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ORGANIZATIONAL THEORY PERSPECTIVES TOWARD SUCCESS IN DYNAMIC ENVIRONMENTS

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THESIS

ORGANIZATIONAL THEORY PERSPECTIVES TOWARD SUCCESS IN DYNAMIC ENVIRONMENTS

by

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December 2018

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How can special operations forces balance present-day readiness with the requirement to stay ahead of potential revolutionary changes in the operating environment? This question presents a challenge to any organization—military or otherwise—that seeks to sustain a competitive advantage over time. The challenges of tomorrow are different from those of today, and organizations in changing environments must deal with the often-competing requirements for present and future success. Within the field of organizational study resides a deep and diverse body of work that addresses this issue from varying perspectives. This thesis reviews three of these perspectives—ambidexterity, the dynamic capabilities view, and organizational ecology—and extracts useful concepts for United States Special Operations Command to consider as it plans for the increasingly dynamic environments of the twenty-first century. Each field is reviewed in some detail, and key concepts or frameworks are reviewed and assessed for applicability. Ultimately, a concise summary of conclusions is provided along with recommendations for further study into matters that impact special operations' readiness in environments of evolutionary and revolutionary change.

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ORGANIZATIONAL THEORY PERSPECTIVES TOWARD SUCCESS IN DYNAMIC ENVIRONMENTS

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Submitted in partial fulfillment of the
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ABSTRACT

How can special operations forces balance present-day readiness with the requirement to stay ahead of potential revolutionary changes in the operating environment? This question presents a challenge to any organization—military or otherwise—that seeks to sustain a competitive advantage over time. The challenges of tomorrow are different from those of today, and organizations in changing environments must deal with the often-competing requirements for present and future success. Within the field of organizational study resides a deep and diverse body of work that addresses this issue from varying perspectives. This thesis reviews three of these perspectives—ambidexterity, the dynamic capabilities view, and organizational ecology—and extracts useful concepts for United States Special Operations Command to consider as it plans for the increasingly dynamic environments of the twenty-first century. Each field is reviewed in some detail, and key concepts or frameworks are reviewed and assessed for applicability. Ultimately, a concise summary of conclusions is provided along with recommendations for further study into matters that impact special operations' readiness in environments of evolutionary and revolutionary change.

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LIST OF ACRONYMS AND ABBREVIATIONS

AT&L	Acquisitions, Technology, & Logistics
AWG	Asymmetric Warfare Group
C4ISR	Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance
CBP	Capabilities based planning
DCV	Dynamic Capabilities View
DoD	Department of Defense
GCC	Geographic Component Command
HVI	High value individual
JCIDS	Joint Capability Integration and Development System
JSOU	Joint Special Operations Command
NDS	National Defense Strategy
NSW	Naval Special Warfare
O&M	Operations & Maintenance
RBV	Resource Based View
SMU	Special Mission Unit
SOF	Special Operations Forces
SOFCIDS	Special Operations Forces Capability Integration and Development System
TTP	Tactic, Technique, and Procedure
USSOCOM	United States Special Operations Command
VRIN	Valuable, rare, inimitable, and non-substitutable
VUCA	Volatile, Uncertain, Complex, and/or Ambiguous

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I. INTRODUCTION AND APPROACH

> The sobering fact is that the cliché about the increasing pace of change seems to be true. Sooner or later, discontinuities upset the congruence that has been a part of the organization's success. Unless their competitive environment remains stable—an increasingly unlikely condition in today's world—firms must confront revolutionary change.
>
> —Tushman and O'Reilly (1996, p. 12)

A. INTRODUCTION

In the mid-1990s, as the dust settled following the end of the Cold War and as the United States sought to understand its swift and decisive victory in Desert Storm, it appeared that a major paradigm shift in how wars would be fought was underway (Davis, 2010; Gray, 2006). Many perceived that the United States was experiencing a revolution in military affairs, one that would open the door to a new era of conflict typified by technology, information, and precision. The national leadership formulated new strategies which prioritized defense transformation and environment shaping (Goldman, 2011), and the Department of Defense (DoD) adopted a new capabilities-based planning framework to plan against a wide array of conflict scenarios (Davis, 1994). These efforts were interrupted (though not halted) by the events of September 2001, and the nation shifted gears again to fight a 17-year (and counting) long conflict against asymmetric terrorist and insurgent networks. Although it may be too early to declare that the Global War on Terror is winding down, the 2018 *National Defense Strategy* made quite clear that the national defense focus is reverting back to state-level adversaries. "Inter-state strategic competition, not terrorism, is now the primary concern in U.S. national security" (Department of Defense, 2018, Introduction).

The point of this short recap of the last 30 years is to demonstrate the trend of variation in the security environment. This trend can be traced back to before the modern era, and according to some as far back as the 14th century (Rogers, 2001). The trend is this: change over time consists of extended periods of relative uniformity, interrupted by occasional pulses

of fast, disruptive, paradigm-shifting change. The former is commonly referred to as *evolutionary change*, and the latter as *revolutionary change* (Murray & Knox, 2001).

Whether one can clearly determine which environment typifies the present, there are undeniable indicators that things continue to change quickly in multiple domains. In a recent conference, the United States Special Operations Command (USSOCOM) Commanding General talked about how developments in information access and dissemination are fundamentally changing the intelligence cycle (Thoennes, 2018). Ground operators now have real-time access to Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) and technology-enabled situational awareness tools that ten years ago resided only in the most modern of operations centers (see Ferriter, Schupp, & Wetteland, 2017). Autonomous machine technology in the commercial sector is accelerating at an exponential pace, as is data collection and data processing.[1] In the social domain, the Arab Spring of 2011 demonstrated new volatility of local acts—that the response to a single event can "go viral" and initiate immediate, widespread, and unpredictable social and security repercussions (BBC News, 2013).

All of these factors create a powder-keg dynamic, where an incremental change in one field could potentially trigger paradigm-shifting change in the security environment. This is perhaps a new form of volatility, in which small catalysts in the form of technological gains, social events, or even natural events (such as natural disasters) have the potential to trigger widespread or accelerating (or both) environmental change. This new volatility represents a departure from the bipolar, mutually assured destruction, world-destroying volatility that typified the delicate balance of power during the Cold War.

This situation presents a planning challenge for organizations, and particularly defense organizations. The always-present possibility of revolutionary change tomorrow does not override the criticality of readiness and success today. In fact, the same conditions that make drastic change an imminent possibility in the future, also make war and conflict a real possibility in the present. According to Imlay and Toft (2006), "given that war is

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[1] See Moore's Law, the prediction that processing capacity doubles every eighteen months, which has held true since the invention of the computer in the 1960s (Schaller, 1997).

always possible, if not probable, planners must closely follow short-term events and developments, tailoring their plans to unexpected changes. At the same time…a long-term planning vision is necessary" (p. 252). The military therefore does not have the luxury of looking solely into the future, as it must maintain a high state of readiness in the present. Described in business literature as a central "paradox of administration" (Thompson, 1967, p. 150), the military faces a situation in which investing in readiness for the future may entail being less effective today, and vice versa (Betts, 1995). In the military, it could accurately be referred to as the central paradox of readiness. For USSOCOM, who has forces persistently engaged in conflict zones around the world, addressing this paradox is a central issue.

Special Operations Forces (SOF) are both reputed and doctrinally mandated to be adaptable and innovative (Department of Defense, 2014, p. I-2). Both are distinguishing traits that make SOF unique amongst the wider military, and add to their strategic value (Spulak, 2007, 2010). Tucker and Lamb (2007) describe SOF as models of organizational adaptability that should be emulated by conventional forces (p. 185). Others (Martinage, 2008; Yarger, 2013) espouse SOF's adaptability as one of their key competitive advantages. SOF are widely recognized as, to use Edward Luttwak's term, a quintessential "outward regarding" military organization (Luttwak, 1983, p. 336); attuned to and constantly reconfiguring to meet the demands of the external environment.

However, SOF organizations are still organizations, and as such there is a limit to how much and how fast they can change and adapt. Maximum adaptability is but one strategic posture for dealing with change, and it should not be the only one (Courtney, Kikland, & Viguerie, 1997). Aside from being a one-dimensional approach, adaptability has its limits, as recognized by Helfat (2007):

> With all the current enthusiasm for reinventing the corporation, in all its various scholarly and practitioner forms, we must not lose sight of the fact that organizations have far from unlimited opportunity or flexibility. (pp. 118–119)

Similarly, as much as the military likes to push innovation as a priority, aggressive innovations challenge the essence of bureaucracy (Downs, 1967). These bureaucracies, according to

Huntington (1961) and Halperin and Clapp (2006), seek to preserve themselves, and therefore may resist innovations that upset the status quo.

If one accepts that adaptability is fundamentally limited, it brings the issue of balancing present versus future readiness to the fore. Organizations cannot assume that they can simply adapt their way to success, especially in highly dynamic or volatile environments. Therein lies the challenge: an organization with constrained flexibility must pursue two different strategies simultaneously: succeed in today's world, while preparing for tomorrow's.

B.   RESEARCH QUESTION AND APPROACH

This paper's central research question is this: How can USSOCOM prepare simultaneously for environments of evolutionary and revolutionary change? It hopes to shed light on balancing USSOCOM's number one and two priorities: *Win* and *Transform* (Thomas, 2018).

This study directly addresses the Joint Special Operations University (JSOU) 2018 Special Operations Research Topic C8: "Evolutionary and revolutionary change and the implications for SOF" (p. 18). An extract from this topic summary captures the essence of the research topic:

> While SOF remain dedicated to constant technological innovation, there is a growing tension between evolutionary change based on improvements to existing paradigms of warfare and revolutionary change based on the introduction of radically new concepts, technologies, and/or environmental conditions. To avoid strategic surprise, USSOCOM must maintain a foothold in both evolutionary and revolutionary advances. (p. 27)

The level of analysis for this study is USSOCOM as a whole, rather than any specific subordinate organization or line of effort that focuses on innovation or process development. It recognizes that there are significant and focused innovative efforts already underway by various USSOCOM agencies or within its extended commercial network. The importance of adaptability in dynamic environments is widely recognized, so reinforcement of the value of adaptability is not necessary. The intent, rather, is to search unorthodox, perhaps unexplored, corners of organizational theory to see if there are some new or novel perspectives or

approaches that are possibly not already considered. These themes warrant consideration by SOF planners for future force structure, resource allocation, or innovation-centric decisions.

This thesis reviews three distinct fields of organizational theory, and draws several relevant concepts for USSOCOM to consider when confronted with conflicting demands of short and long-term planning. The three fields provide varying perspectives on the issues inherent in organizations and changing environments. The first field, *ambidexterity* confronts the problem directly, and recognizes the dichotomy between continuous and discontinuous change. The second field, *dynamic capability* discusses how organizations develop internal mechanisms that create a propensity for adaptability. The third field, *organizational ecology* provides a unique perspective on organizations' interactions and relationships with environmental variables.

C.   CONCISE SUMMARY OF RECOMMENDATIONS

Several recommendations emerge from this review of varying organizational theory perspectives. Separated by field, the following is a concise summary of these recommendations:

1.   **Ambidexterity**: Delineate between incremental and explorative innovation, and structurally differentiate in order to buffer exploratory units from bureaucratic and structural inertia. Instill and emphasize integration mechanisms between exploitive and explorative entities, and ensure that this integration spans USSOCOM's vertical hierarchy.

2.   **Dynamic Capabilities**: Recognize, develop, and foster those internal processes and capabilities that enable the organization to reconfigure its resource base. Simplify routines and processes in dynamic and complex environments. Mitigate path-dependency and "success traps" by exercising dynamic capabilities even during times of success or stability.

3.   **Organizational Ecology**: Maintain variation in capabilities and innovative pursuits. Resist isomorphism, and ensure that SOF maintains an excess

capacity in a wide variety of capabilities that may be required in future environments.

To integrate the three, the author summarizes that decentralization, variation, and flexible processes provide fitness in dynamic and uncertain environments. All three perspectives recognize the change-stifling effects of structural inertia, which is reinforced by repetition, success, and constancy. Ultimately, there is no universal solution to this challenge, but the ideas presented in this paper may widen the aperture of possible approaches.

D.   ORGANIZATIONAL STUDIES IN THE MILITARY

Augier, Knudsen, and McNab (2014) highlight a gap between organizational studies and military organizations. The authors point out the following:

> While the field of organization studies is mostly concerned with issues relating to business organizations, there is great potential in closer interaction between the fields of organization studies and military organizations. Asymmetric conflict, technological change, and challenges related to organizational design challenge today's militaries and have dramatically impacted military decision-making and behaviors. (p. 1417)

Like Augier et al., this study proposes that a more concerted effort to connect organizational studies to military organizations would be mutually beneficial to both.

Military studies have in fact tapped into the more prominent organizational design theories and approaches for analysis of military organizations. For example, Mintzberg's (1981) five configurations have become a common analytical framework for Naval Postgraduate School theses that analyze military organizations (see Hill, 2008; McCray, 2001; Tyynismaa et al., 2006). Galbraith's star model (Galbraith, 1995), which offers a framework for assessing organizational design, also appears regularly in military organization studies (see Lynch et al., 2018; Montes, 2007). Rothstein (2006) relies heavily on contingency theory (Donaldson, 2001; Lawrence & Lorsch, 1969), as a useful model for analyzing SOF. Military analysts, it would seem, do in fact leverage the field of organizational design to study the function of military organizations.

The inverse would appear to be less prevalent. With the notable exception of studies coming out of the RAND Corporation, the literature from the fields of organizational theory

and management largely ignores the military organization as the subject of focused analysis (Augier et al., 2014). Instead, analysis of organizational forces that affect military organizations have emerged in the political science literature, in which the military organization is considered an institution within the broader governmental or national security context (Halperin & Clapp, 2006). Organizational concepts are also invoked at the international strategic level, as in Posen's (1984) analysis of drivers of innovation between European nations between the world wars. While there is no doubt that military organizations are affected by forces originating out of the political or governmental sphere (such as defense budget and foreign policy), in the realm of innovation and future investments one may expect more overlap with business firms, who also seek competitive advantage and survival. As such, an analysis of military organizations using organizational theory concepts is warranted.

E.   APPROACH AND METHODOLOGY

The three perspectives reviewed in this study—*ambidexterity*, *dynamic capabilities*, and *organizational ecology*—were selected specifically because of three criteria: 1) they address the issue of performance in changing environments, 2) they are each distinct in their perspective and their resultant implications, and 3) there is little or no available literature that assesses the utility of each to military organizations. The aim of this study is to extract insights from each theory that set the stage for further research and policy implications, rather than test rigorously any of the fields in depth.

Chapter II provides a broad overview of the relationships between change and organizations, and highlights how change offers both opportunities and challenges. Chapters III through V contain studies of the three organizational perspectives. Chapter VI coalesces the implications from each, and provides a comparison of their respective values. It concludes by making recommendations for further study based on the findings and analysis.

F.   STUDY LIMITATIONS

There are many ways to address the research question at hand, and this study takes a limited approach that hopes to reveal avenues for further study or force planning research. As such, it is deliberately narrow in scope, and does not claim to be a holistic look at all the potential avenues to pursue innovation or fitness in dynamic environments. As discussed in

the final chapter, practical application of these theories will require more in-depth study, either via empirical "real life experiments" (Krohn & Weyer, 1994) or select case study analysis.

Also, this study is not predictive in nature. Despite addressing how to prepare for future states of the world, it steers clear of making any specific forecasts or estimations of what these future states may entail or when they may occur. Informed predictions and intelligence assessments are absolutely critical to the formulation of strategies, but this study focuses instead on potential organizational reform to address future states.

Much of the approaches or concepts discussed in this thesis are already being put into practice by various elements within the U.S. military, so these concepts are not completely groundbreaking. For example, the recent establishment of the Army Futures Command represents a major adoption of a partitional ambidexterity approach—by creating a separate and distinct organization within the Army to focus on exploratory innovation (Lacdan, 2018). USSOCOM also already invests in dedicated, differentiated, and specialized organizations that focus on highly dynamic fields of innovation, either in Special Mission Units or internal departments that focus on technological innovation and acquisition. Naval Special Warfare has historically undergone significant internal reorganizations approximately every two decades, in essence demonstrating an adaptive dynamic capability (see Chapter IV, section B.1). Each of these examples shows that the concepts discussed are already put into practice be elements of the military or SOF.

Nonetheless, the ideas and concepts highlighted in this thesis are intended to illuminate how SOF looks at the issue of organizational and environmental change. Much of the ideas contained herein are intuitive, as indicated by the fact that SOF organizations already subscribe to many of the principles in practice. In this light, this thesis may serve only to reinforce an already existing understanding of the value of specialization in the modern dynamic conflict environment.

II.   A PRIMER ON CHANGE

This chapter provides a background on evolutionary and revolutionary change environments and some of their implications for military organizations. The concept of discontinuous change is addressed widely in both military and organizational literature, and before delving into the specific approaches in the following chapters, it is useful to discuss the background and factors that make this issue relevant and important.

A.   THE NATURE OF CHANGE

Murray and Millett (1996) describe evolutionary progress as "natural and the result of a dynamic environment in which organizations must accept change if they are to survive" (p. 5). According to this view, the parallel evolution of militaries in evolutionary change domains is ultimately a survival necessity. In these gradual or incremental change environments, organizational behavior is well explained by organizational contingency theory (Lawrence & Lorsch, 1969). Contingency theory emphasizes congruence, or "fit," between the organization and the contingencies, internal and external, that affect it. It explains that an organization is "shaped by the contingencies, because it needs to fit them to avoid loss of performance. Organizations are seen as adapting over time to fit their changing contingencies so that effectiveness is maintained." (Donaldson, 2001, p. 2). This theory is very appropriate for explaining how military organizations evolve in parallel with evolutionary environments. It does not explain, however, why an organization would deliberately upset this equilibrium. Donaldson (2001) recognizes this gap in the theory, when he states, "an organization in misfit moves into fit, but is then assumed to stay there. There is no theory of why the organization moves out of fit into misfit in the first place" (p. 247). To understand this, one must look to the nature of revolutionary change.

Most scholars recognize that change is not strictly evolutionary, but rather that is best described as a punctuated equilibrium (Gersick, 1991) consisting of long periods of relatively gradual or linear change, interrupted by periodic disruptive paradigm shifts. However, there is not a consensus across literature regarding what fundamentally breaks up the otherwise continuous evolution of military history. Murray and Knox (2001)

describe the history of military affairs up to modern times as a pattern of continuity broken by five major revolutions, beginning with the creation of large nation state armies. These military revolutions are marked by widespread change that "recast[s] society and the state as well as military organizations" (pp. 6–7). By this description, to be considered a revolution the changes must permeate across the social and/or political domains. Arquilla and Ronfeldt (2000) provide a different perspective, as they divide military history and doctrinal evolution into four "paradigms," which describe the "fundamental forms of engagement" (p. 7) taken by military formations.[2] This view of the military evolution-revolution history focuses on operational or even tactical discontinuities, specifically on the interaction of forces. A third perspective, offered by Lind et al. (1989) divides modern warfare into four distinct "generations," in which the transitions are a product of advances in weaponry, resultant changes in tactics, and (in the case of the current generation) information and technology. This view is focused on the means of engagement, or the primary tools with which warfare is waged. Van Creveld (1989) divides the evolution of warfare based on the primary technological drivers of different eras. His account breaks military history into four phases: the ages of tools, machines, systems, and automation. Each of these phase's metaphors captures the method through which militaries sought competitive advantage on the battlefield during the time period. In a similar vein, Bousquet (2009) divides the chronology of the science of warfare—or "the manner in which scientific ideas have been systematically recruited to inform thinking about the very nature of combat and the forms of military organization best suited to prevail in it" (p. 3)—into two eras (or "regimes") that describe how warfare is perceived, studied, and treated by military theorists.

Each of these shows that there are different optics on how to fundamentally divide the military history into continuities and discontinuities. Regardless of how one divides the history of warfare, however, it is typically in the transition between these states where revolutions occur, as these transitions usher in a new era.

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[2] These paradigms are the melee, massing, maneuver, and swarming, the latter emerging out of and enabled by the information revolution.

1. Competitive Advantage

These transitions, or periods of revolutionary change, offer opportunities for militaries to seize competitive advantage. As organizational inertia moderates institutions' responsiveness to new technology, processes, or ideas, those organizations on the leading edge of this change—the early-movers—gain several distinct advantages. First, from a Schumpeterian perspective,[3] emerging domains offer an immediate advantage to those who are the first establish a foothold. This competitive advantage holds until others are able to re-establish competitive equilibrium. This process is best exemplified by the United States' development of the nuclear bomb during World War II (WWII). Atomic weaponry was an emerging field—a domain of revolutionary change—and the United States was the first to achieve the capability. By gaining the first foothold, the United States gained an immediate strategic competitive advantage, one which it used shortly thereafter to end the war. However, this competitive advantage quickly waned in the post-war years as the Soviet Union acquired a similar capability in 1949, and the uncomfortable equilibrium of nuclear deterrence remains to this day.

2. Strategic Surprise

There is another advantage of being a revolutionary change early-mover. Those on the leading edge of revolutionary change buffer themselves against strategic surprise from adversaries or competitors who are also on the leading edge. In the 21st century, the emerging and fast-paced domain of cyber-warfare provides a useful example. Arquilla and Ronfeldt, in their 1993 article "Cyberwar is Coming," predicted that cyber warfare would represent the major paradigm shift in warfare in the 21st century, one which would "span the gamut of intensity—from conflicts waged by heavy mechanized forces across wide theaters, to counterinsurgencies" (p. 43). Cyber-warfare's ubiquity reinforced the need to pursue in it an understanding and capability, if not to gain an advantage, then to mitigate vulnerability to it. As they state, "the future of war—specifically to anticipate and wage

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[3] Schumpeterian economics (Schumpeter, 1939) is based on the ideas of Joseph Schumpeter (1883-1950) that center around economic growth. The Schumpeterian view holds that organizations gain market advantage by changing or introducing products or ideas to the marketplace, and sustain that advantage until the competition imitates or replicates those products or ideas.

war—will be shaped in part by how these technological advances are assessed and adopted" (p. 25). Implied here is that failing to move early on cyber-warfare technology and capability would make a nation, in this case the United States, vulnerable to attacks and strategic surprises executed by cyber warfare's early movers.

New technology and forms of warfare are not the only sources of surprise. Others include "random events, historical discontinuities, trend reversals, systemic transitions, individual actions, or the actions of others" (Crocker, 2008, p. 177). Buffering against all potential sources of surprise is difficult, if not impossible. In fact, Gray (2009) asserts that surprise is not completely preventable, as he states: "By definition, the enemy controls surprise. He has the initiative. If this were not so, the events in question would not be surprises." (p. 99). In other words, as long as there is an enemy with free will and an ability to act, there exists the potential for surprise. However, I argue that while an organization cannot completely mitigate surprise, it does have a say in what kinds of surprises it is more or less vulnerable to. Even if the military cannot predict with precision the next strategic surprise, it can and should consider what kinds of "surprise risk" it is willing to assume. Finkel (2011) agrees, and claims that instead of trying to predict the future, states should "[concentrate] instead on the outer limits of technical developments from which the next technological and doctrinal surprise is likely to emerge" (pp. 223–224). Decisions on innovation vectors should factor in the varying levels of risk posed by uncertainty and strategic surprise in different domains. Our earlier cyber-war example illustrates this phenomenon at play in recent decades. By investing in extensive cyber-focused research, training, and defensive measures, the United States drives down the risk of being surprised by a cyber-attack. The same approach can be made in other domains, domains in which the consequences of strategic surprise are most severe.

B.   INNOVATION: TECHNOLOGY AND DOCTRINE

> How armed forces, weapons technology, and human society at large can continue to coexist is, indeed, a capital question of our age." (McNeill, 1982, p. viii)

A preponderance of the literature on change in the military realm focuses on technological progress. As the tools of warfare evolve, the ways in which warfare is fought

fundamentally changes. O'Connell (1989) discusses not only how the evolution of weaponry as an integral consideration when studying the evolution of warfare, but also that this evolution has effected political history. He claims that "it is impossible to separate weapons from war and politics. They are interwoven threads in a single tapestry" (p. 12). The influence of military technology extends, as several historians contend (McNeill, 1982; Boot, 2006), not just into the political realm, but also into social and industrial history. These viewpoints would tend to elevate technology's status as a (if not the) driver of modern human history.

However, Black (2013) reminds us that history must not view technology as an independent factor, but rather that is an extension of the human societies that create it. Even the adoption of new technologies is a function of many complexly interrelated factors, of which the technology itself is only one. He states that "whether something is adopted successfully may be decided by all sorts of reasons unconnected with technical merit: it is not the technology itself but the response to it that drives change" (p. 53). In other words, the technology is only as effective as the response it creates. The nuclear bomb has only yielded direct effects twice in its history, both in August 1945. But the response to its existence has shaped the history of the last 70 years.

Technology may be a major driver of the pace of change, but success in these new technologically intensive conflict environments "not only mean[s] obtaining high-tech platforms, but also effectively optimizing forces to supply, use, and command them" (Blank, 1997, p. 61). Simply innovating and adopting cutting-edge technology is not enough in and of itself; organizations must be able to adapt themselves to leverage new technologies. Furthermore, adoption of new technology may have a darker side. Pursuit or acquisition of new technologies can distract a service from its core competencies, or deepen rifts with other services. Bergerson's (1980) account of the U.S. Army's campaign to develop its own attack helicopter highlights this potential. In this case, decisions regarding technology acquisition were significantly affected by the bureaucratic politics of the services, and inter-service conflicts were exposed and exacerbated. New and emerging technology is not a strategic panacea, but a tool that needs to be managed and purposefully integrated.

An example of effective integration of technology into military systems can be seen in the Germans in the early years of WWII. As highlighted by Posen (1984), the Germans combined inter-war innovations in mobile armor and air power to their new doctrine of the Blitzkrieg offensive. The French, in contrast, "were *much* more conservative in their approach to changes in air, armor, and communications technology than were the Germans" (p. 85). Add to this France's highly defensive and conservative mindset developed during the interwar years, one of "firepower over movement, defense over offense, and 'tactical security' over risk" (p. 85), and one can grasp the asymmetry between the two forces during the Battle of France in 1940. In the early years of the war, German doctrinal innovation manifested as speed and destruction, particularly upon the land forces of the Allies in France and Belgium. This advantage was not the result of some major technological advantage that the German possessed. The French and British had been developing tank technology during the interwar years much in parallel with the Germans (Murray, 1996). Yet, Germany was the early mover in the domains of doctrinal and organizational innovation, as they developed a "revolutionary *approach* to war" (Murray, 1996, p. 7, emphasis added) which gave them a significant (if not sustained) competitive advantage in the land battles of 1940.

Doctrinal and organizational innovation is just as critical today as it was during the interwar years. In fact, in the asymmetric wars common in the modern age, these doctrinal and organizational innovations may prove more decisive than technological ones. Boot (2006) supports this position, when he says that "countering [irregular or unrestricted warfare] will require much more than simply buying more advanced aircraft, tanks, or submarines" (p. 473). As history has proven time and again, high-tech gadgets cannot fully mitigate complexity, and they cannot compensate for bad strategy. However, innovative approaches to complex problem sets can be decisive. Between 2005 and 2007 in Iraq, a new strategy that empowered Sunni leaders and linked them to the Iraqi government, coupled with a military campaign that emphasized counterinsurgency doctrine, turned Anbar province from one of the most violent of Iraq's sectors, into one of its most stable (Knarr, 2015). This was not due to a new technological capability or the introduction of

some new platform to the area of operations, but rather to an innovative approach to the problem set.

The United States has, however, greatly benefited from the acceleration of technology's progress and influence on modern warfare. Berkowitz wrote in 2003 that "the American military is overwhelmingly stronger than any of its potential adversaries. This is mainly because it has been more successful in taking advantage of information technology" (pp. xi–xii). The recent NDS, however, recognizes that the competitive advantage that the United States has enjoyed in technology domain is shrinking fast:

> For decades the United States has enjoyed uncontested or dominant superiority in every operating domain. We could generally deploy our forces when we wanted, assemble them where we wanted, and operate how we wanted. Today, every domain is contested—air, land, sea, space, and cyberspace. (Department of Defense, 2018, p. 3)

Is the United States and its military still riding the wave of early mover advantages it gained in the 20th century?[4] The gap is closing perhaps not so much because the United States is slowing down, but more likely because others are catching up. The competitive advantage that it once owned is now harder than ever to maintain. Goldman (2011) points out that in a world of increased interconnectedness and complexity, revolutionary changes in technology "diffuse more rapidly, to a greater number of actors, with a greater diversity of outcome, producing more uncertainty about relative capabilities and about how new technologies will be leveraged" (p. 15). So technological advantage, while increasingly important, is also increasingly difficult to protect and sustain.

In this environment, new technologies may provide competitive advantage only for a short amount of time. Once they diffuse and are adopted by competitors, the playing field is once again level and the competitive advantage that a technology initially provided is lost. The United States is beginning to see this process in several domains. SOF used to "own the night" due to its monopoly on night vision technology; now this very technology is available and accessible to almost all potential adversaries. In Syria, ISIS is using small

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[4] These advantages did not always translate into military successes (example: the United States failures in the Vietnam War). Competitive advantage is just that–an advantage–and is not decisive in and of itself.

unmanned aerial vehicles against United States and coalition forces; only a few years back the United States enjoyed a monopoly on this technology system (Almohammad & Speckhard, 2017). The United States' (and the West's) technology gap is closing, and one might also argue that the time windows of technology-based competitive advantage are shrinking. As such, the military must become that much more adept at staying at or ahead of the front line of technological change, lest it risk being surpassed by adversaries.

The previous section has shown how innovation and investment in technological and doctrinal change provides both competitive advantage and a buffer against strategic surprise. Being an early mover, however, entails and often requires organizational change. It requires a break from the "natural" evolutionary state of both the environment and the organization. There are forces, however, that constrain an organization's propensity to change, even when early-mover advantages are evident. The next section discusses these forces.

C.   INSTITUTIONAL INFLUENCES AND IMPEDIMENTS TO CHANGE

1.   Bureaucratic Inertia

There is tension in the military, especially since the middle of the 20th century, between traditional, hierarchical, and rule based organizational structure, and the demands for flexibility and innovation that are levied upon it in the uncertain environments it operates in. As articulated by Stone (2002):

> Military organizations are designed to operate in the uncertain environment that characterizes war, with the result that they have established modes of procedure that are intended to minimize uncertainty, but that may also stifle flexibility. Strict discipline and rigid hierarchies, along with standard operating procedures, drills, and parsimonious forms of language, contribute to an intellectual climate that is inimical to creative thought. (p. 188)

The source of much of this reported change resistance resides in the nature of bureaucracy itself. In this way the modern military functions much like large industrial or business organizations, as noted by Hilsman (1987): "War is a large-scale enterprise; like other large-scare enterprises, it has bureaucratized" (p. 200). This "bureaucratization" is touted by Weber (1964) as a beneficial for large firms, as it provides efficiency and predictability.

As an organization becomes bureaucratized, it becomes machine-like and increasingly immune against human error in operations. However, contemporary authors such as Halperin and Clapp (2006) recognize these benefits come at the cost of flexibility:

> The bureaucratic system is basically inert; it moves only when pushed hard and persistently. The majority of bureaucrats prefer to maintain the status quo, and at any one time only a small group is advocating change. The time and resources of any one person in the bureaucracy is limited, and when a participant does desire change, he or she must choose carefully the issues on which to do battle. (p. 99)

This view is shared by Rosen (1991), who goes one step further and says that in a bureaucracy non-innovation is the "natural state" (p. 5), and that innovative pursuits are the exception to bureaucratic norms. Rothstein (2006) sees the effects of bureaucratization permeating large military organizations, which he argues makes them not only innovation resistant, but also inefficient. In his words:

> As previously noted, an attrition-based military force is inward regarding. This quality, in a country with large armed forces, cannot help but produce a complex internal structure that is overregulated, bureaucratic, and rigid to a point that inhibits innovation. Additionally, internal operations in large, inward-regarding organizations have a tendency to absorb a great deal of the energy of staffs and commanders, thereby reducing the amount of effort available to tackle the intricacies of external issues. (p. 3).

These references demonstrate that there is a wide recognition that, despite the value they may provide in efficiency, high levels of bureaucratization create what is termed *inertia.* This inertia is recognized also throughout organizational literature, including the three fields reviewed in this study. Change resistance, however, is not limited to bureaucratic inertia. It can also be found in the military or political culture, in the form of competing interests and incentives.

2. Organizational Essence and Inter-service Competition

Halperin and Clapp (2006) cite an organization's *essence*—defined as "the view held by the dominant group within the organization of what its missions and capabilities should be" (p. 27)—as a potential change constraining factor. According to this view, an organization will actively resist changes that disrupt or take away from its essence, pursue

those that support or advance it, and passively resist those that it perceives as indifferent. Allison and Halperin (1972), in their Bureaucratic Politics Model, also cite this tendency, not so much as a change constraining function, but rather as a influencer of the predispositions of bureaucratic "players" in the national decision making apparatus. They (Allison & Halperin) explain that bureaucracies make policy-level decisions based on "no consistent set of strategic objectives" (p. 43). Instead, their decisions are based largely in their own organizational interests, which include increased autonomy, leverage, and resources.

In a similar way, Admiral William Owens (2002) claims that military service parochialism inhibits military innovation. He argues that because ideas for change and innovation "have to make their case in four separate courts in which each 'jury' evaluates the arguments in terms of what is best for their single service" (p. 212), innovations may get stymied by inter-service power struggles. Builder (1989) is also a critic of inter-service tensions and the misalignment of interests that results. He points out that "the services' dominant concepts of war probably serve their peacetime institutional interests better than they serve their preparedness for the next major war" (p. 127). Both service parochialism and Allison and Halperin's Bureaucratic Politics Model demonstrate that there exist systems of competing interests within the military and defense structures. They predict that decisions and incentives of organizations are not necessarily always in the direction of beneficial change.

The effect of organizational essence is evident in the Twentieth Century history of the battleship in the U.S. Navy (O'Connell, 1991). Despite the fact that it had been proved vulnerable to air attack, and despite the rise of the aircraft carrier, many saw the battleship as the iconic symbol of power at sea. Although it experienced a major decline and constituted a small portion of the naval fleet, the battleship remained in service, continued to absorb resources, and was periodically employed through the 1980s. From WWI on, the battleship demonstrated time and again that its operational utility was marginal at best, especially when one considers its extremely high price tag ($2 billion per vessel in the 1980s). However, it can be argued that the battleships extended service life is largely

resultant from the fact that it was perceived by many to represent the Navy's core *essence*— the ability to project power from ships.

It is worth pointing out that Boot (2006) says that this tendency to retain legacy platforms in the face of revolutionary innovations is not only common, but sometimes prudent. The invention of some new technology or weapons system does not, he argues, "necessarily sweep aside all old weapons and old ways of doing things" (p. 467). Rather, he argues, militaries transition deliberately as new technologies come online, and hold on to platforms in order to ease the transition into new paradigms. It can be argued however, especially in the case of the battleship, that inertia and organizational essence can cause this transition period to extend well beyond what is necessary to adjust to new ideas or technologies. The challenge often resides in making the difficult distinction—when is old technology useful as a bridging function, and when is it time to discard it?

D. SUMMARY

This chapter has discussed briefly some implications of change, both environmental and organizational, which apply to the military domain. It reviewed the concepts of continuous and discontinuous change, early-mover advantages, integration of technology, and impediments to change (inertia and essence). These have been addressed in broad terms, in order to establish a conceptual starting point from which to delve into the organizational perspectives described in the next three chapters.

The three approaches reviewed come from different lineages within organizational theory and provide different contributions to the discussion. Each has a substantial amount of literature within the field of organizational study, but has not been significantly assessed for relevancy for military innovation research. *Ambidexterity* provides an approach to pursue incremental and exploratory innovation simultaneously. Its implications have to do with the structural differentiation and integration mechanisms that link differentiated departments. *Dynamic capabilities* offers an inward look towards different capabilities to change, adopt, and create resources and processes in response to environmental change. *Organizational ecology* controls for adaptability, and offers an environmental selection approach to organizational change in varying and dynamic environments.

Each chapter will begin with a background and literature review of the topic, and then provide an overview of the central concepts. The final section in each chapter will provide an assessment of the central takeaways and their applicability to today's SOF force.

III. THE EXPLOIT AND EXPLORE PERSPECTIVE: AMBIDEXTERITY

Exploration and exploitation require fundamentally different and inconsistent architectures and competencies that create paradoxical challenges.

—Jansen et al., (2009, p. 797)

The concept of ambidexterity is a sub-field in organizational study that addresses how organizations balance the competing demands of continuous and discontinuous market change. One of the key variables that appears repeatedly across ambidexterity literature addresses structural differentiation; some innovation-focused organizations structurally differentiate exploratory innovative pursuits, and some integrate them across the larger organization. While both approaches have merit, this study argues that differentiating innovative sub-units provides more autonomy and flexibility for exploratory elements to pursue paradigm-shifting innovation.

A. BACKGROUND AND LITERATURE REVIEW

The idea that efficiency and flexibility pose competing challenges to organizations can be traced back to March and Simon (1958), Burns and Stalker (1961), and Thompson (1967). However, the fundamental paradigm of ambidexterity arose largely from the field of organizational learning, which recognized the dichotomy that organizations face between exploitive and explorative activities (March, 1991). Although the term "ambidexterity" was initially used in 1976 by R.B Duncan, it caught on as a concept after it was reinvigorated by Tushman and O'Reilly in 1996. It gained a following in the following years as marketplace competition grew and the pace of change in many business sectors accelerated (Blarr, 2012). As Tushman and O'Reilly's ideas have caught on in the field of organizational design, they have led to numerous studies which have conceptualized ambidexterity in several different ways (Simsek et al., 2009, p. 866).

However, its central dichotomy—exploration versus exploitation[5]—is substantively the same across literature. March's (1991) original definition of these terms still holds up today:

> Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution. (p. 71)

The exploitation-exploration view is considered dichotomous because the two vectors are considered to be at odds with each other (March, 1991; Levinthal and March, 1993; Tushman & O'Reilly, 1996), and compete for resources and priority within an organization. Each is beneficial within its own context, but a balance is necessary for organizational success over time, and this balance is largely determined by environmental factors (Raisch & Birkenshaw, 2008). Ambidexterity, as explained by Simsek et al. (2009), "is not simply achieving the same levels of exploration and exploitation but rather maximizing the attainment of both" (p. 867). What all ambidexterity literature appears to agree on is that an exclusive focus on one or the other is a recipe for long-term failure or obsolescence of an organization. In short, environments of punctuated equilibria call for an effective ambidextrous strategy for long-term survival, resiliency, or competitive advantage.

B.   RELEVANT CONCEPTS

As ambidexterity divides the activities of an organization into two fundamental categories—exploitation and exploration—the first step to understanding the ambidextrous approach is understanding these two vectors.

1.   Exploitation vs Exploration

Exploitive activities maximize performance in current environments or marketplaces, and seek to minimize risk and maximize return. Exploitation activities provide success and competitive advantage in evolutionary change environments, and

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[5] This thesis will refer to exploitation and exploration as *vectors.*

"create reliability in experience through refinement and routinization of knowledge" (Blarr, 2012, p. 59). Incremental innovation, or "small improvements in… existing products and operations" (O'Reilly & Tushman, 2004, p. 76), is considered to be part of an exploitive strategy, as it involves progression within established paradigms or along established paths. In business literature, incremental innovation is defined as innovations that target a company's existing customer base (as opposed to innovation that seeks new customers) (Tushman & O'Reilly, 1996). Within the military, incremental innovation is recognizable in that it is easily absorbed into existing structures and processes. For example, in late 2014 Naval Special Warfare upgraded its medium-sized special operations surface craft from the Mark V to the Combatant Craft Medium Mark 1 (Defense Industry Daily, 2014). While the new platform offered many significant technological upgrades, it is essentially an upgrade of an established system, and arguably does not represent a paradigm shift in SOF maritime surface mobility.

Exploitation activities would include operations and maintenance (O&M) activities, training and readiness against current threats, knowledge management, personnel management, and improvements to existing equipment or technology. In short, exploitation entails getting better at things we already do, or improving things we already have. These are all critical pursuits to not only in maximizing current readiness, but also in sustaining the current organizational structure.

On a long timeline, however, a strategy heavy on exploitation leads organizations to acquire excessive inertia and become "trapped in suboptimal stable equilibria" (March, 1991, p. 71). Success and repetition breed inertia, which as it becomes stronger becomes more difficult to break away from. The risk of an exploitation-centric business model is apparent in the case of Kodak, who clung to the film-based photography market as it declined and digital photography replaced it (O'Reilly & Tushman, 2004). They failed to explore (and therefore foresee) the growing digital domain, and have since lost their position as one of the dominant firms in that market. The risks of an exploitation-centric approach, therefore, are that it can lead to the growth of inertia, a loss of competitive advantage when environmental dynamics change, and increased vulnerability to strategic surprise.

The exploration vector consists of those activities that seek out discontinuities with the current paradigm. As such, they often do not translate into a direct return on investment. Exploration prioritizes and emphasizes variation, experimentation, flexibility, risk-taking, and aggressive innovation. In recent years, the exploratory approach has led to high-profile success stories in large firms in the technology industry (such as Tesla, Netflix, and Google). Exploration goes beyond simply adapting to revolutionary change; it seeks it out and even initiates it when conditions are right. An aggressive and concerted exploration effort, while perhaps costly or inefficient, pushes an organization towards the leading edge of change, therefore driving down the risk of strategic surprise resulting from sudden incongruence with new environments. It postures an organization to establish footholds in emerging domains and become early- or first-movers in new environments. It manifests as dedicated and resourced research and development, testing and evaluation of new technologies, "fail-fast" strategies, aggressive scan and search for new opportunities, and innovative approaches to established or emerging problem sets.

Whereas an exploitation-centric strategy can lead to organizational rigidity over time, an over-emphasis on exploration does the inverse. It can lead to an overly diffuse knowledge base, underdeveloped competencies, and/or inefficiency. As explained by Raisch and Birkenshaw (2008), "too many (or too radical) change actions could create organizational chaos if continuity is not taken into account" (p. 379). The stable structures and routines that accompany an exploitation strategy are necessary to translate explorative opportunities into real returns. The need to balance the two vectors is made evident by Levinthal and March (1993):

> An organization that engages exclusively in exploration will ordinarily suffer from the fact that it never gains the returns of its knowledge. An organization that engages exclusively in exploitation will ordinarily suffer from obsolescence. (p. 105)

A useful delineation of the respective characteristics of exploitation and exploration strategies is shown in Figure 1.

Figure 1.   A comparison of exploration versus exploitation.
Adapted from Blarr (2012, p. 61); O'Reilly and Tushman
(2004, p. 80)

Having delineated between exploitive and explorative vectors, the question remains of how to pursue both in a manner that optimizes performance. While there is not a single approach that is effective in all situations, theorists have identified several common ambidexterity strategies observed across businesses and industry. The first of these involves structural differentiation in order to enable effective simultaneous pursuit of exploitive and explorative vectors.

2.   Ambidexterity types

The case for structural differentiation is argued by several prominent ambidexterity theorists (Jansen et al., 2009; O'Reilly & Tushman, 1996, 2004). Others submit that ambidexterity does not require structural differentiation, that organizations can successfully pursue both vectors within a single organizational unit (Eisenhardt, Furr, & Bingham, 2010; Gibson & Birkenshaw, 2004).

To better understand these different approaches, Simsek et al. (2009) reviewed 49 different studies of ambidexterity, and developed a typology that consists of two dimensions that delineate how companies pursue ambidexterity. This typology, shown in

Figure 2, is useful for conceptualizing different approaches to ambidexterity observed in the business domain.
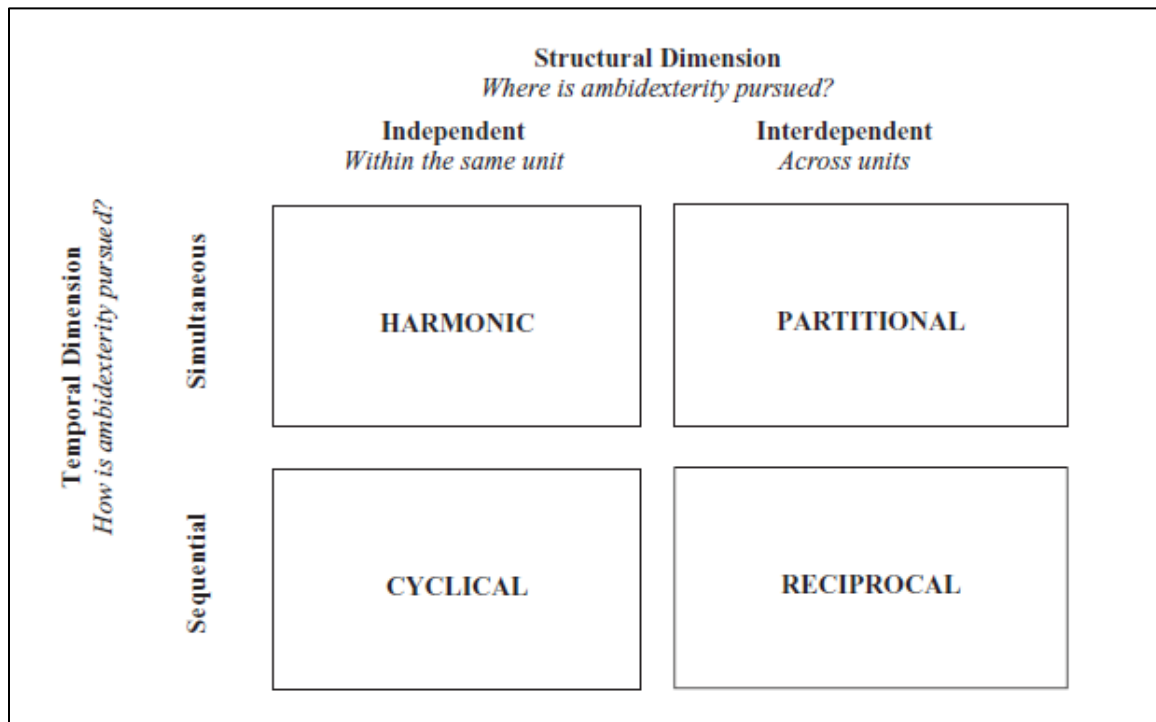
Figure 2.   A typology of ambidexterity. Source: Simsek et al.
(2009, p. 868)

Different situations, organizational missions, hierarchical levels, or environmental dynamics may call for different forms of ambidexterity. Because of SOF's broad swath of roles and missions, and because of the vertical separation within USSOCOM's force structure (JSOU, 2015), it is likely that a single typological approach is not appropriate across the force. However, due to SOF's persistently deployed model, this thesis argues that pursuing exploration sequentially (either cyclically or reciprocally) is not an effective approach for USSOCOM. Neither readiness nor innovation can take breaks to allow the other to progress. Therefore, this section will focus on the differences between harmonic and partitional ambidexterity.

Harmonic ambidexterity entails "concurrently pursuing exploitation and exploration harmoniously within a single organizational unit" (Simsek et al., 2009, p. 869).

It is similar to what Gibson and Birkenshaw (2004) term *contextual ambidexterity*, which they define as "the behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit" (p. 209). This approach does not separate the two vectors, either structurally or temporally, and therefore raises some significant challenges. Because resources, personnel, and processes that feed each vector are pooled, the competition between them can lead to "conflicts, contradictions, and inconsistencies" (Simsek et al., 2009, p. 869). Furthermore, others have pointed out that if individuals within an organization are naturally predisposed to either exploitive or explorative activities, and asking them to do both is likely not very effective (Gupta, Smith, & Shalley, 2006).

For this same reason, the harmonic approach creates a natural integration mechanism between efforts, due to the fact that the same individuals or departments are executing both vectors. Another view is provided by Gibson and Birkenshaw (2004), who argue that ambidexterity is best achieved "not through structural, task, or temporal separation, but by building a business unit context that encourages individuals to make their own judgments as to how best divide their time between the conflicting demands for alignment and adaptability" (p. 211). According to this reasoning, organizations with high levels of experience and professionalism might be well suited to a harmonic approach to ambidexterity.

One might also propose that doctrinal innovation[6] in the military is well suited to a harmonic approach, resident within operational units. As innovations in tactics, techniques, and procedures (TTPs) require iterative testing, the operational units are best positioned to get the repetitions in training to test and evaluate new tactics. Deployment cycles to theaters of conflict enable a cyclical feedback mechanism for testing and evolving TTPs, or feeding information back to units in training. For example, as SOF direct action missions against High Value Individuals (HVIs) increased in frequency during the early years of Operations Enduring Freedom and Iraqi Freedom, the TTPs specific to these mission profiles evolved quickly because innovation occurred organically within tactical units, and then diffused to

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[6] The term doctrinal innovation in this context does not just refer to changes in established doctrine. I use the term to refer to all innovations in how units employ maneuver, employ equipment or technology, manage command and control, or develop new tactics, techniques, and procedures.

other units when they (the TTPs) proved effective. One team would try out a new innovative tactic, find it beneficial, and then spread the word to other units. During peacetime, when units don't have this real-world laboratory with which to test and refine TTPs, training cycles offer opportunities for operational units to innovate. As such, harmonic ambidexterity within operational units might be an effective approach to foster innovation in the doctrinal domain.

The other simultaneous approach to ambidexterity—Simsek et al.'s *partitional approach*—was proposed by Duncan (1976), as he recommended the use of dual structures between units engaged in alignment with current environmental demands and those focused on adapting to change. This approach involves the simultaneous pursuit of both vectors, delineated across structurally differentiated sub-units. O'Reilly and Tushman (2004) studied 35 businesses pursued ambidexterity in various ways, and found those companies that established differentiated subordinate organizations with their own support structure achieved a higher level of success in their innovation projects. These organizations that achieved innovation success place explorative functions into an entire separate departmentalized structure. This is contrasted against cross-functional teams (in which members from different disciplines are teamed up for specific projects), and unsupported teams (small offshoot units that still rely heavily on the larger organization's support mechanisms). The ambidextrous structure that Tushman and O'Reilly describe mirror's Mintzberg's divisionalized configuration, which is described as "a set of rather independent entities joined together by a loose administrative overlay" (Mintzberg, 1981, p. 9). In a divisionalized structure, subunits are grouped together by the markets they address. The ambidextrous organization approach offers that there are advantages in adopting a divisionalized form based on the delineation between *current* and *future* markets.

This partitional ambidextrous structure "allows cross-fertilization among units while preventing cross-contamination" (O'Reilly & Tushman, 2004, p. 77). Additionally, by separating the exploratory sub-structure from the exploitive side, it mitigates the effects of structural inertia and path dependency that accrue through constant exploitation. Some of the change-impeding forces are mitigated by creating an organizational buffer between

those activities that tend to create inertia, and those that attempt to break it. Jansen et al. (2009) also advocate for structural differentiation as one of the primary enablers of ambidexterity. Through structural differentiation, ambidextrous organizations "allow the coexistence of inconsistent and paradoxical exploratory and exploitive efforts at different locations where motivation can be built entirely around emerging or mainstream business opportunities" (p. 799).

However, structural differentiation between explorative and exploitive activities increases the requirement for coordination, integration, and cohesion. Differentiation raises the risk that an organization will become overly bifurcated and suffer a loss of cohesion. At worst, it may lead to "self-interested behavior in which senior team members perceive direct competition regarding the allocation of resources" (Jansen et al., 2009, p. 800). This is not generally a concern in harmonic ambidexterity, as an organization's activities are naturally coordinated because they are carried out within or across a single organization. However, as units become more differentiated, effective integrating mechanisms become increasingly important. Ambidexterity scholars have investigated the mechanisms and approaches through which businesses coordinate and integrate their vectors. These are discussed in the next section.

3.   Integration Mechanisms

Regardless of which of the four types of ambidexterity an organization utilizes, the second critical component of ambidexterity involves the coordination and integration of the vectors. These integration mechanisms serve as connective tissue between the naturally divergent exploitive and explorative vectors. Referred to in earlier organizational literature as *lateral processes*, these mechanisms involve horizontal coordination between adjacent hierarchical departments or sub-units (Galbraith, 1977). Jansen et al. (2009) pointed to these lateral processes as important integration mechanisms, and pointed specifically to cross-functional interfaces and connectedness as two types. Cross-functional interface refers to any function, event, or process that links operational level elements from the structurally differentiated units. Connectedness is often known in the military as flatness; it refers to how well information flows across horizontal and vertical hierarchies. A flat

organization that emphasizes or encourages cross-functional interfaces, according to Jansen et al. (2009), will benefit from a free flow of ideas and information between adjacent sub-units and see improvements in ambidextrous performance. Additionally, they (Jansen et al., 2009) emphasize the important role that leadership plays in integrating efforts across organizations. Both formal and informal relationships between senior team members are integral to maintaining cohesion and mutual support between elements.

Tushman and O'Reilly (1996) also point to an organizational culture as an integration and cohesion mechanism across structural differentiation. Defined by Daft (2004) as "the underlying set of key values, beliefs, understandings, and norms shared by employees" (p. 20), a strong organizational culture can preserve cohesion between differentiated elements even as they work towards different objectives. However, organizational culture can be a double-edged sword when it comes to innovation and ambidexterity. On one hand, a strong cultural foundation establishes and upholds organizational norms, mitigating the need for strong bureaucratic control mechanisms while maintaining its core value systems and organizational identity. A strong culture can also create what Tushman and O'Reilly (1996) call "cultural inertia" (p. 18), which, much like bureaucratic essence, works to preserve itself, rather than explore new ideas and take risk. As such, culture can serve both as an integrative mechanism, as well as an impediment to ambidexterity. Reforming culture is a significant challenge for leaders, but it is possible and necessary if cultural inertia impedes progress.

C.   SUMMARY AND IMPLICATIONS

A 2016 report on innovation in the U.S. Air Force (USAF) highlights both the challenges and success stories of ambidexterity in the military:

> The USAF has a rich heritage of innovation through experimentation, but today, in the struggle between the priorities of normal production versus those of innovation through experimentation, normal production is winning. The Air Force needs a revival of innovation through experimentation, with emphasis on rapid prototyping, experimentation, and learning through failure (as in "big wins from small failures"). A few organizations, such as the Rapid Capabilities Office and the U.S. Special Operations Forces Acquisition, Technology and Logistics (SOF AT&L), have successfully created such environments, but these isolated pockets cannot function at the

level sufficient to meet the total competitive threat facing the Air Force. (National Academies of Sciences, Engineering, and Medicine, 2016, pp. 60–61)

This report shows that some subordinate organizations (the Rapid Capabilities Office and SOF AT&L) are very effective at pursuing innovation, enabled by the fact that they are distinct and differentiated from the operational force, and therefore firewalled from some of the structural or bureaucratic inertia. However, the report also highlights that these organizations are too small relative to the larger military force, and implies that an even more ambidextrous approach should be taken by the Air Force at large. The amount of resources and priority provided to an explorative unit should be proportional to the priority that the overall organization places on aggressive and exploratory innovation.

As an example of a successful ambidextrous approach to innovation, the same report cites the Air Force's program to develop and test new aviation technology in the second half of the 20th century. Sixty years ago, the U.S. Air Force, Navy, and what would later become NASA developed a program that demonstrated what a properly resourced and differentiated innovation program was capable of. The X-series program began with the development of the X-15 (Evans, 2013), and progressed over three decades and eventually led to the development of high-altitude long-range stealth platforms (National Academies of Sciences, Engineering, and Medicine, 2016). Due to the tensions of the cold war, this program was seen as a priority, and it was given the necessary structure, support, and infrastructure (including their own dedicated ranges and airspace) to develop and test radical new equipment and ideas. As such, this program led to numerous breakthroughs in aviation stealth technology during the 20th century. The Air Force demonstrated ambidexterity during this time-period—as it met the demands of the ongoing conflicts, while simultaneously pursuing explorative innovation.

USSOCOM already executes a partitional strategy for technological innovation, evident in the structural differentiation and relative autonomy of the SOF Acquisitions, Technology, and Logistics Directorate (SOF AT&L) (JSOU, 2015). Part of USSOCOM headquarters, SOF AT&L has its own support structure and task organization to support its unique mission to "provide rapid and focused acquisition, technology, and acquisition

logistics support to SOF Warfighters" (SOF AT&L, n.d.). SOF AT&L explicitly pursues exploration in new areas such as human-machine interaction, big data, and artificial intelligence (Sanders, 2018, slide 5). It has a reputation as being a highly effective and efficient model for innovation and coordination with the commercial

The DoD and USSOCOM also pursue a different form of ambidexterity, one that has appeared in recent research and is known as alliance ambidexterity (Tiwana, 2008). Alliance ambidexterity involves establishing linkages with external exploratory entities. DoD and USSOCOM pursue alliance ambidexterity through liaison or intermediary organizations such as the Defense Innovation Unit or SOFWERX. While alliance ambidexterity offers linkages to multiple nodes of highly explorative entities, Tiwana (2008) points out that the integration challenges between organizations are often more challenging to manage.

Yet there other are challenges to integration as well. There are typically at least three levels of vertical chain of command between the operator and USSOCOM headquarters. While operational level commands usually welcome new gadgets that provide immediate tactical returns, they also can be skeptical of new ideas that risk to disrupt their organizational essence. This resistance to change is a factor of organizational essence, a form of cultural inertia.

Proactive integration mechanisms that can minimize or mitigate the impact of this inertia include personnel cycling, regular cross-functional interfaces, and aggressive communication between the two vectors. High-performers (power-players) from the operational force should cycle through innovation units, in order bring an operational perspective to exploratory pursuits, and to later return to the operational force with knowledge of new ideas and technology. Potential cross-functional interfaces include integrating innovation unit personnel into major exercises, and emphasizing operator attendance at innovation forum events. Finally, leaders at the operational level should ensure that innovative concepts and progress are being actively communicated across the operational force.

IV.   THE ADAPTATION PERSPECTIVE: DYNAMIC CAPABILITY

> The capacity to reconfigure and transform is itself a learned organizational skill. The more frequently practiced, the more easily accomplished.
>
> —Teece and Pisano (1994, p. 545)

The next organizational field takes a different approach to the issue at hand. As opposed to ambidexterity's dichotomy of exploratory vs exploitive activities, the Dynamic Capabilities View (DCV) emphasizes an organization's *capabilities* to change its resource base in order to maintain competitive advantage in changing environments. In other words, it seeks to offset the forces of structural inertia through the development of capabilities to reconfigure and change. The central takeaway for the purposes of this paper is that these dynamic capabilities can atrophy during periods of evolutionary change, when they may be less critical for success. Therefore, organizations must proactively maintain dynamic capabilities during periods of evolutionary change to ensure readiness and responsiveness towards revolutionary change.

A.   OVERVIEW AND LITERATURE REVIEW

The concept of dynamic capabilities was introduced in 1994 by Teece and Pisano, and it adapts the resource-based view (RBV) of organizational performance to account for dynamic environments. The RBV essentially proposes that an organization's competitive advantage is a function of the organization-unique resources it holds and is able to acquire readily (Barney, 1991; Wernerfelt, 1984). In order to maintain a competitive advantage, this resource base should be valuable, rare, inimitable, and non-substitutable (VRIN)—in other words unique in some way relative to competitors' resources. However, VRIN resources eventually diffuse to competitors, and markets level out over time.[7] The dynamic capabilities view proposes that organizations retain this competitive advantage through

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[7] This is much like the technology diffusion discussed in Chapter II, and its leveling effect of competitive advantage in warfare.

capabilities that "create new products and processes, and respond to changing market circumstances" (Teece & Pisano, 1994, p. 541). The DCV argues that VRIN resources are not enough to sustain competitive advantage; an organization must also have capabilities that enable it to change itself and adapt to changing environmental factors (Bogodistov & Botts, 2016).

A useful definition of dynamic capability is provided by Salvato and Vassolo (2014), who describe it as "a firm's capacity to sense new opportunities in its environment and then seize those opportunities by adapting, integrating, and reconfiguring its key assets and activities" (p. 1729). Helfat and Winter (2011) provide another helpful description of dynamic capabilities, by contrasting them against operational capabilities:

> We understand **operational capabilities** to be those that enable a firm to make a living in the present. Thus, an operational capability enables a firm to perform an activity on an on-going basis using more or less the same techniques on the same scale to support existing products and services or the same customer population. Such a capability is ordinary in the sense of maintain the *status quo.* … In contrast, a **dynamic capability** is one that enables a firm to alter how it currently makes its living. (Helfat & Winter, 2011, p. 1244, bold added for emphasis).

While specific definitions of the concept vary across the literature, they generally all agree that dynamic capabilities are those organizational mechanisms that enable an organization to adapt.

The dynamic capabilities view (DCV) has gained traction in the field of organizational study, and has seen a surge of studies and books that refine (Eisenhart & Martin, 2000; Helfat et al., 2007; Teece, Pisano, & Shuen, 1997; Wang and Ahmed, 2007), critique (Arend & Bromiley, 2009), or test its concepts (for an extensive list, see Wang and Ahmed, 2007, Appendix 1). However, like the other approaches in this study, the preponderance of literature focuses on the business domain, in which dynamic capability serves to maintain competitive advantage in a profit-oriented market environment. One notable exception is a recent conference paper by Bogodistov and Botts (2016) that tested several dynamic capabilities hypotheses with performance of the Ukrainian Army in a conflict environment. Their findings indicate that the DCV is a promising perspective for

understanding and possibly predicting efficiency and performance by non-profit organizations (including the military) in highly dynamic and uncertain environments.

As opposed to ambidexterity's exploit-explore framework, the DCV "stress[es] exploiting existing internal and external firm-specific competences to address changing environment" (Teece et al., 1997, p. 510). In other words, it focuses on how existing properties of an organization can be leveraged or reformed to increase the organization's adaptability, without a need for a structural realignment. According to the DCV, internal *capabilities*—as opposed to resources, structure, leadership, or outputs—are the fundamental organizational attributes that enable change and (therefore) competitive advantage.

The DCV is not prescriptive, and there is not a single "how to do dynamic capabilities" roadmap. The variance in how the concept of dynamic capabilities is described in literature can make it a difficult concept to grasp, and Eisenhardt and Martin (2000) point out that it is oft criticized for being "tautological, endlessly recursive, and nonoperational" (p. 1107). However, they argue, one may still derive useful frameworks from the concepts, and seek commonalities and derive value from its central ideas. The next section attempts to extract some of the useful and relevant concepts from across the literature reviewed.

B. RELEVANT CONCEPTS

Dynamic capability might appear very similar or identical to the common notion of *adaptability.* However, adaptability is but one element of dynamic capability, and this section will discuss some other aspects of dynamic capability that not necessarily considered as adaptability. An adaptable organization *reacts* to external stimuli, and seeks to align itself with the environment. Dynamic capability is more comprehensive than this.

1. Adaptive, Absorptive, and Innovative Capabilities

Wang and Ahmed (2007) developed an easily intuitive framework for conceptualizing dynamic capabilities. They divided dynamic capability into three component factors—or categories—that delineate between the three primary methods by

which an organization changes. Their framework divides dynamic capability into adaptive, absorptive, and innovative capabilities.

Adaptive capability refers to an organization's ability to "align resources and capabilities with environmental changes" (Wang & Ahmed, 2007, p. 39). It is the ability of an organization to work with what it already has, in order to meet requirements to change and adapt. Without acquiring or developing new resources, adaptive capability is an organization's zero-sum approach to re-establish fit with changing environments. An example of this would be an organizations ability to quickly adjust its task-organization to address a specific problem set. Another example would be the ability to move equipment or finances between departments based on evolving environmental demands.

Absorptive capability is an organization's ability to take on "new, external information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1998, p. 128). It is distinct from adaptive capability in that new external resources are available and integrated into the organization in such a way that the organization gains a competitive advantage. It may also be conceptualized as receptiveness, or ability to integrate new ideas into its organizational structure and processes. In the military, one might point to a deployed unit's ability to integrate local resources, cultural practices, and personnel into its operations as an example or indicator of absorptive capability.

Innovative capability refers to an organization's ability to organically develop and create new technologies, structures, or processes. It is not zero sum (like adaptive capability), and may not entail the absorption of external resources (as in absorptive capability). Instead, innovative capability involves the generation of new knowledge, technology, or competency in an organization's resource base. While much has been written about innovation in the military, Grissom (2009) argues that there is still much to learn, especially in regards to bottom-up innovation. Innovation in the military is commonly understood, even in Grissom's own four models of military innovation,[8] as being driven from the top levels of organizations, but there exist plenty of cases of

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[8] Grissom's four models of military innovation are the civil military model, the interservice model, the intraservice model, and the cultural model. They each refer to a different driving force behind innovation in the military (see Grissom, 2009, pp. 908 - 919).

innovation originating at lower levels and then diffusing. The case for harmonic ambidexterity in operational units (discussed in Chapter II, paragraph B.2) is tied to the idea that tactical level units are well positioned to exercise innovative capability in doctrine and tactics.

Wang and Ahmed's (2007) framework represents a three-pronged approach that may prove useful for assessment of overall dynamic capability of an organization. An organization looking to assess its dynamic capability might start with this framework, by asking itself how effective it is at reconfiguring what it already has, how effectively it integrates new ideas and resources from outside the organization, and how well it generates new, original ideas.

2.   Simplicity of Routines

Eisenhardt and Martin (2000) argue that dynamic capabilities in high velocity markets are aided by simple routines. They define a high-velocity market as one in which "market boundaries are blurred, successful business models are unclear, and market players… are ambiguous and shifting" (p. 1111). One may draw a logical analogue between high-velocity markets and VUCA—volatile, uncertain, complex, and ambiguous—conflict environments. Similar to the high-velocity market, these VUCA environments involve blurred distinctions, dynamic situations, and absence of clear solutions (Bennet & Lemoine, 2014). In these situations, Eisenhardt and Martin's position suggests a "less-is-more" approach to processes and routines. This minimization, they argue, frees up time, resources, and knowledge towards adaptive, or dynamic, capabilities. Similarly, Eisenhardt and Sull (2001) further argue that dynamic capability increases when organizations use a very simple structure of rules.

If simple processes and routines increase dynamic capability in high-velocity markets (or VUCA environments), then it is logical to assume the inverse is true. Complex processes, burdensome routines, and highly regulated systems of rules would, in theory, decrease dynamic capability. As SOF continues to grow in both numbers and responsibilities, there is a risk—or at least a potential—that bureaucratic inertia will pull it in the direction of more complex routines and more rules that govern its operations. Yarger

(2013) offers that SOF's effectiveness is hampered by excessive bureaucracy, as he states that the "organization's effectiveness is inversely proportional to the complexity of the organization's size, structure, and mechanisms of control" (p. 60). Reduction or minimization of rules can be a challenging prospect, as routines and rules provide security and predictability. They also contribute to what is referred to in the DCV as *path dependency.*

3.   Path Dependency

The DCV recognizes that an organization's history ingrains in it certain path dependencies, which constrain the range of its feasible future options (Teece and Pisano, 1994). Path dependencies are like metaphorical ruts; ruts that become deeper as organizations age and become accustomed to certain routines, patterns of investment or activity, or cultural norms. Success reinforces path dependency, and over time can turn core capabilities into "core rigidities" (Leonard-Barton, 1992), which constrain dynamic capability. Path dependencies are akin to organizational habits, and manifest as structural or cultural inertia. Tushman and O'Reilly (1996) describe this phenomenon—the increase in path dependency and accumulation of inertia—as "the organizational equivalent of high cholesterol" (p. 18).

Path dependency is related to what is referred to in organizational literature as the *paradox of success* (Audia, Locke, & Smith, 2000; Pina e Cunha & Putnam, 2017). Audia et al. (2000) explain how success breeds path dependency, which mitigates future success in dynamic environments:

> The paradox lies in the fact that the very success that organizations strive to achieve plants the seeds of their possible future decline. Once organizations achieve success, their natural tendency is to continue to exploit the strategies that worked in the past… Such success-persistence-success cycles, however, become self-destructive when radical external changes impose the need to use new strategies. After a period of success, organizations may lose the ability to recognize when it is time to abandon previously effective strategies. Consequently, they may experience larger drops in performance than organizations with lesser histories of success (p. 849).

In order to mitigate the likelihood of this success trap, organizations should exercise dynamic capabilities even when the status quo seems to be working. Adhering to practices that provide immediate and current success deepens path dependency, and when environments change and dynamic capabilities are needed, organizations may find themselves path-dependent; or stuck in the ruts of their success. In order to call upon dynamic capability when it is needed, the DCV argues that organizations must proactively disrupt their status quo, and seek new opportunities and capabilities, even in times of evolutionary change.

C. SUMMARY AND IMPLICATIONS

Despite the recent study by Boristovic and Botts (2016), a full understanding of dynamic capabilities as they apply to military organizations is lacking. However, it is safe to say that the central principle—that an organization's adaptability is derived in part from its change how it utilizes resources—is relevant to military organizations in dynamic environments. Competitive advantage in the domain of defense entails an intricate and complex combination of networking, information security, technology security, and resource distribution.

Simply saying that dynamic capabilities are important because they enable organizations to change is not useful. However, the primary implication of the dynamic capabilities view is this: the adaptability is not a specific organizational property, but rather a set of capabilities to developed, practiced, maintained, and honed over time. The commonly held and perhaps intuitive strategy for dealing with future environmental change is to focus externally and forward; to look out into the environment and towards the future for indicators of where to invest and orient. The Dynamic Capabilities View does not contradict this position, but instead complements it a perspective that looks inward. There is an almost cautionary undertone implicit in the dynamic capabilities view: that becoming overly focused on the external environment may mask the slow growth of structural inertia—or path dependencies—within the organization.

Even when new ideas are tested and true, these path dependencies can run deep. When not mitigated by dynamic capabilities, they can lead to technological stagnation or

(worse) strategic failures. The former can be seen in the earlier discussed case of the battleship (O'Connell, 1991). The Navy, even while it modernized its fleet in the latter half of the 20th century, still clung to old ideas and platforms—perhaps even sapping resources from efforts to modernize or innovate in other domains (such as new capabilities, or development of new platforms or technologies).

Another example of a deep path dependency (and lack of dynamic capability) can be the U.S. military's conventional, attrition-based strategy in Vietnam in the later years of this war. A recipe for a successful counterinsurgency was available, provided by British success against the Malay insurgency between 1948 and 1957 (Nagl, 2002), and the United States actually began its engagement in Vietnam with a similar strategy. Yet the U.S. military was accustomed—or path dependent—with a certain way of war, one which was designed and honed to take on symmetric threats, and eventually it resorted to what it was most familiar with. As clearly explained by Krepinevich (1986):

> In developing its Vietnam strategy to use operational methods successful in previous wars, the Army compromised its ability to successfully combat lower-phase insurgency operations at anything approaching an acceptable cost. In forcusing on the attrition of enemy forces rather than on defeating the enemy through denial of his access to the population, MACV missed whatever opportunity it had do deal the insurgent forces a crippling blow at a low enough cost to permit a continued U.S. military presence in Vietnam in the event of external, over aggression (p. 259).

Here the cost of the Army's path dependency was not limited to dollar figures and lost opportunities to invest elsewhere. In fighting the war it felt it knew how to fight, rather than the one called by the new operating environment, the Army (and the rest of the U.S. military, to be fair) fought its way to strategic failure. Furthermore, and to demonstrate the strength of the Army's path dependency (and/or lack of dynamic capability), the Army failed to adjust its doctrine *even after* its failures in Vietnam. Krepinevich argues that, rather than recognizing a need to reconfigure itself for the next counterinsurgency conflict, "in spite of its anguish in Vietnam, the Army… learned little of value" (p. 275), and decided to avoid the next Vietnam rather than prepare for it. The failures in Vietnam were not a sufficient enough catalyst for the Army to develop dynamic capabilities in how it fights, and what types of conflicts it is prepared to fight.

To contrast this with a positive example of dynamic capabilities, Russell's (2010) account of three conventional military battalions in Iraq between 2005 and 2007 shows how ground-level units adapted, absorbed, and innovated at the operational level. These three units each deployed into conflict environments that posed problems that the units were not fully prepared or configured to deal with, and each had to adapt themselves, absorb new ideas, and innovate new methods, in order to meet their objectives. As Russell (2010) explains:

> The innovation process exhibited by the units in this article drew was dialectical in nature and drew upon a complex series of forces both from within and outside the units that fused together in ways to produce organically generated change—change that eventually 'pulled' tactical practice, institutional innovation and (finally) authoritative doctrinal pronouncements along behind it (p. 621).

These units were able to overcome any path dependencies that might have created a predisposition towards ingrained or familiar modes of operation. Instead, they "evolved into flexible, adaptive organizations [that took] advantage of twenty-first century human and technological capacities" (p. 621) at the tactical level, demonstrating that dynamic capability is important at all levels of an organization.

A final notable takeaway is that success in environments of high change requires early investment in dynamic capabilities (Teece and Pisano, 1994). Much like SOF Truth #4—"Competent SOF cannot be created after emergencies occur" (JSOU, 2015, p. 1–1), dynamic capabilities cannot leveraged or created after they are needed. Dynamic capabilities will be difficult to instill in a highly bureaucratic organization that is comfortable and invested in the status quo. Process change takes time, especially processes that have acquired significant path dependencies within the organization. Therefore, dynamic capabilities need to be established proactively if they are to be available and effective when they are needed.

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V.   THE SELECTION PERSPECTIVE: ORGANIZATIONAL ECOLOGY

> The variation-selection-retention model gives us a very powerful framework for explaining how organizations change in ways that make them more fit for the environment they face
>
> —Aldrich (2008, p. 35)

The final perspective offered is quite distinct from the first two. Instead of focusing on adaptability or internal capabilities or processes, organizational ecology adopts natural evolution principles and applies them to organizations. Its central premise is that of evolutionary selection: as the environment changes, emerging conditions—or *niches*—select for the organizations with the highest fitness. While there are limits and discontinuities in this approach for direct application to SOF organizations, it is still interesting and perhaps useful to extract some of its themes.

A.   OVERVIEW AND LITERATURE REVIEW

Organizational ecology derives its central premises from the fields of biological ecology, and argues that selection processes, similar to the forces at play in Charles Darwin's theories of natural selection (Aldrich & Pfeffer, 1976; Aldrich, 2008), are the principal forces that affect population performance and variability. Hannan and Freeman's 1977 article "The Population Ecology of Organizations," although not the first to import ecological concepts into organizational theory (see Aldrich & Pferrer, 1976), is widely recognized as a landmark work and the foundation for subsequent organizational ecology study. Hannan and Freeman (1977) argued that established organizational theories that emphasize adaptation were insufficient to explain the variability of organizations. This concept represented a departure from prevalent ideas of the time, including contingency theory (Lawrence & Lorsch, 1969) and task-environment interdependence (Thompson, 1967). Each of these latter theories largely subscribes to what is Hannan and Freeman (1977) refer to as the *adaptation perspective,* which predicts that organizations will "scan the relevant environment for opportunities and threats, formulate strategic responses, and

adjust organizational structure appropriately" (Hannan and Freeman, 1977, p. 930). The ecological perspective, conversely, considers that organizations are "inert with respect to their environment" (Bruggeman & Ó Nualláin, 2000, p. 161). The combined effects of structural inertia and external constraints to change collectively limit organizations' ability to flex and adapt to changing environments. (Hannan and Freeman, 1977).

It is important to point out that this approach does not assume that organizations are completely static. Organizations do in fact change—this is readily apparent—but their ability to change and adapt is constrained by structural inertia and external factors to the extent that environmental selection pressures are a significant factor in determining the evolution of organizations over time (Hannan & Freeman, 1977). Essentially, the organization chooses a strategy, and environmental factors determine whether or not that strategy succeeds or fails. Strategies that fail are selected out of the environment, either through the death of the organization, or by forcing a change in organizational form. Aldrich (2008) clarifies that the selection approach "does not necessarily mean progress to higher forms of social organization or to better organizations. The process of natural selection means organizations are moving toward a better fit with their environment, nothing more" (p. 27).

To return to our central research question, one might ask how might organizational ecology's principles apply to dealing with evolutionary and revolutionary change? The basic concept of variation, selection, and retention is a useful starting point to explain how variation is beneficial in changing environments. Secondly, it is important to recognize the drivers and effects of isomorphism, which reduces variation over time. The following section will elaborate on these two ideas.

B.   RELEVANT CONCEPTS

1.   Variation and Selection

An ecological selection perspective would advocate for high levels of organizational variation to protect against environmental change. Because "in theory unfilled niches do exist, waiting to be entered by some variation on an existing form"

(Aldrich, 2008, p. 112), a population of organizations[9] looking to identify and establish footholds in emerging niches should diversify their forms. Hannan and Freeman (1977) define a form as "a blueprint for organizational action, for transforming inputs into outputs" (p. 935). How one defines forms in the military depends on what is being assessed, but for the purpose of this paper, it is logical that a military organization's form is largely a product of its capabilities. Therefore, whereas organizational ecology deals with variation in forms, an organizational ecology assessment of SOF would consider variation in *capabilities*.

Organizational ecology addresses the relative strengths and weaknesses of specialist and generalist organizations.[10] A capability variation approach would appear to advocate for generalists organizations, as they maintain a wider range, and therefore variation, of capabilities. After all, generalist organizations maintain much more excess capacity (defined as any capabilities maintained that are not needed the current environment), which provides protection against changing environments. Dynamic environments require excess capacity because "in a rapidly changing environment, the definition of excess capacity is likely to change frequently. What is used today may become excess tomorrow, and what is excess today may be crucial tomorrow" (Hannan & Freeman, 1977, p. 948). Excess capacity, therefore, protects against unexpected changes in the environment by creating a reserve of capabilities that can be called upon if or when the situation changes.

However, while generalization and some level of excess capacity is likely beneficial at the individual organizational level, when one looks at USSOCOM and the SOF enterprise as a whole, this excess capacity may be spread across many subordinate units. In short, generalization or specialization of individual subunits matters less than the *diversity* of organizations within USSOCOM. Specialist and generalist organizations each have their relative strengths, and an effective USSOCOM force structure would consist of

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[9] Hannan and Freeman (1977, 1983) define a population of organizations as those organizations that are similar in how they are affected by or tolerate environmental influences or change.

[10] Specialist organizations occupy a narrow niche, whereas generalist organizations occupy broad niches. Assuming that fitness is constant, the decision of whether do adopt a specialist or generalist strategy entails tradeoffs in risk. See Levins' (1968) fitness-set theory for more info on specialist vs generalist strategies in dynamic environments.

a balanced mix of both. Specialist organizations are important for innovation in fast moving or highly technical domains, while generalist organizations are good for innovatively combining ideas from different fields (Teodoridis, Bikard, & Vakili, 2018). This reasoning combined with organizational ecology's selection perspective, offers that a diverse mix of specialist and generalist organizations, encompassing as wide a range of capabilities as USSOCOM's resources and commitments allow, is a promising strategy to prepare for revolutionary changes in the conflict environment.

Furthermore, USSOCOM does not necessarily need to create a wide variety of *organizations* as they should maintain a wide variety of *capabilities*. This line of thinking is in line with the Capabilities Based Planning (CBP) framework developed in the 1990s (Davis, 1994) and adopted by the DoD in the 2001 Quadrennial Defense Review (DoD, 2001). The CBP involves "planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances" (Davis, 2002, p. xi). A similar approach is offered here, but for a different reason; organizational ecology stresses a wide range of capabilities is recommended in order to protect against environmental change, whereas the CBP stresses variation to prepare for a wide range of current threats.

Increasing SOF's collective capability portfolio necessitates making two fundamental decisions. The first involves determining what capabilities are potentially feasible that are not already sufficiently resident in the force. Addressing this question requires forecasting and creative thinking about not just what might be possible in the future, but what will be *required* in the future. The second decision addresses the tradeoffs involved in developing new capabilities. In a zero-sum environment, a growth of new capabilities will often necessitate a decrease in existing ones. Letting go of existing capabilities, especially engrained legacy capabilities, is made difficult by the strong forces of cultural inertia and bureaucratic essence in the military. However, if preparing for future change is the priority, the organizational ecology selection perspective proposes that capability variation should favor innovative and leading-edge capabilities over those needed in today's conflict environment.

It is also important to note that capability diversity should not come at the cost of interoperability. The costs of variation or specialization without interoperability were made

evident in failed Iranian hostage rescue operation in 1979 (Bowden, 2006), which was the catalyst in a long chain of events that eventually led to the Goldwater-Nichols act and the creation of USSOCOM in 1987. In this operation—Operation Eagle Claw—a wide variety of different capabilities were integrated to meet a unique set of environmental demands, but the interoperability was lacking or not sufficiently rehearsed. Additionally, some of the variation was driven by political inter-service dynamics, rather than the requirements of the operations. So while the selection perspective emphasizes variation, it is important that it is measured, deliberate, and does not sacrifice SOF's interoperability or ability to bring come together into a cohesive task force when needed.

2. Isomorphism

Isomorphism, a concept originally introduced by Hawley (1968), explains that organizations subject to similar environmental pressures will undergo convergent evolution. This principle assumes that either natural selection or adaptation will drive organizations (or biological lifeforms) toward a form that is optimal for that environment. In other words, to quote Hannan and Freeman (1977), "each unit experiences constraints which force it to resemble other units with the same set of constraints" (p. 939). Isomorphism, therefore, is a force that counteracts variation in stable environments. When environments are stable and predictable, organizations will "settle in" to those forms and configurations that provide it success, and will over time resemble other organizations in the same environment. It explains why many businesses that occupy the same market niches look very similar (fast food restaurants, or hardware stores, to name a few examples). In the military domain, Terriff (2002) noticed isomorphic processes at play within NATO in the 1990s as multiple nations' military adopted similar structures, forms, and practices.

One can also observe these three forces at work on a shorter timescale within USSOCOM. Look no further than Operation Enduring Freedom, when the commonality of environmental demands caused convergence (isomorphism) of mission sets between previously differentiated SOF units. In 2010, as part of the Village Stability Operations (VSO) campaign, ground elements from the Navy SEALs, Army Special Forces, and

Marine Special Operations Command were all involved in identical missions across Afghanistan. VSO merged Foreign Internal Defense (FID), Counterinsurgency (COIN), and Stability operations into a single effort executed by small SOF teams embedded in villages in "strategically important rural areas critical to the Afghanistan campaign but beyond the effective reach of the Afghan government and U.S. conventional forces" (Huslander and Spivey, 2012, p. 125). As such, although geographically separated, the teams executed similar or identical missions and faced similar challenges and environments. Over time, the homogeneity of environmental influences experienced by these different SOF units naturally caused a convergence in capabilities, as each unit was preparing for the same set of environmental demands. One might argue, furthermore, that isomorphism is accelerated in conflict zones, when environmental pressures and consequences of failure are amplified.

Isomorphism is discussed here because it is a primary force that works against variation, especially in stable or homogenous environments. Organizational ecology's selection approach predicts that variation protects against deselection when environmental pressures change. However, isomorphic processes drive organizational forms or capabilities in the other direction: towards low levels of variation. Therefore, organizations must consciously work to counteract undeliberate or unbeneficial isomorphism. In times of war it is often necessary and prudent to focus and converge organizations towards those capabilities and missions that are most needed. However, this convergence should be undertaken with an awareness that variation is sacrificed in the process, and therefore readiness for unforeseen environmental change is diminished.

C.   SUMMARY AND IMPLICATIONS

The value in the organizational ecology approach is that it forces an organization to discard the assumption that adaptability will always protect against change. It recognizes organizations with structural inertia in dynamic environments will be subject to environmental selection pressures, and that variation is the best hedge against uncertainty. In homogeneous or stable environments, organizations will naturally trend towards isomorphism, which adversely impacts capability variation and readiness. Ultimately, how

an organization (or a group of organizations, in the case of USSOCOM) decides to allocate its capabilities across potential environments is a key component of its strategy.

The variation-selection perspective brings to light a significant question for USSOCOM to consider. How can SOF emphasize variation without compromising its central core competencies? SOF is assigned its core activities through Title 10 of U.S. code and DoD Directive 5100.01 (2010), which outline 12 core activities that SOF is tasked with. These 12 activities are broad in nature and allow USSOCOM plenty of autonomy in how it approaches them.

While this construct does provide flexibility, many have criticized the SOF core activity construct as being inconsistent, vague, and open to misinterpretation (Adams, 1998; Collins, 1994; Rothstein, 2006). Tucker and Lamb (2007) also recognize the somewhat inconsistent and complex relationships between SOF activities, and hint that a re-organization might be possible or beneficial.

> Understanding this [complexity], we come to see that there is nothing inevitable or unalterable in SOF's current missions and organization. Might they be better focused and organized than they currently are to fight the war on terrorism, support conventional operations, and meet the future challenges of warfare? Which missions should they have and which should be passed on to general purpose forces? What are new missions that might emerge? (p. xx)

Perhaps these perspectives point to the fact that the core activity construct, while sufficiently broad to provide USSOCOM flexibility to vary its capabilities as environments evolve, is also not helpful as reference for SOF core-competencies. If nothing else, as environments evolve in the 21st century, and SOF's roles evolve along with these environments, a review and perhaps a revision in the SOF core activity construct is warranted. An accurate and clear depiction of SOF's unique and critical activities will actually enable variation, by ensuring that core competencies are maintained as SOF evolves.

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VI.   CONCLUSIONS

A.   SUMMARY

In addressing the central research question, How can USSOCOM prepare for environments of evolutionary and revolutionary change?, this thesis has delved into three specific fields of organizational theory to expose the reader to differing perspectives on the issues inherent in dealing with change. Chapter two reviewed a history of the concept of evolutionary and revolutionary change, and the implications that this dichotomy has on militaries in conflict. The fact that change over time consists of punctuated equilibria poses both challenges and opportunities to organizations who are able to adopt strategies and structure that maximize their fitness in both change dynamics. Chapter III through V summarized three different organizational theory perspectives, each of which provides a slightly different optic on the problem set. To recap these perspectives:

Ambidexterity addresses functional separation of activities that exploit current environments from those that explore potential futures. This separation buffers innovation from the organizational inertia that develops from a focus on exploitive activities. It also recognizes the fundamental differences between incremental and exploratory innovation, and argues for the importance of coordination/integration mechanisms between the two.

The Dynamic Capabilities View (DCV) assesses how an organization's ability to change its resource base—through adaption, absorption, or innovation—enables it to succeed in dynamic environments. It posits that these dynamic capabilities need to be developed, practiced, maintained, and honed over time. It offers a counterweight to views that focus on looking solely outward or forward, and instead recommends that organizations can look inward to posture themselves for change.

Organizational Ecology offers a different perspective, one of variation and selection. It operates on the premise that organizations are selected by environmental forces. This perspective offers that variation of organizational capabilities and forms offers a buffer against uncertainty. By prioritizing variety of organizations that address different potential

futures, SOF increases the likelihood that one of those organizations will be an early mover in a future operational niche.

B.   LIMITATIONS / BLIND SPOTS

There are several relevant considerations regarding the research question that have not been addressed. The reviewed fields primarily address structure, process, and the environment, but tend to neglect personnel issues such as recruitment, selection, training, and retention. Neglecting personnel and talent management in favor of reforms to structure, process, or capabilities puts entire organizations—current and future—at risk. This is especially the case with SOF, as human capital is one of its VRIN assets. Much attention and resources are allocated to SOF's selection programs, to ensure that on the human capital domain, SOF maintains a competitive advantage. Teece and Pisano (1994) almost downplay the importance of personnel in dynamic environments when the say "a shift in the environment is a far more serious threat to the firm than is the loss of key individuals, as individuals can be replaced more readily than organizations can be transformed" (p. 548). This position is valid but debatable; a resilient organization can survive the inevitable losses of individuals, but over time poor selection, training, and personnel management processes can have catastrophic consequences for an organizations' human capital. For an organization such as SOF, preserving this human capital should be a priority in any long-term strategy.

Furthermore, while each approach takes a different view of organizational preparation for future change, each fails to address directly the important role of prediction and taking informed risks. Intelligence estimates and risk assessments play an important role in prioritizing resources and preparation for future environments. The three perspectives reviewed do not place much emphasis on forecasting or prediction, but rather focus on preparation for, or buffering against, environmental change. However, estimations and predictions are vital to an organization's future strategy, and this is largely ignored in the reviewed literature. Innovation without prediction is unconstrained, but also unfocused and perhaps inefficient (Courtney et al., 2014).

C. SOF CHALLENGES

Within the military, there are several characteristics or factors that are SOF-specific (relative to conventional forces) that affect their options for preparation for differing environmental change dynamics.

1. Limited Resource Base

First, SOF are a relatively a low density—high demand force. Although it has grown in size by nearly 66% between 2001 and 2012 (Robinson et al., 2018), the demand for SOF continues to far outpace the supply.[11] Despite this growth, and despite being recently designated the lead DoD agency for coordinating Countering Violent Extremist Organizations (VEO) and Combatting Weapons of Mass Destruction (CWMD) (in addition to other demanding and persistent missions worldwide), USSOCOM still operates on less than 2% of the total DoD budget (Thomas, 2018). This combination of high levels of responsibility and demand, coupled with a relatively low resource base (manpower and budget), means that efficiency in where and how USSOCOM applies effort and resources is critical. Resources serve as a significant, if not the primary, limiter of innovation and change potential for SOF, but forcing it to make strategic decisions on: 1) how much of the limited resources to allocate to innovation and future capabilities, and 2) which vectors to invest in, and which to assume risk in. In short, as today's SOF force does not have much excess capacity to spare, its choice of strategies to prepare for future conflict are critical.

This limited resource base constrains SOF's ability to create differentiated units, as doing so often requires more personnel and resources. If resources are limited and efficiency is the priority, it makes more sense to pool resources and personnel together, and adopt a harmonic ambidexterity model. However, given any excess capacity, the exploratory benefits of a structurally differentiated approach may outweigh their resource costs. The same can be said for variation of units (organizational ecology's selection

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[11] Based on author's operational experience, specifically regarding information USSOCOM Global Force Management process. This is the process used by USSOCOM to allocate operational units to global requirements. In recent years, SOF has been able to source a low percentage of the global demand for forces.

approach), which requires a significant investment of resources and effort in order to protect against uncertainty. However, dynamic capability can be increased without incurring additional costs or growth, from a resource and manpower perspective. In other words, an organization can look to improve its adaptability by improving its internal processes, even in a zero-growth environment, and without degrading its existing capacity.

2.   Persistent Engagement in Low-Intensity Conflict

One of Yarger's (2013) SOF premises is that "Special Operations and SOF exist on the cutting edge of change and continuity in the security environment" (p. 50). This premise speaks to the fact that SOF are persistently engaged forward even during times of peace. They rotate through regions of instability and low-intensity conflict, as persistent engagement is integral to the Global SOF network strategy (Yoho et al., 2014). As of 2018, approximately 8,300 SOF personnel were persistently deployed to 90 countries (Thomas, 2018). J. Guerts summed up the phenomenon in 2016, when he said, "SOF used to be a force that is globally deployable; now we are a globally deployed force. Mission complexity is increasing; the number of missions they're doing is increasing; the number of partners they're engaging with is increasing; the number of environments they're working in is increasing" (cited by Clevenger, 2016).

As is made clear in the recent NDS, SOF must now continue to engage in persistent low-intensity conflict while simultaneously preparing for major theater war against peer adversaries. SOF essentially prepares for or operates in two highly differentiated conflict environments simultaneously. Finally, the extremely wide range of operational requirements placed on SOF demands that investments or divestments are made with a full understanding of the tradeoffs involved, not just internally, but also in the context of varying environmental dynamics.

D.   SOF OPPORTUNITIES

Despite the continued high operational tempo in its operational force, the recent drawdown of SOF forces from Iraq and Afghanistan and the reorientation towards nation-state threats stated in the NDS (Department of Defense, 2018), offers opportunity for USSOCOM to invigorate its innovation efforts. Additionally, it benefits from the fact that

it controls and manages its own Major Force Program (MFP) funding line, unlike other combatant commands (Martinage, 2008, p. 10). This gives USSOCOM a unique ability to plan out requirements and invest in new SOF-specific research and development initiatives and opportunities. It owns its own system for developing and integrating new systems, the SOF Capabilities Integration and Development System (SOFCIDS), which is "a streamlined version of the JCIDS process, wholly owned by the USSOCOM commander for SOF-particular acquisition" (Schaefer, 2010, p. 122). As such, it does not compete for priority or attention with the larger acquisitions programs of the services, and therefore somewhat insulated from the bureaucratic inertia of the larger DoD process. The fact that USSOCOM has a SOF-specific acquisition process provides it a significant dynamic capability, by enabling the fast fielding or rotation of technologies into the operational force.

E.   RECOMMENDATIONS FOR FURTHER STUDY

This thesis has discussed each of the three theories at the wave-top level, but each of them offers a deep body of work that elaborates on many of the topics discussed. Of the three, ambidexterity most directly addresses this study's central question, and therefore is most warranted for further study. Each perspective, however, offers additional interesting and potentially useful concepts that were not included in this thesis, in order to adhere to the intent of the concept overview.

Based on the themes highlighted in this paper, several concepts emerge that warrant further or ongoing study:

1.   What are the potential future environments that would create the most disruption in the current SOF operating paradigm? Does a risk-analysis of these potential environments warrant the creation specialized units that explore ways to meet these environments' unique demands?

2.   How can USSOCOM create more or better linkages between the operational force and the R&D units? Chapter III discussed the importance of integration mechanisms to enable structural differentiation of explorative and exploitive vectors. A detailed assessment of the depth and

effectiveness of existing integration mechanisms would inform USSOCOM on whether there is room for improved integration and coordination.

3.   How can SOF units balance dynamic capability with risk? Many established procedures and routines are intended to mitigate risk and/or ensure accountability. The DCV chapter discussed how complex routines and systems of rules are detrimental in VUCA environments. Reforming or breaking away from these practices will often an assumption of risk, or a transfer of risk to a different domain. Are routines and processes within SOF as simple as they can be within acceptable risk constraints, or do they limit dynamic capability?

4.   Are SOF's capabilities balanced across the SOF force appropriately? Through the lens of organizational ecology's variation-selection approach, is the SOF enterprise capability matrix arrayed in such a way that prepares it for revolutionary environment shifts? The 2018 NDA has signaled a shift towards state-level adversaries, which may require a re-evaluation of priority SOF capabilities. In recent years, has SOF fallen victim to the forces of isomorphism in common mission sets of DA, FID, and SFA?

Each of these further research avenues may benefit from drawing on some of the fundamental principles of the three fields discussed in this study.

F.   FINAL THOUGHTS

In conclusion, a reiteration of the key macro-level takeaways from across the three perspectives follows.

1.   Structurally differentiate and resource exploratory units, in order to mitigate structural inertia and encourage radical innovative pursuits. Develop and maintain robust integration mechanisms between exploratory and exploitive (operational) units.

2.   Proactively develop and maintain dynamic capability, to mitigate establishing engrained path dependencies. Simplify routines and rules in dynamic environments.

3.   Maintain a force structure that prioritizes variability of units and capabilities while ensuring interoperability

In recent decades, SOF has proved itself a highly versatile and reliable force. Many years of persistent engagement in active armed conflict have honed SOF's capabilities in present-day conflicts. It has suffered failures and enjoyed successes (high profile and obscure), and has evolved substantially in a relatively short period of time. However, it must be wary of the paradox of success: that relying too much on what works or has worked can be the path to obsolescence in the future. In the last half-century, SOF has rarely had to operate in an environment that forced it to shift its operational paradigm.

Preparing for paradigm-shifts—or revolutionary change—is not easy for an organization riding a wave of success. Kodak dominated the photography market, but failed to plan for market change. After World War I, the U.S. Navy retained and resourced the battleship for almost 70 years after it was operationally effective or relevant. And while one can be confident that SOF will not be the next Kodak or battleship, these examples provide good cautionary tales. In order to avoid succumbing to such change-inhibiting forces as inertia and path dependency, concerted efforts are required. New ideas and technology must be explored and, when appropriate, adopted. Old ideas and equipment should be let go when they no longer provide competitive advantage. Avenues must be explored that may yield no returns. Internal mechanisms that enable change should be developed and fostered, even when they are not needed. SOF should resist the temptation to converge capabilities towards requirements of the here and now, and maintain a varied capability profile that prioritizes readiness for the future.

In closing, the three fields reviewed in this thesis do not reveal ideas that are exceptionally novel or groundbreaking. More likely, they reinforce some basic principles, but perhaps through a different line of reasoning. In the end, that the most effective way to balance evolutionary and revolutionary fitness is to explore new ways of fighting, new

technologies, changes in how effort is prioritized, and new ways of organizing. And all of this should be oriented towards conflict environments in which SOF is less comfortable or familiar. Competitive advantage, in warfare as in business, requires taking risks and leaning into the future.

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