

Strategic Culture as the Basis for Military Adaptive Capacity: Overcoming battlefield technological surprises

Jack H. Miller, Author

Dr. Michael Horowitz, Advisor

Senior Honors Thesis in Political Science
University of Pennsylvania
Spring 2014

Abstract

The ability of a military to respond to environmental changes rather than rigidly adhere to previously defined concepts of operation is paramount to overcoming unforeseen battlefield technological challenges. A force with the greater capacity for learning and adaptation will possess significant advantages in overcoming unforeseen challenges. However, it is unclear as to what determines the flexibility or adaptive capacity of a military during military engagements. To address this issue, this study focuses on intra-war adaptation as a product of a military's strategic culture in overcoming enemy technological surprises. The work demonstrates the symbiotic relationship between strategic culture and adaptability that ultimately determines how effectively a force will respond to unforeseen battlefield challenges. For this reason, strategic culture is indispensable in explaining why militaries may continue to act in ways that are incongruous with prevailing operational circumstances while others are adept at responding to Clausewitzian fog and friction.

Acknowledgments

First, I would like to thank my thesis advisor, Dr. Michael Horowitz, for all of his words of advice and guidance. It has been a privilege and pleasure to work with such an accomplished professional, but more importantly an excellent mentor.

I would also like to extend my gratitude to Dr. Eileen Doherty-Sil. She has done a masterful job as the undergraduate advisor and thesis coordinator, and played a vital role in my project from the development phase to making herself available throughout the process for even the most minute of questions.

Thank you to the additional individuals who assisted me with exploration, research, writing, and editing: Evan Perkoski, Osman Balkan, Dr. Avery Goldstein, Dr. Mark Meredith, and Dr. Robert Vitalis.

Last but certainly not least, I am indebted to my parents, grandparents, siblings, and dogs for their immeasurable support not only during this process, but also over the course of my collegiate career. I would not be where I am today without their love, encouragement, and constructive criticism.

After you make a decision, do it like hell- and never take counsel of your fears.

General George S. Patton, USA

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Chapter 1

Introduction

There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order.¹

Niccolò Machiavelli

Introduction

On June 24, 1942, U.S. Navy chief anti-submarine warfare expert Captain Wilder D. Baker informed Commander-in-Chief of the United States Fleet Admiral Ernest King that the Battle of the Atlantic was being lost.² Admiral King was being informed of the dire situation regarding the Battle or War for the Atlantic, the longest continuous military campaign of WWII, at the height of the German attempt to cut off Britain from the supplies needed to wage war. The campaign reached its height in 1942, when German U-Boats under the command of Karl Doenitz began an assault on coastal shipping in the immediate vicinity of the United States. During the 1942 and the early months of 1943, the Allies suffered the greatest average monthly tonnage loss of the entire war.³ While the German onslaught ultimately failed to sever Britain's lifeline to the U.S., it surprised Allied forces in posing a risk to planned offensive operations in Europe.

¹ Niccolò Machiavelli, *The Prince and The Discourses*, (Random House, Inc., 1950): Chapter VI, 21.

² Cohen, Eliot, and John Gooch. *Military Misfortunes: The Anatomy of Failure in War*. New York, NY: Free Press, 1990: 62.

³ Padfield, Peter. *Dönitz: The Last Führer*. Cassell & Company, 2001: 240.

In World War I, the Allied introduction of the convoy and other antisubmarine measures kept their depredations at the hand of German submarines limited. This is because Allied patrols forced U-boats to dive, becoming far slower submerged than convoys. Yet most navies had few ideas of how to combat submarines beyond locating them with sonar and then employing dropping depth charges against them. During the interwar period the Germans crafted an improved operational concept for their U-Boats by forming “wolf packs” of half a dozen submarines. When WWII began, sonar proved much less effective than expected against German wolf packs, and was of little use against U-boat nighttime surface tactics. Despite having access from the beginning of the war to British information about anti-submarine warfare (ASW), the U.S. Navy was surprised by their mounting losses and ineffectiveness of WWI convoy concepts.

The Navy had initially defined the War of the Atlantic as the acquisition of technical information rather than the assimilation of new forms of information, compounding the inadequacy of the organization of naval forces for wartime requirements. American efforts fell on technical matters in the form of the performance of sonar, new types of depth charges, and attack trainers. Similarly, the Navy’s definition of readiness was largely technical, focusing on numbers and quality of ships, munitions, planes, and supplies.⁴ “By the end of 1942 it had become clear that improvement in the quantity and quality of antisubmarine equipment and personal could not by itself win the battle of the Atlantic.”⁵ A centralized planning and operational authority was needed.

⁴ Cohen and Gooch, *Military Misfortunes*, 88.

⁵ National Defense Research Committee. *A Survey of Subsurface Warfare in World War II*. Summary Technical Report of Division 6, Vol 1. Washington, D.C.: Government Printing Office, 1946: 92.

While American naval forces demonstrated a clear failure not only to anticipate German operational changes, the Navy recognized the need to adjust ASW to intra-war developments. This American adaptation can be attributed to the cultural dispositions of the U.S. Navy at the time: a resistance to mirroring the British ASW organization, operational concepts favoring offensive action, and a predisposition for technological solutions. The result, a successful adaptation to German surprise and the challenges of ASW, represented by the creation of the American Tenth Fleet in May of 1943. The fleet was responsible for ASW training and the direction of operations at sea. It sought to combine operational intelligence, control of convoys, allocation of antisubmarine units, and direction of establishments charged with the development of ASW technology.⁶ The organization allowed for the creation of a uniform tactical doctrine, and enabled greater cooperation in ASW doctrine. This top-down organizational adaptation facilitated tactical flexibility, producing a second order effect of tactical adaptation and feedback.

In the six months after the creation of the Tenth Fleet, American naval forces sank 75 U-Boats, a significant improvement from the 36 U-Boats sunk in the 18 months prior to its creation.⁷ Revised American hunter-killer tactics using escort carriers on search and destroy patrols proved complementary to the British use of escort carriers to directly defend convoys, suppressing the effectiveness of and destroying U-boats. The ability to adapt to changing battlefield circumstances often serves as the defining factor in battlefield outcomes. As Cohen and Gooch advocate in their work on battlefield failures, “The ability to adapt is probably most useful to any military organization and most

⁶ Cohen and Gooch, *Military Misfortunes*, 91.

⁷ Ibid.

characteristic of successful ones, for with it, it is possible to overcome both learning and predictive failures.”⁸

Background

In the complex operational environment of war, the ability to rapidly adapt can determine success or failure. Military victories almost certainly require forces to adapt to the operational environment and challenges they face, both when they first deploy and as campaigns evolve. A military establishment that is too slow to recognize and respond to battlefield surprises or adjust its assumptions to reality faces an increased likelihood of defeat. Effective military organizations adapt their prewar assumptions and concepts to reality, rather than attempt to impose prewar conceptions on the war they are fighting. A determining factor in battlefield orientation is not whether failures in battle are the result of the inability to perform tasks that have been well defined and that continue to be accepted as legitimate by the organization, since the solutions are matters of established organizational routine. The key is the ability and manner in which militaries react when wartime problems fall outside the parameters of established missions and concept of operations (CONOPS). Thus war disciplines militaries by forcing them to refine and sometimes revise their tactics, techniques, and technologies, or risk defeat. However, militaries are often the victims of change rather than the agents of change.

Traditional theories of military learning outlines top-down reform or innovation such that leaders of the state perceive threats to state security and direct military institutions to act in ways that address the threat and protect the state. When threats are perceived to be undergoing change, leaders direct military institutions to take steps to

⁸ Ibid, 94.

address new threats. The summation of these steps produces military change. However, this type of approach is applicable primarily in cases of peacetime, when information is more readily available and there is little Clausewitzian friction or fog. Most scholars concentrate on explaining these major forms of change as peacetime innovations, which impact military strategy and doctrine. Such research does not include smaller-scale changes such as adaptation in operational means and methods, or battlefield technology and tactics. While these changes may have limited implications for organizational strategy or structure, they are most likely to occur during wartime and influence the outcome of battles and wars.

Yet there is no theory of how militaries improve during war. To try and address this, scholars have developed theories for intra-war learning in the form of battlefield flexibility and have studied the degree of effectiveness in the flow of timely information and intelligence up and down chains of command. By applying these concepts to battle, one can begin to think of war as a competition of learning through adaptations. The ability to learn and respond to environmental changes rather than rigidly adhering to previously defined CONOPS is paramount to overcoming unforeseen battlefield challenges. Militaries can prepare for unforeseeable enemy actions by integrating an absorptive capacity into their force planning in order to be able to adapt to any enemy surprises. Therefore the force with the greater capacity for adaptation will possess significant advantages in the outcome of the conflict. However, it is unclear as to what determines the absorptive or adaptive capacity of a fighting force in response to unexpected challenges.

Definition of Terms

In addressing intra-war changes, Stephen Rosen advises, “there are so many examples of military organizations that have been unable, for whatever reasons, to learn from wartime experience that we are forced to be cautious in assuming that innovation during wartime is a straightforward matter of observing what works and what does not work in combat.”⁹ Common theories of organizational learning based on the study of organizations that do not face the fog of war may not be useful in studying learning and adaptation during war.¹⁰ Hypercompetitive environments call for organizational strategies and structures that place a premium on learning, innovation, and cooperation.¹¹ Therefore it is prudent to develop a definition of organizational learning and adaptation based on strategic culture as it applies to intensive battlefield “under fire” adjustments, which are meant to counter the enemy’s interwar or wartime innovations. There is also a need to differentiate between common terms for military learning both during war and in peacetime, such as innovation, reform, and adaptation.

The most useful definition for wartime adaptation can be derived from Theo Farrell’s study of British military adaptation in Afghanistan’s Helmand Province from 2006-2009.¹² Farrell defines adaptation as a change in tactics, techniques or existing technologies to improve operational performance. In other words, adaptation is the ability to think anew and capitalize on changed circumstances through the fusion of resourcefulness and judgment. Farrell argues that military organizations can adapt in two

⁹ Rosen, *Winning the Next War*, 7.

¹⁰ Finkel, *On Flexibility*, 23.

¹¹ Staber, Udo, and Jörg Sydow. “Organizational Adaptive Capacity: A Structural Perspective.” *Journal of Management Inquiry* 11, no. 4 (December 2002): 409.

¹² Farrell, Theo, “Improving in War: Military Adaptation and the British in Helmand, 2006-2009,” *The Journal of Strategic Studies* 33:4, (July 2010).

ways in responding to battlefield changes or technological surprise. First, forces can exploit core competencies in refining or modifying existing tactics, techniques, or technologies.¹³ Second, they can explore new capacities by developing new modes and means of operations.¹⁴ This is distinct from doctrinal adaptation, which occurs within the larger context of strategic transformation. Therefore, some adaptations involve science and technology, while others are in the realm of concepts and organizational design. In both cases, however, the ability to adapt rests on the ability to discern current and emerging trends, as well as to anticipate their impact.

Change, learning, and adaptation, have all been used to refer to the process by which organizations adjust to their environment. Another term, flexibility, rarely appears in military literature except as a synonym for related concepts like adaptability.¹⁵ This study interprets flexibility as synonymous with adaptation at the tactical level in allowing field commanders to make decisions and operate based on initiative. Tactical command and control can improve adaptation by helping tactical commanders react quickly as the battle unfolds and capitalize on tactical-level opportunities.

For the purposes of this study, adaptation is not synonymous with innovation. Barry Posen's 1984 *The Sources of Military Doctrine* provides a foundation for the development of a growing body of literature that focuses on military innovation.¹⁶ Much of this literature has examined how strategic, political, and technological developments have produced strategic or political conditions that served as sources of change in military organizations, while more recent contributions to this literature have examined

¹³ Ibid, 4.

¹⁴ Ibid.

¹⁵ Finkel, *On Flexibility*: 6.

¹⁶ Posen, Barry, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars*, (Ithaca: Cornell University Press, 1984).

how social conditions, or norms of identity and behavior, can structure military change.¹⁷ Following Posen's work, Stephen Rosen's *Winning the Next War* studies major military innovations, which he defines as a change in the way one of the primary combat arms of a service fights. Major innovations change a military's CONOPS, as opposed to tactical innovations that change how specific weapons are applied to targets.¹⁸ While adaptation results in operational and tactical changes, based on individual problem solving initiatives, the strategic level of warfare can be attributed to military innovation and doctrinal reform, both higher order concepts.

Tactical adaptation and organizational innovation are mutually supportive. According to James Russell, tactical adaptation occurs when units change organizational procedures on the battlefield in order to address perceived organizational shortfalls generally revealed by interactions with the adversary.¹⁹ Organizational innovation seeks to capture the process by which tactical adaptations gather organizational momentum and validation, leading to the creation of new standard operating procedures (SOPs) embodying organizational capacities that did not exist when the units began their deployment.²⁰ This occurs when an action results in procedural and physical adjustments that help an organization better match its inputs and outputs with its desired goals and objectives.²¹ However, the collective momentum of tactical adaptations can be characterized as organizational adaptation. Since tactical adaptations can produce new

¹⁷ Ibid, Chapter 2.

¹⁸ Rosen, *Winning the Next War*, 7.

¹⁹ Russell, James A. *Innovation, Transformation, and War: Counterinsurgency Operations in Anbar and Ninewa, Iraq, 2005-2007*. Stanford, Calif.: Stanford Security Studies, 2011: 192.

²⁰ Ibid.

²¹ Serena, *A Revolution in Military Adaptation*, 10-11.

organizational structures and capacities during wartime that change the nature of organizational outputs.

Janine Davidson discusses this concept of organizational learning in the context of the American military in military operations other than war.²² In analyzing the record of U.S. military involvement in and adaptation to stability and reconstruction operations, she seeks to identify how operational experience is or is not translated into organizational learning. Davidson's institutional adaptation is distinct from the adaptation that this study focuses on in that she analyzes a response to the overall combat environment through strategic and doctrinal reform towards a counterinsurgency strategy. Most important, the adaptations in this study occur as a series of bottom-up procedures developed over the course of engagements with enemy forces.

Literature Review

Technological Surprise

Military technology is a force multiplier or means of overcoming strategic and tactical handicaps and inequalities. Weaker powers employ military technologies in the form of new or existing technology, tactics, strategy, or their combination to "level the playing field." According to military historian Max Boot, while technology sets the parameters of the possible and creates the potential for military change, the extent to which forces recognize and exploit opportunities inherent in new tools of war is what produces actual innovation.²³ In other words, merely possessing a technology does not allow for a

²² Davidson, *Lifting the Fog of Peace*.

²³ Max Boot in Adamsky, Dima, *The Culture of Military Innovation: The Impact of Cultural Factors on the Revolution in Military Affairs in Russia, the US, and Israel*, (Stanford, Calif: Stanford Security Studies, 2010): 1.

narrowing of the capabilities gap between warring factions. Thus a key concept that has historically proven vital for weaker powers in gaining parity in battle is the deployment of a weapon system in an unanticipated fashion or unfamiliar to the stronger power. This alludes to the concept of technological surprise.

Throughout history, nations have found themselves confronted with unexpected threats that place them at a fatal military disadvantage. These situations are an extension of the more general military notion of surprise. Michael Handel first illustrated the concept of technological surprise in a 1987 article in *Intelligence and National Security*.²⁴ He defines technological surprise as the unilateral advantage gained by the introduction of a new weapon or by the innovative use of an existing weapon in war against an adversary who is either unaware of its existence or not ready with effective counter-measures, which the development of which requires time.²⁵ It is essential that the technology be employed with an effective doctrine in order to maximize tactical and strategic effects to produce technological surprise.

Tactical surprises have tactical consequences, necessitating a response on the part of combat commanders. Operational surprise threatens operational vulnerabilities and requires a response beyond the resources of the tactical commander. Operational responses can include a redistribution of forces within the theater, the release and employment of theater reserves, and other decisions within the remit of the operational commander.²⁶ They may also necessitate reaching back into strategic resources and

²⁴ Handel, Michael. "Technological Surprise in War." *Intelligence and National Security* 2, no. 1 (January 1987): 1–51.

²⁵ *Ibid*, 5.

²⁶ Smith, Andrew. *Improvised Explosive Devices in Iraq, 2003-09: A Case of Operational Surprise and Institutional Response*. Letort Paper. U.S. Army War College, Carlisle, PA: Strategic Studies Institute, April 2011.

capabilities. In the latter situations, surprise begins to impinge on the strategic level, requiring a strategic response. A successful strategic surprise facilitates the destruction of a sizeable portion of the enemy's forces at a much lower cost to the attacker by throwing the inherently stronger defense psychologically off balance and temporarily reducing its resistance.²⁷

There are few studies on technological and doctrinal surprise. According to Handel, "while strategic surprise has been studied extensively as a strategic and intelligence problem, technological surprise has received only scant attention in the open literature."²⁸ The lack of intensive study may be explained by three primary concepts. First, strategic surprise is of greater interest due to existential ramifications of strategic defeat. Second, isolating the uniqueness and influence of a technological or doctrinal surprise often proves elusive when analyzing a combat environment. Third, for security reasons military establishments are reluctant to discuss their reactions to such surprise.²⁹

While much of Handel's application of the concept focuses on the World Wars, he illustrates a notion that continues to grow in importance given the increasingly technological nature of warfare. As the capabilities of the world's strongest militaries continue to grow with the development of advanced systems and platforms, weaker powers struggle to prevent the power gap from widening, as they may not have the financial, intellectual, or organizational capacity to develop and employ similarly sophisticated technologies. Under such conditions, each side attempts to leverage its strengths against its opponent's weaknesses. Surprise is the ultimate asymmetric threat

²⁷ Handel, "Technological Surprise in War," 5.

²⁸ Ibid, 3.

²⁹ Finkel, Meir, *On flexibility: recovery from technological and doctrinal surprise on the battlefield*, (Stanford, California: Stanford Security Studies, 2011): 7.

because it interferes with the stronger power's ability to assess adversary capabilities and intentions, as well as account for one's own vulnerabilities. It exploits natural proclivities and inherent and systemic vulnerabilities by capitalizing on complacency and misperceptions. Surprise, whether intentional or unintentional, can also influence policies and public opinion at home and abroad through the force-multiplying effects of shock, thus potentially shifting the balance of power by shaping perceptions in the adversaries' favor.

According to Israeli Defense Force (IDF) Brigadier General Itai Brun, the strategic evolution of groups or states at the weaker end of a balance of power continues to occur as a counter-strategy to superior conventional militaries.³⁰ Brun writes that technologically inferior powers have been seeking to improve their absorption capacity, the ability to increase survivability against advanced conventional arsenals, in order to create effective deterrence, shift the war to more convenient areas in case the deterrent fails, and avoid engaging in a war of attrition.³¹ For example, all current U.S. adversaries fall far behind the United States in maneuver and firepower capabilities. These adversaries will likely avoid confronting the U.S. military in direct battle, instead relying on innovative means to counter U.S. material superiority without directly opposing it, while seeking to exploit perceived weaknesses through surprise. The result is that the boundaries between the strategic, operational, and tactical levels of war become less clearly defined. Conversely, nations with modern conventional militaries like the United States lack the natural incentive to employ surprise, often dismissing the concept as a weapon of the weak. However, defeating these threats requires a thorough understanding

³⁰ Brun, Brig. Gen. Itai. "While You're Busy Making Other Plans' – The 'Other RMA'." *Journal of Strategic Studies* 33, no. 4 (August 2010): 535–565.

³¹ Ibid.

of the nature of surprise, as well as the resolve to minimize its impact and consequences through adaptation. Consequently, Handel's concept of technological surprise is perhaps more relevant now than towards the end of the cold war due the proliferation of precision weapons, globalization, and the rise of groups or states seeking to challenge traditional balances of power.

As the pursuit of surprise by a group is common when facing a notably stronger force, the outcome of a conflict will be determined by the response of the superior power to the actions of the weaker power. Even devastating technological surprise will not bring about decisive long-term results unless such results immediately follow. As the impact of surprise fades, a variety of technological and doctrinal countermeasures as well as other variables are introduced that affect the outcome of war.³² Therefore time is one of the most important dimensions of technological surprise, as the more time required by the opponent to react and develop a counter reaction, the greater the impact of the technological surprise.

The study of battlefield adjustments begins with the great military theorist Carl von Clausewitz. Based on Clausewitz's theories, battlefield adaptations are necessary given the fog of war and the fact that the best laid battle plans fall victim to the first moments of war. When wartime surprises occur, adaptation is key, especially if enemy surprises occur outside the parameters of established CONOPS. Adaptation is most effective when associated with a redefinition of the measures of strategic effectiveness

³² Handel, "Technological Surprise in War," 28.

employed by the military organization, and has generally been limited by the difficulties connected with wartime learning and organizational change due to time constraints.³³

In addressing this concept and building off the work of Handel, IDF Colonel Meir Finkel studies the response of surprised powers in determining the outcome of a conflict. Finkel's work *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield* is unique in its study of military responsiveness to wartime shocks.³⁴ According to Finkel, the solution to technological and doctrinal surprise lies not in predicting the nature of the future battlefield or obtaining information about the enemy's preparations for the coming war, but in the ability to recuperate swiftly from the initial surprise.

While organizational and tactical flexibility are often discussed in military research, the concept has not been analyzed in detail nor has a comprehensive theoretical framework of flexibility been proposed.³⁵ To address this, Finkel's work is structured around his proposed theory of flexibility, which he defines as:

The combination of doctrinal, cognitive, command, organizational, and technological elements, that if properly applied can eliminate most obstacles in the current paradigm that stem from biases caused by problems inherent in large organizations such as failure to learn from mistakes and ideological rigidity.³⁶

He shows that when armies improve their response skills and reaction time to technological and doctrinal surprise, most obstacles based on prediction and intelligence solutions become superfluous. Michael Doubler demonstrates the utility of flexibility in

³³ Rosen, Stephen. *Winning the Next War: Innovation and the Modern Military*. Ithaca, NY: Cornell University Press, 1991: 250.

³⁴ Finkel, *On flexibility*.

³⁵ *Ibid*.

³⁶ *Ibid*, 2.

his work on WWII, *Closing with the Enemy*.³⁷ Through out the study Doubler addresses organic sources of tactical flexibility and adaptation. In one case, he argues that the breakout from the Bocage in Normandy resulted from a series of small changes stemming from the adaptation of existing technology to break through the hedgerows.³⁸ This was supported by the tactical placement of weapons and personnel to disrupt German defenses.

Finkel concludes his study with a brief mention of military culture, hypothesizing that military culture appears to be of importance in establishing an infrastructure for the culture of flexibility that is required for the recovery from surprise. He alludes to the critical connection between strategic culture and tactical responsiveness in battlefield settings, when military change tends to come more from the spontaneous interactions between soldiers, technology, and tactical circumstances. The critical ability in establishing a feedback loop between strategy and tactical analysis is whether an organization is capable of making intra-war changes and adopting them widely.

Theories of Military Change

Scholars of military change draw on three overlapping theories to explain the sources that can either facilitate or impede successful adaptation: bureaucratic politics, organizational theory, and organizational culture.³⁹

Bureaucratic politics theory describes how military leaders, like leaders of other large organizations, seek to promote change from within their respective organization.

Theorists of this school identify the conflict between influential individuals and

³⁷ Doubler, Michael D. *Closing with the Enemy: How GIs Fought the War in Europe, 1944-1945*. Lawrence, Kan.: University Press of Kansas, 1994.

³⁸ Ibid, 32-57.

³⁹ Davidson, Janine. *Lifting the Fog of Peace: How Americans Learned to Fight Modern War*. Ann Arbor: University of Michigan Press, 2010: 12.

bureaucracies as the drivers of military innovation and seek to identify which relationships initiate and shape innovation more so than the others. In his work *Winning the Next War* Stephen Rosen proposes an internally driven model in which “mavericks,” or officers who advocate change from within conservative military organizations, produce these changes.⁴⁰ These insiders must challenge existing methods for waging war, refine a new method, and manage the political struggle that accompanies the change. Similarly, Rosen argues that peacetime innovation involves a top-down campaign of military change led by a visionary military leader.

In their study of military failures, Cohen and Gooch argue that scholars should avoid the pitfalls of the “dogma of responsibility” by realizing that the concern is not awarding demerits or prizes to defeated or successful commanders but to discover why events unfolded the way they did.⁴¹ Therefore, instead of testing men and institutions, we must examine the structures through which they work and explore how those structures stand up to the stresses they encounter. This suggests the second theory of military change: organization theory.

Organization theory views military organizations as highly resistant to change. For organizational theorists, militaries resist change as a result of structural systems, norms, and standard operating procedures that together focus behavior toward particular outcomes. Accordingly, the theory predicts that all militaries should fail to adapt, without exception. There are three main approaches to organizational theory: the rational systems approach, the open systems approach, and the natural systems approach.⁴² According to

⁴⁰ Rosen *Winning the next War*, 35.

⁴¹ Cohen and Gooch, *Military Misfortunes*, 46.

⁴² Isaacson, Jeffrey, Christopher Layne, and John Arquilla. *Predicting Military Innovation*. Prepared for the United States Army. Santa Monica, CA: RAND Arroyo Center, 1999: 16.

Isaacson et al., the rational systems approach outlines organizations as rational actors that pursue their goals efficiently. The open systems approach sees organizations as having a limited ability to act rationally because they are embedded in, and constituted by, the environment in which they operate. Lastly, the natural systems approach sees organizations as having a limited ability to act rationally because of cognitive constraints, and as dedicated to pursuing their narrow self-interest. Thus they can only operate within a bounded rationality.⁴³ In this study I employ the natural system model of organization theory because it is not only the dominant organizational theory paradigm, but also the best-suited approach for the analysis of military operations.

The aim of a bureaucracy is imposing order and form on a world that is disorderly and ambiguous. Without a coherent design for promoting adaptation, an organization might find it impossible to learn and apply lessons to effectively accomplish mission objectives. Murray points out the irony; a bureaucratic system is absolute necessity for successful adaptation, but the rhythms of most bureaucracies are antithetical to successful adaptation. They are more about efficiency than effectiveness, and become prisoners of prewar assumptions and perceptions.⁴⁴ Michael Horowitz studies this notion of limited organizational capital in the context of his adoption capacity theory, identifying organizational characteristics such as resources for experimentation, ossified bureaucracies, and critical task definitions as possible limiting factors to successful adaptation or innovation.⁴⁵

⁴³ Ibid.

⁴⁴ Murray, Williamson. *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, 2011: 18.

⁴⁵ Horowitz, Michael. *The Diffusion of Military Power: Causes and Consequences for International Politics*. Princeton: Princeton University Press, 2010: 10.

Similarly, Chad Serena points out in his study of the U.S. Army in Iraq from 2004-2006 that defensive routines employed by large organizations hide errors made by the organization and complicate the adaptive process. Methods for employing strict organizational control also serve to limit the opportunities for adaptation. The embedded and often inflexible standard operating procedures common to many organizations reduce the prospects of realizing considerable organizational gains through change.⁴⁶

The third theory of adaptation identifies a unique culture that perpetuates the routines that reinforce institutional norms and CONOPS. This theory suggests that all large organizations have assumptions, beliefs and values that underpin their views and actions. According to Farrell and Terriff, cultural norms are inter-subjective beliefs about the social and natural world that define actors, their situations, and the possibility of action. These norms produce persistent patterns of behavior by becoming institutionalized within an organization.⁴⁷ In addressing adaptation, unexpected circumstances test organization and system by revealing not only weaknesses that are partly structural and partly functional, but also cultural predilections regarding the range of possible solutions. For this reason, culture is useful in explaining why militaries may continue to act in ways that are incongruous with prevailing strategic and operational circumstances, or implement effective battlefield reforms.

⁴⁶ Serena, Chad C. *A Revolution in Military Adaptation: The US Army in the Iraq War*. Washington, D.C.: Georgetown University Press, 2011: 10.

⁴⁷ Farrell, Theo, and Terry Terriff. *The Sources of Military Change: Culture, Politics, Technology*. Boulder, Colo.: Lynne Rienner Publishers, 2002: 7.

In recent years, the concept of culture has become increasingly relevant to the study of military organizations as well as organizations in general.⁴⁸ A notable proponent of this school is Elizabeth Kier. Kier rejects the conflict-relationship thesis of bureaucratic politics and argues that culture better explains military innovation. According to Kier, culture directly shapes the thinking of military leaders and therefore can enable or inhibit certain innovations. She cites the example of mechanized warfare in the interwar period as a prime example, showing that cultural factors drove different outcomes in Britain, France, and Germany, despite a shared experience in WWI with similar technology.⁴⁹

A narrow demonstration of distinct military cultures in action is demonstrated in the early Cold War years. The West German army's view of warfare as a creative activity contrasted sharply with the American's more managerial approach so much so that a group of German officers criticized American army manuals for what they saw as a dangerous tendency to try and foresee all possible scenarios. Another example involves the nascent Israeli army, which avoided the British emphasis on parade ground drills, and instead stressed combat skills and the paratrooper spirit by requiring all officers to undergo jump training.⁵⁰ Cultures differ, and it is these differences that account for doctrinal, operational, and even tactical preferences.

In the causal chain of military effectiveness, the independent variables of service cultures, civil-military relations, politics, and social structure coalesce to form the

⁴⁸ Shamir, Eitan. *Transforming Command: The Pursuit of Mission Command in the U.S., British, and Israeli Armies*. Stanford, Calif.: Stanford Security Studies, 2011.

⁴⁹ Kier, Elizabeth. *Imagining War: French and British Military Doctrine Between the Wars*. Princeton, N.J.: Princeton University Press, 1999.

⁵⁰ Van Creveld, Martin. *Fighting Power: German and U.S. Army Performance 1939-1945*. Westport, Conn.: Greenwood, 1982: 121

concept of a broad national military culture.⁵¹ Upon further study, the cultural perspective involves two levels of analysis: the strategic culture and organizational culture approaches. The former emphasizes the use of force by a state, while the latter emphasizes the use of force by a specific service branch. Strategic culture posits that states have distinctive, consistent, and persistent views on how they think about the use of force. As an amalgam of values, traditions, and their philosophical underpinnings that shape the context for military behavior, strategic culture is the principal input in the cycle of military change. In other words, strategic culture is the frame of reference through which ideas, attitudes, traditions, and preference for military action are considered. As such, it has an identifiable effect on how units respond to changes in the operational environment. To identify and measure the impact of a state's strategic culture on the use of force, it is necessary to analyze both current and historic episodes and texts in order to identify not only strategic preferences but also concepts that relate to the nature of military operations in the form of SOPs and CONOPs.

Most studies on military change involve an integrated approach to the aforementioned theories, since each approach can help explain the dynamics of a particular case and provide some general lessons for the student and practitioner alike. In their totality, they show that innovation comes about through a series of complex interactions at levels both internal and external to an organization, and that a variety of factors or conditions can either promote or hinder the process. This study attempts to identify how militaries seek to win wars by overcoming unforeseen challenges. While the use of the cultural approach is limited in explaining major peacetime innovations and

⁵¹ Brooks, Risa, and Elizabeth A Stanley. *Creating Military Power: The Sources of Military Effectiveness*. Stanford, Calif.: Stanford University Press, 2007: 9.

reforms to force structures, this study will demonstrate that it is most useful in conditioning military responses to unforeseen challenges in war.

The realist school of political science derives a fourth noteworthy theory of military change. Structural realism posits that the international political system is fundamentally anarchic. Hence, the international political system is a self-help system in which states must ensure their own security either by external balancing through alliances or internal balancing involving the enhancement of their own military forces.

Accordingly, structural realist indicators may reveal incentives to innovate. States that face serious external threats, have revisionist ambitions, or face relative resource constraints all have powerful reasons to innovate militarily, making them more likely to do so. First, fear is a powerful incentive for a state to innovate. States that believe they are highly insecure have a strong incentive to innovate, while those that believe they are secure have little incentive. Second, states with revisionist political aims have strong incentives to innovate because they are willing to use force to alter the geopolitical status quo. Third, states with expanding international interests and ambitions, like rising powers, innovate because their outward projection of growing power increases their risk of conflict, and their interests must be defended. Finally, insecure states that lack allies and consequently must rely exclusively on internal balancing for security have strong incentives to innovate.⁵²

There are two points of contention with the realist explanation for intra-war change. First, realist theory is predicated on states perceiving threats to their own security. Yet given the inherent bolt from the blue nature of technological surprise, states may not foresee threats to their security until after the unexpected enemy action. As a

⁵² Isaacson et al., *Predicting Military Innovation*, 11-14.

result there is a limited opportunity for innovation prior to enemy engagement. Second, the phenomenon of technological surprise produces an obvious incentive for intra-war adaptation. Realism would predict that all states that encounter technological surprise would seek to innovate. Similar to organizational theory, realism predicts the same outcome across all cases. However, observed variation across cases demonstrate that the realism explanation is lacking. Thus realism is better suited for an analysis of inter-war innovations.

Strategic culture theory is best able to explain the largely bottom-up change by forces at war as opposed to bureaucratic politics and organizational theory. The concepts of flexibility, slack, and absorptiveness are part of a culture that understands the need for tactical experimentation and perhaps a new operational framework after suffering a technological surprise. This, in turn, requires a strategic culture that encourages initiative and does not punish the failures that innovation invariably brings about. These qualities often rest on the fundamental attributes of societies that in turn reflect in their militaries. As this study will demonstrate, strategic culture influences wartime military activities and ultimately military effectiveness.

Strategic Culture Literature

Strategic culture is the sum total of ideas, conditioned emotional responses, and patterns of habitual behavior that members of a national strategic community have acquired through instruction or imitation and share with each other. It reflects its own functional imperative and the social forces, ideologies, and institutions dominant within its larger

society.⁵³ Strategic culture encompasses the purpose and possibility of military change by producing persistent patterns of behavior that are institutionalized within an organization.

Strategic culture is distinct from military culture, which itself can be broken into the culture of each service branch. Military culture has been studied because it possesses a tight knit social architecture that strategic culture does not, and is easier to quantify and measure due to the smaller number of variables involved. However, understanding why militaries behave differently under the stresses of combat requires an analysis of the organization's culture and how their basic assumptions, values, beliefs, norms, and formal knowledge shape the collective understandings of their members. This approach encapsulates both the cognitive or mental thought-ways that result from shared values, traditions, experience, as well as behavioral trends in employing military force.⁵⁴ In other words, a nation's "way of war" is an expression of how the nation's military wants to fight wars.

The notion that there is a connection between a society and its style of warfare has a long and distinguished pedigree. One of the earliest examples is of the Peloponnesian War, as Thucydides records that Spartan and Athenian leaders linked the capabilities of their militaries to the constitutions of their respective states.⁵⁵ Success in waging wars that run counter to national ways of war may come only after a period of painful adaptation.

⁵³ Collins, Joseph. *American Military Culture in the Twenty First Century*. Washington, D.C.: Center for Strategic and International Studies, International Security Program, February 2000.

⁵⁴ Harris, Brice F. *America, Technology and Strategic Culture a Clausewitzian Assessment*. London; New York: Routledge, 2009: 6.

⁵⁵ Mahnken, Thomas G. *Technology and the American Way of War*. New York: Columbia University Press, 2008: 3.

Jack Snyder first identified the notion of strategic culture in the late 1970s in the context of analyzing Soviet nuclear strategy during the height of the Cold War. Snyder presumed the distinctive stylistic predispositions and behavioral patterns of Soviet strategists during security crises reflected Soviet strategic culture. The unique Soviet style of strategy, he argued, would best be understood by evaluating both the sociological and intellectual elements of Soviet strategic thought through the Soviet organizational, historical, and political context.⁵⁶

In his in-depth study of pre-modern Chinese strategic, Alastair Johnston comes to a conclusion utilizing rigorous procedures to test for the existence and influence of strategic culture. According to his analysis, different states have different sets of strategic preferences that are rooted in the early or formative military experiences of the state, and are influenced by the philosophical, political, cultural, and cognitive characteristics of the state and state elites.⁵⁷ According to Johnson, much of the work on strategic culture is deterministic because it asks, “Here is a set of strategic assumptions; where do they come from?”⁵⁸ According to Johnson, a researcher following this approach moves back in time to a point where she or he finds similar assumptions. This guarantees that the researcher will find continuity, which is then labeled as strategic culture. The alternative method, which this study utilizes, is to ask, “Here are some past, historical strategic assumptions; where do they go?”⁵⁹ While strategic culture is not quantifiable, this approach allows a researcher to empirically discern preferences for how military forces may be employed.

⁵⁶ Snyder, Jack. *The Soviet Strategic Culture: Implications for Limited Nuclear Operations*. Santa Monica, CA: RAND Project Air Force, September 1977.

⁵⁷ Johnston, Alastair I. *Cultural Realism: Strategic Culture and Grand Strategy in Chinese History*. Princeton, N.J.: Princeton University Press, 1998: 1.

⁵⁸ Johnston, Alastair I. “Thinking about Strategic Culture.” *International Security* 19, no. 4 (Spring 1995): 50.

⁵⁹ *Ibid.*

These qualitative preferences are observable throughout the spectrum of military force, from doctrine down to the tactical level. Together, these observable components of military-strategic culture tend to demonstrate a preferred paradigm for war.

There is a debate among scholars as to how strategic culture affects behavior. A notable feature of this debate is that researchers do not disagree about the importance of strategic culture, but rather disagree about the precision of the explanation for a specific behavior and how it is measured. The dispute occurs between those who perceive strategic culture both as a constituent of that behavior and as a context for the behavior itself, and those who argue for more positivistic thoroughness and attempt to filter the effects of culture more precisely.⁶⁰

As opposed to the notion that culture causes end-guided action providing preferred ends that cause organizations to change their behavior, this study adopts the view that culture provides a generally accepted way of accomplishing tasks, not as defining end goals. This outlook was first advanced by Ann Swidler, who argued that a culture has enduring effects on those who hold it, not by shaping the ends they pursue but by providing the characteristic repertoire from which they build lines of action. In other words, every culture contains “tool kits” for of organizational behavior.⁶¹ Swidler invokes culture to explain continuities in action in the face of structural changes, or why different groups behave differently in the same structural situation. She concludes that culture limits the range of strategies of action. As such, the effects of culture are seen through strategies of action not by defining ends of action but rather by providing

⁶⁰ Finlan, Alastair. *Contemporary Military Culture and Strategic Studies: US and UK Armed Forces in the 21st Century*, 2013: 10.

⁶¹ Swidler, Ann. “Culture in Action: Symbols and Strategies.” *American Sociological Review* 51, no. 2 (April 1986): 284.

constructs of action.⁶² In other words, strategic culture directly influences the inputs in the adaption cycle, rather than prescribing a preferred output. With the knowledge of a military's strategic culture, one can better predict its adaptive capacity and operational effectiveness in responding to technological surprises.

Strategic Culture in Action

One of the most notable works that evaluates the relationship between military strategic culture and technological change is Dima Adamsky's study of the U.S., Israeli, and Soviet military's reactions and the subsequent changes to their force structure and doctrine based on the late 20th century revolution in military affairs (RMA).⁶³ Adamsky comes to the conclusion that strategic and military culture explains the different ways in which military innovations, based on similar technologies, develop in different states.⁶⁴ Unlike Finkel, Adamsky looks at strategic level innovations. He identifies the socially constructed relationship between technology and innovation as a result of national military tradition and professional cultures that interact with the technology. From his work it is clear that there is a symbiotic relationship between technology, strategic culture, and the development of new theory of victory. Combining his strategic analysis with Finkel's study of the tactical responses of powers facing battlefield technological surprise can provide a unique insight the operational management of war and the responsiveness of militaries to surprise.

A seminal piece on the relationship between military culture and adaptation comes from Williamson Murray's article "Does Strategic Culture Really Matter?" and his

⁶² Ibid, 273-289.

⁶³ Adamsky, Dima, *The Culture of Military Innovation: The Impact of Cultural Factors on the Revolution in Military Affairs in Russia, the US, and Israel*, (Stanford, Calif: Stanford Security Studies, 2010).

⁶⁴ Ibid, 8.

book *Military Adaptation in War*.⁶⁵ According to Murray, there is a consistent historical pattern of military organizations' imposing their prewar concepts of future combat on the actual conditions of war, instead of adapting to the conditions despite the fact that the need for adaptation has increased with advances in technology. Military and strategic cultures that remain enmeshed in the day-to-day tasks of administration, and believe that the enemy will possess no "surprise" responses are military organizations headed for defeat.⁶⁶ On the other hand, strategic cultures with adaptive capacity do not experience environments passively. In the process of interpreting and acting on environments, they reconstruct them in ways that change the conditions to which they then adapt.⁶⁷

From James Russell's study of the counterinsurgency strategy adopted by the U.S. in Iraq around 2007, we can discern the enabling cultural factors for successful adaptation.⁶⁸ Similarly, Fiol and Lyles identify the contextual factors that affect the probability that organizational change will occur.⁶⁹ The first is the empowerment of tactical-level leadership. Instrumental to successful adaptations are flexible and decentralized organizations that are characterized by flat and informal hierarchical structures. Organizational leadership must establish a culture of learning and intellectual flexibility by granting lower-level initiative to junior officers.

⁶⁵ Murray, Williamson, "Does Military Culture Matter?" *Orbis, Foreign Policy Research Institute* 43, no. 1, The End of American Military Culture, (Winter 1999): 27–42, and Murray, *Military Adaptation in War*, 2011.

⁶⁶ Murray, "Does Military Culture Matter?" 38.

⁶⁷ March, James. "Exploration and Exploitation in Organizational Learning." *Organizational Science, Organizational Learning*, 2, no. 1 (February 1991): 85.

⁶⁸ Russell, James A. *Innovation, Transformation, and War: Counterinsurgency Operations in Anbar and Ninewa, Iraq, 2005-2007*. Stanford, Calif.: Stanford Security Studies, 2011.

⁶⁹ Fiol, C. Marlene, and Marjorie Lyles. "Organizational Learning." *The Academy of Management Review* 10, no. 4 (October 1985): 803–813.

The second factor is information flow. While military bureaucracies can have peacetime reputations as stove-piped organizations reluctant to share information, successful change requires flow of information up and down chain of command as well as horizontally from unit to unit. Therefore, adaptive capacity is understood in terms of double-loop learning, which enables questioning and changing the prevailing goals and tactics, as well as developing new doctrines and information flows.⁷⁰ Strategic cultures that resist adaptation often follow a pattern of single-loop learning, which assumes that goals are relatively stable and focuses more on the means by which existing goals are pursued.⁷¹ These contextual factors for organizational adaptation can be thought of as an absorptive capacity that facilitates adaptive processes. Accordingly, the strategic culture most conducive to battlefield adaptations views adaptation not as an optimal end state but as a dynamic process of continuous learning and adjustment that permits discussion, ambiguity, and complexity.

Research Design

This exploratory study is designed as the first step towards establishing a causal link between strategic culture and wartime military adaptations with the hypothesis that the determining factor of the aforementioned concept of tactical and operational adaptation is strategic culture. This culture, formed during peacetime, will determine how a force reacts to wartime occurrences more so than theories regarding bureaucratic politics and organizational theory. While strategic culture provides a limited range of choices or tendencies for the use of force, militaries with an adaptive capacity do not experience

⁷⁰ Staber, Udo, and Jörg Sydow. "Organizational Adaptive Capacity: A Structural Perspective." *Journal of Management Inquiry* 11, no. 4 (December 2002): 412.

⁷¹ *Ibid.*, 415.

environments passively. In the process of interpreting and acting on environments, they reconstruct themselves in ways that change the conditions to which they then adapt.

This study focuses on intra-war adaptation as a product of a military's strategic culture by analyzing tactical and operational responses to unforeseen technological challenges posed by an enemy force. The relationship between strategic culture, adaptability, and battlefield encounters is a symbiotic one. This relationship must exist between top-down and bottom-up thought, so that even if the military's structure and operational culture becomes ill suited to the challenges on the battlefield, it will be able to adapt and harness its own intellectual capital to further progress. This internal capacity must be able to transcend traditional doctrinal frameworks and must be deeply embedded in its institutional culture.

This relationship will be demonstrated through an analysis of the strategic culture and battlefield performances of the Israeli Defense Force (IDF) in the Sinai Theater of the 1973 Yom Kippur War, the Soviet Army in Afghanistan circa the 1980s, and finally the U.S. military's experience over the past decade in Iraq. In each case, the superior force largely set itself up for failure by projecting its conception of the order of battle onto the enemy. This is indicative of possibly a larger trend of power disparity and its effect on battlefield preparations.

Each case study will open with a discussion of the independent variable strategic culture, followed by a brief background on the conflict in which the nation was engaged as well as how strategic culture was manifested in initial battlefield operations. Within the context of discussing the battlefield setting, I will discuss the technological system employed by opposing forces that achieved an effect of technological surprise as an

intervening variable. Emerging tactical surprises can operate at both the strategic and operational levels as well, and are particularly dangerous as they test the adaptability of military forces and the strategic culture of their respective defense establishments.

The three empirical cases were selected for several reasons. First, in each case, the intervening variable of technological surprise is similar across the three cases. The nature of each enemy system is negative in that it was designed to deny the superior power the freedom of mobility required to maximize its conventional effectiveness. In addition, the enemy systems surveyed in this study all possess a tactical and strategic duality that would define the conflict by forcing the studied power to adapt or risk defeat. Therefore, technological surprise definitely brings about the need for adaptation by clearly manifesting any issues in force preparation and dispelling erroneous preconceived notions.

The deployment of the “surprising” system serves as an evident starting point from which to isolate and measure the response of the superior power. Subsequently, it is the wartime interaction between technological surprise and strategic culture that produces a unique adaptation. Therefore, while there are many cases of intra-war adaptations from the tactical to the strategic level, identifying conflicts involving technological surprise with the appropriate time frame is difficult. For example, the war in Southern Lebanon involving Israel and Hezbollah in 2006 was not included in this study, despite the achievement by Hezbollah of technological surprise; Hezbollah countered IDF armor through the use of Russian-made anti-tank guided missiles (ATGMs). According to Israeli officials, 52 Merkava main battle tank were damaged during the engagement, 45

of them by different kinds of ATGMs.⁷² However, during the 34-day conflict, ground engagements occurred during a single period of about two weeks, a time period too short to allow for significant adaptive processes to be developed, implemented, and measured. The effectiveness of the enemy technological system must be measured from its first deployments to the end of the conflict. A decrease in effectiveness denotes a successful adaptation. In addition, changes in force structure, tactics, and operating procedures that can be related to the technological system indicate adaptation.

Second, the cases demonstrate the enduring role of strategic culture over three disparate militaries; the highly centralized, conscript, and politically deferential Soviet military; the small yet agile, citizen-soldier, practitioner IDF; and the techno-centric, decentralized, and volunteer force of the American military. While these militaries may share elements of strategic cultures, the key is the aggregation of these factors in producing a unique way of war. In addition, the cultures of the respective militaries have been widely studied from historical and social perspectives to after action reviews, and are therefore highly qualifiable.

Third, the three conflicts surveyed in this study largely cover the spectrum of military operations. The 1973 Yom Kippur War falls on the conventional inter-state conflict end of the spectrum, with the irregular counterinsurgency campaign of the Iraq War falling on the opposite end. In between these two extremes are the Soviet war in Afghanistan and the 2006 Lebanon War, both conflicts that combined many irregular and conventional components. Different types of conflict, such as irregular versus conventional, attribute different roles to different echelons of command. For example,

⁷² Rapaport, Amir. *The IDF and the Lessons of the Second Lebanon War*. Mideast Security and Policy Studies. Bar-Ilan University, Israel: Begin-Sadat Center for Strategic Studies, December 2010: 13.

irregular engagements place greater emphasis on combat commanders as opposed to brigade and battalion level officers. By covering the spectrum of operations, the study will demonstrate the universal role of strategic culture across any type of armed engagement.

Finally, the variation of the dependent variable and the adaptability of the military will be analyzed through the lens of bureaucratic politics, organizational structure, strategic culture, and realist theory in determining which theory was most influential in explaining the conflict outcome. This research will conclude with a set of policy prescriptions for militaries in preparing for future engagements in which enemy forces are likely to seek technological surprise to alter the balance of power on the battlefield.

Chapter 2

The IDF, Sagger, and the Sinai

It is not the strongest or the most intelligent who will survive but those who can best manage change.

Charles Darwin

A complex weapon makes the strong stronger, while a simple weapon—so long as there is no answer to it — gives claws to the weak.¹

George Orwell

Introduction

This chapter analyzes the Israeli Defense Forces (IDF) and their performance in the 1973 Yom Kippur War, fought against the Egyptian and Syrian Armed Forces. While military operations were fought in both Northern and Southern Israel, this chapter focuses on Egyptian and Israeli operations in the IDF Southern Command theater of operations. Specific attention is paid to the misconceptions produced by Israeli strategic culture, Egyptian achievement of technological surprise, and finally the IDF response that was able to turn the tide of the war in favor of the Israelis. The following description of the Battle of the Sinai and subsequent analysis demonstrate the primacy of strategic culture and bureaucratic politics in explaining the Israeli actions, while refuting the opposite predictions of realism and organizational theory.

Israeli Strategic Culture

¹ George Orwell, “You and the Atomic Bomb,” First published in the *Tribune*, London, GB, October 19, 1945.

Since gaining independence in 1948, Israel has been involved in numerous conflicts along the spectrum of military operations ranging from low intensity border skirmishes and terrorist attacks to large-scale conventional operations in which the survival of the nation itself was at stake. Despite deficiencies in manpower and equipment, Israeli forces have relied on tactical brilliance and ingenuity to achieve battlefield success. Israeli victories during the numerous conflicts of the 20th century elevated the IDF to near mythical status in the eyes of neighboring countries.

Israel's lack of geographic depth, small but educated population, and technological skill have produced a strategic culture that emphasizes strategic preemption, offensive operations, initiative, and qualitative technological superiority. In a Cold War setting these characteristics, combined with a fear that the major powers would use diplomatic pressure or the threat of military intervention to stop a war before Israel could achieve its war aims, reinforced an Israeli predisposition for short-war strategies.² Furthermore, lacking a massive military-industrial base, Israel had limited stocks of munitions and supplies; a short-war strategy would limit having to rely on outside state support for resupply and possibly risk forfeiting its strategic or operational freedom of action. Finally, short wars reduced the possibility that a conflict would escalate to involve the targeting of civilian population centers.

Geographically and numerically at a disadvantage, Israel has continuously focused on the defense of its existence and freedom by developing a defensive strategy with a reactive offense directed at undoing or negating the objectives of its opponents.

² Cohen, Eliot, Michael Eisenstadt, and Andrew Bacevich. *"Knives, Tanks, and Missiles": Israel's Security Revolution*. Washington, D.C.: The Washington Institute for Near East Policy, 1998: 17.

Israel has also sought to maintain its deterrent posture by projecting an image of invincibility. It has therefore put a premium on daring covert operations and commando raids far from its borders, and, in war, the swift and complete destruction of enemy forces. Over time these policies have become central to the self-perception of the Israeli public. Israel continues to rely on deterrence, backed by a rapid mobilization capability, and is prepared to act preemptively should deterrence seem to be eroding.

Israel could not, according to the framers of its doctrine, afford to adopt a purely defensive approach because it could not trade space for time. Israeli military planners decided that war must take place in enemy territory, and that Israeli ground forces must carry it there, thereby creating a kind of artificial strategic depth.³ Therefore, while IDF doctrine at the strategic level is defensive, its tactics are offensive in nature. Israel has sought to shift combat operations into enemy territory to achieve a quick victory and spare the Israeli home front. These concepts continue to define Israeli strategic culture today, with the goal of maintaining a qualitative edge over enemies in order to offset its numerical inferiority and ensure its deterrent posture.⁴

The IDF operates a decentralized command structure in order to facilitate offensive initiative and maneuver warfare as a means of dealing with Israel's operational challenges. IDF organizational structure also reflects in part the demands of a conscript-based, reserve-oriented military system. Because of Israel's size, the relative simplicity of its military chain of command, and sense of national unity, solutions for overcoming problems can flow remarkably quickly to the top of command. In addition, the tradition

³ Ibid, 16.

⁴ Giles, Gregory. *Continuity and Change in Israel's Strategic Culture*. Comparative Strategic Cultures Curriculum. Advanced Systems and Concepts Office: Defense Threat Reduction Agency, June 18, 2002.

of leadership from the front brings senior military commanders to the point of decision, thereby cutting through the layers of bureaucracy that might otherwise stifle new ideas. Most militaries evolve such organizational shortcuts in wartime, to be sure, but few have made them standing operating procedure to the extent the Israelis have.⁵

As such, the IDF has historically demonstrated a proclivity for tactical adaptation to operational challenges. It is indeed the popular image of Israeli military innovation that accounts for much of the respect with which foreign commentators view it. Israeli military culture is presumed by most observers to reflect levels of military proficiency and adaptability similar to that of Germany during the wars of unification and WWII; small unit commanders achieving victory through the core elements of strategic culture such as tenacity, initiative, and the maintenance of objectives.⁶ Further, constant operational activity served to reinforce pragmatism, flexibility, and a penchant for simplicity that are hallmarks of the IDF, while minimizing many of the routines of garrison life and peacetime training that affect other armies.

The result is an Israeli reliance on the quality of its soldiers as much if not more than on technical inventions to secure victory. The IDF has traditionally believed that its successes rest on the skill and spirit of its soldiers who, in its large wars in 1948 and 1967, fought for the survival of the state. Because the goal of the Arabs in most of their wars with Israel was the eradication of Israel as a nation, the Israelis always felt as though they were fighting not simply to win, but also to exist. This fight for existence has served as a unifying factor in both the public and military, adding to the camaraderie and bond associated with military service. Israeli officers traditionally lead from the front

⁵ Cohen et al. *“Knives, Tanks, and Missiles,”* 65.

⁶ *Ibid*, 49.

rather than from a rear headquarters area, and are unwilling to send troops into a fight that they would not go into themselves. This reliance on leaders' and soldiers' bravery reflects what Clausewitz called *Volksgeist* or a patriotic national spirit.⁷

While the concept of *Volksgeist* is familiar to many nations as a means towards building an effective fighting force, the Israeli conception functions as an end in preparing soldiers for war. Thus, despite an impressive learning curve within the tactical realm as demonstrated in the nation's first wars, the IDF did not possess a formalized system for learning lessons from campaigns or after action reviews until the early 2000s.⁸ The growing dichotomy between the IDF's tactical adeptness and strategic inadequacies became apparent during the decades following Israeli independence:

The IDF's battlefield success blinded it from seeing and achieving a strategic view and modeling the IDF as an operational arm of its political masters. Israel's conflicts in the next thirty years would nullify its unwritten pre-emptive doctrine focused on armored and airpower excellence. These following years would expose the extent to which Israel truly could not understand what it was really seeing.⁹

As a result, the tactical expertise of IDF officers never translated to intellectual inclination to make qualitative leaps in military thought. At a deeper level, Israeli officers are suspicious of "big ideas" in the art of war. Acutely sensitive to Clausewitz's friction and fog, they have traditionally mistrusted grand theories or publishing doctrine in written form. In a military constantly at war, advancement comes not through educational achievements, eloquence, or intellectual reputation but through demonstrated success as a field commander. This overwhelming preference for the practical doer over the theorist

⁷ Bolia, Robert. "Overreliance on Technology in Warfare: The Yom Kippur War as a Case Study." *Parameters, U.S. Army War College* 43, no. 2 (Summer 2004): 54.

⁸ Adamsky, *The Culture of Military Innovation*, 122.

⁹ Billmyer, Maj. John. *The IDF: Tactical Success - Strategic Failure, SOD, the Second Intifada and Beyond*. Fort Leavenworth, Kansas: School of Advanced Military Studies, United States Army Command and General Staff College, April 13, 2011: 34.

reflects the founding labor Zionist ideology of the early part of the century.¹⁰ This also stems from the formative years of the IDF after the victory in the war for independence in 1949, when the military had no agencies dedicated to institutionalizing learning or the study of military theory. Instead of theoreticians, academics, and research institutions, the IDF has officers familiar with military theory and flexibility regarding new battlefield concepts.¹¹

1967 War and the Lead-up to 1973

Any discussion of Israeli strategic culture in affecting the battlefield outcomes of the Yom Kippur War of 1973 must be considered in the historical context of Israel's victory in Six Day War of 1967 against the same foes. This is because the IDF's conduct in 1973 was largely based upon its success in 1967. The success of advanced weaponry combined with more easily defensible borders and the still-fresh memory of the swift victory in 1967 stimulated feelings of increased confidence in Israel's deterrent posture. Israeli military leaders had felt that they had found the perfect mix of weapons and tactics to defeat any enemy. In addition, by 1973 the country could boast the production of the Kfir attack plane, mobile medium artillery and long-range guns, the Shafrir air-to-air missile, and sophisticated electronic devices.¹² These military accomplishments ushered the IDF into the age of electronic warfare and served to enhance Israeli society's undaunted confidence in the deterrent capabilities of its military. Most importantly, utilizing a

¹⁰ Cohen, et al., "*Knives, Tanks, and Missiles*", 74.

¹¹ Shamir, Eitan. *Transforming Command: The Pursuit of Mission Command in the U.S., British, and Israeli Armies*. Stanford, Calif.: Stanford Security Studies, 2011: 82.

¹² Gawrych, Dr. George. *The 1973 Arab-Israeli War: The Albatross of Decisive Victory*. Leavenworth Papers. Fort Leavenworth, Kansas: Combat Studies Institute, U.S. Army Command and General Staff College, 1996: 5.

combination of highly mobile armor and total air superiority, the IDF held itself to be nearly invulnerable:

The 1967 Arab-Israeli War transformed tiny Israel into a regional superpower: a puny but potent David had handily defeated a Goliath. The IDF had every reason to bask in its resounding military victory, both for the magnitude of that success and for the social and economic benefits that accrued from the war. There now appeared little hope for the defeated Arabs militarily, for with the passage of time, Israel seemed destined to become even more powerful than her Arab neighbors. Nonetheless, six years later, in 1973, Egypt and Syria initiated another war against Israel, knowing full well that they were incapable of decisively defeating the Israelis. Caught off guard, the IDF failed to duplicate its impressive performance of 1967. The consequent political fallout in Israel after this failure can only be understood in light of the Six Day War.¹³

The IDF quickly came to rely on domination of the air to cover its mobilization and to make possible the offensive thrusts that its operational style requires. Thus, a powerful air force designed first to neutralize enemy air and air defense forces and then to interdict and destroy enemy forces on the ground, became an essential feature of the Israeli military. In the Six Day War, Israeli pilots flying mainly French-made aircraft destroyed 304 Egyptian planes on the tarmac and then inflicted similar damage on the smaller Jordanian and Syrian air forces.¹⁴ This astonishing feat depended upon excellent intelligence, detailed planning, and superior training. Control of the air allowed the Israeli ground forces to roll through the Arab armies with relative ease and dramatic speed. Ultimately, the 1967 war confirmed the critical importance of gaining air superiority in maneuver warfare. Consequently, Israeli war strategies depended upon Israel maintaining an air force superior in quality and comparable in quantity to the Arab air forces.

The Armor Corps constituted Israel's other pillar of strength. Because enemy ground forces posed the primary threat to Israel's existence, IDF ground forces were seen

¹³ Gawrych, *The 1973 Arab-Israeli War*, 2.

¹⁴ *Ibid*, 6.

as the key to victory on the battlefield and thus to the survival of the state. For this reason, the IDF was structured primarily around its armored ground forces. In 1967, after achieving breakthroughs in eastern Sinai, armored brigades led by tanks with little or no infantry support spearheaded the IDF advance across the Sinai desert.¹⁵ The IDF's success rested on the ability of its tactical commanders to demonstrate initiative in combat while Israeli tank crews exhibited mastery of fire and movement over their Egyptian counterparts. The Israelis were left with the impression that wars on the ground were won by armor and armor alone. Thus, after the war, the Israeli General Staff placed an even greater emphasis on armor in budget allocations, doctrine, organization, and tactics. Tank-heavy armored brigades, lacking in well-trained mechanized infantry, became the norm. As a result, the Israeli military failed to develop an integrated infantry-armor doctrine, and effectively eschewed the use of infantry. Infantry and artillery experienced a concomitant neglect. This was epitomized by the IDF's abandonment of the flexible task force as its division organizational concept, in favor of the armored division. Indeed, a number of infantry brigades were converted to armor units. To compensate for a tank-heavy doctrine for land warfare, the Israeli General Staff counted on the Israeli Air Force quickly gaining air superiority and then serving as "flying artillery" for ground forces.¹⁶

In essence, the IDF was prepared to fight the last war, the 1967 Six Day War. Rather than develop a more balanced force structure centered on combined arms, Israeli doctrine and strategy relied upon what worked best in 1967: intelligence, the air force, and tanks. This dynamic trinity would carry the fight into the enemy's territory in

¹⁵ Ibid, 7.

¹⁶ Ibid.

decisive fashion. The Israeli military leadership assumed confidently that the Arabs would wage Israel's kind of war; one fought over open terrain pitting air and armor forces directly against each other. Not only did the Israelis expect to fight the last war, they also expected a repeat command performance. Given a huge advantage in aerial capabilities and technology, Israeli leaders did not foresee any significant threat of prolonged conflict from neighboring Arab countries, but rather quick and decisive Israeli victories.¹⁷

Projecting their own concept of a war's outcome with the Arabs, the Israeli government found it inconceivable that the armies of an Arab coalition would risk "inevitable" defeat in war. For example, because Israel held air supremacy in such high regard, it was natural to assume that any enemy would do the same. Furthermore, as a prerequisite prior to attempting a major ground assault against Israel, the assumption was made that an enemy would require the destruction of the Israeli Air Force. It did not make sense to the Israelis that a nation would go to war with a purpose short of total military victory. In presuming that what was good for Israel, the same must also be good for the enemy; it was inconceivable that the Arabs would be planning a major coordinated offensive.

Arab forces in general, and the Egyptians in particular, did not rest on assumptions based upon their experiences in the Six Day War. Working from a basis of self recognized inferiority with respect to Israeli operational concepts, the Egyptians "re-interpreted the concepts of superiority."¹⁸ Operationally, the Israeli's sought to

¹⁷ Chorev, Col. Moni. *Surprise Attack: The Case of the Yom Kippur War*. Fort McNair, Washington, D.C.: Industrial College of the Armed Forces, April 1996: 6-7

¹⁸ Baxter, LCDR Steven. *Arab-Israeli War October 1973: Lessons Learned, Lessons Forgotten*. Department of Joint Military Operations. Newport, RI: Naval War College, February 8, 1994: 5.

offensively seize control of the air and ground environment. Whereas the Israelis envisioned control of the skies as involving aircraft and skilled pilots, the Egyptians saw SAMs as their weapon of denial. Thus while Israel continued to view air power as deterrence, Arab armies were able to overcome Israel's deterrent posture. What Israelis had perceived as an unacceptable risk had been reduced to a calculated one on the part of Egypt and Syria. A similar strategy was pursued by Arab nations with regard to armored ground forces. The Israelis fought a maneuver based tank war emphasizing speed, firepower, and tactical air support. As long as Israeli forces could dictate the dynamic mobile style of tank warfare at which they excelled, they held a clear advantage. The Egyptians and Syrians thus opted for infantry carried anti-tank weapons and shoulder fired anti-aircraft missiles. Egyptian and Syrian planners decided to secure control over the battlefield by negative rather than positive means. Evading battle on Israel's own terms, they ordained their own rule, the Wellingtonian peninsular approach of strategic offense combined with tactical defense:

Egypt's goals in initiating the 1973 war were to discredit the "Israeli Security Theory"... They learned their own limitations and designed an operation that supported their own strengths and nullified the IDF's strengths. Egypt would secure a lodgment on the east bank of the Suez, reduce Israeli forces through defensive tactics and Soviet anti-tank guided missile- launchers (ATGMs), and protect their force while destroying Israeli planes with an advanced surface-to-air missile (SAM) network that was pushed eastward to the canal banks... Israeli air force strength was negated by Egypt's SAM umbrella, and armor that did react to the fight initially was heavily attrited by Egyptian ATGMs.¹⁹

Egyptian planning would prove extremely effective in the 1973 war, forcing the IDF and Israel to essentially "adapt or die."

¹⁹ Billmyer, *The IDF: Tactical Success - Strategic Failure*, 36-37.

Operations in the Sinai Theater

The Yom Kippur War, also known as the October War, was launched at 1400 hours on the afternoon October 6, 1973, when Egyptian infantry crossed the Suez Canal and assaulted Israeli defensive positions on the east bank, composing the Bar-Lev Line.²⁰ The Egyptians made a highly successful crossing of the Suez Canal along a broad front, enveloping most of the Israeli defensive positions. Simultaneously, on Israel's northeastern border, Syrian armor attacked Israeli positions along the Golan Heights. In the Golan, Syrian tanks penetrated nearly eight miles into Israeli territory over the course of two days before the IDF was able to stabilize the battlefield and prepare to counterattack. The coordinated attack came as an almost complete surprise to Israel.

In the Sinai, the Egyptians had planned a three-phased operation. The first phase entailed the crossing of the canal along a broad front by infantry divisions assigned to the 2nd and 3rd Armies in order to secure divisional-sized bridgeheads. Phase two included a consolidation of the bridgeheads in a temporary transition to the defensive in order to defeat the expected IDF counterattack. After securing footholds along the east bank involving mechanized and armored divisions, phase three would see a continued attack by the mechanized and armored divisions to reach operational objectives by pushing into the Sinai to cut off Israeli lines of communication and supply.²¹

Following their plan for a broad front crossing, the Egyptians quickly pushed across the canal and were able to establish divisional-sized bridgeheads on the east bank of the canal. Between October 8th and October 14th, the Egyptian armies consolidated and

²⁰ Bolia, "Overreliance on Technology in Warfare," 48.

²¹ Loefstedt III, Maj. Arthur. *Yom Kippur 1973: An Operational Analysis of the Sinai Campaign*. Department of Joint Military Operations. Newport, RI: National War College, February 12, 1996: 7-11.

defended their positions along the east bank of the Suez, and continued to push armored forces across the Suez into the bridgehead.²² In response, Israeli Southern Command, still relying on the doctrine of continuous offensive action with armored forces, directed counterattacks to gain a foothold back on the canal in order to shift combat operations to Egyptian territory. However, these counterattacks were poorly coordinated and failed to achieve their objectives. This inability to respond to unforeseen threats played a major role in the defeat of early Israeli counterattacks and the tremendous loss of troops and equipment.

According to Williamson Murray, intellectual discourse over the nature of operational and tactical choices facing the IDF did not take place at the onset of Egyptian offensive, as “nothing was occurring more than a dialogue of the deaf.”²³ IDF leaders were still constrained by their previous successes against Arab armies, unable to rethink their pre-war assumptions. Had they recognized that they were facing an entirely new situation and context, they may possibly have acted sooner to withdraw to the Sinai passes, call up reserves, integrate combat units, fight mobile tank battles, and move out of range of Egyptian SAMs.

Finally, a realization occurred that counterattacks should be halted, and allow Egyptians to attempt a breakout. The IDF refrained from conducting further counterattacks and prepared to defeat the Egyptian attacks that followed. This decision was controversial among the Israeli commanders, with Israeli strategic culture suggesting seizing the initiative from the Egyptians attempting to re-cross the Suez and attack into the operational depth of the Egyptian armies. Rather, the IDF settled into a holding

²² Loefstedt III, *Yom Kippur 1973*, 10.

²³ Murray, Williamson. *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, 2011: 293.

action, allowing the Egyptians to retain the initiative at both the tactical and operational level.²⁴

The Egyptian momentum had been halted. After crossing the Canal with their tanks, the Egyptians had left much of their logistical support on the other side. Harassed by Israeli attacks, it was difficult to expend concerted effort in ensuring the transport and delivery of the assets needed to sustain an advance through the Sinai. In effecting a brilliant and rapid crossing of the Suez Canal, the Egyptians had gone past the culminating point of victory. The initiative they had grasped by crossing the canal was now being transferred to the strengthened Israeli forces.²⁵

With the Egyptian operational pause after the second phase of their operation, the initiative quickly changed over to the Israelis, culminating with the disastrous Egyptian attack toward strategically important Mitla and Gidi Passes on the 14th. The result was a massive Egyptian defeat as the IDF brought to bear its qualitative superiority of personnel and equipment, and exhibited its offensive ethos against the attacking Egyptian forces. This dramatically reversed the trajectory of the war, as the IDF was able to initiate Operation STOUTHEARTED MEN on October 14th, cross the Suez Canal, and take the fight beyond the Sinai and into Egypt. By October 18th, the IDF had defeated two Egyptian armies and controlled territory on the African continent.²⁶

Technological Surprise

According to Dr. Martin Gawrych, the surprise achieved by Egypt and Syria was complete, stunning virtually everyone in Israel.²⁷ The Egyptians and Syrians surprised Israel not only in the timing of their attack but also in another important area: technology. Egypt and Syria had received large quantities of modern weapon systems from their

²⁴ Ibid, 14.

²⁵ Baxter, *Arab-Israeli War October 1973*, 19.

²⁶ Billmyer, *The IDF: Tactical Success - Strategic Failure*, 38.

²⁷ Gawrych, *The 1973 Arab-Israeli War*, 27.

Soviet allies, most notably the SA-6 and SA-7 SAMs.²⁸ Having experienced the ability of the Israeli Air Force (IAF) to provide overwhelming close air support and battlefield air interdiction, the Egyptians deployed SAMs to provide an integrated air defense umbrella over the Sinai Theater. This umbrella was intended to deny the IAF the air supremacy which had been a critical element of the Israeli victory in the 1967 war, and which the Egyptians had identified as the single greatest threat to a surprise crossing of the canal.

The system that proved most decisive in achieving technological surprise, perhaps greater than the SAMs, was the Sagger anti-tank guided missile (ATGM). The Sagger, a first generation ATGM system, is a wire-guided missile with a shaped charge warhead that was capable of penetrating Israeli armor. While adaptable to almost any armored vehicle, Egyptian forces deployed the man-packed and ground-mounted “suitcase” version of the Sagger.²⁹ These Sagger firing teams were typically composed of 3 soldiers; one man was the senior gunner who fired the missiles; the second was the junior gunner who assisted in the system checkout procedures and deployed nearby to protect the gunner; the third man moved well forward of the firing position with an RPG-7 to engage the target if the Sagger failed to hit its target.³⁰ Although accuracy is a function of the operator’s skill, the thoroughness of training for the Egyptian gunners resulted in high levels of system accuracy. With an abundance of Saggers, Egyptian forces established a defense that lured IDF armor into a kill zone in order to optimize the potential of both

²⁸ Chorev, *Surprise Attack*, 7.

²⁹ *Soviet ATGMs: Capabilities and Countermeasures*. TRADOC Bulletin. Weapons, Tactics, Training. Fort Monroe, Virginia: United States Army Training and Doctrine Command, February 1975: 10.

³⁰ *Ibid.*

Saggers and RPG-7s.³¹ These kill zones works by placing great numbers of camouflaged RPG-7s and Saggers forward of Egyptian tanks. IDF tank crews saw Egyptian tanks in the far distance and closed to do battle, unaware of threat awaiting them. In an after action report, an Israeli tank commander voiced the effectiveness of such tactics:

“We were advancing and in the distance I saw specks dotted on the sand dunes. I couldn't make out what they were. As we got closer, I thought they looked like tree stumps. They were motionless and scattered across the terrain ahead of us. I got on the intercom and asked the tanks ahead what they made of it. One of my tank commanders radioed back: ‘My God, they're not tree stumps. They're men!’ For a moment I couldn't understand. What were men doing standing out there—quite still—when we were advancing in our tanks towards them? Suddenly all hell broke loose. A barrage of missiles was being fired at us. Many of our tanks were hit. We had never come up against anything like this before.”³²

The effect of these modern antitank weapons in this war was devastating. Not since the Battle of Kursk between the German and Russians in World War II has there been a comparable loss of tanks in such a short period of time.³³ These losses were largely due to the fact that in the first several days of the 1973 war, Israeli armor units, advancing without close air, infantry, or artillery support, attacked in the face of large numbers of Soviet-made Saggers. Conservative estimates of IDF tank losses in the Sinai Theater are in the range of 800-900 tanks, with approximately 25% attributed to ATGMs.³⁴

While the IDF had modernized its weapons, its doctrine remained tied to previous engagements. This culminated in an Israeli failure to recognize the limits of technology, and more importantly, a failure to develop tactics and doctrine appropriate for a wide

³¹ Ibid, 11.

³² Ibid, 18.

³³ Ibid, 3.

³⁴ Swain, Col. Richard. *Selected Papers of General William E. Depuy*. Letter to Senator John C. Culver, May 12, 1975. Fort Leavenworth, KS: Combat Studies Institute, 1995: 165-169.

range of situations. Although the IDF was fully aware of the supply of these weapons to the Arab armies, the way and quantity in which the weapons were deployed and their combat effect on the Israeli center of gravity was unanticipated. Ultimately, the Egyptians achieved their strategic goal of inflicting heavy casualties on the IDF and undermining the public's perception of Israeli invincibility.

Israeli Adaptation

Israel misjudged the ability of the Arabs to change operations and tactics between 1967 and 1973. Consequently, the IDF was very nearly beaten in the first forty-eight hours of battle:

On the 8th of October [1973], the Israeli Defense Forces had been operationally defeated. Strategically, the Nation still survived but its armed forces were badly mauled. Great distances separated the two fronts and movement of the reserves, once mobilized, was slow.³⁵

However, under the pressure of combat in adverse circumstances, IDF forces made significant combat adaptations in a short period by modifying tactics to employ the combined arms team of infantry, armor, and artillery. They adapted with considerable agility, and managed to reverse the initiative of the invading armies while dramatically reducing the effectiveness of Sagger and other ATGM systems.

At both the tactical and operational level, the IDF was seriously hindered in its ability to fight the deep battle by its doctrine and force structure. Israeli commanders did, however, understand the need to engage the enemy in a deep battle, and proposed as early as October 8th to conduct a divisional sized crossing of the canal in order to engage the Egyptians in depth early in the campaign. The ultimate Israeli success was largely a result

³⁵ Baxter, *Arab-Israeli War October 1973*, 16

of the recognition of the vulnerability of the Egyptian operational rear because of the lack of an operational armored reserve on the west bank of the canal.³⁶ Particularly important was the ability of the Israeli leadership at the theater and senior tactical level to read the battlefield and seize the initiative that the Egyptians handed the IDF when they paused on the east bank of the Suez.

Several tactical adjustments also directly contributed to the battlefield victory. First, the role of IDF infantry in operations shifted to a combined arms approach in serving close fire support for advancing armor. Infantry continued to fight mounted, except when heavy enemy antitank fire prevented forward movement. For armored forces in particular, one tank in a 3-tank platoon was designated to watch for Sagger missiles being fired at the platoon.³⁷ This tank would attempt to determine, if possible, which tank was being fired upon, give an immediate warning over the radio, and then immediately fire the main tank gun at the point from which the Sagger was fired. These tactics were designed to disrupt the Sagger gunner sufficiently to cause him to overcorrect and thereby lose control of the missile. By firing artillery on likely or suspected locations for Sagers and employing infantry with tanks to add suppressive fire to Sagger and RPG-7 positions, the effectiveness of the ATGMs was significantly reduced.³⁸

Another tactical initiative employed was that the tank being fired upon would take evasive maneuvers or move to cover before the missile impacted. After the war, Israeli tank crews reported that they were generally successful in dodging the missile once Sagger watch tactics were implemented. Several types of dodges were implemented, including immediate moves to natural cover, or simply backing down from a hull defilade

³⁶ Loefstedt, *Yom Kippur 1973*, 15-16.

³⁷ *Soviet ATGMs*, United States Army Training and Doctrine Command, 26.

³⁸ *Ibid*, 27.

firing position to a complete hull down position. Next was a violent turn to the right or left at the last few seconds of missile flight, as it was difficult for the Sagger gunner to correct for sudden, sharp moves by his target. Finally, tank platoons began to maneuver in erratic path designed to cause Sagger gunners to over correct and thus lose control of their missiles.³⁹

IDF tactical and operational adjustments went into effect starting with the war's turning point on October 15th. IDF Southern Command launched its counterattack to secure a foothold on the west side of the canal. Southern Command took the opportunity handed them by the Egyptian pause and failed third phase of operations, and in accordance with strategic culture, seized the initiative with their rapid drive across the canal and into the operational rear of the Egyptians. In a daring tactical move laden with risk, future Prime Minister Ariel Sharon's armored division secured a bridgehead on the west bank on October 16th.⁴⁰ This ability to rapidly shift from the defense to an offensive posture demonstrated remarkable agility on the part of the IDF operational and tactical commanders.

Two days later the Southern Command exploited the bridgehead with a two-division force that maneuvered into the operational areas of the 2nd and 3rd Egyptian armies. Far less responsive was the Egyptian chain of command in dealing with the IDF penetration to the west bank of the canal. In a gross misreading of the battlefield, the high command of the Egyptian Army failed to realize the significance of the IDF penetration and so failed to release strategic reserves or transfer armored units from the east to the west bank in order to deal with the Israeli threat. The result was that by October 22nd, the

³⁹ Ibid, 30.

⁴⁰ Loefstedt, *Yom Kippur 1973*, 14.

Israelis had cut off the 3rd Army and were threatening the rear of the 2nd Army and the Egyptian capital. Further, the drive into the rear areas of the Egyptians had enabled the IDF to eliminate much of the SAM umbrella upon which Egyptian command of the air had been based, enabling the IAF to establish air superiority over the theater. On October 24th, a United Nations cease-fire was proclaimed which ended the war.⁴¹

The 1973 war exposed major shortcomings in the ground forces, beginning with Israeli armor. Subsequent to the war, the IDF improved tank firepower and survivability with the development of an improved antitank round, the addition of reactive armor, and the fitting of automatic smoke projectors, machine guns, and a turret-mounted 60mm mortar.⁴² More broadly, however, the IDF recognized the need to move toward a more balanced combined arms force if the tank were to retain its dominance on the battlefield.⁴³ The IDF had to strengthen its infantry, combat engineering, and artillery capabilities to enable the tank to operate effectively on the modern battlefield. Since it was demonstrated that the IAF might not always be available to support the ground battle, obliging ground combat units to rely instead on field artillery for fire support, artillery was modernized with the procurement of new target-acquisition means and automated fire control systems.⁴⁴ The IDF concluded that the tank and fighter were still essential but that their survivability on the modern battlefield could not be taken for granted.

Analysis

⁴¹ Ibid, 11.

⁴² Cohen et al., "Knives, Tanks, and Missiles," 33.

⁴³ Murray, *Military Adaptation in War*, 299.

⁴⁴ Ibid.

From initial battlefield performances, it is evident that Israel had no system of net assessment in place, and rather made a host of implicit net assessments that shaped their behavior. As a result, IDF planners failed in the area of comparative assessment of doctrine and effectiveness.⁴⁵ In particular, assessment failed with respect to two Egyptian tactical-operational adjustments; effectiveness of the SAM belt along the Suez Canal, and the impact of ATGMs against Israeli armor. The IDF was well aware that the Egyptian possessed SAM and ATGM systems prior to the beginning of combat operations. Yet Israeli strategists demonstrated an inability to mentally match likely enemy action with the range of likely Israeli reactions, as well as to predict enemy moves.

Similarly, the IDF's overwhelming commitment to offensive operations not only led to inappropriate operations, but overconfidence. Ultimately, the Israeli understanding of what would work and what would not, such as what kinds of interactions would occur between systems like armored ground forces and Egyptian ATGMs, diverged sharply from the realities of the battlefield. Even after the recognition of battlefield realities, there was no concerted effort on the part of the IDF Southern Command to address the ATGM threat. This refutes the realist explanation, despite the clear incentive for change, given the lack of theater-wide directives coupled with simply trying to prevent further losses and Egyptian advance. This does not imply an endorsement of organizational theory, as bottom-up field adjustments became the in-theater norm. The explanation for the Israeli response to the Egyptian surprise occurs between the extremes of complete action according to realism and inaction according to organizational theory.

Despite major setbacks not only on the battlefield but also by the psychological shock to the national spirit, the brilliant adaptive capacity of Israeli field commanders

⁴⁵ Cohen and Gooch, *Military Misfortunes*, 127.

redeemed the initial defeats of the first few days of combat. This adaptive capacity facilitated a tremendous recovery at the tactical and operational levels, despite reflecting an intellectual deficiency in Western military concepts. The seminal role of Israeli officers suggests a major role played by bureaucratic politics in determining the Israeli response to the ATGM threat and the larger situation on the ground. One could argue that these officers resemble Rosen's mavericks, actively taking responsibility into their own hands despite input from regional or central command.

However, these officers were not attempting to change Israeli military policy but rather operated according to the IDF norm of encouraging field commanders to seize the tactical and operational initiative. Therefore, the role of individual commanders is indicative of the larger Israeli strategic culture of decentralization in command and empowerment of field commanders to adapt to battlefield circumstances and seize the initiative whenever possible. Specifically in combating ATGMs, strategic culture offers the best explanation for the ability of IDF forces to overcome the technological surprise through tactical initiative and ingenuity. These qualities are imbued in Israeli officer culture, further strengthening the case of strategic culture over bureaucratic politics.

While Israel was able to overcome the tactical and operational surprise, its adaptations couldn't compensate for changes in strategic nature of war. Israeli force structure as informed by strategic culture was significantly deficient in several key areas, which seriously limited the IDF's adaptive capacity. As a result, its ability to deal with unforeseen threats and to fight the battle throughout the operational depth of the battlefield was greatly hampered. The result was a campaign that was primarily fought as a close battle, which served to lengthen the campaign and raise the casualty rates

significantly. Thus, despite the eventual tactical and operational success of the IDF, the Egyptians were able to achieve the strategic goal of eliminating the seeming invincibility of the IDF. A key operational lesson can be taken from this simple premise; never assume that any future opponent has accepted the status quo imposed upon him on the basis of past operational victories.

Conclusion

Following the 1973 war, the Israeli defense establishment developed a variety of technical and operational responses to the challenges of what they termed “the saturated battlefield.”⁴⁶ Where previously Israel had sought to defeat its enemies by mobile operations and indirect attacks in the open field, it now faced enemies bristling with modern antitank defenses arrayed in depth, with limited avenues for flank attacks. Yet while seemingly learning the lessons of the 1973 War, Israel would face a similar situation nearly 30 years later. The 2006 war against Hezbollah in Southern Lebanon featured the primary system that surprised and wreaked havoc on the IDF in 1973: anti-tank weapons. Despite being employed by adversaries on different ends of the military spectrum, the Egyptians as a conventional military and Hezbollah as a guerilla force, ATGMs again served as game changers.

Like Egypt, Hezbollah sought to attack the militarily and technologically stronger opponent using asymmetric means. Realizing the capabilities of the Merkava, Hezbollah allocated their most advanced weaponry to combat this advanced tank, firing more than 1,000 anti-tank rockets at Israeli armor and infantry. In the difficult terrain of southern Lebanon, the IDF faced older ATGMs like the AT-3 Sagger that they had encountered in

⁴⁶ *Cohen et al, “Knives, Tanks, and Missiles”, 81.*

the Sinai in '73. The IDF also faced far more advanced weapons like the tube-launched, optically tracked, wire-guided TOW, and the Russian AT-14 Kornet, both third-generation systems that can be used to attack tanks fitted with explosive reactive armor as well as bunkers, buildings, and entrenched troops.⁴⁷

ATGMs caused most of the IDF casualties in the war, nearly all the Armored Corps' casualties, and many from the infantry units. A total of 500 Merkava tanks were committed to combat; five were destroyed by powerful underbelly mines, with 45 to 50 more (roughly 10 percent of the total number of tanks committed to the ground fighting by the IDF) hit by ATGMs.⁴⁸ According to a leading Israeli defense analyst:

We knew the organization had advanced anti-tank rockets; the IDF's Military Intelligence even acquired one. We also understood that Hezbollah was positioning anti-tank units; however, we failed to understand the significance of the mass deployment of these weapons.⁴⁹

Similar to 1973 when Israeli intelligence badly underestimated the number of Saggers in Egyptian possession, Israeli intelligence did not have an accurate estimation of the inventory of the prewar Hezbollah holdings of these munitions or their associated tactics.

It is clear that Israel made many of the same mistakes in 2006 as they did in 1973. During the several years prior to the conflict, in which the bulk of the IDF was constantly engaged in low intensity urban counter terrorist warfare in the West Bank and Gaza Strip, all regular forces, including tanks crews were retrained for small unit infantry policing activities, which was mostly dismounted action. Armored-unit training was neglected, as was efforts to integrate air and ground operations. This proved regretful when Israeli

⁴⁷ Cordesman, Anthony. *Lessons of the 2006 Israeli-Hezbollah War*. Washington, D.C.: Center for Strategic and International Studies, 2007: 119.

⁴⁸ Ibid, 45.

⁴⁹ Ibid, 121.

tankers had to quickly re-adapt to traditional procedures during combat.⁵⁰ In addition, just prior to the conflict, IDF operational doctrine that came online in April 2006 was heavily technology-oriented. It stressed the role of firepower over maneuver, as well as achieving battlefield success via a combination of accurate, standoff fire, and limited operations on the ground.⁵¹ Thus IDF forces operated under the impression of the strengthening of firepower on the battlefield at the expense of maneuver, similar to Israeli forces prior to the 1973 War.

While the threat posed by Hezbollah weapons and tactics as well as Israeli preconceived notions of what combat would look like bear stark resemblance to operations in the Sinai 30 years earlier, the notable difference between conflicts is the IDF response. Operating within a strategic culture almost identical to that of 1973, the IDF faced an irregular enemy with dispersed forces in a combat theater far more conducive to enemy operations than the open ground of the Sinai. As a result, there was no creative adaptation made by combat commanders to turn the tide of the engagement. Rather, hostilities ended in a stalemate, largely representing a defeat for the IDF.

Israel will likely encounter Hezbollah forces on the battlefield in the next decade, as well as Hamas in Gaza and terrorist cells in the West Bank and Sinai. Inferior opponents will seize on the effectiveness of Hezbollah's tactics, like the Egyptians decades earlier, and employ asymmetric capabilities in order to limit power disparities. The Israeli case should serve as a warning against a strategic culture that places an overreliance on technology in general and on airpower or network-centric warfare in

⁵⁰ Eshel, Col. David. "Assessing the Performance of Merkava Tanks." *Defense-Update*, 2007. http://defense-update.com/analysis/lebanon_war_3.htm.

⁵¹ Kober, Avi. "The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance?" *Journal of Strategic Studies* 31, no. 1 (February 2008): 18.

particular. In addition, the illusion that modern militaries like the IDF can rely on technology to eliminate friction, decrease the dependence on logistics, and break the enemy's will, should be quickly dispelled. Instead, Western and modern militaries must put a premium on developing a strategic culture that prizes adaptation and flexibility in order to overcome battlefield surprises as well as their own misconceived notions of future conflicts.

Chapter 3

The Soviets, Stinger, and Afghanistan

For today it is not only the business of commanders to think up new techniques, which will destroy the value of the old; the potentialities of warfare are themselves being continually changed by technical advance. Thus the modern army commander must free himself from routine methods and show a comprehensive grasp of technical matters, for he must be in a position continually to adapt his ideas of warfare to the facts and possibilities of the moment. If circumstances require it, he must be able to turn the whole structure of his thinking inside out.¹

Field Marshall Erwin Rommel

Introduction

This chapter analyzes the Soviet response to the Mujahedeen deployment of the Stinger surface-to-air missile (SAM) during their decade-long engagement in Afghanistan from 1979-1989. As in the previous chapter that identified an “Israeli way of war,” this chapter begins with an explanation of the “Soviet way of war” as a product of Soviet strategic culture. This is demonstrated through an analysis of Soviet strategic culture as well as a discussion of the quandary Soviet forces found themselves in soon after deploying to Afghanistan. This is followed by an analysis of the technological surprise embodied by the Stinger SAM, and the Soviet response during the remainder of the conflict. The chapter culminates in an evaluation of the theories explaining the Soviet reaction to the Stinger threat, concluding that while organizational theory provides a partial explanation

¹ Dunn, Richard J. *From Gettysburg to the Gulf and beyond: Coping with Revolutionary Technological Change in Land Warfare*. Honolulu, Hi.: University Press of the Pacific, 2005: 19-20.

for the Soviet response as opposed to realism and bureaucratic politics, strategic culture accounts for the greatest scope of the Soviet reactions.

Soviet Strategic Culture

From the origins of the Soviet Union to the end of the Cold War, several reoccurring patterns of Soviet military activity are discernible. First, Soviet political and military leaders and Russian strategic culture has from earliest times prized and exploited the great masses of seemingly limitless military manpower. Military leaders recognized that Soviet military capabilities were dependent on this manpower, and relied heavily on it. However, they maintained a relative indifference to casualties (as demonstrated in both World Wars) and encouraged relative indifference to the living conditions of its troops. Exploiting manpower required not only very large standing forces, but also maintenance of a huge, conscripted but only rudimentarily trained mobilization base, and a military industrial base to arm it. Additionally, the educational level of the manpower base was far too low to master technology of the late 20th century and was characterized by a low technical-culture capacity when measured against Soviet requirements for modern war. In other words, despite the large numbers of conscripts, their mastery of modern technology was far below that of a modern military.

The second pattern characterizing the Soviet military was the fading of distinctions between military fronts and rears that followed the development of new technologies in the 20th century. These technologies, including the advancement of airpower, increased the pace of change in modern weaponry. In keeping with the Soviet obsession of contiguous theaters of battle and their need to seize them rapidly, the Soviets

were most interested in the trend towards the motorization of infantry; motorization made possible swifter and deeper offensive operations. Soviet force building by their General Staff in the early Cold War period concentrated on creating a force structure characterized by large mobile and armor-protected forces that could carry the offensive to great depths, in particular, Europe, the Far East, and Southwest Asia, the three contiguous land theaters.²

This was done at the expense of other strategies involving air power and naval systems, which were neglected in favor of a doctrinal and industrial focus on deep land battles. The catering of technology to a desired force structure indicates a degree of Soviet social determinism with regards to military technology. The USSR pursued the opposite, or a technological backwardness, of the techno-centric American approach to warfare. Standard Soviet practice involved the development of doctrine and the subsequent devising of force structure to conform to the CONOPS. At the end of this process, the necessary technology was identified and developed in order to match practical needs rather than to achieve a degree of technological sophistication. Similarly, the Soviets focused persistently on combined arms combat, making all branches of service and weapons work jointly for a common military objective. No single service or weapons system occupied a wholly dominant role. Unlike Western forces, weapon systems were regarded as mass multipliers rather than as a means to improve force effectiveness during battle.³ Due to the Soviet cultural tolerance for casualties, officials did not share in the American belief that platforms could take place of human operators. This resulted in a Soviet strategic culture with poorly developed western concepts of

² Ibid, 120.

³ Glantz, David, and Lester Grau. *The Bear Went Over the Mountain: Soviet Combat Tactics in Afghanistan*. Washington, D.C.: National Defense University Press, 1996: xii-xiii.

tactical creativity, flexibility, and capacity for independent action. Thus throughout the 1970s, U.S. perceptions of Soviet ground force tactics stressed a general lack of initiative and flexibility in their military doctrine.⁴

The expression of Soviet strategic culture in military power and foreign policy behavior, reached a peak in the mid-to-late 1970s. Soviet political and military leaders came to believe that they had achieved or were on the way to achieving a strategic superiority over the West based on robust strategic nuclear forces, theater force superiority in both conventional and nuclear capabilities, and the beginnings of the ability to project force beyond the Eurasian continent. Equally important, they came to believe, especially after America's withdrawal from Vietnam, that "historic trends in the global correlation of forces"- military, political, and ideological- were in their favor.⁵ They viewed their strategic status as a platform from which they could conduct more assertive and ambitious foreign policies in the Third World to win new allies and dependents, and in Europe to detach traditional allies from the United States.⁶

During this late Cold War period, Soviet theorists displayed a deep theoretical grasp of the nature and strategic management of warfare through an elaborate, integrated system of thought. Strategic and doctrinal concepts were precisely defined, and each had its place in a hierarchy of importance corresponding to its military decision-making level. This is demonstrated in the Soviet formulation of military science. According to the Soviet *Dictionary of Basic Military Terms*, military science is a system of knowledge

⁴ Frketic, Maj. John. *Soviet Actions in Afghanistan and Initiative at the Tactical Level: Are There Implications for the U.S. Army?* Fort Leavenworth, KS: School of Advanced Military Studies, United States Army Command and General Staff College, December 6, 1988: 30.

⁵ Ermarth, Fritz. *Russia's Strategic Culture: Past, Present, And... in Transition?* Comparative Strategic Cultures. Advanced Systems and Concepts Office: Defense Threat Reduction Agency, October 31, 2006: 10.

⁶ Ibid.

concerning the nature, essence, and content of armed conflict and concerning the manpower, facilities, and methods for conducting combat operations with armed forces and their comprehensive support.⁷ It derives its findings from training exercises, human behavior, physical sciences, technology, and industry, all factors that form Soviet strategic culture. These findings became the foundation for the Soviet armed forces' military doctrine, which can be defined as the accepted system of scientifically founded views on the nature of modern wars and the use of the armed forces in them. Consequently, the concept of military science established a direct connection between strategic culture and Soviet doctrine in devising a Soviet way of war. However, consistently defining the Soviet way of war was qualitatively inferiority. There existed an inability to turn strategic concepts and material visions into reality due to limited economic and political capital afforded by Communist ideology. Therefore, while unique in their innate ability for strategic planning, the USSR was never able to take advantage of such vision.

Perhaps one of the most important factors that influenced Soviet military science was the study of historical experiences in war. Accordingly, the orientation of Soviet strategic culture was anchored in the past, unlike the traditional American orientation towards the future of combat. In the 1970s, the Soviet big-war model culminated with the development of the land-air battle concept that relied on technology to conduct modern combined arms battle fought throughout the depth of the enemy battle formation.⁸ By the late 1970s, the Armed Forces of the Soviet Union were structured, equipped, and trained for high-intensity war on the northern plains of both Europe and China against a modern

⁷ Odom, William. "Soviet Military Doctrine." *Foreign Affairs* 67, no. 2 (Winter 1988): 118.

⁸ *The Soviet Army: Operations and Tactics*. Field Manual. Washington, D.C.: Department of the Army, July 16, 1984.

enemy who would occupy defensive positions stretching across said plains. The Soviet Army planned to contend with these defensive belts through the weight of massed artillery fires, and then advance through the gap created to strike deep at enemy lines of supply and communications.⁹

This big war approach was characterized by heavy tank and mechanized formations, massed and echeloned to conduct breaches of dense defenses, followed by rapid advance into the enemy rear to encircle and destroy him. These offensives were supported by air-ground attack, long-range artillery, and airmobile assaults throughout the depth of the enemy defense.¹⁰ Tactics were designed for rapid implementation by conscripts and reservists and to operate within the context of the larger strategic operation. Spacing between vehicles and the ability to dismount a BMP personnel carrier, form a squad line, and provide suppressive small-arms fire were prized components of motorized rifle tactics. However, tactical initiative was not encouraged, as it tended to upset operational timing.¹¹ The increased conventionalization of Soviet forces in preparation for large-scale land engagements with a peer competitor like the United States did not come to fruition, however, as the final military engagement for the Soviet Union devolved into a quagmire ill-suited for the conventional capabilities the Soviets had been developing since the end of WWII.

War in Afghanistan, 1979-1989

In December 1979, Soviet forces conducted a conventional assault on Kabul and other key points in Afghanistan with the aim of creating a stable Soviet-friendly government

⁹ Glantz and Grau, *The Bear Went Over the Mountain*, 201.

¹⁰ *The Soviet Army: Operations and Tactics*, section 2 (1-11).

¹¹ *Ibid*, section 5 (1-11, 29-34).

and quelling insurrection. The Soviet military strategy for the invasion of Afghanistan was time-tested and based on interventions from the decades following WWII. The overarching strategy in December 1979 was a determination to limit the level of its military commitment and focus on the transformation and employment of the Democratic Republic of Afghanistan's (DRA) army. As a result, a plan of occupation was not feasible, nor was it ever considered. The USSR relied upon speed, surprise, deception, and overwhelming offensive force to address military objectives both sequentially and simultaneously. Adequate resources were devoted to each objective in an environment nearly free of political and operational constraints, while well-planned and organized preparatory military actions of an indirect nature supported aggressively direct execution. As a result, an asymmetrically superior force was applied to a weak and surprised opposition. Yet almost a decade years later, Soviet forces withdrew from Afghanistan after suffering close to 14,000 killed, leaving behind a very precarious pro-Soviet government and an ongoing civil war.¹²

The military situation that would confront the USSR in Afghanistan differed greatly from Soviet pre-war expectations based on their 1968 invasion of Czechoslovakia.¹³ The Afghan terrain, climate, and the enemy were entirely different from Soviet forces had prepared for; the army was geared for a high tempo, mechanized war with capabilities and competencies designed for the demands of operational art within the context of strategic offensive operations. In this locale, their equipment

¹² Farrell, Theo, Frans Osinga, and James Russell. *Military Adaptation in Afghanistan*. Stanford University Press, 2013: 39.

¹³ McMichael, Scott R. *The Soviet Army, Counterinsurgency, and the Afghan War*. U.S. Army War College, Carlisle, PA: Strategic Studies Institute, December 1989: 21.

functioned less than optimally, their force structure was clearly inappropriate, and their tactics were not suited for unconventional operations.¹⁴

The Mujahedeen did not accommodate the Soviets by fighting a Northern European-plane war. Their success often owed much to Soviet and DRA adherence to stereotyped organization and tactics, incompetence, and excessive passivity that were all a product of strategic culture. For example, massed artillery and simple battle drills had little effect on the elusive guerrillas. In addition, excessive Soviet reliance on artillery and air-delivered firepower occurred at the expense of maneuver and dismounted infantry closings with the enemy. Motor rifle troops, especially DRA forces, were reluctant to leave their armored vehicles because of both a reluctance to engage in close quarter battle and a deficiency in training in dismounted operations.¹⁵ As a result they found a tactical situation where an allusive and lightly armed enemy melted into difficult mountainous terrain when confronted with superior force and reemerged to strike at isolated units and logistic convoys.¹⁶ Wise to Soviet failings, the Mujahedeen would “hug” the enemy as close as possible to make it impossible for him to use his artillery and attack helicopters.

Early Soviet tactical and operational adjustments proved ineffective or inconclusive on the battlefield. Initial adaptations were hampered by systemic limitations of an army designed for a single variant of warfare. Company-level officers were taught only basic tactics unsuited to conditions in Afghanistan and were unskilled in such tasks as rapidly adjusting mortar or artillery fire. Low-level commanders often displayed little

¹⁴ Glantz, *The Bear Went Over the Mountain*, xvii.

¹⁵ Westermann, Maj. Edward. “The Limits of Soviet Airpower: The Bear Versus the Mujahedeen in Afghanistan, 1979-1989.” *School of Advanced Airpower Studies*, 1997: 17-19.

¹⁶ Dick, CJ. *Mujahedeen Tactics in the Soviet-Afghan War*. Royal Military Academy Sandhurst, England: Conflict Studies Research Center, January 2002: 6-7

capacity for independent action, lacked initiative, and often displayed poor leadership.¹⁷ Conventional Soviet military strategy and operations continued to prove indecisive and constituted a significant drain on resources. At the same time, the Soviets were incapable of implementing an unconventional strategy against the Mujahedeen. Of the three tenets of the crude Soviet counterinsurgency doctrine- establishing a popular political organization, isolating insurgents from external support, and utilizing “terror tactics” to quell rebellion- only the latter was implemented to any effect.¹⁸

Therefore, early Soviet operations did not aim as much at defeating the Mujahedeen as they did in intimidating and terrorizing populations in Mujahedeen-controlled territory into abandoning areas of intense resistance and withdrawing support for the guerrillas. The methods and weapons employed- deliberate destruction of villages, high altitude carpet-bombing, napalm, and fragmentation bombs- testify to the intent of the Soviet military’s effort to terrorize the Afghan civilian population. These methods, together with a scorched-earth policy and the heavy mining of key highways and the perimeters of towns, resulted in the destruction of a large part of agricultural lands.¹⁹ As Stilwell argues, the Soviet inability to implement a viable counterinsurgency strategy effectively eliminated any chance of achieving stated political objectives or stemming the flow of foreign military assistance, primarily through Pakistan. This ensured that the resistance was able to keep pace with Soviet tactical and operational innovations. The use of the American-sourced Stinger missile system to counter the increased Soviet use of

¹⁷ Ibid, 4.

¹⁸ Stilwell, Douglas. *From Successful Invasion to Failed War: An Analysis of Soviet Military Strategy in Afghanistan 1979-1989*. Fort McNair, Washington, D.C.: National War College, 2002.

¹⁹ Cassidy, Robert. *Russia in Afghanistan and Chechnya: Military Strategic Culture and the Paradoxes of Asymmetric Conflict*. U.S. Army War College, Carlisle, PA: Strategic Studies Institute, February 2003: 14-15.

heliborne forces and other aviation in support of conventional offensives is the best example of this failure.²⁰

Faced with this imposing security challenge, and burdened with a military doctrine, operational, and tactical techniques suited to theater war, the Soviet Army was hard pressed to devise military methodologies suited to deal with the Afghan challenges. Initially, there was no desire on the part of Soviet commanders to change the status quo of an army suited for a European war against its principal adversary. Thus during the first several years of the war, the Soviet mindset remained conventional in approach. Traditional Soviet strategic culture prevailed, producing a dangerous combination of rigidity, inflexibility, lack of aggressiveness, and an inability to maneuver effectively.

For example, while Afghanistan proved ideal for light infantry forces, Soviet force structure centered on armor and motorized infantry. Motorized troops could not easily transition to light infantry because they were essentially married to their armored personnel carriers. In addition, the reliance on mechanized forces and massive firepower made the soldiers load so heavy that any movement on foot beyond their BMPs, especially given the terrain and heat in Afghanistan, would exhaust them. This new non-linear battlefield required the abandonment of traditional operational and tactical formations, a redefinition of traditional echelonment concepts, and a wholesale reorganization of formations and units to emphasize combat flexibility and survivability. Lessons drawn from the first few years of the war included the need for rapid mobility and massive, responsive fire support, constituting a revision of traditional Soviet doctrinal precepts.

²⁰ Stilwell, *From Successful Invasion to Failed War*, 10.

The massed use of heliborne operations by specially trained airborne and air assault forces to achieve a “vertical envelopment” of the battlefield soon established a new emphasis for Soviet operations.²¹ As a result, the 1980s witnessed a reevaluation of the Afghan Theater by Soviet commanders to produce greater flexibility at the operational and strategic levels. Elements of the Soviet 40th Army altered their concept of the theater strategic offensive, identified new concepts for shallower echelonment at all levels, developed the concept of the air echelon, and experimented with new force structures such as the corps, brigade, and combined arms battalion. The most effective adaptation was seen among Soviet airborne, air assault, and Spetznaz forces. These forces were at the center of improving Soviet counterinsurgency operations that relied on light airborne forces deployed along high ground and mountain passes in order to secure movement along axes of advance used by motorized infantry.²² The key technological system that facilitated this Soviet shift away from linear conventional conflict towards irregular and counterinsurgency operations was the helicopter-gunship, specifically the Mi-24 Hind.

The Hind was the most widely used element of Soviet air power in the Afghan war. It was also the most dynamic feature of Soviet tactical operations during the war, providing a mobility of combat power that the Mujahedeen could not match. Though the Soviets were essentially in the infancy of determining how to use attack helicopters, they quickly realized their value as a fire support platform. The Soviet Union had experimented with armed versions of attack helicopters in the 1950s, but it was not until

²¹ Frketic, *Soviet Actions in Afghanistan and Initiative at the Tactical Level: Are There Implications for the U.S. Army?*, December 6, 1988.

²² McMichael, *The Soviet Army, Counterinsurgency, and the Afghan War*, 24-25.

the late 1960s that development began on the Mi-24.²³ The idea of dedicated attack helicopters fermented as the shift from nuclear to conventional doctrine increased in the later Cold War period. Further, Soviet observation of the Vietnam War and the 1973 Arab-Israeli War led to an operational concept of the Hind that focused almost exclusively on fire support. The result was an attack helicopter doctrine and tactical development, prior to the beginning of the war in Afghanistan, which was based on providing close air support for a variety of ground forces.²⁴

While the helicopter did not enable the Soviets to adapt from a conventionally oriented force to a truly counterinsurgency oriented force, it did help them bring the fight to the Mujahedeen more effectively. The terrain in Afghanistan had considerable influence on the use of the Hind. Many of the narrow roads in Afghanistan snake through valleys overlooked by steep, tall mountains. Like American forces in Vietnam, the USSR discovered Hinds to be extremely useful given the terrain due to their range, mobility, armament, and multiple capabilities.²⁵

Air assault forces were most effective when used in support of a mechanized ground attack. Heliborne detachments would land deep in the rear and flanks of Mujahedeen strongholds to isolate them, destroy bases, cut lines of communication, and block routes of withdrawal. The ground force would advance to link up with the heliborne forces.²⁶ Soviet and DRA troops inserted by helicopter achieved surprise in a way that ground forces could rarely do. Attack helicopters could deliver a high volume of

²³ Groenke, Andrew. "CAS, Interdiction, and Attack Helicopters." Naval Postgraduate School, 2005: 12.

²⁴ Ibid, 13.

²⁵ Nelson, LTC Denny. "Soviet Air Power: Tactics and Weapons Used in Afghanistan." *Air University Review* 36, no. 1 (February 1985).

²⁶ Glantz, *The Bear Went Over the Mountain*, 203.

fire accurately against small, point targets that were invisible to tanks or artillery observers. Their arrival often silenced heavy weapons and was the signal for a break-off of Mujahedeen action and withdrawal.²⁷

However, airborne and air assault forces rarely operated at full strength. The Soviets never brought enough helicopters and air assault forces into the Afghan theater to perform all the necessary missions. For example, helicopter support was not routinely provides for convoys, while terrain along convoy routes was not always monitored and held by air assault forces, allowing Mujahedeen interdiction attacks.²⁸ Ultimately, the lack of resources provided for the Soviet's most effective system in combating the Mujahedeen would become evident in 1986 with the Mujahedeen's achievement of technological surprise.

Technological Surprise and the Stinger

Like the U.S. years later in Iraq, the Soviet experience in Afghanistan demonstrates that qualitative superiority does not ensure victory, especially when the enemy employs an unexpected counter method or device to achieve battlefield parity. Consequently, attack helicopters were far from immune to the effects of enemy action. With time, the Mujahedeen developed tactics to counter the Soviet threat developed and eventually were able to employ weapons and air defense techniques that obviated portions of Soviet attack helicopter doctrine and tactics.

Early in the war, helicopters were largely able to remain above or outside the engagement envelope of machine guns and light anti-aircraft artillery, while evaluating

²⁷ Dick, *Mujahedeen Tactics*, 12.

²⁸ *Ibid*, 201.

their targets and then expose themselves for a brief period during their attacks. The first specific adaptation by the Mujahedeen to limit the capabilities was the rocket-propelled grenade (RPG). Before achieving technological surprise, the guerrillas had already shot down several hundred helicopters with well-placed machine guns and RPGs, modified with a fantail device that allowed the Mujahedeen to aim this shoulder-fired anti-tank weapon at airborne targets.²⁹ These weapons were largely supplied by Pakistani intelligence services and Islamic militants in Pakistan's tribal regions, just as the Afghanistan Taliban did during Operation Enduring Freedom.

While the rebels proved remarkably committed, they incurred terrible losses under the Soviet strategy that took advantage of virtually complete Soviet dominance in the air to provide fire-power, reconnaissance, convoy security, tactical lift, mining, ambushes, and dismounted operations. Further, Mujahedin air defenses were ineffective. They were limited to heavy machine guns and a small quantity of unreliable, Soviet-designed SA-7 SAMs obtained from defecting Afghan army troops or supplied covertly. Further, the effectiveness of modified RPGs decreased considerably as the Soviets improved their airborne assault tactics and integrated them with motorized infantry to suppress Mujahedeen movements.³⁰

In desperation, the Mujahedin and their supporters in the United States and Pakistan appealed to the American government to supply the rebels with an effective anti-aircraft weapon to help level the playing field. In response, through the CIA and Pakistani Inter-Services Intelligence, the U.S. supplied the Afghans with the Stinger SAM. The shoulder-fired, heat-seeking Stinger was the state-of-the-art Man Portable Air

²⁹ Cassidy, *Russia in Afghanistan and Chechnya*, 19.

³⁰ Groenke, "CAS, Interdiction, and Attack Helicopters," 18.

Defense System (MANPADS) at the time. With its maximum speed of 2.2 Mach and maximum effective range of 5.5 kilometers, the Stinger provided a quantum leap in performance over the SA-7 with a maximum speed of 1.4 Mach and maximum effective range of 3 kilometers. More importantly, the Stinger was an all-aspect missile while the SA-7 could only be launched from the rear quadrant of aircraft moving away from the missile operator.³¹ Overall, the Stinger's superiority was due to several technological advantages. It required little training, was truly man-portable, weighed just 35 pounds, was a "fire-and-forget" weapon, was faster and had greater range than earlier SAMs, could attack fixed-wing aircraft and helicopters from any angle, and once locked on target, it could not be deflected by flares.³²

According to a post-war *Washington Post* article on the CIA's effort to arm the Mujahedeen, the United States received highly specific, sensitive information about Kremlin politics and new Soviet war plans in Afghanistan in 1984 and 1985. This intelligence coup triggered the Reagan administration's decision to escalate the covert program in Afghanistan by opening up its high-technology arsenal to aid the Afghan rebels.³³ These efforts first came to fruition on September 25, 1986, when Mujahedin fighters fired their first five Stinger missiles, knocking three Soviet Mi-24 Hinds out of the sky.³⁴ The introduction of the Stinger SAM, beginning in 1986 showed how guerrillas could inflict heavy losses against a regular industrialized army without having a high level of training and organization. The Mujahedeen were then able to undermine the key

³¹ Westermann, "The Limits of Soviet Airpower," 76.

³² McManaway, Maj. William. "Stinger in Afghanistan." *Air Defense Artillery* (February 1990): 3-8.

³³ Coll, Steve. "Anatomy of a Victory: CIA's Covert Afghan War." *Washington Post*, July 19, 1992. <http://www.globalissues.org/article/258/anatomy-of-a-victory-cias-covert-afghan-war>.

³⁴ Kuperman, Alan. "The Stinger Missile and U.S. Intervention in Afghanistan." *Political Science Quarterly* 114, no. 1 (Summer 1999): 235.

Soviet technological advantage: the mobility and firepower of helicopters. The introduction of Stinger ended the Soviets' ability to conduct heliborne operations and airborne operations with impunity, effectively reducing the Soviets' greatest advantage of "owning the air". The Soviet military had substituted airpower for large-scale troop deployments. The loss of freedom in the air left them with few available alternatives in interdicting insurgent operations. The image of Afghan resistance fighters shouldering Stinger missiles and shooting down Soviet aircraft became an icon for the later years of the Cold War era.

The Stinger had an immediate military impact and achieved the effect of technological surprise. From a tactical perspective, although initial estimates were overblown in claiming that the Stinger downed approximately one aircraft per day during the first three months of its deployment, the missile clearly represented an enormous qualitative improvement in the rebels' air-defense capability.³⁵ In an interview towards the end of the war, a DRA defector said,

"Before Stinger, we were free to do almost anything we wanted. After Stinger was introduced, we changed all our tactics, altitudes and speed-everything. We did not like to fly down low, and when we had to, we flew very fast, and even at high altitudes, we flew as fast as we could... We were no longer able to operate at will whenever and wherever we wanted to."³⁶

Preventing Soviet control of the air was critical in the Mujahedeen's attempt to seize the operational initiative. Early in the fighting, they were only able to obtain temporary tactical initiative but were unable to close with the enemy, or mass forces. The Soviets were able to exploit control of the air and move throughout the battlefield, synchronizing air and ground operations to limit Mujahedeen sanctuaries. Active air

³⁵ Ibid, 244.

³⁶ Quoted in Westermann, "The Limits of Soviet Airpower," 77.

defense changed that. The employment of the Stinger enabled the Mujahedeen to seize the initiative and fight the war on their own terms. By ending Soviet freedom of action, the Mujahedeen, who controlled the countryside, now had the advantage of depth and could concentrate their forces at critical points. With the air threat diminished, the Mujahedeen were able to increase and maintain their operational tempo as well as establish a logistical structure that could support large-scale operations.³⁷

The Stinger removed the Soviet's most flexible and effective fighting force, its air power and air assault forces, from the battlefield. In the first years of the war, the Soviets possessed the necessary agility to limit the initiative of Mujahedeen attacks. By desynchronizing the Soviet air-ground synergy, the Stinger eliminated the Soviet's air component as an effective element of their combined arms team. It denied the Soviets their aerial fire support and their ability to resupply by air, thus reducing the Soviet operational capability.

From another operational perspective, the Soviets were no longer able to use helicopter gun ships in a ground support role and the effectiveness of the Spetznaz was degraded as the insertion by helicopter became limited. As a result the Soviets increased their reliance on artillery and high-level aerial bombardment. As the war continued and civilian losses mounted, the resistance to the Soviets became stronger, more organized, and effective, demonstrating the duality of the surprise of the Stinger. With greater ramifications than the outcomes of specific engagements, the Fabian effect of the Stinger severely affected Soviet morale as well as global perceptions of the conflict. Declassified U.S. intelligence cables from March 1987 reveal the initially enormous perceived impact of the missiles. "The Stinger missile has changed the course of the war because Soviet

³⁷ Ibid.

helicopter gunships and bombers no longer are able to operate as they once did.”

According to such cables, more tactical and air support changes occurred in the last quarter of 1986 and the first quarter of 1987 than in the previous seven years of the conflict.³⁸

The Stinger directly struck at the Soviet military center of gravity, airpower, and demonstrated that control of the air environment was as vital in low-intensity conflict as in higher intensity warfare. In addition to the system’s ability to neutralize the major source of Soviet military strength and allow Mujahedeen to mass their forces for the conduct of large-scale operations, the Stinger was equally decisive in its psychological impact among Soviet and DRA pilots. The Stinger achieved a high level of respect among Afghan and Soviet pilots, who became increasingly unwilling to expose themselves or their aircraft to its lethal envelope. The accuracy and effectiveness of subsequent air operations suffered even more from the exaggerated belief in both the availability and capabilities of this missile among Soviet and DRA pilots. The Mujahedeen played on Soviet fears discussing their possession of Stinger missiles in radio communications, even if their group did not have the missile. The Soviets intercepted these communications and received an exaggerated picture of the availability of Stinger among the insurgent groups.³⁹ The system became a symbol for not only the defeat of the Soviets in Afghanistan but the victory for the West in the Cold War. This duality of effects is indicative of technological surprise.

The Soviet Response to the Stinger

³⁸ See Kuperman, *The Stinger Missile*, 245: Cables obtained from National Security Archives, Washington, DC.

³⁹ Westermann, “The Limits of Soviet Airpower,” 109.

In response to the Stinger's immediate success, the 40th Army initially restricted its pilots to less dangerous missions. The only reliable Soviet countermeasures employed were flying above 12,000 feet or at night.⁴⁰ Both measures negated the tactical value of Soviet air power, and gave the Mujahedeen the freedom of movement they coveted.

Fairly quickly, however, Soviet forces adopted a series of technical and tactical countermeasures that mitigated the impact of the Stinger. Technically, Soviet aircraft were retrofitted with improved flares, infrared beacons, and baffles on their exhausts to impede the Stinger's ability to lock on target. Aircraft also were equipped with a missile radar warning system to notify pilots of the need for evasive action.⁴¹ Tactically, the Soviets had numerous responses. Fixed-wing aircraft flew at higher altitudes outside the Stinger's three-mile range, which averted the missile threat but reduced the pilots' effectiveness. Helicopter pilots pursued the opposite strategy, adopting low-altitude, and nap-of-the-earth techniques to hide from the Stingers. At the lower altitude, however, helicopters became more vulnerable to small-weapons fire. Interestingly, the same tactical countermeasures had been reported as early as the first year of the war and several times thereafter in response to earlier-model SAMs. However, the Stinger's introduction triggered a dramatic renewal and expansion of their use. Since the low altitude and nap-of-the-earth flight patterns were not designed for Hinds, their crews had not been properly trained for this tactic. This increased wear on airframes and systems, while greatly increasing rates of operational attrition.⁴²

Ultimately, the net effect of Soviet counter-measures was to offset the Stinger. Within 18 months of the Stinger introduction, USSR aircraft losses had dropped to

⁴⁰ Ibid.

⁴¹ Ibid, 248.

⁴² McManaway, "Stinger in Afghanistan," 3–8.

previous levels, indicating a successful adaptation. David Isby, an expert military analyst of the Afghan conflict, concluded in 1990 that, “although none of the Soviets’ countermeasures were totally successful, the Stinger did not succeed in forcing Soviet helicopters out of the sky.”⁴³ The Soviets accepted the risk at lower altitudes and operated there throughout the rest of the war. They also sought to provide increased suppression of air defenses when attack helicopters conducted CAS missions. This capability was essentially limited during free hunt missions, and as result, hunt missions were drastically curtailed, especially in the border region where Stingers were known to be prevalent. New ground and air tactics as well as technical countermeasures eventually mitigated the Stinger threat. However, there can be little doubt that Hinds lost their freedom of movement, and as a result, a large degree of their effectiveness. A leading French expert on Afghanistan, Olivier Roy, confirmed from his experience among the rebels in late 1988 that, “by 1989, the Stinger could no longer be considered a decisive anti-aircraft weapon.”⁴⁴

Yet the damage had already been done. As Scott McMichael states, “During the first two years of the war, the great majority of Soviet aircraft losses (75-80 percent) must be attributed to non-combat causes, plus losses suffered on the ground due to raids, rocket attacks, and sabotage... There can be no doubt at all that the Stinger turned the ratio on its head.”⁴⁵ A rigorous U.S. Army analysis was conducted in early 1989 by a team sent to “go sit with the Mujahedin” in Pakistan for several weeks. It concluded that by war’s end

⁴³ In Kuperman, *The Stinger Missile*, 251.

⁴⁴ *Ibid.*, 249.

⁴⁵ McMichael, Scott R. *Stumbling Bear: Soviet Military Performance in Afghanistan*. London; Washington: Brassey’s, 1991: 92.

the rebels had scored approximately 269 kills in about 340 engagements with the Stinger, for a remarkable 79 percent kill ratio.⁴⁶

There was much debate as to the role of the Stinger on the Soviet withdrawal and defeat. It was reported in the American media that the supply of high-tech American weaponry to the Mujahedin played a key factor in the Soviet withdrawal from Afghanistan by convincing the Kremlin that the war was unwinnable.⁴⁷ Conversely, it can be argued that the Stinger did not contribute to Soviet decision to leave the war but did deepen the demoralization of Soviet forces already facing the prospect of withdrawal. Two facts are clear. First, when Gorbachev came to power in 1985, he escalated the war. Second, had the United States not countered with the Stinger and other U.S. technology, the Soviets would have gained militarily against the Mujahedin.⁴⁸ It is certain that the Stinger served to erode Soviet feelings of control. Therefore, while the Mujahedeen could not completely eliminate the most advanced aspect of Soviet force structure, its aerial presence, the Stinger succeeded in adjusting the power equation towards the Mujahedeen, while striking a material as well as symbolic blow to the Soviet war effort.

Analysis

The Mujahedeen recognized the tremendous importance of the Hind for Soviet operations, and effectively exploited the achievement of technological surprise via the Stinger SAM. Yet the Soviets responded to Stinger and in-theater developments as a whole, albeit ineffectively at first. In explaining this outcome, realist theory and the

⁴⁶ McManaway, "Stinger in Afghanistan," 8.

⁴⁷ Dobbs, Michael. "Dramatic Politburo Meeting Led to End of War." *Washington Post*, November 16, 1992.

⁴⁸ Kuperman, *The Stinger Missile*, 251.

strategic culture arguments prove most useful, while organizational theory and bureaucratic politics cannot offer explanations for Soviet action.

The bureaucratic politics model, which this study defines as adaptation driven by individuals within a military bureaucracy, is unable to account for the decisive failure of Soviet adaptation. Due to the heavily centralized nature of the Soviet military, low-level commanders were driven by strict regulations and tactical norms dictating behavior in combat to a level of specificity uncommon in Western militaries. The result was a rigid method of warfare that left little to change or uncertainty.⁴⁹ This precluded the Soviet ability to develop a degree of Western-style creativity and initiative in their junior leaders.

The decentralized nature of the war in Afghanistan frequently forced decision-making down to the level of field commanders. Bureaucratic politics predicts that men in these positions should act independently when required by the tactical situation. Yet their training required the strict adherence to higher unit commanders. As a result, field officers proved deficient in making independent decisions. Even with the Soviet desire to push the concept of Western-style initiative and creativity lower in their command structure, Soviet cultural reluctance to take risks and mixed signals from higher commanders hindered their success.⁵⁰

Traditionally, Soviet behavior is thought of as conforming to organizational theory. For organizational theorists, militaries resist change as a result of structural systems, norms, and standard operating procedures that together focus behavior toward

⁴⁹ Scales, Robert. *Firepower in Limited War*. Washington, D.C.: National Defense University Press, 1990: 166.

⁵⁰ Frketic, Maj. John. *Soviet Actions in Afghanistan and Initiative at the Tactical Level: Are There Implications for the U.S. Army?* Fort Leavenworth, KS: School of Advanced Military Studies, United States Army Command and General Staff College, December 6, 1988.

particular outcomes. Without a coherent design for promoting adaptation, an organization might find it impossible to learn and apply lessons to effectively accomplish mission objectives. Organization theory is ideal for explaining the actions of a Soviet-style military, but only during peacetime. Since it sees military organizations as highly resistant to change, it would predict that the Soviets would take no action in response to Mujahedeen threats. This was not the case, as the Soviets ultimately made changes to its theater-wide doctrine and operational concepts, as well as airmobile tactics following the deployment of the Stinger. Ultimately, an unsuccessful adaptation still compromises an attempt to adjust to battlefield realities, disproving the applicability of organizational theory to the Soviet case.

Realist theory affords a plausible explanation for Soviet actions in adjusting their force to the Afghan theater. Soviet commanders were presented with clear incentives to change. One notable change was the definitive shift in the standard Soviet employment of airpower in the conduct of military operations. Soviet doctrine in 1979 had emphasized the use of airpower as a force adjunct for the direct support of ground forces. This doctrinal disposition relied heavily on the historical legacy of the Soviet experience against the Germans in WWII. In the initial period of the Afghan war, Soviet airpower conformed to this existing paradigm of ground support operations. However, the unwillingness of DRA forces to fight, Moscow's reluctance to increase Soviet troop levels, and the desire to minimize casualties led to the employment of airpower as both a force multiplier and a force substitute in the battle against the Mujahedeen. This resulted in the increased use of helicopters and elite units to increase mobility and initiative, as well as a decrease in use of set-piece tactics that proved highly ineffective.

While realism correctly predicts the routine occurrence of change in Soviet actions as a result of combat encounters, it is Soviet strategic culture that explains the nature and characteristics of such adaptations. For example, despite a reevaluation of Soviet thinking as a result of field experience, there were few attempts at reform directed at the majority of Soviet forces. Rather, the attempt to allow for greater flexibility at the operational level produced piecemeal and isolated modification of airborne unit organization and employment. As stated by Mujahidin military commander Abdul Haq, “Since we were invaded nine years ago the Soviets have changed, step by step, their tactics. Soviets can change tactics but they cannot change their forces.”⁵¹ Although Soviet forces incrementally adapted at the tactical and operational level to the changing character of the war, they were unable to do so efficiently or effectively enough to defeat the resistance. The continued application of sequential conventional operations against a fragmented but skilled insurgent guerrilla force is a resounding indictment of Soviet strategic culture.

Conclusion

Throughout the decade of the 1970’s, U.S. perceptions of Soviet ground force tactics stressed a general lack of initiative and flexibility in their military doctrine. These assessments proved accurate after the Soviet invasion of Afghanistan. The Soviets were hindered by overconfidence in their military capabilities relative to the Mujahedeen and insecurities related to the Cold War environment. Their sustained prosecution of a limited war strategy against an adversary who approached the conflict as absolute was a failure,

⁵¹ Quoted in Westermann, *The Limits of Soviet Airpower*, 99.

while their inability to implement an effective counterinsurgency strategy against the Mujahedeen was telling.

The Soviets' rigidity in doctrine and strategy also contributed to their failure in Afghanistan. In the case of the Hind, Soviet attack helicopters faced numerous problems, both self-generated and enemy-induced. At the most basic level, the rigid nature of the Soviet system got in the way, causing pilots to blindly follow orders to attack unoccupied positions. The depth of this and similar problems is difficult to measure, but a lack of initiative is often cited with respect to Soviet military activity in general in Afghanistan. Along with the changes in helicopter doctrine at the onset of the war, this almost certainly created friction when it came to the planning and execution of attack helicopter missions.⁵² The Soviet failure demonstrates the potential danger in relying on airpower as a primary instrument for coercion. Soviet actions in Afghanistan showed that air supremacy does not constitute a panacea for guaranteeing success in contemporary military operations.

⁵² Groenke, "CAS, Interdiction, and Attack Helicopters," 17.

Chapter 4

The United States, IEDs, and Iraq

This is an aspect of military science which needs to be studied above all others in the Armed Forces: the capacity to adapt oneself to the utterly unpredictable, the entirely unknown. I am tempted indeed to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they have got it wrong. What does matter is their capacity to get it right quickly when the moment arrives.¹

Sir Michael Howard

Introduction

This chapter examines the strategic culture of the United States, which has received considerable attention given the well-documented history of American military engagements. The study of American strategic culture remains critical to strategic studies because even though the United States remains the world's most powerful nation, she faces a future rife with uncertainty and unprecedented challenges from rising peer competitors seeking to alter the regional and international status quo. What follows is an examination of American strategic culture and its role in shaping the American response towards the technological surprise of improvised explosive devices (IEDs) encountered in Iraq. The experience of the United States with the IED is the empirical case study that most clearly demonstrates the role of strategic culture in influencing intra-war adaptations. This is not only because of the miniscule roles of organization theory and

¹ Quoted in Lacquement, Jr., Richard. "In the Army Now." *The American Interest*, September 1, 2010. <http://www.the-american-interest.com/articles/2010/09/01/in-the-army-now-2/>.

bureaucratic politics in explaining American actions, but also because of the characteristics of the response; the nature of the counter-IED effort is explained by strategic culture but not realism.

American Strategic Culture

Today, there is perhaps no nation with a greater association between society and style of warfare than the United States. Scholars have studied this relationship by outlining the numerous characteristics of American methodology, addressing the distinction between a way of war and a way of battle, and illustrating the advantages and disadvantages of these characteristics in major conflicts and small wars. Within this historiography, authors have also tried to define the characteristics of the strategic American way of war, including advancing American national interests through various means, and how culture and preparation for war actually shape American strategy.

Historian Russell Weigley was the first to define the American approach to conflict and popularize the phrase “the American way of war.” According to Weigley, since the American Civil War the U.S. armed forces have pursued a unique approach to combat favoring wars of annihilation through the generous use of firepower. The U.S. military has viewed “the complete overthrow of the enemy, the destruction of his military power, [as] the object of war.”² The strategy of attrition is manifested by the methods employed by Ulysses S. Grant to defeat Robert E. Lee’s forces during the Civil War, by John J. Pershing against the Germans in WWI, and by the U.S. Army Air Force against German and Japanese cities during WWII. In this view, the Civil War, WWI, and WWII

² Weigley, Russell. *The American Way of War: A History of United States Military Strategy and Policy*. Bloomington, IN: Indiana University Press, 1977: xxi.

were won not by tactical or strategic brilliance but by the weight of numbers as well as the destructive power that a fully mobilized and highly industrialized democracy can bring to bear.

Military historian Max Boot offers a critique of Weigley's interpretation of American military history by maintaining that America has more than one way of war. Boot analyzes American involvement in "small wars" such as the Boxer Rebellion, the Philippine-American War, and the late 20th century interventions Bosnia and Kosovo. These small wars were fought not to attain decisive victory over an opponent, but for reasons related to inflicting punishment, ensuring protection, achieving pacification, and benefiting from profiteering. According to Boot, these involvements outnumber American participation in major conflicts and are, therefore, deserving of inclusion in any description of the American style of war.³

While the viewpoints of Weigley and Boot appear contradictory, the synthesis of the two arguments presents a complete description of American force deployments covering the spectrum of conventional operations. They are therefore complementary, as U.S. Army Lieutenant Colonel Antulio Echevarria argues. He writes that in both arguments, the American way of war tends to avoid turning military triumphs, whether major campaigns or small-unit actions, into strategic successes.⁴ Ultimately, both the Weigley and Boot interpretations implicitly portray the American way of war as a way of battle more than a way of war.⁵ In other words, the American concept of war has rarely extended beyond the winning of battles and campaigns to the difficult work of turning

³ Boot, Max. *The Savage Wars of Peace: Small Wars and the Rise of American Power*. New York: Basic Books, 2002.

⁴ Echevarria II, LTC Antulio. *Towards an American Way of War*. Op-Ed. U.S. Army War College, Carlisle, PA: Strategic Studies Institute, March 2004.

⁵ Echevarria, *Towards an American Way of War*, 2004.

military victory into strategic success. Consequently, the American way of war is more a way of battle than a way of war.

Within this way of battle, American officials have typically viewed an opponent's center of gravity as his military force, the destruction of which marks the end of war and the achievement of victory. This a-political and a-strategic way of war emphasizes the pursuit of tactical victory as the end state autonomous from strategic policy, rather than as the beginning of post-war negotiations and a means to a political resolution.⁶ War represents an alternative to bargaining, rather than the Clausewitzian view of combat as part of an ongoing bargaining process. For example, the quick U.S. tactical victory in Iraq in 2003 did not immediately lead to peace and stability in Iraq because the American pursuit of a quick victory occurred, as it often does, independent of strategic policy decisions.

Thus, the American way of battle is characterized by an aggressive style of force to overwhelm and destroy enemy forces in order to acquire a decisive victory with minimal casualties. Its hallmarks are speed, maneuver, flexibility, and surprise. By combining the superiority of information with the use of information-enabled weapon systems trained against enemy centers of gravity, the aim of U.S. military strategy is to deliver a shock effect against opposing armed forces in the context of regular warfare. Doing so neutralizes the adversary's command and control. In addition, it strives to integrate naval, air, and land power into a seamless whole. These characteristics of the American tactical and operational way of battle are advantageous in large-scale, force on force conflicts.

⁶ Gray, Colin. *Irregular Enemies and the Essence of Strategy: Can the American Way of War Adapt*. Carlisle, PA: Strategic Studies Institute, US Army War College, 2006.

Accordingly, the American approach to irregular warfare is not very different from approach to conventional conflict; small or irregular wars have typically been viewed as conventional wars but on a smaller scale. At the operational level of irregular warfare, the military seeks to exploit and disrupt enemy centers of gravity even where they may not exist in the same sense as conventional combat. In addition, the same techno-centric approach applied to regular operations is applied here. The procedures of irregular warfare are defined by precision targeting coupled with high operational tempo, as American forces seek to create conditions for the rapid lockout of adversary courses of action. However, when niche science and technology efforts are tailored for irregular warfare, they often are isolated from the broader force development process.

Most critically in the context of irregular operations, American forces have demonstrated a stark under-appreciation for historical lessons and cultural differences within the theater of operations. The lack of cultural and historical curiosity frequently results in a situation in which the enemy understands American forces more coherently and effectively than the Americans understand him.⁷ This outcome may be a result of the distance between the American homeland and the nation's overseas contingency operations, or overconfidence in enemy inferiority. On the other hand, countries like Israel, India, and South Korea actively seek to maximize their knowledge of potential adversaries by following Sun Tzu's precept of knowing one's enemy, especially since threats to their respective national securities predominately emanate from just outside of their national borders.

⁷ See the Sunni insurgency in Iraq and the Taliban insurgency in Afghanistan of the past decade. Adamsky, *The Culture of Military Innovation*, 82.

No nation in recent history has placed greater emphasis upon the role of technology in planning and waging war than the United States. For example, the emphasis on precision firepower is innate to the wider tendency of American society to place faith in the ability of science and technology to solve the problems of war and protect precious manpower. As a result, one of the most defining characteristics of the American way of war is its emphasis on technology. The American industrial approach to warfare, increasing emphasis on minimal casualties, and pursuit of victory through annihilation by firepower makes the United States one of the most techno-centric militaries in world. The U.S. strategic approach is increasingly driven by the notion that future warfare will be highly technological, and that America will maintain her strategic position only by transforming her fighting forces ahead of her competitors.

The American fascination with technology dictates, drives, and organizes the managerial mind set in U.S. military affairs. WWII witnessed the wholesale mobilization of American science and technology, culminating in the detonation of the atomic bomb. Technology played an important role in America's conduct of the Cold War as well, as the United States sought to use its qualitative advantage to counterbalance the numerical superiority of the Soviet Union and the Warsaw Pact.

The American emphasis on technology also reflects the preference in American military for simplicity over complexity.⁸ In other words, a reliance on technology is a corollary of the predisposition to solve problems as quickly and simply as possible. It also reflects how the American way of war tends to avoid turning military strength into strategic successes by seeking refuge from difficult problems of strategy in technology. For example, this chapter's discussion of the American response to the IED will

⁸ Ibid, 85.

demonstrate how the reliance on technology that preserved manpower and tactical initiative also served to isolate coalition troops from the Iraqi populace, contradicting the strategic principles of population-centric counterinsurgency.

The traditional orientation towards quick action and results, an attachment to things new and futuristic, and a disinclination to wage a long war has resulted in “an almost instinctive reliance of American strategists on technology as a panacea in national security affairs.”⁹ In a pervasive atmosphere of technological determinism, the functional and practical application of technology should be designed to address specific requirements related to a narrow set of operational or tactical threats, rather than as a substitute for strategic thinking.¹⁰ For example, the United States failed to accomplish strategic objectives in Vietnam despite enjoying a considerable technological edge over its adversaries because it failed to develop an adequate strategy to achieve its political objectives.¹¹ During the 1990s, the U.S. government increasingly looked to technology in the form of standoff air- and sea-launched precision-guided munitions to solve problems related to terrorism and ethnic violence, even though the issues were at their root political. Washington’s penchant for advanced technology also fostered the illusion among some that the United States could use force without killing American soldiers and innocent civilians, and among America’s enemies that the United States was averse to

⁹ Ibid, 91.

¹⁰ Ibid, 131.

¹¹ See Collins, John. “Vietnam Postmortem: A Senseless Strategy.” *Parameters, U.S. Army War College* 40, no. 4 (March 2010): 32; “American strategists struck out in Vietnam. Our forces won every battle, but this country lost the war... It had little to do with disciplinary problems that deviled American troops during the later stages. It had little to do with constraints on U.S. air power or privileged sanctuaries. It had little to do with outside logistic support for our opposition... The cause was a senseless strategy that foiled us for 14 straight years.”

sustaining casualties.¹² Ultimately, while prudent and innovative exploitation of the technological dimension to strategy and war is a vital asset, technology that dictates tactics regardless of the political context can be detrimental to strategic aims.

Iraq

The U.S. military is an institution best prepared for combat against a symmetrical and regular enemy rather than an asymmetrical one. In other words, America's military institutions were designed to fight peer competitors or the armed forces of other states and not transnational terrorist organizations or insurgencies. The U.S. method of fighting and victory in WWII is preferable to the U.S. method of counterinsurgency in Afghanistan. Thus U.S. forces were not culturally, ideationally, or materially equipped to deal with the asymmetric threats experienced during the war on terrorism.

The United States invaded Iraq in 2003 boasting the world's best-equipped military. Using a host of technologies and weapons that had been integrated into its force structure starting in the early 1990s, the invading force made quick work of Iraqi forces. American forces applied a new generation of sensors, precision guided munitions, and advanced command and control systems to great effect against a notably inferior enemy. U.S. armed forces specialize in network-centric warfare, taking advantage of information technology to radically enhance the effectiveness of C4ISR: command, control, communications, computers, intelligence, surveillance, and reconnaissance. Thus the invasion seemed to confirm the primacy of U.S. global military power. However, optimism regarding the success of shock and awe offensive operations soon dissipated as

¹² Mahnken, Thomas. *United States Strategic Culture*. Comparative Strategic Cultures Curriculum. Advanced Systems and Concepts Office: Defense Threat Reduction Agency, November 13, 2006: 12.

the U.S. became embroiled in insurgencies and civil war in Iraq. This was a kind of warfare that the U.S. had failed to prepare for, and had not directly experienced since the Vietnam War. The military came to the understanding that the methods and technology for defeating Saddam's conventional forces and bases of operation would not prove as effective against irregular insurgent groups. The U.S. had to adapt or face defeat, as it became clear that a lack of credence was given to the possibility of enemy technological surprise.

The IED Surprise

Soon after the conclusion of conventional operations, the U.S. military found itself increasingly confronted by irregular forces employing unconventional tactics in largely urban settings. Unable to match the U.S. in conventional firepower, insurgents initially resorted to ambush tactics and the sporadic use of indirect fires. Insurgent forces soon shifted their tactics to emphasize the use of IEDs as well as vehicle-borne IEDs (VBIEDs). The IED threat that emerged in Iraq and later Afghanistan is one of the few contemporary examples of a conventional military confronting a tactical surprise with operational if not strategic implications, necessitating adaptation at all levels to avoid strategic defeat.

Joint U.S. military doctrine defines an IED as a weapon that is fabricated or emplaced in an unconventional manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals designed to kill, destroy, incapacitate, harass, deny mobility, or distract.¹³ IEDs may incorporate military munitions and hardware, but are

¹³ *Counter-Improvised Explosive Device Operations*. Joint Publication 3-15.1, Department of Defense Office of the Joint Chiefs of Staff, Washington, D.C, January 9, 2012: vii.

generally constructed from components that are nonmilitary in nature. The weapon comes in many shapes and sizes, and are often classified by their method of employment, either suicide or non-suicide. Despite the many variations, IEDs usually share several common components: a main charge utilizing high-yield explosives such as C4 or TNT, or low-yield explosives such as black powder or fertilizer; a power source such as batteries, alternating current, or recoiled springs; a command-, time-, or victim-operated switch; an initiator, such as electric or non-electric blasting caps; and a container which may be a vehicle, shell casing, pipe, plastic jug, or even an animal carcass. Some IEDs additionally contain enhancements such as fuel, fragmentation, or contamination hazards.¹⁴

While the IED is sometimes described as a new technology, it actually has a lengthy history; ships loaded with explosives were used as far back as the 1500s, while various jury-rigged bombs and mines were used in the American Civil War including the naval battle of Mobile Bay and the land battle of Petersburg.¹⁵ Even the more contemporary versions of IEDs, whose explosively formed penetrators can pierce even the armor plating of the U.S. military's mine-resistant vehicles, actually date back to WWI.

Facing the prospect of defeat against a numerically, militarily, or industrially superior opponent, the use of IEDs by relatively inferior forces should come as no surprise. From the perspective of the outnumbered, outgunned, and ill-equipped, the decision to employ IEDs is logical because they are cheap, flexible, and highly effective weapons. They can provide a pragmatic insurgent with a weapon capable of striking a

¹⁴ Ibid.

¹⁵ Hearn, Chester G. *Mobile Bay and the Mobile Campaign: The Last Great Battles of the Civil War*. Jefferson, NC: McFarland, 1993. Pages 32-37; Singer, Peter. "The Evolution of Improvised Explosive Devices (IEDs)." *Brookings Institute*. Armed Forces Journal, Feb. 2012.

punishing blow against a superior enemy while also avoiding the enemy's combat advantages. It is the combination of two factors- its cost effectiveness and its' potential to produce strategic and operational effects, that have defined the use of the IED against U.S. forces in Iraq. The IED is cheap and simple, relatively easy to deploy, and most importantly, it is symbolically powerful. It has allowed insurgents to frustrate a militarily superior force, while using mass media to erode support for the conflict at home. Like many weapons that retain their utility over time, the IED is extremely functional. It is extremely versatile and can be used in a virtually unlimited number of ways to achieve an endless variety of goals. Due to its improvised nature it can take any number of forms, the only limitation being the imagination of the "bomb maker."¹⁶

The complex urban terrain of Iraq provided ample concealment for such attacks, while IEDs provided an ideal means to attrite U.S. forces on patrol at very little risk to the insurgents. For the period March 2003 to early August 2007, 1,496 of a total 3,037 coalition deaths due to hostile causes (49.5%) were attributed to IEDs. From January 2005 to early August 2007, the percentage increased to 65%. From March 2007 onward, the percentage of hostile deaths attributed to IED attacks continued to rise to 72%.¹⁷ Stated another way, for the conflict as a whole, from March 2003 to August 2007, IEDs accounted for almost half of all coalition deaths due to hostile causes.

A typical tactical platform such as a tank or artillery serves as a weapon that causes physical damage as an end in itself. A tactical weapon contributes to the tactical success when it creates low-level, discrete effects on specific systems. The IED differs in

¹⁶ Martin, James. "Dragon's Claws: The Improvised Explosive Device (IED) As a Weapon of Strategic Influence." Naval Postgraduate School, 2009: 27.

¹⁷ Krepinevich, Andrew, and Dakota Wood. *Of IEDs and MRAPs: Force Protection in Complex Irregular Operations*. Washington, D.C.: Center for Strategic and Budgetary Assesments, 2007: 6.

that the physical damage generated by the IED is only a fraction of its utility. It may be used simply in a tactical manner, but its greatest utility lies with its symbolic qualities and the potential for strategic influence. Delivered in a non-linear fashion through both social and physical space, its functionality is the destruction that it is able to cause both physically and psychologically on two separate targets: the target of attack and the target of influence.

The lethality of the IED was most poignantly manifested in the damage done to the most heavily armored U.S. vehicle, the M-1 Abrams tank. Some IEDs were large enough to penetrate virtually any thickness of armor, using technology like explosively formed projectiles and shape charges with assistance from Iran. For example, on July 23, 2005, a 500-pound bomb detonated underneath a Humvee in Baghdad, killing all four passengers and leaving a crater six feet deep and seventeen feet wide. A few weeks later, another IED flipped a 25-ton amphibious assault vehicle, killing all fourteen marines inside. Compared to the first Gulf War during which 18 M-1s were disabled but no casualties suffered, between March 2003 and March 2005, 80 tanks were badly damaged as a result of IEDs.¹⁸

As the Iraq War demonstrates, an adversary may employ IEDs to achieve effects at all levels of war. At the tactical level, these devices were often used as obstacles and barriers to maneuver, similar to the way that a conventional combatant would employ mines. The Joint Chiefs define an obstacle as “any obstruction designed or employed to disrupt, fix, turn, or block the movement of an opposing force,” while also posing

¹⁸ Mahnken, Thomas G. *Technology and the American Way of War*. New York: Columbia University Press, 2008: 213-215.

potential increased losses in personnel, time, and equipment on the opposing force.¹⁹ In short a barrier is nothing more than a coordinated series of obstacles employed to achieve a specific effect on the opposing force.

The successful employment of IEDs as a means of attacking ground forces created the effects traditionally associated with obstacles and barriers. Insurgents began to restrict the freedom of movement of coalition forces into certain areas or along certain routes, and canalizing forces into engagement areas for ambush attacks. Blocking access to stretches of urban terrain made it possible for insurgents to develop strongholds, where they controlled both the terrain and the population. Deliberately planned belts of IEDs raised the cost of defeating the obstacles to an unacceptable level. Without extensive combat engineering and explosive ordnance disposal (EOD) resources, the Joint Force would risk extensive casualties and destruction of equipment in breaching operations. Eventually, some enclaves such as Sadr City in Baghdad were left virtually unpatrolled, as they had essentially become restrictive terrain for the coalition.²⁰

At the operational level, the employment of IEDs along ground lines of communication (LOCs) served to effectively disrupt coalition operations. In Iraq, long supply lines originating in Kuwait challenged coalition forces. As the insurgency grew, these LOCs were highly vulnerable and presented rewarding soft targets for attack. The threat these devices posed to the sustainment of forces in the field required the operational commander to dedicate significant combat power and intelligence,

¹⁹ U.S. Joint Chiefs of Staff, *Joint Tactics, Techniques, and Procedures for Antiterrorism*. Joint Publication 3-07.2, Washington, DC: CJCS, 1998: GL-3.

²⁰ Brobeck, Maj. Brian. *Protection, Risk and Communication: Battling the Effects of Improvised Explosive Devices in Contemporary Operations*. Newport, RI: Joint Military Operations Department, Naval War College, May 4, 2010: 7.

surveillance and reconnaissance (ISR) resources to protecting these vital LOCs. In addition to the logistical difficulties, the apportionment of forces along key LOCs limited tactical commanders' offensive options due to a reduced ability to mass combat power.

The effective deployment of IEDs has its greatest impact at the strategic level because such attacks indirectly struck at the strategic center of gravity. In the information age, public opinion is influential and may therefore be a priority target for a militarily overmatched adversary. Coupled with the reach of modern information systems and public media, IED attacks produce second and third order affects that transformed this local battlefield weapon into weapons of mass strategic effect. Iraqi insurgents accurately recognized the will of the American people as the American strategic center of gravity, and used two specific methods to employ IEDs in order to achieve strategic effects. First, targeting of coalition forces and inflicting casualties effectively raised the cost of the conflict by eroding public and political support back home. Second, the targeting of civilians served to spur unrest and prompt sectarian retaliation, which discredited coalition efforts at establishing security and maintaining order.²¹ Both of these lines of effort relied on global information flow and media stories that depicted the scenes, stories, and images the insurgents desired to portray.

Response

The initial coalition reaction to the IED threat from 2004-2006 ultimately served to magnify the weapon's influence.²² Forces responded to the threat of being bombed while out on patrol by increasing protective armor on vehicles and personnel, establishing a few

²¹ Ibid, 12.

²² Brobeck, *Protection, Risk and Communication*, 8.

primary patrol and logistics routes, and operating from scores of large forward operating bases. These actions served to effectively isolate ground forces from the Iraqi people while leaving significant portions of terrain open for the enemy to occupy. “The IED is the enemy’s artillery system,” According to U.S. General Montgomery Meigs, in 2007. “What’s different is the trajectory. Three 152mm rounds underneath a tank, which will blow a hole in it, are artillery rounds. But they didn’t come through three-dimensional space in a parabolic trajectory. They came through a social trajectory and a social network in the community,” affecting the enemy far beyond the battlefield.²³ Officials were quickly learning that IEDs were the product of human ingenuity and human social organization, and as a result had to be understood in the social context in which they were built and employed. As one member of the Office of Naval Research wrote in 2005:

“A shift in focus from IED technology to IED makers requires examining the social environment in which bombs are invented, manufactured, distributed, and used. Focusing on the bomb maker requires understanding the four elements that make IED use possible in Iraq: knowledge, organization, material, and the surrounding population.”²⁴

The initial impact of the IED attacks was compounded by ill-conceived American operational and strategic thinking, which failed to adequately consider the psychological impact on the local Iraqi populace and American public opinion.

The situation surrounding the IED and the American response began to gather momentum with the broader shift to a counterinsurgency strategy in Iraq starting in late 2006. The strategic realignment corresponded with several broader adaptations specifically designed to overcome the IED. The evidence suggests that the emergence of

²³ Atkinson, Rick. “The Single Most Effective Weapon against Our Deployed Forces” The Washington Post, 30 Sept. 2007. <http://www.washingtonpost.com/wp-dyn/content/article/2007/09/29/AR2007092900750.html?hpid=topnews>.

²⁴ McFate, Montgomery. “Iraq: The Social Context of IEDs.” *Military Review* 85, no. 3 (June 2005): 37.

the IED threat in Iraq was a dangerous surprise for the U.S. military, necessitating a response of national proportions with military, industrial, scientific, and budgetary dimensions. Further, the need to make significant acquisitions of new equipment, much of it not previously held in U.S. inventories, supports the contention that American forces were surprised by the emergence of the IED threat. The response by U.S. commanders is also indicative of American strategic culture and the predilection for technological acquisitions in the protection of warfighters. For example, the massive cold-start acquisition program to equip U.S. forces with the Mine Resistant Ambush Protected (MRAP) vehicle conformed to the American preference for technological systems to meet unforeseen threats.

In February 2006, a Department of Defense Directive established the Joint IED Defeat Organization (JIEDDO) with the mission to lead all Department of Defense actions in support of the Combatant Commanders' and their respective Joint Task Forces' efforts to defeat IEDs. The precise mission of the organization was to defeat the device, attack IED networks, and train the force to deal with countering the weapon system. JIEDDO was mandated to lead, advocate, and coordinate counter-IED initiatives by operating in conjunction with various national laboratories, the Department of Energy, academia, the defense industry, and other services and agencies on technologies and countermeasures to the IED threat. Through JIEDDO, the United States spent billions of dollars to develop technologies to detect IEDs, focusing extensively on developing high-tech solutions to defeating the improvised device.²⁵ Consistent with American strategic

²⁵ Benson, Lt. Col. Christopher. *Detecting Improvised Explosive Devices: Enduring Threat Requires Enduring Solutions*. Strategy Research Project. Carlisle, PA: U.S. Army War College, March 20, 2012.

culture, technology was always at the forefront of JIEDDO initiatives and a significant emphasis on technology supported almost all approaches to the problem.

One of the first adaptation efforts was to increase personnel survivability against IED effects for soft-skinned general purpose vehicles, in which the majority of movement was undertaken and which are essential for the efficient conduct of routine functions such as personnel transportation, administrative movement, and logistic resupply. Initially, U.S. forces in Iraq had few general-purpose vehicles with armored protection and even fewer vehicles that were optimized for the conduct of counter-IED (CIED) activities. Even when armored, however, the protection offered by Humvees was inadequate and a need for a better-protected vehicle was soon identified.

As a result, great investments were made in defensive technologies like the MRAP. The MRAP was viewed as part of a larger military contest between U.S. armored vehicles and Iraqi insurgents: armor vs. anti-armor competition. The MRAP is a large, heavily armored vehicle, originally designed and fielded for mine clearing and explosive ordnance disposal tasks. The basic vehicle design incorporates very heavy armor arranged in a v-shaped hull that deflects the blast away from the passenger compartment. A heavy-duty, raised chassis and the use of tires instead of tracks help to create space for dissipating the blast energy from a mine-like explosion. The sheer mass of the vehicle also provides an increased level of protection. MRAP design characteristics have also been incorporated into smaller armored vehicles to better protect military personnel from the hazards of blast and shrapnel.²⁶ However, it is clear based on insurgent reactions to the MRAP that they anticipated the American technological response and were able to

²⁶ Krepinevich, *Of IEDs and MRAPs*, 8.

quickly adapt the IED to it. As American armor increased in effectiveness, the amount of explosives used in each IED increased.

Another American technological adaptation was intended to prevent the detonation of the devices by jamming or denying the radio frequencies (RF) used to transmit signals between initiating systems and the devices themselves. The implementation of spectrum denial and jamming systems known collectively as CREW (counter radio-controlled electronic warfare), was intended to defeat many of the radio-controlled devices that were prevalent in the theater.²⁷ Jammers were installed in vehicles in an attempt to defeat the RF triggering devices.

The insurgent response to the first deployment of battlefield jammers was swift. Insurgents resorted to using command wires and pressure wire as triggering mechanisms. Command wires are a pair of insulated copper wires, which connect the triggering device to the blasting cap and can be several kilometers long. Pressure wire is a victim-operated trigger that it initiates when someone steps on it or a vehicle runs over it.²⁸ As a result, despite possessing RF jamming equipment on their vehicles developed specifically to mitigate the risk and potential casualties, coalition forces continued to suffer the devastating effects of IEDs.

As it became clear that ad-hoc technical solutions would not eliminate the IED, a second approach was developed that recognized that the IED required a nuanced whole-of-government approach to get as far “left of the boom” as possible. A method was sought to defeat the device prior to detonation rather than to mitigate the effectiveness of the blast. As part of defeating the device prior to its deployment, the JIEDDO mandate to

²⁷ Brobeck, *Protection, Risk and Communication*, 8.

²⁸ Martin, “Dragon’s Claws,” 71-72.

attack the IED network was arguably its most effective line of this new approach.

According to former JIEDDO Director Lt. Gen. Thomas F. Metz, “Attack the Network is one of the biggest areas where JIEDDO has made progress. I’m convinced that defeating IEDs requires attacking the devices at their source. By targeting the networks that fund and build IEDs, we can attack the enemy before they take action.”²⁹

As part of this line of operation, JIEDDO established its Counter-IED Operations Integration Center (COIC) with the task of combining multi-source intelligence with analytical technologies to create a common operational and intelligence picture of IED systems.³⁰ The insurgent operators in Iraq (as well as Afghanistan) were supported by organized networks that financed operations by supplying critical elements for the production of IEDs, creating the devices, and planning and executing attacks. The new COIC system implemented powerful analytics to gain critical, data driven insight into the structure, character, interactions, and methods associated with those networks. By analyzing data from a myriad of sources, JIEDDO staffers attempted to identify and analyze the linkages between individuals and groups that indicated a support network. Through the synthesis of vast amounts of signals and human intelligence, the COIC created a detailed operational picture in support of offensive operations against IED networks. The COIC also served as a conduit for strategic feedback and collaborative analysis. Within the COIC, JIEDDO also formed the Law Enforcement Professional program to leverage the knowledge and skill of former law enforcement experts to attack the IED network activities. It enabled the services to disrupt the vast network by

²⁹ Smith, Irene, and Michael Coderre. “The Continuing War Against Improvised Explosive Devices.” *WSTIAC (Weapons Systems Technology Information Analysis Center) Quarterly* 8, no. 2 (2008): 3–6.

³⁰ *Ibid.*

expanding operations beyond emplaces and target the finances, explosives, suppliers, and the planners that constructed IEDs.³¹

Within the operational context of the final JIEDDO mandate, training the force, commanders focused on developing a better understanding of enemy tactics, techniques, and procedures (TTPs) involving their employment of IEDs. This was executed with an eye toward modifying and improving U.S. TTPs to counter enemy adaptations. This effort was reinforced at the operational level by adapting an existing structure that was already available to the counter-IED effort. This involved expanding the Mine and Explosive Ordnance Information Coordination Center (MEOICC) from an organization concerned mainly with traditional explosive hazards such as landmines and unexploded ordnance, to one focused on IEDs.³²

As such, the solution to the IED was not just military but leveraged technological advances as well. Ground commanders began making significant efforts to counter the enemy networks that were required to build, deploy, and employ IEDs. Early on, these efforts were largely focused on finding and destroying caches of weapons material and a kinetic action against the IED triggermen. As the threat from IEDs increased, tactical commanders applied increasing resources and emphasis toward this effort. Intelligence and forensic analysis, surveillance and targeting of IED network members and programs offering rewards to citizens who would identify the location of IEDs or weapons caches all leveraged in an attempt to disrupt the enemy IED campaign.³³ Airlift transports to reduce the number of U.S. supply convoys leveraged U.S. air supremacy and America's

³¹ Ibid.

³² Smith, Andrew. *Improvised Explosive Devices in Iraq, 2003-09: A Case of Operational Surprise and Institutional Response*. Letort Paper. U.S. Army War College, Carlisle, PA: Strategic Studies Institute, April 2011: 22.

³³ Brobeck, *Protection, Risk and Communication*, 13.

asymmetric advantage in aerial capabilities. These efforts and others attempted to ensure that forces operating in Iraq and those preparing to deploy were well prepared to deal with the IED threat.

Analysis

Realist theory correctly predicts the occurrence of change as a result of the identification of the IED threat. However it is the characteristics or nature of the response, the belief that technology would enable forces to cope with irregular challenges at relatively low costs, which is explained by strategic culture. During the near decade long engagement in Iraq, the Pentagon waged the battle against IEDs in the classic American style: by spending billions and using advanced technology. “Congress is real good shoveling money to defense contractors,” said G.I. Wilson, a retired Marine colonel and military commentator. “There is a fixation with the technological fix for everything.”³⁴ This conforms to the techno-centric strategic culture of American forces through the industrial approach to warfare desire for minimal casualties, and pursuit of victory. Also supporting the strategic culture explanation is the role of the MRAP not only in protecting troops, but facilitating the annihilation of the enemy by firepower via speed, maneuver, and flexibility. Strategic culture also explains the lack of preparation for irregular conflict, as well as the application of conventional systems and tactics to non-linear operations.

While the innovative exploitation of technology has served as a vital asset in contributing to American military power, a strategic culture in which technology dictates

³⁴ Levesque, William. “IEDs Continue to Kill and Maim U.S. Troops despite Multibillion Dollar Effort.” *Tampa Bay Times*, September 27, 2012. <http://www.tampabay.com/news/military/war/ieds-continue-to-kill-and-maim-us-troops-despite-multibillion-dollar-effort/1253728>.

tactics regardless of the context can be detrimental to multiple levels of objectives.

Though the technological adjustments made by the force served to lessen the IED threat and protect troops in the field, these measures alone did not prove decisive in the conflict. Most importantly, IED countermeasures failed for the most part to positively change two of the most important IED metrics: IED detection rate and rate of incidents that injure or kill coalition forces. Since technological countermeasures are inherently reactive, they only served to mitigate the threat, not defeat it completely. Thus, the technological efforts did not significantly improve the ability of forces to detect IEDs prior to detonation, eliminating technology as the panacea American planners hoped it would be.

Supporting the explanation of strategic culture is the formation of an entirely new organization to address the IED threat, JIEDDO. This serves as evidence against organizational theory of a change, which would predict no change in American actions after encountering the IED. However, the unique composition of the organization brought together experts from various fields and professions, affording JIEDDO a degree of flexibility and outside the box thinking. This runs counter to organizational theory's prescription for highly rigid institutions with limited opportunities for adaptation. Rather, the perceived inflexibility or cognitive constraints on the part of JIEDDO emanated from American strategic culture. This is demonstrated by the overwhelming technical nature of JIEDDO's work, not only in the operational line of defeating the device, but in attacking the network and training the force as well. This substantiates the claim that organizational actions are dictated or informed by strategic culture. The creation of JIEDDO also does not conform to bureaucratic politics theory because the counter-IED effort was a defense-wide movement rather than the product of a few maverick officers and defense officials.

Bureaucratic politics does not play a significant role in interpreting the response to the IED, especially due to the advanced command and control capabilities of the American military. For example, the first forward-deployed troops that encountered the devices up-armored their vehicles with “hillbilly armor” and spare parts. These combat commanders were the first to realize the need for greater defensive mechanisms and protection to mitigate the effectiveness of IEDs. However, the actions of these combat commanders cannot be classified as part of bureaucratic political theory. Rather, their aggregate combat experiences and subsequent messages up the chain of command represent feedback in the combat operations process. This feedback was routine, and essential to the adjustment of battlefield indicators and measures of effectiveness. Thus makeshift armor, other tactical adjustments, and reporting did not represent maverick-type activities but rather standard operating procedures.

Conclusion

So much more than just roadside bombs, IEDs became the signature enemy weapon system in the Iraq war narrative. Insurgents used IEDs to great effect against the U.S.-led coalition, disrupting tactical operations, restricting freedom of action, inflicting considerable numbers of casualties, and psychologically impacting moral. These effects presented the most significant threat to the success of Operation Iraqi Freedom (OIF): the loss of domestic support. U.S. military officials report that great progress has been made defeating IEDs. Yet even after a decade of war in Iraq and Afghanistan costing more than \$1 trillion, U.S. troops continue to feel the presence of a weapon that can be assembled with parts costing less than thirty dollars.

As long as the United States maintains its significant margin of superiority in conventional military capabilities, future contingency operations will likely continue to place the Joint Force in confrontation with militarily inferior adversaries. If the Iraq experience is used as an indicator of future trends, these adversaries will remain highly adaptive and capable of applying the limited means available to them to successfully attack American interests.³⁵ This applies not only to non-state actors like militant or insurgent groups, but state actors as well. This includes ascendant state powers that desire resources and status, and are posturing to contest U.S. hegemony. These adaptive competitors are also translating lessons from recent conflicts into new concepts, capabilities, and doctrines tailored to counter traditional U.S. strengths while exploiting vulnerabilities. Consequently, the United States and its allies face an unprecedentedly varied array of threats, ranging from existential to potentially crippling systems.

It is easy to suggest that the U.S. military needs to be more adaptive and imaginative in confronting future threats, but this realization faces extraordinary difficulties due to the involvement of military culture; “Cultural change in large organizations represents an effort akin to altering the course of an aircraft carrier.”³⁶ Thus the challenge of adaptation proves even more daunting in the contemporary and future security environment considering the pace of technological advancement, the diffusion of political and military power, and the difficulty in intelligence analysis of meta-data.

³⁵ Kass, Lani, and J. Phillip London. “Surprise, Deception, Denial and Warning: Strategic Imperatives.” *Orbis, Foreign Policy Research Institute* 57, no. 1 (Winter 2013): 59–82.

³⁶ Murray, *Military Adaptation in War*, 327.

Chapter 5

Conclusion

Because of the growing complexity of weapon systems... and difficulties in disseminating this information, the potential for a technological failure and technological surprise not only lurks in the shadow but also becomes larger with time.¹

Azriel Lorber

How to make sensible adaptations in a world dominated by chance, harrow, misperceptions, and human frailty is the hard question that military institutions, no matter how sophisticated their technology, will confront far into the future.²

Williamson Murray

Introduction

Throughout history, nations have been confronted by unexpected threats that place them at a critical military disadvantage. These situations are an extension of the more general notion of military surprise, often achieved through the innovative application of technology, or a change in tactics or behavior. With globalization, the phenomenon of technological surprise, which this study has addressed as the intervening variable in the process of intra-war adaptation, is especially threatening as it increasingly functions across tactical, operational, and strategic levels. This development reflects the idea that while the nature of war is fairly constant; its characteristics are constantly evolving.

¹ Lorber, Azriel. *Misguided Weapons: Technological Failure and Surprise on the Battlefield*. University of Nebraska Press, 2002: 243.

² Murray, Williamson. *Military Adaptation in War: With Fear of Change*. New York: Cambridge University Press, 2011: 36.

Surprise and a successful response constitute a cycle that begins when the surprise emerges, putting the surprised force at a disadvantage by negating some aspect of its capability. The cycle continues as the surprised force responds; if it does so successfully, it nullifies the disadvantage and regains its capability.³ Nations and their military establishments have shown differing levels of agility in responding to battlefield surprises. Before a force can respond, however, it must recognize that it has been surprised; it must understand that familiar capabilities and accustomed reactions may not result in success. With that realization, an institution can begin to address the challenges of deciding how to organize and execute a response.

One of Williamson Murray's conclusions from his notable work on military innovation is that factors that drive successful innovation in peacetime are similar to those that drive successful adaptation in war. Both require imagination and a willingness to change. Both involve the awareness of the possibilities and potential for change. And both demand cultures that encourage the upward flow of ideas and perceptions, as well as direction from above. Particularly important is the need for senior leaders to encourage their staff and for subordinates to seek out new paths.⁴ While these qualities are not disputed, they are simply the processes of larger theories of change that I have outlined in this study.

There are substantial differences in the theories that govern inter-war innovation and intra-war adaptation. In peacetime, time, fog, and friction pose few significant challenges to the innovator. This affords realism, bureaucratic politics, and organizational

³ Smith, Andrew. *Improvised Explosive Devices in Iraq, 2003-09: A Case of Operational Surprise and Institutional Response*. Letort Paper. U.S. Army War College, Carlisle, PA: Strategic Studies Institute, April 2011.

⁴ Murray, *Military Adaptation in War*. Prepared for the Director, Net Assessment, Office of the Secretary of Defense. Alexandria, Virginia: Institute for Defense Analysis, June 2009: 8-4.

theory greater roles in determining the drivers or inputs of change. The subsequent process of innovation and its outputs naturally produce a unique strategic culture. In war, the opposite is true, as strategic culture instinctively guides decision-making. Nations involved in combat usually possess a plethora of resources, but time is limited and decisions are confounded by Clausewitzian fog. Those pursuing serious changes in doctrine, technology, or tactics have only a brief window of opportunity to adapt. This is when strategic culture, or way of war of a particular nation, predominately dictates the decision-making processes. This is not to say that elements of realism, bureaucratic politics, and organizational theory do not play a role in times of conflict. However, as the case studies show, each outcome is predominately explained by strategic culture. In effect, the strategic culture of particular military organizations formed during peacetime will determine how effectively they will adapt to the actual conditions they will face in war.

This relates to the idea of path dependence, or “that what happened at an earlier point in time will affect the possible outcomes of a sequence of events occurring at a later point in time.”⁵ This concept of path dependence, in which preceding steps in a particular direction induce further movement in the same direction, indicates that once a country has developed a unique strategic culture, the costs of reversal are very high, especially during wartime. There will be other choice points, but the entrenchments of certain institutional arrangements obstruct an easy reversal of the initial choice, especially after encountering technological surprise. As Paul Pierson argues, even if mistakes or failures are apparent, improvement through trial-and-error processes is far from automatic. In the

⁵ Pierson, Paul. “Increasing Returns, Path Dependence, and the Study of Politics.” *The American Political Science Review* 94, no. 2 (June 2000): 252.

context of complex environments, new organizations and policies are costly to create and often are complicated by learning effects, coordination effects, and adaptive expectations that they generate.⁶ As such, adaptability and flexibility must be incorporated into strategic culture and operational designs.

While path dependent analyses do not imply that a particular alternative is permanent and unchangeable following the move onto a self-reinforcing path, identifying self-reinforcing processes helps researchers understand why military practices are often stubbornly persistent.⁷ To avoid this outcome, two aspects of a nation's pre-war strategy must be addressed. The first is straightforward; avoid surprise by reforming prewar assessments in order to avoid erroneous one-sided predictions. As demonstrated by the preceding case studies, the victims of battlefield surprises have enjoyed the unequal balance of power, deriving satisfaction from their position of superior strength whether quantitatively, qualitatively, or both. As a result they often approach conflicts with limited perspective. This leads to the presumption that what is good for the stronger side is good for the weaker side. As the Egyptians learned between 1967 and 1973, a superior enemy can be beaten on terms other than those he seeks. There are many circumstances in which senior leaders fail to understand enemy innovations disregard their relevance to the battlefield. In most cases this is due to a decision-making trap; many leaders often choose to adhere to comfortable assumptions and time-tested constructs during war, failing to realize that the strategic environment in which they function has been fundamentally transformed. Rather, the optimal outcome is to exploit the potential for

⁶ Ibid, 260.

⁷ Ibid, 265.

innovation by fusing new concepts, technologies, approaches, and organizational structures with old, through integration and holistic thinking.

If the variable of surprise is given as a constant, or an inevitable outcome since strategists cannot foresee all enemy actions, the solution to overcoming both learning and predictive failures lies in strategic culture and adaptability. A defining characteristic of successful militaries, the taxonomy of adaptability includes the following: operational flexibility, operational agility, operational resilience, and operational responsiveness.

Future Threat Environment

According to Barry Watts, the former head of the Defense Department's Office of Program Analysis and Evaluation, the conduct of war is likely to change more fundamentally between 2011 and 2050 than it has since the early 1990s.⁸ If so, then the changes in the dominant cultures, operational concepts and doctrines, and organizations that the U.S. military services will need to embrace in coming years, will be more significant and wrenching than any they have had to make in the early 1990s.

The next several decades will likely experience a period of even greater discontinuous change than the past twenty years in both technology and warfare in the form of a military-technical revolution (MTR). Within this MTR, the expansion of the guided munitions regime will continue, along with the technological convergence of unmanned systems, cyber capabilities, and space systems to produce an entirely new war-fighting paradigm for the United States, its allies, and its adversaries. More generally, the fusion of robotics, global satellite communications networks, advanced sensors, and

⁸ Barry Watts, "The Maturing Revolution in Military Affairs," *Center for Strategic and Budgetary Assessments*, (2011): 14.

information technology will continue to create a new mode of data collection, awareness, and interaction across the globe that will allow for a new way of combat. The United States will be driven to these systems not only out of an operational necessity, but also because of their economic practicalities in terms of unit costs and relatively short production cycle. Moreover, many of these technologies are dual-use, complicating the ability to monitor the spread of militarily significant technologies as well as anticipate how they will be employed during a conflict.

Foreign powers have been quick to recognize the current and future utility of emerging systems like robotics. Therefore, in the years to come the United States will not be the only beneficiary of this game-changing technology, as it will likely be an area of intense competition. The barriers to entry for basic unmanned systems capability are already low and will continue to drop, raising the real potential that peer competitors and possibly nonstate actors will also field systems in growing numbers. In contemporary and future nonlinear operational environments, defense communities must be quick to recognize emerging platforms and capabilities in order to seize any first mover advantages and understand how systems may be applied to the battlefield. In this rapidly changing technology charged environment, the effects of decision-making failure will be amplified and ramifications far more severe.

The challenge for present and future American military leaders is the unpredictability of future opponents in major military operations, or the kinds of conflict and missions in which they will be involved. It is clear that the unprecedented lethality and effectiveness of many modern militaries has deterred opponents from massing on the battlefield, driving them to adopt distributed and dispersed operations. In addition, having

experienced or observed the cost of conventionally challenging nations like the United States directly, would-be adversaries are developing asymmetric approaches to circumvent superior power's core advantages while undermining international support and domestic resolve.

Therefore, future conflicts may range from hybrid contingencies against proxy groups using asymmetric approaches, to a high-end conflict against a state power armed with weapons of mass destruction or technologically advanced anti-access and area-denial (A2/AD) capabilities. One such example is the Chinese DF-12D anti-ship ballistic missile, or "carrier killer", the first weapons system capable of targeting a moving aircraft carrier strike group from long-range, land-based mobile launchers.⁹ These adversaries pose a significant challenge to the United States' vital interests at home and abroad. As Murray points out:

Such an international environment obviously carries with it serious implications for the U.S. military. It suggests that the threats to American interests, as well as those of its allies and partners, will range across the spectrum of conflict from peace keeping to peace enforcement to mid-level conventional conflict, all the way in the best case to deterrence, and in the worst case, war at the high end. Thus, the ability to adapt at every level of war from the tactical to the strategic and political would seem to be more important to the American polity and its military than at any time since 1941.¹⁰

The enemy is real, and with its own threat assessments and forecasts, it too adapts to the conditions it confronts, often in unexpected ways. As war is not static but rather a dynamic competition in learning, adaptation demands constant and unceasing change.

⁹ *Military Power of the People's Republic of China 2008*. A Report to Congress Pursuant to the National Defense Authorization Act Fiscal Year 2000. Washington, D.C.: Office of the Secretary of Defense: 2.

¹⁰ *Ibid*, 8-2.

Policy Prescriptions

In a 2008 article on the future of American effects-based operations (EBO), USMC General James Mattis outlined several principles involving future theaters of battle, underscoring the premium that should be placed on an adaptable fighting force.¹¹ Prospective enemies are increasingly adaptive and seeking to exploit asymmetries. As such, operations in the future will require a balance of regular and irregular competencies as dynamic operating environments present an infinite number of variables. All of these sources of complexity generate novelty and surprise since it is not scientifically possible to accurately predict the outcome of future enemy action. According to Mattis, to suggest otherwise runs contrary to historical experience, and the nature of war. In reflecting on experiences in Iraq and Afghanistan, the General described the error in thinking that what works or does not work in one theater is universally applicable to all theaters. He adeptly quotes Civil War General William Sherman, “Every attempt to make war easy and safe will result in humiliation and disaster.” History is replete with such examples and further questions the idea that predictability can strengthen American military doctrine.¹² While the concept of decision-making traps is not new, future changes will introduce an entirely new set of challenges, dramatically altering the way decisions are made on the battlefield.

In this environment, forces will be required to undertake a wide range of tasks at the same time, within the same geographical area, at short notice, and in complex terrain. To operate effectively, forces must be adaptable and able to coordinate efforts in a precise and discriminating manner. Modular forces manned with highly educated and skilled personnel with a capacity for network enabled operations and optimized for

¹¹ Mattis, Gen. James. “USJFCOM Commander’s Guidance for Effects-Based Operations.” *Parameters, U.S. Army War College* 38, no. 3 (Autumn 2008): 18–25.

¹² *Ibid.*

combat in combined arms teams will be required. These will incorporate traditional elements of air, land, and sea combat, as well as non-traditional elements such as civil affairs, intelligence, and psychological warfare capabilities with the capacity for protracted independent operations within a joint interagency framework over a distributed area of operations.¹³

To reaffirm Mattis' main point; war is fundamentally and irreducibly uncertain and unpredictable. Efforts to predict and control events in warfare will only mask the true complexity of the situation, rather than reducing or eliminating it.¹⁴ Therefore, the principles of adaptation in mobility, maneuverability, and responsiveness take on even greater importance. As military organizations anticipate future conflicts, analyze the political-military conditions under which they will occur, and assess the tactics each side will pursue, they must encourage a flexible force with a premium on adaptability. This sentiment is echoed in the 2014 Quadrennial Defense Review, a legislatively mandated review of DoD strategy and priorities that sets a long-term course in strategy and capabilities for the defense community:

Reflecting this diverse range of challenges, the U.S. military will shift focus in terms of what kinds of conflicts it prepares for in the future, moving toward greater emphasis on the full spectrum of possible operations. We will actively seek innovative approaches to how we fight, how we posture our force, and how we leverage our asymmetric strengths and technological advantages. Innovation is paramount given the increasingly complex warfighting environment we expect to encounter.¹⁵

¹³ Bassingthwaighe, Australian Army, Maj. Michael. *Adaptive Campaigning Applied: Australian Army Operations in Iraq and Afghanistan*. Fort Leavenworth, KS: School of Advanced Military Studies, United States Army Command and General Staff College, May 2011: 11.

¹⁴ Ryan, Alex. "The Foundation for an Adaptive Approach: Insights from the Science of Complex Systems." *Australian Army Journal* 6, no. 3. Science of Adaptation (Summer 2009): 73.

¹⁵ *Quadrennial Defense Review 2014*. Quadrennial Defense Review. Washington, D.C.: Department of Defense, Office of the Secretary of Defense, March 4, 2014: vii. http://www.defense.gov/pubs/2014_Quadrennial_Defense_Review.pdf.

The alternative rigid operational design and associated tactics, uniformed by the possibility of unforeseen challenges is dangerously misleading. The peril of oversimplifying a complex situation is that actions have unintended consequences that undermine the best of intentions and efforts.¹⁶ Complexity increases the incidence of second and third order effects because of interdependence, while simultaneously decreasing abilities to predict these effects. Resolving this apparent paradox requires acceptance that prediction may have a limited utility for effective interventions in a complex adaptive system.¹⁷

The task of twenty-first century strategists, senior officers, and combat commanders demands that the inevitable fog and friction of war be approached in the context of combat environments, factoring in a vast array of dynamic and increasingly complex variables. This requires rigorous, precise thinking and the ability to reconcile a wide array of threats, while choosing among a spectrum of responses. However, current capabilities-based and effect-based approaches to defense focus on improving existing capabilities while assuming that they will suffice to defeat future threats. EBO advocates believe that an enemy is a cognitive being that can be dislocated, shocked or disrupted into submission or negotiation by a series of offensive actions whose effects and outcomes can be calculated by an attacking force.¹⁸ This is can lead to an overly inward-focused effort that may serve to reinforce tactical and strategic norms rather than develop a greater culture of flexibility.

Future War as a Complex Adaptive System

¹⁶ Ryan, "The Foundation for an Adaptive Approach," 76.

¹⁷ Ibid, 84.

¹⁸ Kelly, Justin, and David Kilcullen. "Chaos Versus Predictability: A Critique of Effects-Based Operations." *Australian Army Journal* 2, no. 1. Special Edition: Effects-Based Strategy (Winter 2004): 87–98.

Chaos makes war a complex system, rather than a closed or equilibrium-based system. Consequently, combat requires constant adaptation to balance costs with potential benefits. As such, strategy, operations, and tactics must be developed through a holistic approach to decrease the risks of surprise. This suggests an alternative approach to EBO by focusing on the exploitation of the transformative potential of uncertainty and surprise, viewing it as an opportunity to disorient the adversary rather than a risk to mitigate.

All approaches to complex situations are based on the notion that adaptation is imperative. The U.S. Marine Corps was the first war-fighting organization to realize that complex systems science could help describe the complexity of war.¹⁹ In 1997, the Marine Corps' primary manual, *Warfighting*, was updated to incorporate insights from complex systems science:

War is not governed by the actions or decisions of a single individual in any one place but emerges from the collective behavior of all the individual parts in the system interacting locally in response to local conditions and incomplete information. A military action is not the monolithic execution of a single decision by a single entity but necessarily involves near-countless independent but interrelated decisions and actions being taken simultaneously throughout the organization. Efforts to fully centralize military operations and to exert complete control by a single decision maker are inconsistent with the intrinsically complex and distributed nature of war.²⁰

The science dictates that as complex problems have no central point of control, the execution of simultaneous lines of operation, as opposed to linear action, is the key to affecting lasting desired change on a system. In applying complex science to military science, "Linear metaphors, such a center of gravity, are still useful, however, care needs

¹⁹ Ibid, 73.

²⁰ United States Marine Corps. "Warfighting." *Marine Corps Doctrinal Publication* U.S. Government Printing Office, Washington DC, 1997.

to be taken in their utilization to ensure that they do not become the sole foundation of a planning process or operational framework.”²¹

As the USMC first demonstrated, operational art increasingly requires balancing design and planning while remaining open to learning and adapting quickly to change. Effective learning and adaptation, while campaigning or “adaptive campaigning,” is a key part of this evolving approach to military operations. Adaptive campaigning represents the art of assessing dynamic situations and developing designs, plans, modes of learning, and actions to keep pace. “Campaigning” refers to extended operations requiring balanced design and planning.²² Adaptive campaigning draws on complex systems science, particularly the theory of complex adaptive systems, which is different from other systems in the large numbers of internal mechanisms that are loosely but not sparsely connected. These flexible internal parts enable the system to survive as it adapts to unpredicted circumstances.²³ However, while variations in existing conditions result in minor adaptations to the overall system, it is not possible to forecast these outcomes in advance. Predictability in complex adaptive systems is limited to the qualitative emergent patterns rather than chaotic local details; specific causes cannot be linked to particular effects.²⁴

A military does not simply pursue adaptive operations, but rather, must fully integrate it within its strategic culture. For example, the Australian Army recently adopted the Adaptive Army Initiative, a formal doctrinal framework involving the

²¹ Bassingthwaighe, *Adaptive Campaigning Applied*, 28.

²² Wass de Czege, Brig. Gen. Huba. “Systemic Operational Design: Learning and Adapting in Complex Missions.” *Military Review*. Combined Arms Center, Fort Leavenworth, KA (February 2009): 2–12.

²³ Bassingthwaighe, *Adaptive Campaigning Applied*, 17.

²⁴ Rihani, Samir. *Complex Systems Theory and Development Practice: Understanding Non-Linear Realities*. London; New York: Zed Books, 2002: 80-105.

identification of a four-step adaptation cycle: act, sense, decide, adapt.²⁵ The first step, action, emphasizes that adaptation is proactive rather than reactive, and assumes that action will always occur in the face of uncertainty, and the emergence of novelty. Action stimulates the system to generate a response (such as forcing the adversary to unmask from below the discrimination threshold). The response serves as the basis for subsequent decisions. The final step, adapt, emphasizes that every action is a learning opportunity.²⁶

Adaptive campaigning does not function independent of strategic planning, but rather complements operations by imbedding absorptive capabilities within strategic culture to ensure flexibility and proper feedback loops. Feedback is essential; it assumes even great importance in non-linear environments in order to maximize positive feedback and counteract negative feedback. As such, the adaptation cycle involves the flow of information through networks of both positive and negative feedback in order to inform operational planning and emphasize adaptations as needed.

Conclusion

The basis of adaptive campaigning is to encourage national security establishments to increasingly become learning institutions, defined as an organization that uses new knowledge or understanding gained from experience or study to adjust institutional norms, doctrine, and procedures in ways designed to minimize previous gaps in performance and maximize future successes.²⁷ Organizational learning is a complex cycle involving several interconnected processes. Organizations that fail to learn are often

²⁵ Ibid, 23.

²⁶ Ryan, "The Foundation for an Adaptive Approach," 84.

²⁷ Russell, James A. *Innovation, Transformation, and War: Counterinsurgency Operations in Anbar and Ninewa, Iraq, 2005-2007*. Stanford, Calif.: Stanford Security Studies, 2011: 42.

stymied by factors such as cognitive beliefs by powerful leaders, organizational incentive structures that discourage creativity, or structural processes that block the transmission of knowledge.²⁸ These factors reflect themes in organizational theory and bureaucratic politics, on which much military innovation literature is based. While individual learning is necessary, it alone is not sufficient for organizational learning to occur. Organizations must possess a culture conducive to adaptation.

In the pursuit of adaptability, leaders must foster a culture that tolerates dissent. “The most critical variable for reform... may be its ability to tolerate dissent and balance such dissent with the ever-present requirement for discipline and obedience, which is the sine qua non of effective combat performance.”²⁹ If the organization approaches dissent and debate on fundamental issues in a thoughtful and consistent way, then individuals will be more apt to think and act in innovative ways, especially when encountering unforeseen battlefield scenarios.

An individual’s ability to learn effectively, adapt rapidly and appropriately, and to solve problems has always been valuable to commanders. Yet unlike bureaucratic politics theory, a command’s collective quality of design, learning, and adaptation is what determines results. Military leaders may value individual creativity, critical thinking, continuous learning, and adaptability in their staff and subordinate commanders, but individual traits do not necessarily equate with the collective abilities needed for the best outcomes.

²⁸ Davidson, Janine. *Lifting the Fog of Peace: How Americans Learned to Fight Modern War*. Ann Arbor: University of Michigan Press, 2010: 26.

²⁹ Winton, Harold R. *The Challenge of Change: Military Institutions and New Realities, 1918-1941*. Lincoln: University of Nebraska, 2000: xiv.

As demonstrated, winning wars often requires undergoing changes to a fighting force, whether through technological acquisitions, new tactics, or redefined operational concepts. The change requires an understanding of the bottom up, self-organizing sources of order and stability in addition to the top down, formal mechanisms for imposing order. Through a combination of theory, practice, and reflection, a fighting force can improve learning within a complex situation through strategic culture, thereby enhancing its adaptive capacity and by extension its survivability on future battlefields.

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