CRISIS MANAGEMENT AT THE TIP OF THE SPEAR

INCREASING ADAPTIVE CAPACITY AND CRISIS THRESHOLD

Master of Arts in Law and Diplomacy Thesis

Submitted by Joseph E. Rupp

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The views expressed in this paper are those of the author and do not necessarily reflect the official policy or position of the United States Marine Corps, the Department of Defense, or the U.S. Government.

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Glossary of Terms

Acronym	Definition
ACE	Aviation Combat Element
ACM	Air Contingency MAGTF
ADOCS	Automated Deep Operations Coordination System
AO	Area of Operations
ARG	Amphibious Ready Group
BSSG	Brigade Service Support Group
C2	Command and Control
CASEVAC	Casualty Evacuation
CBIRF	Chemical Biological Incident Response Force
CE	Command Element
COA	Course of Action
COC	Combat Operations Center
Comms	Communications
COP	Common Operating Picture
DO	Distributed Operations
EMW	Expeditionary Maneuver Warfare
ESG	Expeditionary Strike Group
FAST	Fleet Anti-Terrorism Security Team
Frag Order	Fragmentary Order
FRAGO	Fragmentary Order
FSSG	Force Service Support Group
GCE	Ground Combat Element
HMM-265 (Rein)	Marine Medium Helicopter Squadron 265 (Reinforced)
IED	Improvised Explosive Devices
JTF	Joint Task Force
LZ	Landing Zone
MAG	Marine Aircraft Group
MAGTF	Marine Air Ground Task Force
MARDIV	Marine Division
MARFORLANT	Marine Forces Atlantic
MARFORPAC	Marine Forces Pacific
MCPP	Marine Corps Planning Process
MEB	Marine Expeditionary Brigade
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MEU(SOC)	Marine Expeditionary Unit (Special Operations Capable)
MSR	Main Supply Route
NCO	Network-Centric Operations
NCW	Network-Centric Warfare
ODO	Operations Duty Officer
OIF	Operation Iraqi Freedom
OIF-II	Operation Iraqi Freedom-II
OPLAN	Operation Plan

OPORD	Operation Order
OpsO	Operations Officer
PDE&A	Planning, Decision, Execution, and Assessment
PFPS	Preflight Planning Software
PPF	Production Possibility Frontier
R2P2	Rapid Response Planning Process
RAF	Royal Air Force
RMA	Revolution in Military Affairs
SA	Situational Awareness
SNA	Student Naval Aviator
SPMAGTF	Special Purpose MAGTF
TST	Time Sensitive Targets
TST	Time Sensitive Target
TTP	Tactics, Techniques, and Procedures
U.S.	United States
USMC	United States Marine Corps
WMD	Weapons of Mass Destruction

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Executive Summary

The crisis threshold for a given organization is set, de facto, by the organization's adaptive capacity to maintain system stability and respond in a deliberate manner. When this capacity is exceeded, "crisis" is experienced. Leaders have the ability to raise the crisis threshold of their organization by increasing the organization's adaptive capacity in its structure, culture, and processes. While the concepts discussed here hold a military focus, the lessons learned and principles can be applied to any organization.

In conducting this assessment, one must first establish a common understanding of crisis for the purposes of this discussion. Once the nature of crisis and its elements have been defined, crisis management can be better understood and an analysis can be made of how organizations currently deal with crisis. One organization that is very adept at crisis management, the United States Marine Corps (USMC), is structured to operate in a dynamic complex environment. The Marine Corps is a unique organization in the way it operates. Understanding the organizational structure, culture, and processes resident in the Marine Corps will provide insight on how the employment of various functional areas within an organization must collaborate to in order to increase adaptive capacity and effectively manage crises and complex, multidimensional situations. Case studies will be used to reinforce this argument and provide lessons learned on how events resulting in crisis for one organization were no more than small challenges for another organization.

Contemporary literature concerning the role of the military in crisis response is infused with terms such as "Transformation" and "Network-Centric Warfare (NCW)." Throughout the Department of Defense (DOD), these transformational concepts and their contribution to increased adaptive capacity and effective crisis management is a subject of much discussion. The Marine Corps has assessed that they can increase adaptive capacity and effectiveness by implementing changes to their current structure and processes through a concept of *distributed operations* (DO).

Transforming an industrial age, hierarchical organization, such as the DOD, into an information age, networked organization is a daunting process. Lessons learned can provide great insight on strengths and weaknesses that must be addresses in conducting this transformation. Through analysis of case studies and the implementation of lessons learned, leaders can determine the structure, culture, and processes that result in the greatest overall adaptive capacity of their organization.

After an analysis of the nature of crisis, current crisis management architecture, and a look into transformed, networked crisis management capabilities, recommendations will be provided in the areas of organizational structure, organizational culture, and the processes and procedures that an organization uses to effectively manage crisis. By conducting an analysis of how crisis has been and may be effectively managed, or altogether eliminated; leaders, staff, and action officers in any organization will be provided with tools that enable them to increase the adaptive capacity of their respective organizations to deal with the complex, multidimensional challenges that they face.

Introduction

Al Anbar province, Iraq.[1] On 11 December 2004, at 0318, the "Dragons"[2] of Marine Medium Helicopter Squadron 265 (Reinforced) (HMM-265[Rein]) were notified to be prepared to launch a section[3] of CH-46E helicopters with a Quick Reaction Force (QRF) on board in order to secure a military vehicle that was stranded on a main supply route (MSR) in Western Iraq. Time was of the essence. Enemy and friendly situations were passed over phone and classified internet chat to the squadron's Operations Duty Officer (ODO). The ODO, with the assistance of squadron pilots, intelligence personnel, and maintenance and operations departments, immediately began mission planning for the flight crews. Computers in the Dragon's Combat Operations Center (COC) with Preflight Planning Software (PFPS) were used to plot the objective, complete a route of flight to and from the objective and to upload mission data into the memory bricks for the aircraft communication/navigation systems. The electronic "Smart Board" in the COC was used to prepare hasty objective area and landing zone (LZ) diagrams using PFPS Controlled Imagery Base. Within 20 minutes, a complete pilot "smart pack" with all pertinent mission information was printed for the pilots. Concurrent with the mission planning in the squadron COC, the ODO worked through aircraft controlling agencies and recalled a section of Dragon aircraft that were already in flight on another mission. The section was contacted and dynamically retasked to support the QRF insert. The section returned to the Dragon flight line where they were provided with the smart

[1] Unless otherwise noted, the case studies and experiences throughout this paper are personal experiences of Major Joseph E. Rupp and the "Dragons" of Marine Medium Helicopter Squadron 265 (Reinforced) (HMM-265[Rein]) that occurred from July 2003 to April 2005 while Major Rupp served as the Aviation Combat Element Operations Officer.
[2] "Dragon" is the squadron callsign of HMM-265(Rein).
[3] A section is comprised of 2 aircraft.

packs, and aircraft communication and navigation systems were uploaded the memory bricks containing mission data and routes. The "execute" order was given by higher headquarters and by 0348, 30 minutes from the initial phone call (to be prepared to launch); with mission planning complete, the section was launched with the QRF. They proceeded directly to the objective area and effectively secured the stranded vehicle. The QRF immediately detained thirteen hostile personnel. The section of CH-46Es was contacted and subsequently transported the detainees back to a secure location for further processing.

With Western Iraq "the most networked theater in the history of warfare,"[4] all actions throughout the entire mission were completely transparent at all levels of command. Everything was tracked and coordinated via radio, phone, and over chat between duty officers at all levels of command and at all supporting and controlling agencies. A high level situational awareness (SA) was maintained throughout.

The success of the Dragons in the execution of this mission, and many similar missions, was due to the way in which transformational concepts in organizational structure, processes and practices, organizational culture, and technology allowed the squadron to adapt and effectively increase their capacity to manage crises while conducting combat operations at the "tip of the spear" in support of Operation Iraqi Freedom. *The crisis threshold for a given organization is set, de facto, by the organization's adaptive capacity to maintain system stability and respond in a deliberate manner. When this capacity is exceeded, "crisis" is experienced. Leaders have the ability to raise the crisis threshold of their organization by increasing the organization's adaptive capacity in its structure, culture, and processes.* While the concepts discussed

[4] Michael Bruno, *Western Iraq Most Networked in History of War* (2005).

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Contemporary literature concerning the role of the military in crisis response is infused with terms such as "Transformation," "Network-Centric Warfare (NCW)," and "Revolution in Military Affairs (RMA)." Throughout the Department of Defense (DOD), these transformational concepts and their contribution to increased adaptive capacity and effective crisis management is a subject of much discussion. The Marine Corps has assessed that they can increase adaptive capacity and effectiveness by implementing changes to their current structure and processes through a concept of *distributed operations* (DO).

Transforming an industrial age, hierarchical organization, such as the DOD, into an information age, networked organization is a daunting process. Lessons learned can provide great insight on strengths and weaknesses that must be addresses in conducting this transformation. Combat operations in Iraq and Afghanistan over the last few years have provided excellent case studies on the concepts of transformation and NCW. Through analysis of case studies and the implementation of lessons learned, leaders can determine the structure, culture, and processes that result in the greatest overall adaptive capacity of their organization.

After an analysis of the nature of crisis, current crisis management architecture, and a look into transformed, networked crisis management capabilities, recommendations will be provided in the areas of organizational structure, organizational culture, and the processes and procedures that an organization uses to effectively manage crisis. By conducting an analysis of how crisis has been and may be effectively managed, or altogether eliminated; leaders, staff, and action officers in any organization will be provided with tools that enable them to increase the adaptive capacity of their respective organizations to deal with the complex, multidimensional challenges that they face.

Nature of Crisis

As previously mentioned, in order to properly asses how organizations may more effectively respond to a crisis, we must establish what constitutes a crisis. There is no generally accepted definition of crisis. Various scholars define the concept of crisis in a manner suitable to the context of their particular orientation. As Lebow notes:

> Assessing these definitions in the International Encyclopedia of the Social Sciences. James Robinson concludes that they 'are either extraordinarily precise and specific, and hence, not widely applicable to a variety of situations, organizations and subjects; or they are so unrestricted in meaning that, in this case, it is difficult to distinguish crisis from non-crisis.'[5]

Most of these definitions do, however, include a number of common elements. These include: "the perception of threat, heightened anxieties on the part of decision-makers, the expectation of possible violence, the belief that important or far-reaching decisions are required and must be made on the basis of incomplete information in a stressful environment."[6] Similar to incomplete information is the element of uncertainty, or unpredictability. According to Thomas Schelling, "The essence of the crisis is its unpredictability."[7] Most students of crisis agree that it is an acute rather than chronic phenomenon, that the perception of the existence of crisis is relative not absolute and that the above mentioned characteristics make crisis decision-making different from a deliberate process of decision-making.

Many of these definitions are also built on a distinction between systemic and decision-making approaches.[8] From these two approaches, we will derive our functional definition of crisis for the purpose of this analysis.

The systemic approach views "that a system is a set of actors interacting in established patterns and through designated structures."[9] In a given system, there are critical variables that must be maintained for the system to remain stable. "Stability refers here to the ability of a system or pattern of interactions to undergo a disruptive

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[5] Richard Ned Lebow, *Between Peace and War: The Nature of International Crisis* (Baltimore: Johns Hopkins University Press, 1981).
[6] Ibid.
[7] Glenn Herald Snyder and Paul Diesing, *Conflict Among Nations: Bargaining, Decision Making, and System Structure in International Crises* (Princeton, N.J.: Princeton University Press, 1977).p.8
[8] Charles F. Hermann, *International Crises: Insights From Behavioral Research* (New York,: Free Press, 1972).p.10.
[9] Ibid.p.10.

sequence of events without breaking down or suffering qualitative changes of nature."[10] Changes in critical variables will create varying degrees of instability within the system, "perhaps to the point where a new system will be formed."[11] A systemic view of crisis is "a situation which disrupts the system or some part of the system (i.e., a subsystem such as an alliance or an individual actor). More specifically, a crisis is a situation that creates an abrupt or sudden change in one or more of the basic systemic variables."[12]

An alternate perspective to the systems approach for understanding crisis is the decision-making approach. Central to this approach is the process by which decisions are made and policy is set. A crisis under the decision-making approach is "a situation that (1) threatens high-priority goals of the decision-making unit, (2) restricts the amount of time available for response before the decision is transformed, and (3) surprises the members of the decision-making unit by its occurrence."[13]

Snyder-Diesing take a slightly more in depth assessment on the impetus behind a crisis. Rather than view a crisis as a "situation", the phrase "sequence of interactions" is used. *Sequence of interactions* is described as more meaningful, first because it is the kind of interaction going on between the actors, that gives their relations the character of "crisis". *Sequence* also clearly denotes a span of time and certain relatedness between the specific instances of interaction.[14]

Pfaltzgraff emphasizes the creation of a *fait accompli* in the development of crisis.[15] This "accomplished act" serves, not as a cause, but rather as a precipitant to

[10] Ibid.p.8.
[11] Ibid.p.10.
[12] Ibid.p.10.
[13] Ibid.p.13.
[14] Snyder and Diesing.p.6.
[15] Professor Robert Pfaltzgraff conducts a Seminar on Crisis Management and Complex Emergencies at The Fletcher School, Tufts University.

which an organization must respond. The *fait accompli* is many times the defining event that results in a conflict situation crossing the threshold into crisis.

As the majority of this discussion will focus on military organizations, one must also include United States military doctrine and the joint definition of crisis. Joint publications define crisis as:

> An INCIDENT or SITUATION involving a threat to the United States, its territories, citizens, military forces, and possessions or vital interests that develops rapidly and creates a condition of such diplomatic, economic, political, or military importance that commitment of US military forces and resources is contemplated to achieve national objectives. An adequate and feasible military response to a crisis demands a flexible adaptation of the basic planning process that emphasizes the time available, rapid and effective communications, and the use of previously accomplished joint operation planning whenever possible.[16]

Following consideration of the various approaches to the definition of crisis, and in the context for which the definition of crisis will be used throughout this paper, the following definition will be applied. For the purposes of this discussion, *crisis results from an acute, unforeseen sequence of interaction leading to a fait accompli, where vital interests, values or system stability are threatened, and to which an organization must respond to uncertainty within a finite time period in order to achieve success*.[17]

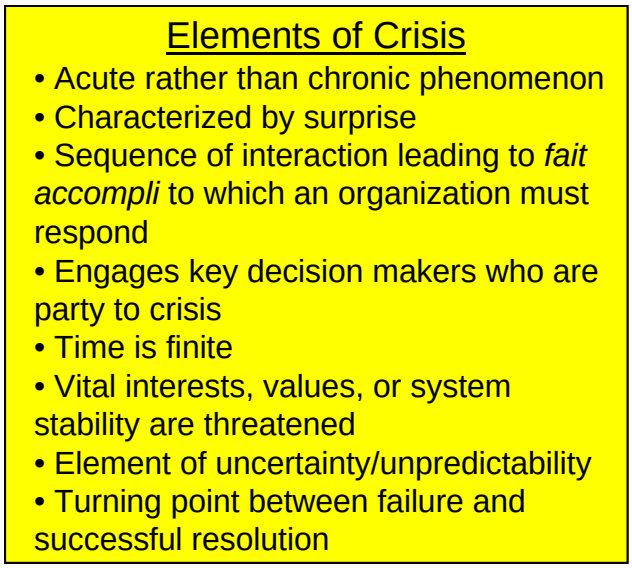


Figure 1 - Elements of Crisis

[16] JCS, ed., *Joint Pub 5-0 Doctrine for Planning Joint Operations* (Joint Chiefs of Staff, 2005). p.III-9.
[17] Definition adapted from Professor Robert Pfaltzgraff's definition given in Seminar in Crisis Management and Complex Emergencies, The Fletcher School, in order to address aspects of the present analysis.

Additionally, for the purposes of this paper, the discussion of crisis will not be limited to international crisis, but will address the concept of crisis as a whole and how it is characterized by the elements of crisis relative to the organization that is experiencing it.

There is no minimum or maximum duration of a crisis; however, it does have a finite timeline characterized by pre-crisis, escalation, crisis, de-escalation, and post-crisis phases. Figure 2 depicts a crisis model adapted from both the Snyder-Diesing and Pfaltzgraff crisis models.[18]

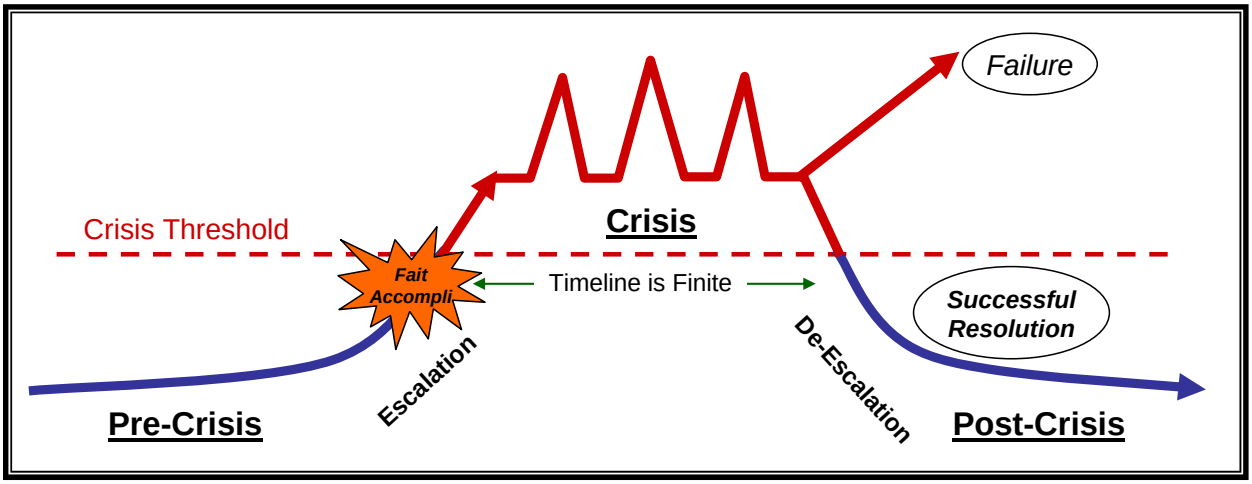


Figure 2 - Crisis Diagram

The pre-crisis phase is the area where organizations function on a routine basis. System interaction variables are kept within a standard deviation. Decision-making units utilize deliberate processes to formulate policy. The pre-crisis period is not necessarily without challenges. Organizations deal with challenges on a regular basis and these challenges are generally viewed as chronic phenomenon. "A challenge is stimulated or motivated by a *precipitant*".[19] A precipitant constitutes an act, or *fait accompli*, to which an organization must respond. When precipitants are of such a

[18] Snyder and Diesing.p.15.
[19] Ibid.p.11.

nature that the pursuant challenge does not constitute a significant or vital threat and can be dealt with utilizing organizational processes of a routine nature, no crisis is experienced.

An escalation occurs when a precipitant creates a challenge of such magnitude and severity as to be considered acute, vice chronic. Uncertainty, surprise, miscalculation, and a perceived need to respond all contribute to what Pfaltzgraff refers to as "the fog of escalation."[20] When the elements of crisis result in escalation to such an extent that deliberate processes are insufficient to adequately address the situation at hand, then the "crisis threshold" is crossed. As previously mentioned, the crisis threshold for a given organization is set, *de facto*, by the organization's adaptive capacity to maintain system stability and respond in a deliberate manner. When this capacity is exceeded, "crisis" is experienced.

The crisis phase, also referred to as the "confrontation phase",[21] may include several "peaks" of tension. This state of crisis is maintained so long as the elements of the challenge are of such a magnitude that they exceed the adaptive capacity of the organization. In reference to international crisis, "there are three possible outcomes of the confrontation phase: war, capitulation by one side, or negotiation or tacit compromise."[22] If the parties are unsuccessful in resolving the crisis, the result is war. The previously existing crisis is then over and the condition then characterized by a different type of interaction. If the elements of crisis are mitigated to the extent that system stability is restored and routine processes and procedures are once again

[20] Professor Robert Pfaltzgraff, Seminar in Crisis Management and Complex Emergencies, Sept 13, 2005.
[21] Snyder and Diesing.p.14.
[22] Ibid.p.14.

sufficient to address challenges; capitulation or compromise occurs, a resolution takes place, and a crisis de-escalates into the post-crisis phase.

Adaptive Capacity and Crisis Threshold

The concept of crisis is relative to the parties involved. "The sense of crisis may be felt in different degrees by each party during the crisis."[23] Precipitants that result in crisis for one organization may not result in crisis for another organization. The true "cause" of crisis lies in the disparity between a given challenge and an organization's adaptive capacity. If the magnitude or severity of the challenge exceeds the organization's adaptive capacity, crisis occurs. If the challenge faced is less than the organization's adaptive capacity, the point of crisis is not reached and results in noncrisis.

Bennis and Thomas assert that "the critical quality of a leader that determines how that leader will fare in a crucible experience is *adaptive capacity*. Adaptive capacity allows leaders to respond quickly and intelligently to constant change. It is the ability to identify and seize opportunities."[24]

> People with ample adaptive capacity may struggle in the crucibles they encounter, but they don't become stuck in or defined by them. They learn important lessons, including new skills that allow them to move on to new levels of achievement and new levels of learning. This ongoing process of challenge, adaptation, and learning prepares the individual for the next crucible, where the process is repeated. Whenever significant new problems are encountered and dealt with adaptively, new levels of competence are achieved, better preparing the individual for the next challenge[25]

[23] Ibid.p.17.
[24] Leonard Wong, "Developing Adaptive Leaders: The Crucible Experience of Operation Iraqi Freedom," (Strategic Studies Institute of the U.S. Army War College, 2004).p.2.
[25] Warren G. Bennis and Robert J. Thomas, *Geeks & Geezers: How Era, Values, and Defining Moments Shape Leaders* (Boston: Harvard Business School Press, 2002).

One could substitute the term "crucible" in the above citations with the term "crisis." *Just as individual leaders are more effective in managing crisis when they possess ample adaptive capacity, so can organizations become more effective in crisis management when the adaptive capacity of the organization is increased.* An organization's adaptive capacity lies in its organizational structure, organizational culture, and institutionalized processes.

Figure 3 depicts how organizational capacity affects the severity of crisis that an organization experiences.

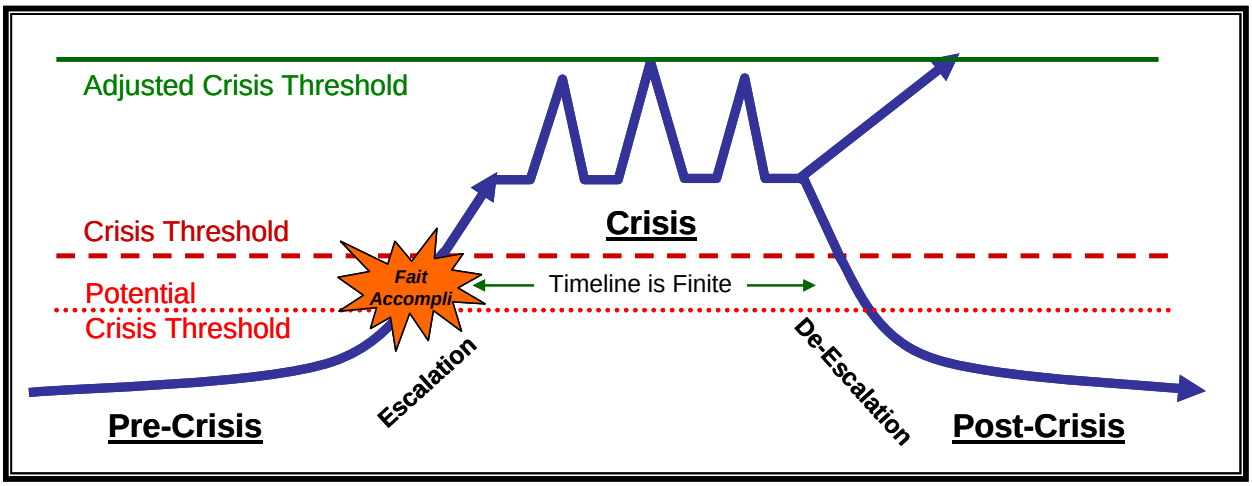


Figure 3 - Adjusted Crisis Threshold

The crisis threshold for an organization with limited capacity is potentially much lower than the crisis threshold of an organization with extensive capacity. *Even if the sequence of interactions, precipitants, and challenges are the same for two separate organizations, the difference between crisis and noncrisis will be dependent on the adaptive capacity, or crisis threshold, of each organization.* The organization that has an increased adaptive capacity will have an adjusted crisis threshold that will lessen the effects of the crisis or cause that the situation be addressed as a "noncrisis" challenge.

Adjusted Crisis Threshold

The following case study exemplifies how an organization can modify its organizational structure, culture, and processes in order to increase their adaptive capacity over that of similar organizations that faced the same, or similar, challenges.

Operation Iraqi Freedom (OIF) II, HMM-265(Rein) faced many new challenges that posed potential crisis if not properly addressed, not only for the squadron, but for higher headquarters as well. Organizational structure was modified, organizational culture reinforced, and the routines and processes used on a daily and basis were adapted to the demands at the time. These modifications resulted in an increased adaptive capacity and increased crisis threshold for the squadron.

The standard HMM squadron in Iraq at the time, of which there were six squadrons, had enough aircraft and aircrew to fly five sections of aircraft per day per squadron. On a daily basis, the Marine Aircraft Group (MAG), the squadron's next higher command, would routinely task *three* of the five sections per squadron, typically one day section and two night sections. In terms of organizational structure, the majority of the squadrons wrote a daily flight schedule that included only the crews for which there was tasking, three sections per day. Operations at HMM-265, would schedule all *five* crews on a daily basis, *two* day sections and *three* night sections, even if there was no tasking for the additional crews.

These crews, both the pilots and crewchiefs, would receive operations and intelligence briefings each day just as if they were going to fly. They would get the proper "crew rest" required by governing directives. When they came to work, the maintenance department would ensure that aircraft were assigned to the crews in the

event they might launch and were available for the crews to preflight. Mission event numbers were assigned so that they would already be in the system if the additional section was required.

There were many times throughout the MAG where flights on a particular day would be cancelled due to a variety of reasons; weather, aircraft maintenance issues, etc. This would result in additional tasking for all the squadrons throughout the MAG on the following day. Since most of the flights were conducted at night, it was generally the following morning when the effects of various cancellations were realized. The typical response from the MAG when flights were cancelled was to call the squadron ODO some time early in the afternoon following a night of cancellations and inform the squadron that there was extra tasking for the upcoming night because aircraft had been unable to fly the night before. This additional tasking would serve as a *fait accompli*, sending squadrons along the flight line into crisis management mode; acute, surprise, finite timeline, unpredictable, success or failure, etc.

Classic responses from the squadrons would include: "We can't get aircraft ready." "We don't have pilots with proper crew rest, and even if we could get pilots, we won't have crewchiefs." Many of the squadrons would have to constitute crews and arrange for aircraft in a short few hours in order to have additional aircraft to launch in the evening.

For HMM-265, there was no such crisis. They could quickly respond with an additional section of aircraft when called upon. The sequence of events that created crisis for some squadrons was a challenge taken easily in stride by HMM-265. By maximizing the resources available, scheduling additional sections both day and night,

the organizational structure provided an increased adaptive capacity to respond. The acuteness of a crisis was mitigated. The organization as a whole viewed the need to provide additional aircraft in support of combat operations as a chronic phenomenon and was continually prepared.

The close, continual integration of Operations, Intelligence, and Maintenance Departments reflected the cohesive organizational culture in the squadron. The squadron as a whole cultivated the traits of adaptability and flexibility. The working relationships were such that there was no need to worry about the Maintenance Department getting upset at the Operations Department due to a "surprise" requirement to launch additional aircraft that maintenance did not have ready. All elements of the organization had a "go" mentality and a desire to accomplish any mission assigned. (The squadron coin is stamped with the phrase, "It's an attitude!") The daily standardized crew briefs, pre-assignment of mission numbers, mandatory crew rest procedures were elements of processes adhered to the squadron. All these elements combined effectively increased the squadron's ability to react. This increased the *adaptive capacity* of the squadron in its ability to support coalition forces. There were events that still exceeded HMM-265's crisis threshold; however, the number and severity of crises was significantly reduced.

Collective Effort

Maintaining adaptive capacity and an elevated crisis threshold demands a concerted effort on a daily basis throughout an entire organization. The effort must be a collective effort. Even if one part of an organization is capable of increasing the

capacity of their particular part of the organization, the organization as a whole will still be limited by the capacity of the "lowest common denominator." The one part of the organization that endeavors to increase its adaptive capacity is many times frustrated at being held down by the other less-adaptive components of the organization.

For example, if the squadron suffered from significant maintenance issues and aircraft availability was reduced, it would not matter that there were crews constituted and briefed to fly missions. (See Figure 4.) If they had no aircraft, they would not be able to accomplish their tasking. The adaptive capacity of the squadron to overcome the challenge of additional tasking would be reduced. Should this tasking come, a crisis would exist, as the challenge would be beyond the capacity of the organization's ability to resolve.

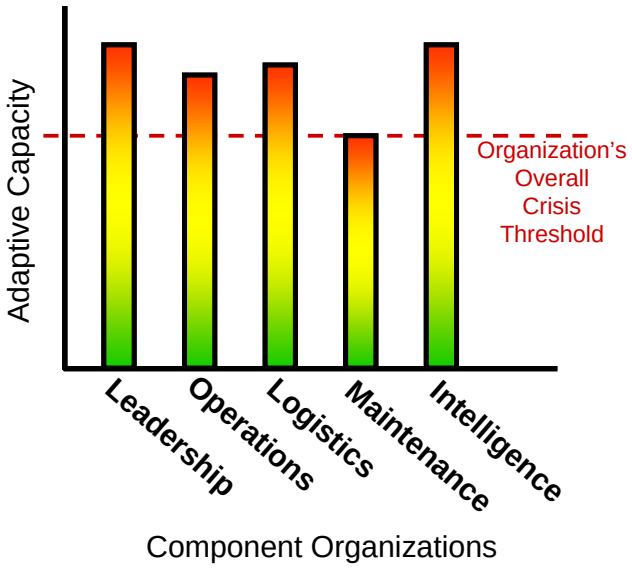


Figure 4 - Collective Adaptive Capacity

If one area of an organization is weak while others are relatively strong, resources should be focused on this weak link. Using the example above, resources from the logistics department could be used to supplement the maintenance effort. This could mean a decline in the

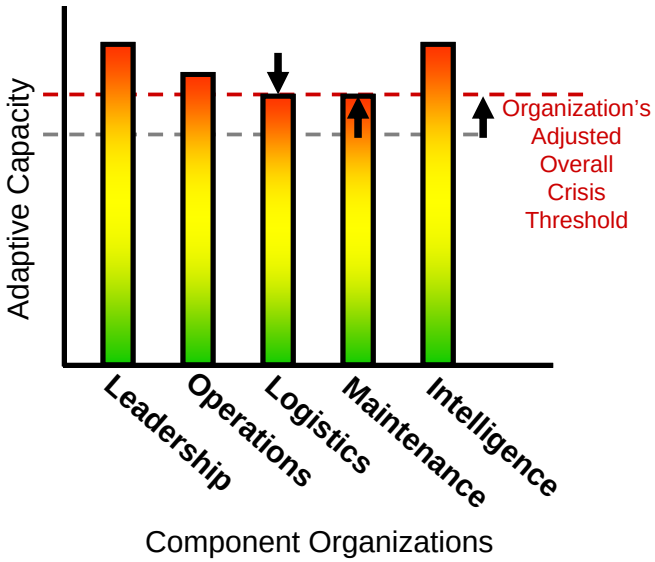


Figure 5 - Collective Adaptive Capacity, Adjusted

adaptive capacity of the logistics department, but with the increase in the adaptive capacity of the maintenance depart, the adaptive capacity of the organization as a whole will be able to maintain an increased crisis threshold. (See Figure 5.)

Factors In Adaptive Capacity

The following series of graphs depict the relationship between the crisis threshold and adaptive capacity of an organization and the need for collective efforts by component organizations within a larger parent organization. These figures also demonstrate importance of the parent organization's ability to manage the resources available.

Correcting one or two variables is much simpler than correcting multiple variables; however, Figures 4 and 5 provide a sample of the many component organizations that could play a factor in maximizing the overall adaptive capacity of an organization. For simplicity's sake, the relationship of only two components, the maintenance department and operations department in a squadron, will be used to conduct this theoretical analysis. (See Figure 6).

The adaptive capacity of the maintenance department and the adaptive capacity of the operations department combine

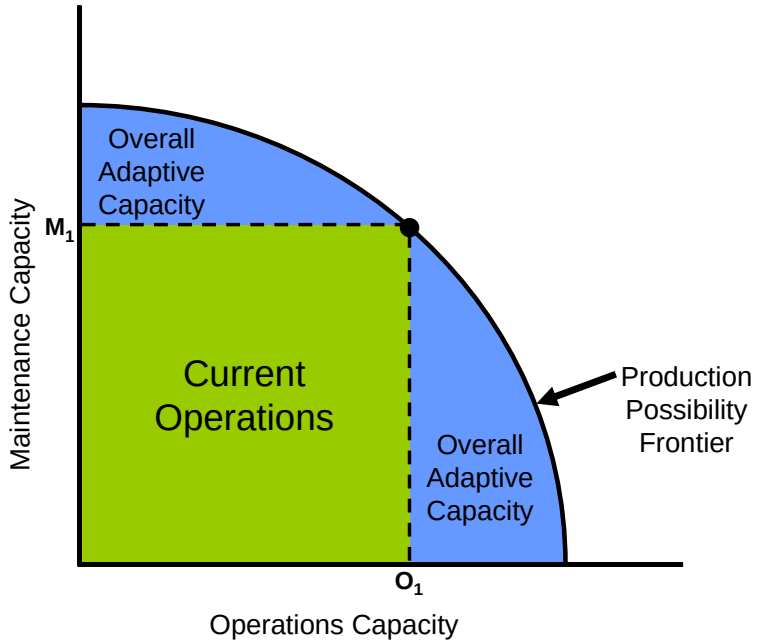


Figure 6 - Adaptive Capacity PPF

to form a production possibility frontier (PPF) representing the extent of possible operations that a squadron can conduct. This PPF essentially defines the squadron's crisis threshold. Assuming that the squadron will always operate at capacity, current operations will maximize the available resources and operate on the PPF. The area of current operations, shown in green in Figure 6, depicts the current output of the squadron based on factors such as priority, resource allocation, etc. The area outside of current operations, but still within the squadron's production possibility, constitutes the adaptive capacity of the squadron. Shown in blue in Figure 6.

The PPF expands, contracts, or adjusts based on the adaptive capacity of each of the individual component organizations. (See Figure 7.) For example, if the squadron has a turnover of pilots where more senior qualified pilots leave and junior unqualified pilots replace them. The adaptive capacity of the operations department will be reduced without necessarily affecting the adaptive capacity of the maintenance department. This will, however, result in a decreased overall adaptive capacity for the squadron as a whole.

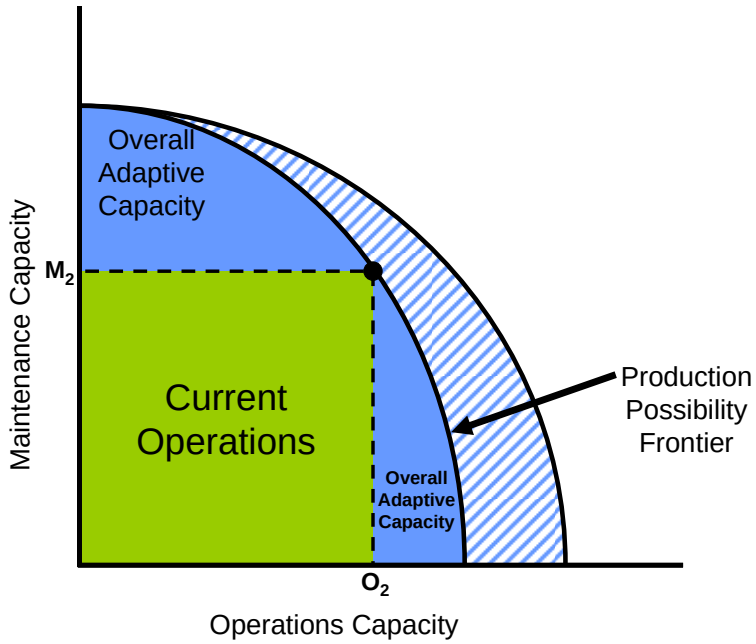


Figure 7 - Reduced Operations Capacity

Challenges have elements, or characteristics, that define them. These elements, referred to earlier in Figure 1, form the basis for crisis. The relationship

between these elements and the adaptive capacity of an organization is the determining factor of crisis vs. challenge for the organization.

Challenges characterized by elements that are easily managed, in this case, by either maintenance, operations, or in a combined effort, are not considered a "crisis" due to the ability of the squadron to overcome the challenge in conjunction with routine operations. These types of challenges are solved by adjusting priorities within the organization. Figure 8 provides an example where pilots are serving both the maintenance department, conducting post-maintenance check flights, as well as operations, conducting pilot training. A potential crisis arises where requirements identified the need to have shipboard qualified pilots for an upcoming mission. In this case, the squadron has enough pilots controlled by the operations department, but not enough of them are shipboard qualified.

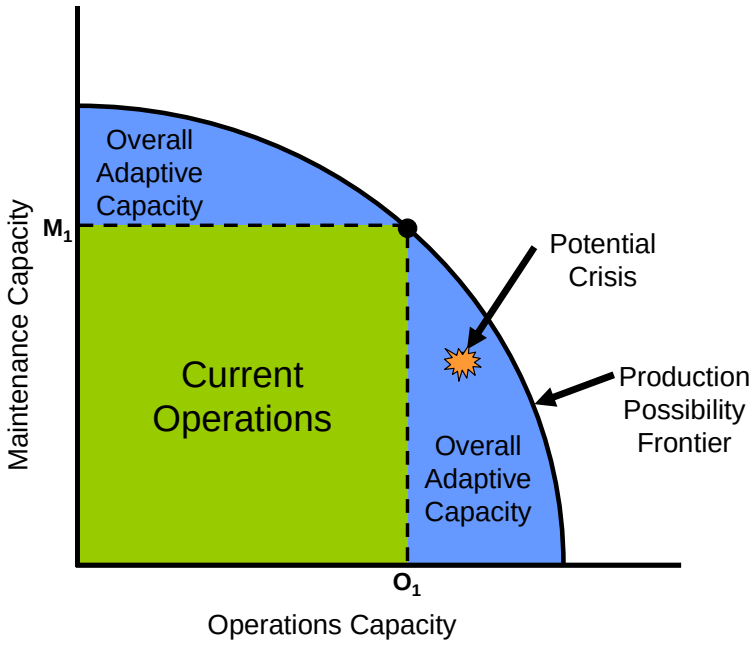


Figure 8 - Potential Crisis outside of Current Operations, within PPF

Figure 9 represents the priority shift to qualifying pilots over the conduct of post-maintenance check flights. One of the maintenance pilots is pulled from conducting the check flights and assigned to conduct shipboard training flights. The maintenance department's current operations are decreased and the training flights in support of

operations are increased. The overall production of the squadron remains the same with the potential crisis resolved.

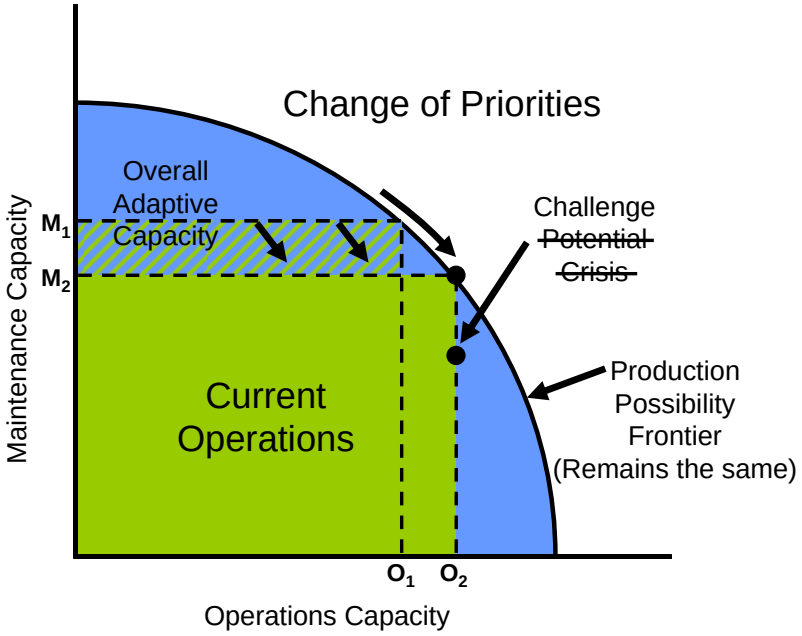


Figure 10 - Priority shift to address challenge

Challenges whose elements lie outside of the PPF are of such a magnitude that the squadron cannot adequately respond without modifying the system, under the systemic approach, or modifying the decisionmaking process, if viewed from the decisionmaking perspective. These challenges result in a crisis condition. This condition of *crisis* will remain in effect until the adaptive capacity is adequate to address the elements that characterize the particular crisis.

Not all crises rely upon the same resource to resolve it. Figure 10 depicts a *maintenance intensive crisis*. This could be represented such a problem as a particular part on all aircraft that is found to be

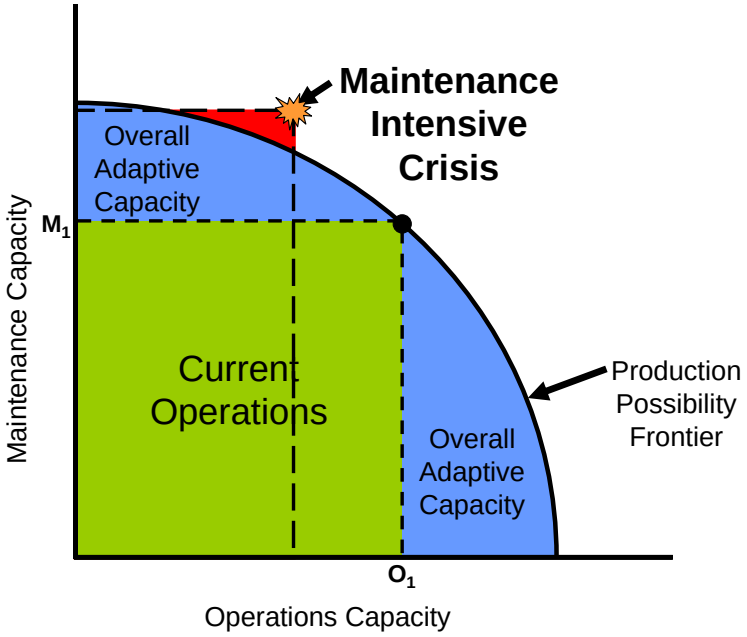


Figure 9 - Maintenance Intensive Crisis

defective, or limited supply of replacement parts. A crisis exists because the squadron cannot accomplish its assigned mission due to a lack of aircraft availability. In this particular scenario, there is not a great deal the operations department can do to help resolve the crisis. The burden of resolution lies primarily on the maintenance department.

Figure 11 depicts an *operations intensive crisis*. An example of this could be a large scale mission that demands extensive coordination and planning. The maintenance department may not be able to create a significant impact on the resolution of the mission.

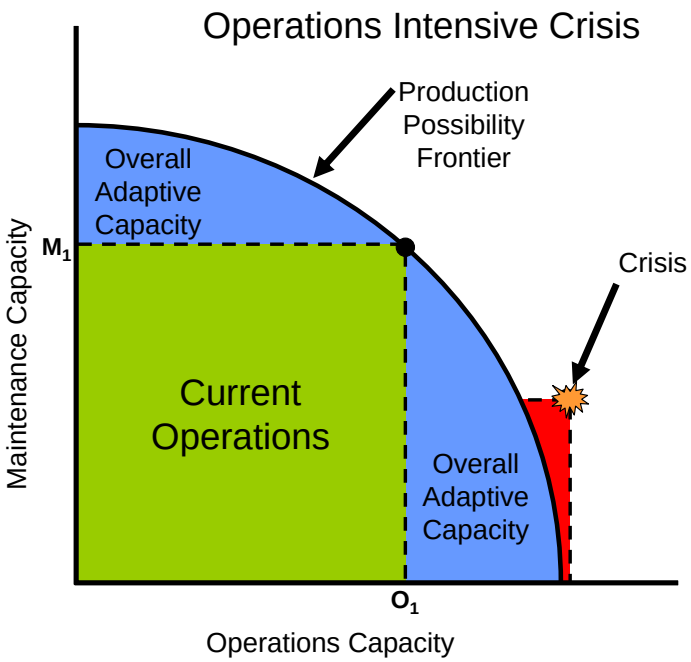


Figure 11 - Operations Intensive Crisis

When challenges are beyond the PPF and present a crisis, there needs to be a change in the factors of production in order for an organization to resolve a particular crisis. For the example in Figure 10, if there is a shortage of parts, increasing the parts supply would contribute to the resolution of the crisis. The increase in parts would result in an increased adaptive capacity within the maintenance department. This change in adaptive capacity represents a change in the factors of production within maintenance. For the example in Figure 11, there might be a requirement to take computer assets from the maintenance department and reconfigure them to provide more collaborative

planning tools to the operations department. This would be a reallocation of assets that would decrease the adaptive capacity of the maintenance department and increase the adaptive capacity of the operations department. (See Figure 12.)

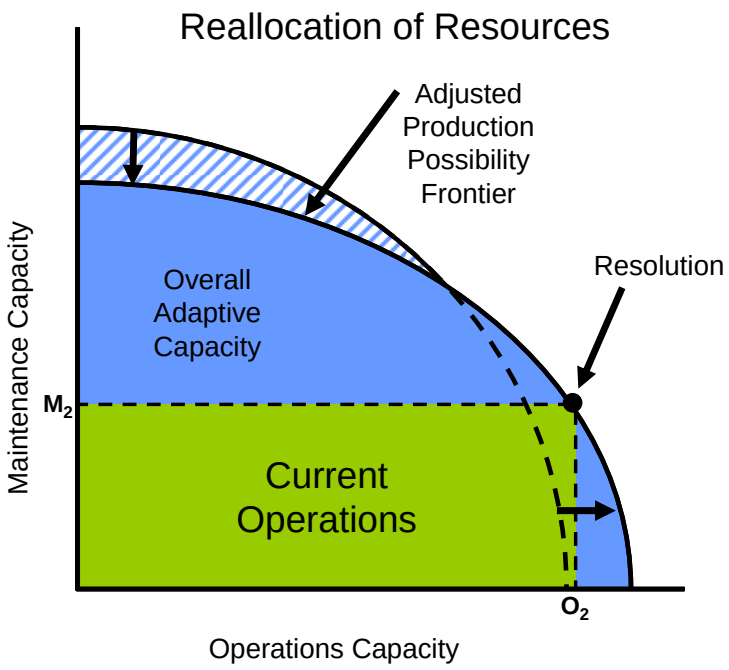


Figure 12 - Resolution through reallocation of resources

The farther the characteristics of the crisis are from the PPF, the greater the magnitude of the crisis and the greater the change required to the PPF. As organizations experience change, their adaptive capacity adjusts. Even a similar sequence of events will result in different levels of crisis from one occurrence to the next. As personnel join or leave the organization, both the organizational structure and culture change. New processes are implemented to address the various factors of the challenges that an organization faces. Likewise, no two organizations are exactly the same, even if they are both the same type of organization. For this reason, even though the challenge may be similar and the organizations very much alike, the challenge will affect one organization differently than the other.

There are times when the elements of the crisis are so far outside the PPF of a particular organization, that any adjustment or reallocation of resources within the organization would still be insufficient to adequately manage the crisis. In order to

manage such a crisis, additional resources must be sought in order to increase the factors contributing to the adaptive capacity of the individual components.

An increased adaptive capacity closes the distance between the organizations capabilities and the resources required to successfully manage crises. The greater the adaptive capacity, the more the elements are mitigated. The more they are mitigated, the less the possibility or severity of a crisis. Many times, any one functional area within an organization can affect one or more elements of crisis, but rarely can one functional area affect all the elements of a particular crisis.

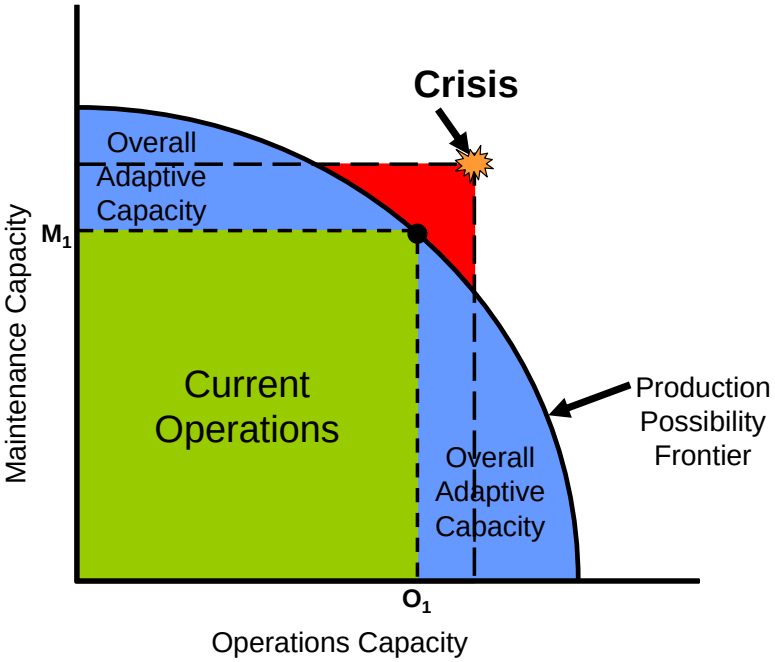


Figure 14 - Significant Crisis

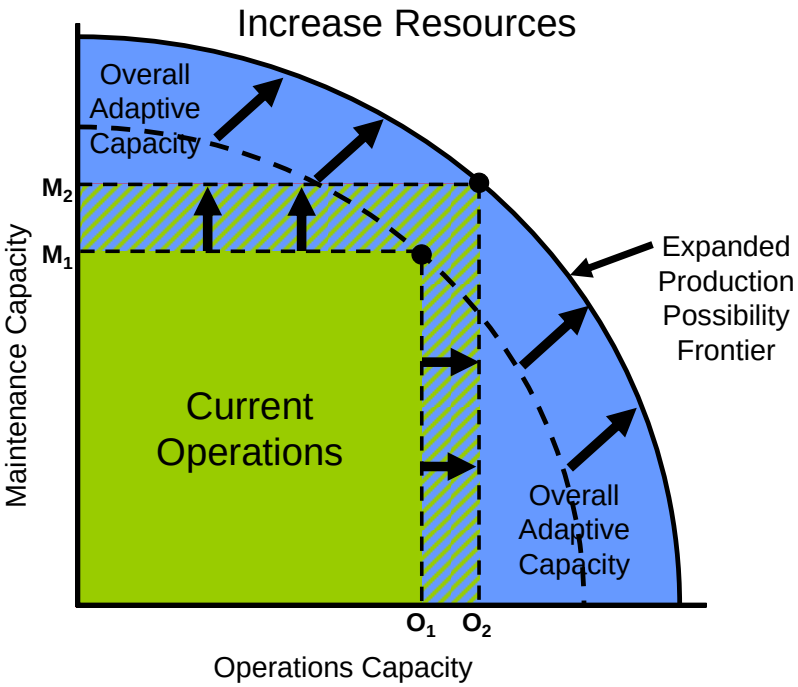


Figure 13 - Increased Adaptive Capacity

The analysis and theory applied here using only two factors, or component organizations, should be applied to the complex factors that actually exist in complex organizations. The interaction of component organizations and the ability to control and manipulate factors as required from one situation to the next, will largely determine the overall adaptive capacity and the crisis threshold for a given organization. Those organizations that have limited resources, limited control over the resources that they have, or resources that are limited in their ability to affect the productivity another component organization, will find crisis management more challenging than similar organizations that are not so constrained.

Organizations that lack adaptive capacity will have a relatively lower crisis threshold. Flight instructors at Helicopter Training Squadron 18, Naval Air Station Whiting Field, spend numerous hours helping Student Naval Aviators (SNA) develop their adaptive capacity. New students would easily become task saturated when presented with multiple or compound simulated emergencies in the aircraft. Surprise, limited reaction time, and rapid decision making demands were all factors that would result in *crisis* for the SNA, leading to what is affectionately refer to as a "helmet fire" in the cockpit.

War is a special activity, different and separate from any other pursued by man. This would still be true no matter how wide its scope, and though every able-bodied man in the nation were under arms. An army's military qualities are based on the individual who is steeped in the spirit and essence of this activity; who trains the capacities it demands, rouses them, and makes them his own; who applies his intelligence to every detail; who gains ease and confidence through practice, and who completely immerses his personality in the appointed task. Carl Von Clausewitz

The students that lacked necessary knowledge, preparation or skill were much less proficient at dealing with the challenges that they faced. Organizations are not unlike individuals in this regard. Poor structure, unwilling culture, and faulty processes will result in an organization's inability to react appropriately to challenge and will easily result in crisis.

While organizations can exercise varying control over external events and precipitants, they must first focus on themselves. Once an organization has trained, educated, and organized itself to the best of its abilities, then it will be better able to focus its efforts on external factors. By trying to focus on external factors first, it is hard to judge what resources can be applied to a given challenge and how much of a particular resource can be expended before the organization as a whole suffers adversely.

Crisis Management and Agile Organizations

The 21st century national security environment differs qualitatively from the security environment that nations faced throughout the industrial age. "Militaries now need to respond to a wider range of potential threats, many that are difficult to assess and many that cannot be responded to with conventional military tactics and capabilities."[26] The crises faced in the modern warfighting environment demand a response that is many times much more complicated than to which the current leadership is accustomed. The factors that must be brought to bear today are not necessarily the factors required in times past. United States (U.S.) military leadership's

[26] David S.; Hayes Alberts, Richard E., "Power to the Edge: Command and Control in the Information Age," (DOD Command and Control Research Program, 2003).p.53.

current vision calls for “agile and adaptive leaders able to conduct simultaneous, distributed, and continuous operations.”[27] This implies that foreseeable challenges will demand greater knowledge, insight, and ability in decisionmakers.

These traits are applicable to more than just individual leaders, but must be applied to organizations as a whole. Agile organizations are needed in order to make optimum use of the technologies and operational concepts. Organizations and processes must be agile enough to exploit emerging technologies and respond to diverse threats and challenges. Organizations must become more responsive to contingencies, with less time between planning and execution.[28] Forces "must be rapidly composed and tailored to the mission. Future command and control (C2) capabilities must enable commanders to rapidly integrate disparate capabilities from a variety of sources and locations to create a cohesive force."[29]

“Our forces in the next century must be agile, lethal, readily deployable, and require a minimum of logistical support. We must be able to project our power over long distances, in days or weeks, rather than months.”
President G.W. Bush

What does an agile organization look like? What about its structure, culture, and process make it agile? How does this agility contribute adaptive capacity and crisis management? How does an organization become more agile? These are all questions that are answered in an analysis of one organization known for its agility, the United States Marine Corps.

[27] Wong.p.1.
[28] JCS, *Joint Vision 2010* (Chairman of the Joint Chiefs of Staff).p.31
[29] DOD, "Command and Control Joint Integrating Concept Final Version 1.0," (Department of Defense, 2005).p.11.

The Marine Air-Ground Task Force (MAGTF)

The United States Marine Corps is one example of an agile organization. Over the last 230 years, the Marine Corps has served as an international crisis management tool for the United States. "Throughout our Nation's history, Marines have responded to national and international brush fires, crises and, when necessary, war."[30]

The Marine Corps operates in Marine Air-Ground Task Forces (MAGTFs), highly integrated and networked combined-arms forces, including air, ground, and combat service support units under a single commander.[31] Understanding the unique concept of the Marine Air-Ground Task Force (MAGTF) with its organizational structure, expeditionary culture, and the planning processes with which it operates will contribute to the overall assessment of how agile organizations might develop adaptive capacity.

MAGTF Composition

MAGTFs are task organized and specifically tailored by mission, as well as for rapid deployment by air and/or sea. However, no matter what their mission or mode of deployment, MAGTFs are comprised of four deployable elements. (See Figure 15.)

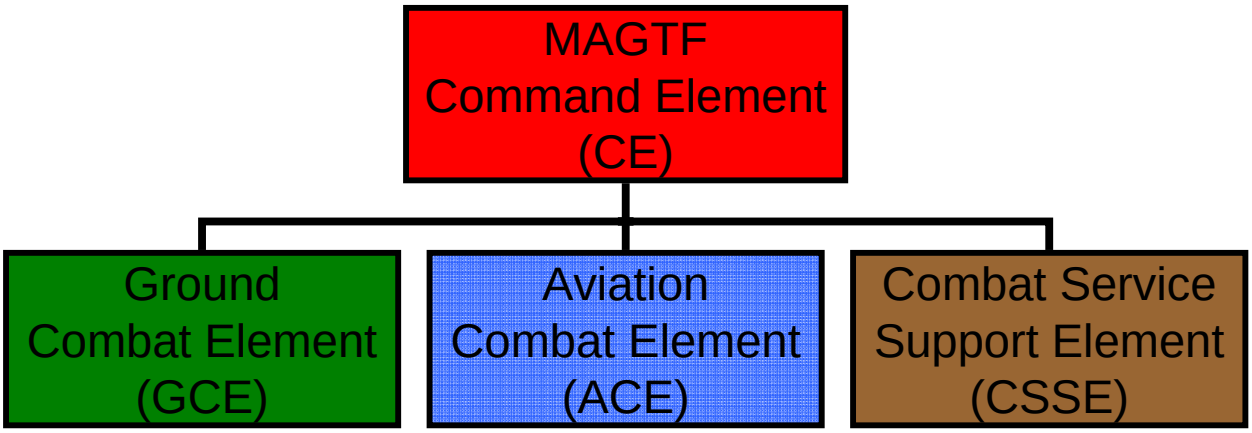


Figure 15 - MAGTF Composition

[30] DOD, *Network Centric Warfare, Department of Defense Report to Congress* (2001).p.A-8.
[31] Ibid.p.A-8.

- **Command Element (CE)**: The CE contains the MAGTF headquarters and other units that provide intelligence, communications, and administrative support.
- **Ground Combat Element (GCE)**: The GCE is task-organized to conduct ground operations to support the MAGTF mission. This element includes infantry, artillery, reconnaissance, armor, light armor, assault amphibian, engineer, and other forces, as needed.
- **Aviation Combat Element (ACE)**: The ACE conducts offensive and defensive air operations and is task-organized to perform those functions of Marine aviation required to support the MAGTF mission. This element is formed around an aviation headquarters with appropriate air-control agencies, combat, combat support, and combat service support units.
- **Combat Service Support Element (CSSE)**: The CSSE is task-organized to provide the full range of combat service support functions and capabilities necessary to maintain the continued readiness and sustainability of the MAGTF as a whole.

Types of MAGTFs

Not only is the MAGTF scalable in terms of function, but it is also scalable in size. Four types of MAGTFs can be task organized as follows: the Marine Expeditionary Force, Marine Expeditionary Brigade, Marine Expeditionary Unit (Special Operations Capable), and Special Purpose.

- **Marine Expeditionary Forces (MEF)**

- Principal Marine Corps warfighting organization
- Task-organized to fight and win battles, including major theater war
- Ranges in size from less than one to multiple divisions and aircraft wings
- 20,000~90,000 personnel
- 60 days of supplies
- Capable of performing as a Joint Task Force (JTF) headquarters.

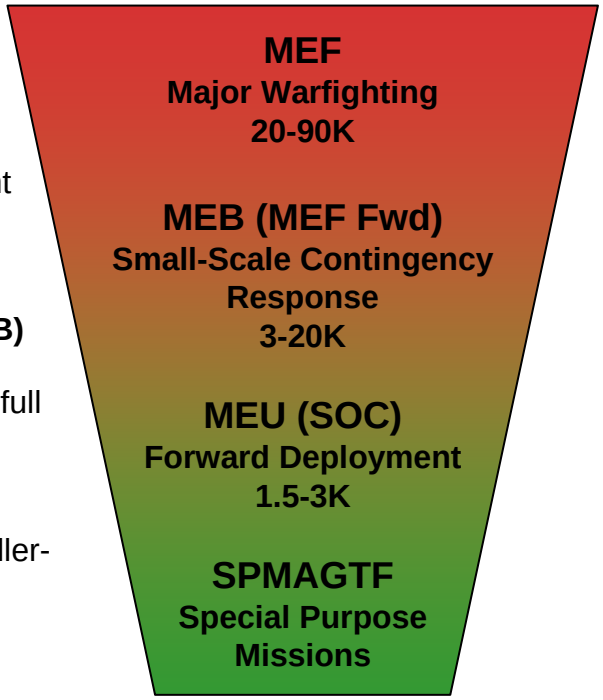


Figure 16 - MAGTF Types

- **Marine Expeditionary Brigades (MEB)**
  - Task-organized to respond to a full range of crises
  - Premier response force for smaller-scale contingencies
  - Mid-sized MAGTF, 3,000~20,000 personnel
  - Comprise of reinforced infantry regiment, a composite Marine Aircraft Group (MAG), and a Brigade Service Support Group (BSSG)
  - 30 days of accompanying supplies
  - Provide combatant commanders with scalable warfighting capability across the spectrum of military operations
- **Marine Expeditionary Units (Special Operations Capable) (MEU[SOC])**
  - Task-organized to provide a forward deployed presence to promote peace and stability
  - Marine Corps' first-on-the-scene force

- Forward-deployed MEU(SOC)s aboard Expeditionary Strike Groups (ESG)
- Operate continuously in the areas of responsibility of various unified combatant commanders
- Provide the President and unified combatant commanders forward-deployed units that can conduct a variety of quick reaction, sea-based, crisis-response options in either a conventional amphibious/expeditionary role or in the execution of maritime special operations
- 1,500~3,000 personnel
- 15 days of accompanying supplies
- Intensive six-month training prior to deployment
- Certification as “Special Operations Capable.”
- America's "911" force.

- **Special Purpose MAGTFs (SPMAGTF)**
  - Task-organized to accomplish a specific mission, operation, or regionally focused exercise

MAGTFs, along with other Marine Corps unique forces, such as Fleet Anti-Terrorism Security Teams (FAST) and the Chemical Biological Incident Response Force (CBIRF), represent a continuum of response capabilities tethered to national and combatant commander requirements.[32]

The flexibility of the expeditionary MAGTF enhances the Marine Corps' operational speed while offering a wide array of force options to meet any number of both expected and unanticipated contingencies. The MAGTF provides fully integrated

[32] James L. Jones, *Marine Corps Strategy 21* (Washington DC: United States Marine Corps, 2000).p.3.

combined arms, effects focused, air-land-sea forces, fully networked to ensure interoperability across a range of functions, distances, and missions.

What makes the MAGTF concept unique is that one commander has all warfighting capabilities under his control. The Army must rely on the Air Force for close air support for its ground forces. The MAGTF commander has an organic aviation capability. The GCE in the MAGTF is supported by the ACE and both answer to the MAGTF commander.

These attributes, together with the Corps' expeditionary culture and unique training and education, make the Marine Corps ideally suited to respond to crisis.[33] The very nature of the MAGTF and advanced operational concepts serve as enablers to increase the agility, the adaptive capacity, of Marine forces to move seamlessly from one operational domain to another.[34]

Expeditionary Maneuver Warfare

Expeditionary Maneuver Warfare (EMW) is the union of the Marine Corps' core competencies: maneuver warfare philosophy; expeditionary heritage, and the concepts by which they organize, deploy, and employ forces. The concept contains the enduring characteristics and evolving capabilities upon which the Marine Corps relies to mitigate or

> "This is the key point: the effective employment of air and space power has to do not so much with airplanes and missles and engineering as with thinking and attitude and imagination."
> Richard Szafranski
> "Neocortical Warfare? The Acme of Skill"

[33] DOD, *Network Centric Warfare, Department of Defense Report to Congress*.pp.A-8, A-9.
[34] USMC, "21st Century Marine Corps: Speed, Flexibility, & Agility…Globally," (2005).

resolve crises as part of a joint force.[35] It emphasizes the unique adaptive capacity the Marine Corps provides the joint force commander.[36]

Marine forces rapidly transition from precrisis state to full operational capability throughout the world. This requires uniformly ready forces, sustainable and easily task-organized for multiple missions or functions. To this end, every part of the organization is agile, lethal, swift to deploy, and always prepared to move to the scene of an emergency of conflict.[37]

Maneuver Warfare

The Marine Corps' approach to warfare, maneuver warfare, is one in which a shift has occurred from reliance on the quantitative characteristics of warfare (mass and volume), to a realization that qualitative factors (speed, stealth, precision, and sustainability) have become increasingly important facets of modern warfare. Maneuver warfare stresses proactive thought and action, elevating the operational art beyond the concept of attrition. It combines high tempo operations to achieve physical, temporal, and conditional advantage relative to an adversary. The aim is to shatter an adversary's cohesion, succeed in other operations by rapid action to mitigate damage, or resolve a crisis on favorable terms.

Expeditionary Operations

Expeditionary is the Marine ethos. It constitutes a pervasive mindset that influences all aspects of organizing, training, and equipping by acknowledging the

[35] USMC, "Expeditionary Maneuver Warfare," (United States Marine Corps, 2001).p.4.
[36] Ibid.p.4.
[37] Ibid.p.4.

necessity to adapt to the conditions mandated by the battlespace. In essence, it defines the culture of the Marine Corps.[38]

This expeditionary mindset has given rise to common phrases used throughout the Corps, such as, "Adapt and Overcome" and "Semper Gumby." (The latter referring to the infinitely flexible clay puppet from the *Howdy Doody Show*.) These are reflections of the adaptive culture that characterizes the Marine Corps. They reinforce the constant need to be agile in a changing environment.

The combined concept of maneuver warfare and expeditionary operations, EMW, encourages decentralized decisionmaking, enabling Marines to exploit the chaotic nature of combat. Decentralizing decisionmaking allows Marines to compress the decision cycle, seize fleeting opportunity, and engage enemy forces from positions of advantage, which empowers forces to outthink, outmaneuver, and outfight the adversary.[39] This allows for decisions to be made at the appropriate level, increases the response and decision cycle, and allows for the decision to be made by those who are more certain of the situation due to their situational awareness. The culture of EMW promotes a movement away from the traditional detailed military decision making process and builds a reliance on FRAGOs, task and purpose, and commander's intent for guidance.

EMW engenders a culture of agility, creative thinking, and flexibility. The concept of adaptive capacity is integral to the EMW culture. By adopting a culture where change, crisis, and complex emergencies are viewed as inevitable, expected,

[38] Ibid.pp.6-7.
[39] Ibid.p.6.

and part of routine operations, Marines create an elevated crisis threshold for themselves.

Marine Corps Planning Process

The third component to maintaining an agile, adaptive organization consists of the processes the organization uses to make decisions and follow through with action. The Marine Corps Planning Process (MCPP) supports the Marine Corps warfighting philosophy of expeditionary maneuver warfare and is implemented at virtually every level within the MAGTF organization.

This planning process mitigates the elements of crisis and builds adaptive capacity in a variety of ways. It helps to organize the thought process of the commander and his staff in their role as the decisionmakers. MCPP focuses on the mission and the threat. This creates the structure for analysis of the nature of a crisis and allows for a determination of which factors must be reprioritized, reallocated, or acquired if the crisis is to be resolved. It supports the culture and structure of the MAGTF by capitalizing on the principle of unity of effort, integrating all functional areas and component organizations with the intent of increasing the adaptive capacity of the entire organization, not just one component. In as much as a finite timeline is an element of crisis, MCPP supports the establishment and maintenance of tempo.[40]

Planning is the act of envisioning and determining effective ways of achieving a desired endstate. Planning enables an organization's leadership to assess the relationship between their production possibility frontier and the elements of a challenge

[40] USMC, "Marine Corps Planning Process, MCWP 5-1," (2001).p.1-1.

or crisis and then manipulate the resources available to them in order to circumscribe those elements to within the adaptive capacity of their organization. MCPP is the process the helps leaders:

- Direct and coordinate actions.
- Develop a shared situational awareness.
- Generate expectations about how actions will evolve and how they will affect the desired outcome.
- Support the exercise of initiative.
- Shape the thinking of planners.[41]

Time is most often the scarcest resource and is vital to the planning process. The considerations of time and uncertainty dictate the approach to planning, and are its defining features. Leadership must adjust the planning process to optimize this perishable resource. When time is critical, the commander uses intuition, judgment, and experience to guide his staff and subordinate commanders. Planning is future-oriented, and the future is uncertain; all planning is based on imperfect knowledge and involves assumptions. This uncertainty increases with the length of the planning horizon and the rate of change in the environment. Given the fundamental uncertainty of war, planners must recognize that planning will not eliminate uncertainty, but it allows the commander to decide and act effectively in the midst of uncertainty.[42]

"The tenets of [MCPP] - top-down planning, single-battle concept, and integrated planning - are derived from the doctrine of maneuver warfare."[43] The commander uses planning to gain knowledge and situational awareness to support his decisionmaking

[41] Ibid.p.1-1.
[42] Ibid.p.1-1.
[43] Ibid.p.1-2.

process. As was discussed earlier, operations or events in one part of the battlespace, or within one part of the organization, may have profound and often unintended effects on other areas and events, therefore a commander must always view the battlespace as an indivisible entity and his organizations adaptive capacity as fluid. Planners use integrated planning to consider all relevant factors, reduce omissions, and share information across all the warfighting functions.[44]

The Marine Corps Planning Process establishes procedures for analyzing a mission, developing and wargaming courses of action (COAs) against the threat, comparing friendly COAs against the commander's criteria and each other, selecting a COA, preparing an operation order or operation plan for execution, and transitioning the order or plan to those tasked with its execution. This is the process with which the decisions are made regarding the distribution of factors contributing to the resolution of a crisis. The application of a MCPP is complemented by expeditionary culture and facilitates rapid reallocation resources or reprioritization. (See Figure 17.)

In order to facilitate this process, MCPP organizes these procedures into six

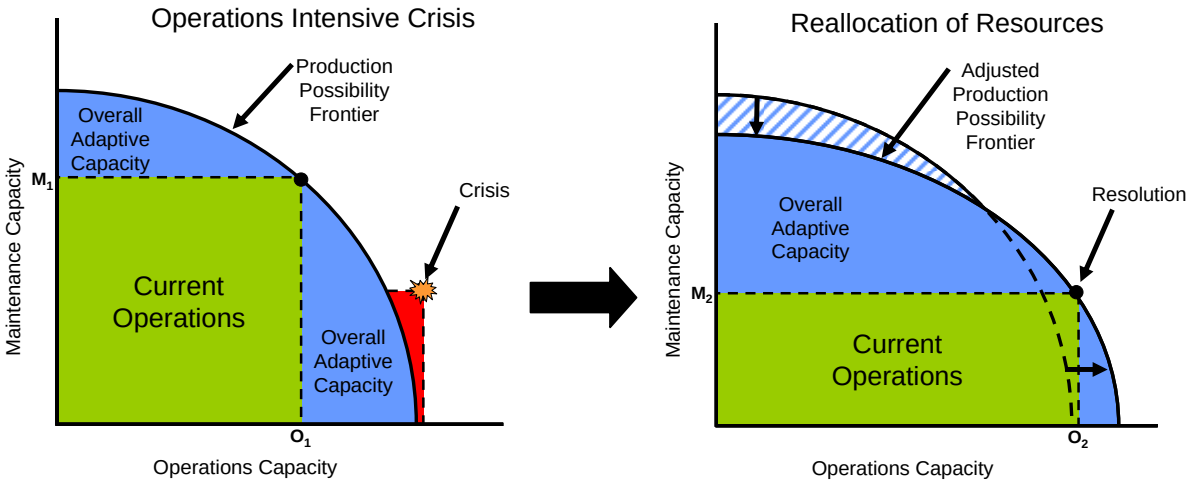


Figure 17 - Planning application to resource allocation

[44] Ibid.p.1-2.

manageable, logical steps. (See Figure 18.) These steps provide the commander and his staff, at all levels, a means to organize their planning activities, to transmit plans to subordinates and component organizations, and to share a common understanding of the mission and commander's intent, creating unity of effort. Interactions among various planning steps allow concurrent, coordinated efforts that maintain flexibility, make efficient use of time available, and facilitate continuous information sharing.[45]

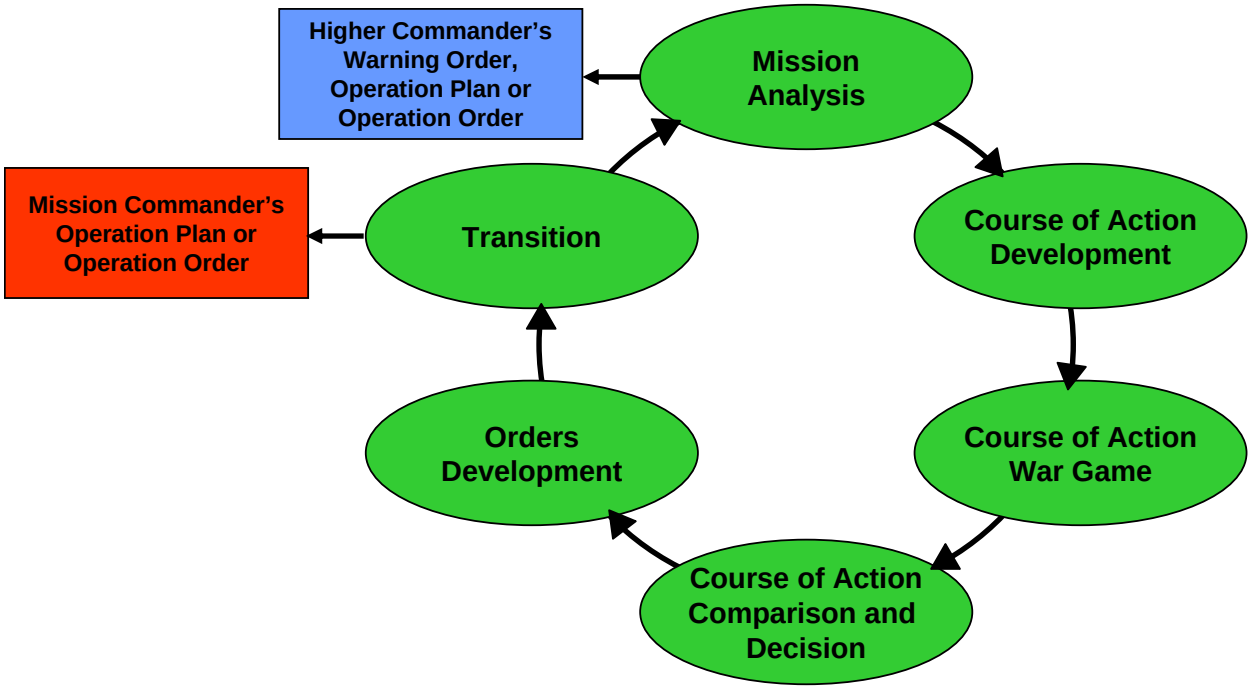


Figure 18 - MCPP Procedures

Planning Modes

Organizations must organize themselves to gather, manage, and process information essential to decisionmaking. Organization for planning not only involves personnel and structure, it is also affected by planning modes.

MCPP is designed to facilitate planning at any level and to satisfy three modes of planning (orientation, contingency, and commitment). Orientation planning is used

[45] Ibid.p.1-3.

when the degree of uncertainty is so high that it is not worthwhile to commit to a specific plan. Planners focus on assessing the situation and designing flexible preliminary plans that can be adapted to a broad variety of situations. Contingency planning is used when there is less uncertainty but enough is not known about the situation to allow for the adoption of a specific plan. Normally, planners prepare for several contingencies, allowing the commander to respond quickly when the situation requires action. Commitment planning is used when there is certainty about the situation and the commander has selected a plan and committed resources to executing the plan.[46]

Planning is an event-dominated process and organizations should be agile enough to enhance planning for significant events as challenges arise.

The MCPP process can be adapted to the Rapid Response Planning Process. R2P2 serves as a time-constrained six-step process that mirrors MCPP. R2P2 is normally used by the MAGTF at the MEU(SOC) level and supports mission execution within a 6-hour time frame between mission notification and mission execution. R2P2 differs from MCPP in that it provides for concurrent planning to occur within and across component organizations and staff sections, vice in one large forum where all components and sections are represented. This simultaneous vertical and horizontal flow of information among the chain of command and all the elements of the MAGTF is vital to the MAGTF's adaptive capacity.[47]

USMC Structure, Culture, and Process

[46] Ibid.p.C-1.
[47] Ibid. Appendix J.

The Marine Air-Ground Task Force structure, Expeditionary Maneuver Warfare culture and the Marine Corps Planning process have a combined effect that produces an agile organization with a great amount of adaptive capacity to address the challenges it faces. (See Figure 19.)

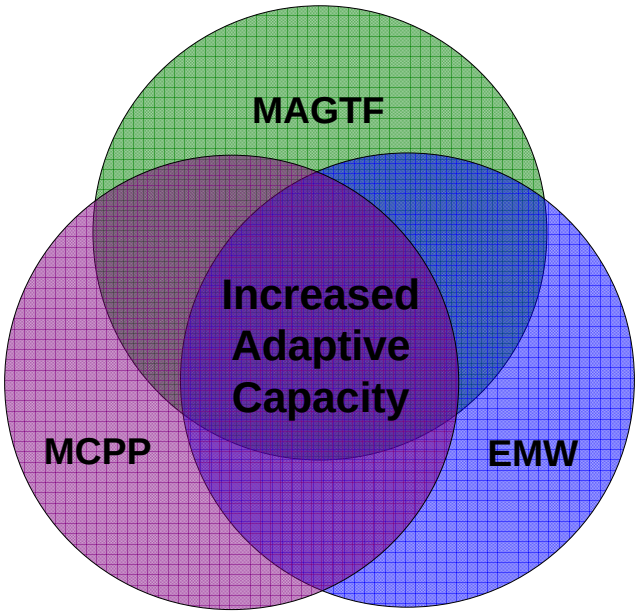


Figure 19 - Marine Corps Adaptive Capacity

Unity of Command. The key components are unity of command, a culture that can operate effectively in a dynamic environment, and a common process that facilitates operations at all levels of the organization. The largest contributor to the increased adaptive capacity of the Marine Corps is that the MAGTF is a combined organization where all of the factors that can influence a particular crisis are at the disposal of one commander. That commander has every functional area and asset at his disposal and he has a process that enables him and his staff to effectively employ those assets. Unlike "stove piped" military organizations that focus on only one particular mission, the MAGTF integration concept provides commanders with full control over the entire range of warfighting functions.

Relationships. A second benefit of a highly integrated organization is the development of the relationships between commanders, to include their staffs. Much has been discussed in current literature regarding "command relationships." Something that is rarely mentioned is the *relationship between commanders*. The MAGTF is

unique in that MAGTF teams live and train together, further increasing their cohesion and fighting power.

As the air combat element (ACE) Operations Officer (OpsO), with a Marine Expeditionary Unit, my state room on the ship was right next to the ground combat element (GCE) OpsO's room and only two doors away from the combat service support element (CSSE) OpsO's room. Personal relationships were developed vertically and horizontally among the subordinate commands and the MEU command element. Not only did we attend the same meetings on a daily basis, but we also ate together, socialized, and came to know each other's character, etc. We developed a better working relationship due to the integration that exists within the MAGTF. Having all functional areas and warfighting functions under the same commander and interacting frequently, a trust and confidence was built among peers. Even though I was part of the ACE, I knew and understood the GCE's capabilities. The GCE OpsO knew the capabilities of the ACE aircraft. When challenges arose, there were no unrealistic expectations of one part of the organization regarding the capabilities of another. I knew that when the CSSE stated that they *really* needed to get a part from another ship, that it truly was important to them. I also knew that when the GCE OpsO said that he "had to" get a particular training exercise done, that is was necessary for him to maintain his warfighting capabilities and not just a personal preference.

This relationship building also transcended vertically across the components of the MEU. The ACE commander knew the OpsOs of each element within the MEU, likewise, I as the ACE OpsO was able to develop a working relationship with the other commanders

These relationships formed a component of the adaptive capacity of the MEU. The speed with which the commander's and staff could react when presented with a potential crisis was significantly improved. Situational awareness was increased throughout the organization. Friction was reduced. When decisionmakers were engaged, they could make a more informed decision rapidly because they better understood the capacity of all component organizations with in the MAGTF.

When the timeline is finite, it becomes necessary to accept some things for face value, or on trust and confidence that the information provided is correct. There is no time to give or receive detailed explanations on such things as: "Why can't I take 15 passengers on the helicopter instead of 12?" or "Why can't the escorts stay on the objective area for 3 hours?" By developing these relationships during pre-crisis exercises, it increases the number of "known knowns" and decreases the "unknown unknowns."

Battle rhythm. Common battle rhythm is another contributor to the adaptive capacity of a highly integrated organization. The term "battle rhythm" describes those events that an organization conducts on a recurring basis that facilitates setting conditions for success. An organization's state of readiness, the battle rhythm of higher headquarters, and the current mission all have an effect on the battle rhythm adopted by an organization. Although the battle rhythm was fixed, it remained flexible and could easily be adjusted as missions demanded. Some missions require much more time and effort to plan and prepare for than others. During such times, the battle rhythm became more intense.

All the components of the MEU were on a set battle rhythm. There was a framework of processes where planning and coordination were conducted on a continual basis, both within sub-organizations of the MAGTF, as well as across the MAGTF as a whole. Having a set battle rhythm that included bi-daily coordination meetings at the MAGTF level, supplemented with coordination meetings within the sub-organizations, mitigated elements of uncertainty, threat to interests or system, surprise, and many times meant the difference between success and failure. Planning was synchronized so that *every element within the MEU maintained unity of effort*. Potential conflicts among the various elements of the MAGTF were easily identified and overcome. Potential challenges for the MEU as whole were analyzed, both near term and long term. Such things as reduction in the capacity of component organizations were briefed to all concerned. If CSSE had most of their vehicles out for repair, I understood what that equated to in terms of their combat capability and how that affected the MEU.

Battlebooks. The use of templates and "battlebooks" were extremely important in reducing the magnitude of a crisis. The MEU had a published *crisis action handbook* that contained exact process and procedures that were to be used when crises arose. The subordinate elements of the MEU (ACE, GCE, and CSSE) all had copies of the crisis action handbook and maintained their own battlebooks with template missions. However acute, mission templates based on foreseeable, situations were identified and included in the battlebooks. When a crisis occurred, all the commanders and staff in the MEU understood their roles and missions. Acute challenges were not perceived as so acute. Uncertainty and unpredictability were reduced. Decisionmakers, while perhaps

not familiar with the specific sequence of events of a particular crisis, were very familiar with similar events and were confident in their abilities to respond appropriately. The R2P2 laid out in the crisis action handbook facilitated a rapid decision cycle when subjected to constrained timelines. Templates and battlebooks provided for a rapid transition when reprioritizing or reallocating assets in order to increase adaptive capacity in a particular area.

Network-Centric Warfare and Transformation

In *Understanding War: History and a Theory of Combat*, Colonel N.T. Dupuy states:

> The essential nature of war has not changed. Wars are fought by men, and there has been no discernible difference in the fundamental nature of man over the past five thousand years of recorded history. Because the nature of man has not changed, neither has his basic objective when he turns to war: the employment of lethal instruments to force his will upon other men with opposing points of view.[48]

While there may not be any discernible difference on man or his basic objective in war, there are fundamental differences in the way war is fought. In the future, "we will *not* change what we do…We *will* change how we do it."[49]

Is the structure of the MAGTF, the expeditionary culture of the Marine Corps, and the processes with which the Marine Corps operates sufficient to respond to future challenges? How does an industrial age, hierarchical organization, such as the Marine Corps, continue to succeed in managing crises characterized by elements that are increasingly dominated by technology and information? What is different about the future that is driving change? What are the challenges that military forces face now that

[48] Trevor Nevitt Dupuy, *Understanding War: History and a Theory of Combat* (New York: Paragon House, 1987).
[49] USMC, "21st Century Marine Corps: Speed, Flexibility, & Agility…Globally."

they have not faced in the past? How can adaptive capacity be increased to keep pace with the nature of the challenges that organizations face?

The Department of Defense (DOD) response to these questions is two-fold: network-centric warfare and transformation. These concepts are designed to increase the adaptive capacity of the DOD as a whole in order to meet the demands of 21st century crisis.

The technology present in modern warfare is without precedent. The ability to rapidly transmit and process large amounts of information has led to the emerging theory of network-centric warfare (NCW). This, in turn, has led to the concept of military transformation. Although similar in their intent to increase organizational adaptive capacity, the focus on factors that expand the production possibility frontier is different.

Network-Centric Warfare

Network-centric warfare is an emerging theory of war, a concept that, at the highest level, constitutes the military's response to the information age. "The term network-centric warfare broadly describes the combination of strategies, emerging tactics, techniques, and procedures, and organizations that a fully or even a partially networked force can employ to create a decisive warfighting advantage."[50]

> The Battle of Britain from July to September 1940 was one of the earliest battles to be largely decided by networked information. The RAF's [British Royal Air Force] newly-built array of radar stations and visual observation posts was voice-networked with a hierarchy of command and control nodes, via 'filter centres' which ensured the coherence and completeness of the situational information present to commanders. Consequently, the RAF commanders were able to scramble scarce fighter aircraft from ground alert when enemy aircraft were reported, thus avoiding wearing down the pilots through relentless (and often fruitless) combat air patrolling, and ensuring that the out-numbered RAF

[50] A. K. Cebrowski, "The Implementation of Network-Centric Warfare," (Washington D.C.: Office of the Secretary of Defense, 2005).p.3.

> fighter force was concentrated, in both time and space, against key elements of the much larger enemy air order of battle.
>
> The Germans, who had not developed their use of radar to the same extent as the British, could not understand why their losses were mounting over the Channel until their intelligence staffs identified the significance of the RAF's radar network. The Germans then attacked some radar stations, with apparent success. However, the considerable resilience and redundancy of the RAF's early-warning network, despite the seeming vulnerability of individual radar stations, mitigated the operational impact of the German attacks on the effectiveness of the fighter defence. Baffled, the Germans switched targets again after only 3 days, allowing the RAF's early-warning network to continue to contribute valuable information to RAF commanders throughout the rest of the Battle. The effective networking of sensors, deciders and effectors was of decisive importance to the RAF's victory in the Battle of Britain.[51]

"At the end of the day, [NCW] is about the Marine getting the information that's available currently to the very high levels…in the same quality of information all the way down to the strategic corporal."[52] By expanding technology and connectivity, NCW theory increases the production possibility frontier and overall adaptive capacity of an organization through networked systems that enable greater situational awareness. By providing a *common operating picture* (COP), the theory of NCW allows all players at all levels to work on the same page. In the NCW environment, the small unit leader in the field has the same information that the general back at the command center has.[53]

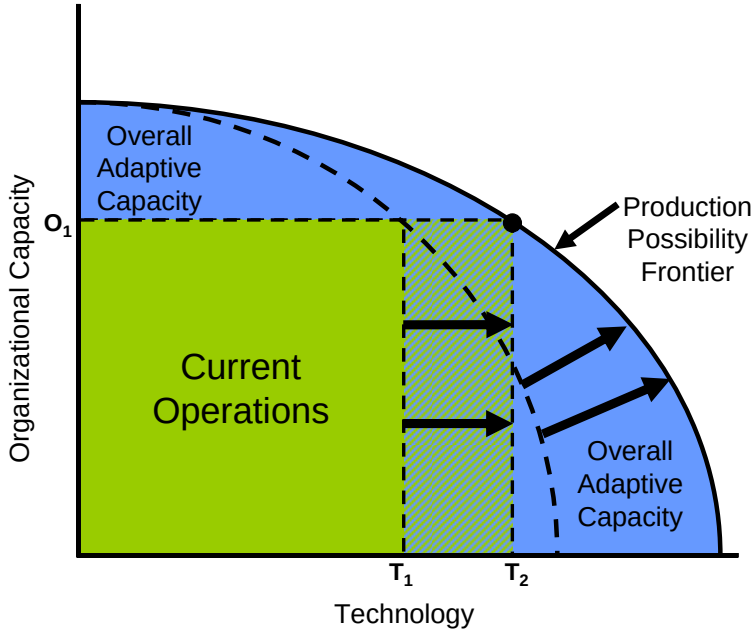


Figure 20 - NCW Expanded PPF

[51] United Kingdom MOD, *Networked Enabled Capability* (Ministry of Defence UK, 2005). p.8.
[52] Gidget Fuentes, "Working on the same page," *Marine Corps Times*, January 30, 2006 2006.
[53] Ibid.

The figure below is just one example of NCW and how the idea of a common operating picture builds situational awareness within an organization.

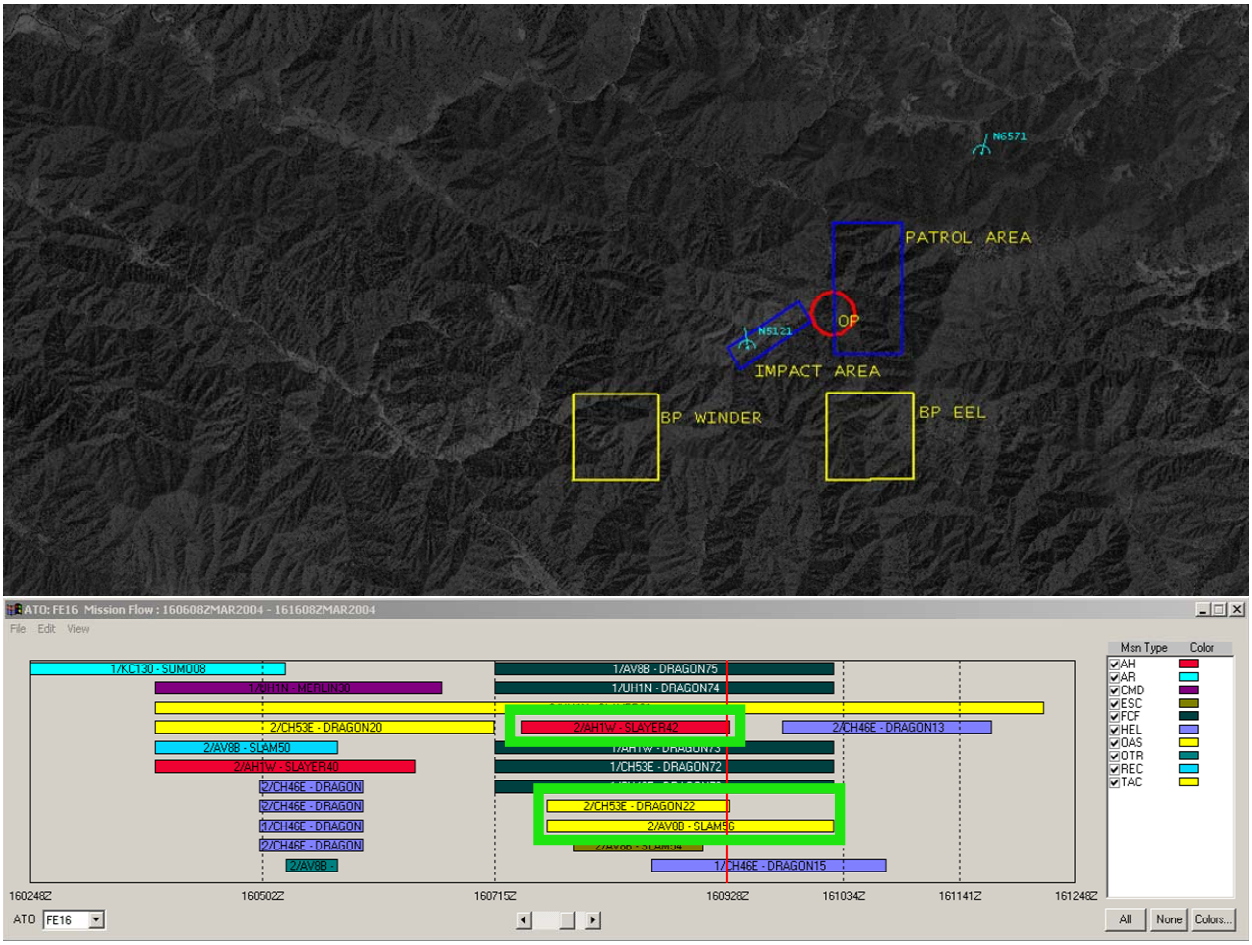


Figure 21 - Automated Deep Operations Coordination System

Shown in the figure is a screen capture of a preplanned strike exercise in a highly networked operating environment. The bottom half of the figure depicts the continuum of all MAGTF aviation sorties on the day of the depicted strike. Above, objective area imagery from a database is overlaid with mission specific coordination measures created by pilots on PFPS and imported using Automated Deep Operations Coordination System (ADOCS) software. ADOCS is a situation awareness tool which integrates a variety of C2 systems, enabling horizontal and vertical integration and C2 actions. It allows the same information to be available to all users regardless of echelon

and allows them to filter the information to their specific mission environment. The two light small figures (N5121 & N6571) are the near real time "tracks" of the aircraft that were conducting the strike. These events are also highlighted in green in the sortie flow area of the diagram.

Add in real time radio calls and live computer chat with all coordinating agencies, and one can begin to understand the amount of information and connectivity on the modern battlefield. This same information that was available in the Force Fires Coordination Center, from where the strike originated, was also available real time, from anywhere else in the world and could have been accessed by anyone needing to maintain situational awareness on this specific event.

"In many respects, the Marine Corps is by its very design a network-centric warfighting force."[54] Marines conducting military operations at the tactical and operational levels of war gain a significant advantage over adversaries because of shared situational awareness. NCW theory has applicability at all three levels of warfare - strategic, operational, and tactical - and across the full range of military operations from major combat operations to stability and peacekeeping operations.[55]

NCW technology can greatly influence the adaptive capacity of an organization. It can help decrease uncertainty, but it also makes operations more fluid. "Modern weapons technology has forced units to increase dispersion, making command and control more difficult. Future battlefields are likely to become more chaotic."[56]

[54] DOD, *Network Centric Warfare, Department of Defense Report to Congress*.p.A-8.
[55] Cebrowski.p.4.
[56] MCWL, *Combat Squad Leader Decision Making*, ed. MCWL, X-Files (Quantico VA: Marine Corps Warfighting Lab, 2003). p.17.

"The fog of battle is about the uncertainty associated with what is going on, while the friction of war is about the difficulty in translating the commander's intent into actions."[57] Network-centric operations are intended increase adaptive capacity by reducing fog and friction on the battlefield by building situational awareness at all levels and providing the means to clearly convey commander's intent to those that must act.

Transformation

> The future operating environment will be characterized by greater complexity and uncertainty. While the United States is likely to have information superiority over adversary nation-states in conventional conflict, such an advantage is less likely in conflict against asymmetric threats such as terrorists and insurgent groups. Commanders will have to make decisions despite imperfect information, complex situations, and competing demands on DOD assets.[58]

"The major institutions of American national security were designed in a different era to meet different challenges. They must be transformed."[59]

> ***Our challenge in this new century is a difficult one. It's really to prepare to defend our nation against the unknown, the uncertain and what we have to understand will be the unexpected.***
>
> ***SecDef D. H. Rumsfeld***

The strategic landscape is no longer dominated by traditional threats such as regional powers with conventional and (some) nuclear capability as well as the continued instability created by interstate conflicts. Non-traditional, irregular threats that involve a global radical Islamist insurgency; asymmetric warfare fought by decentralized groups of terrorists; and exploitation of

[57] David S. Alberts, John Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*, 2nd ed., CCRP publication series (Washington, D.C. Vienna, VA: Dept. of Defense. Center for Advanced Concepts and Technology (ACT) ; Distributed by CCRP Publications Distribution Center, 1999).p.71.
[58] DOD, "Command and Control Joint Integrating Concept Final Version 1.0."p.11.
[59] George W. Bush, "The National Security Strategy of the United States of America, March 2006," ed. President of the United States (2006).p.43.

failed and failing states with intrastate conflicts now pose a great challenge for today's security establishments.

Threats to national security are expanding the spectrum of challenges that the military expects to face in the next century. A greater emphasis is needed to manage or prevent crises that have an irregular, catastrophic, or disruptive precipitant, in addition to maintaining traditional military capabilities. In order to meet the demands of this environment, the military must increase its overall adaptive capacity in these areas. This process of change is referred to as transformation and applies to transformation of organizational structure, transformation of culture, and transformation of processes.

[60]

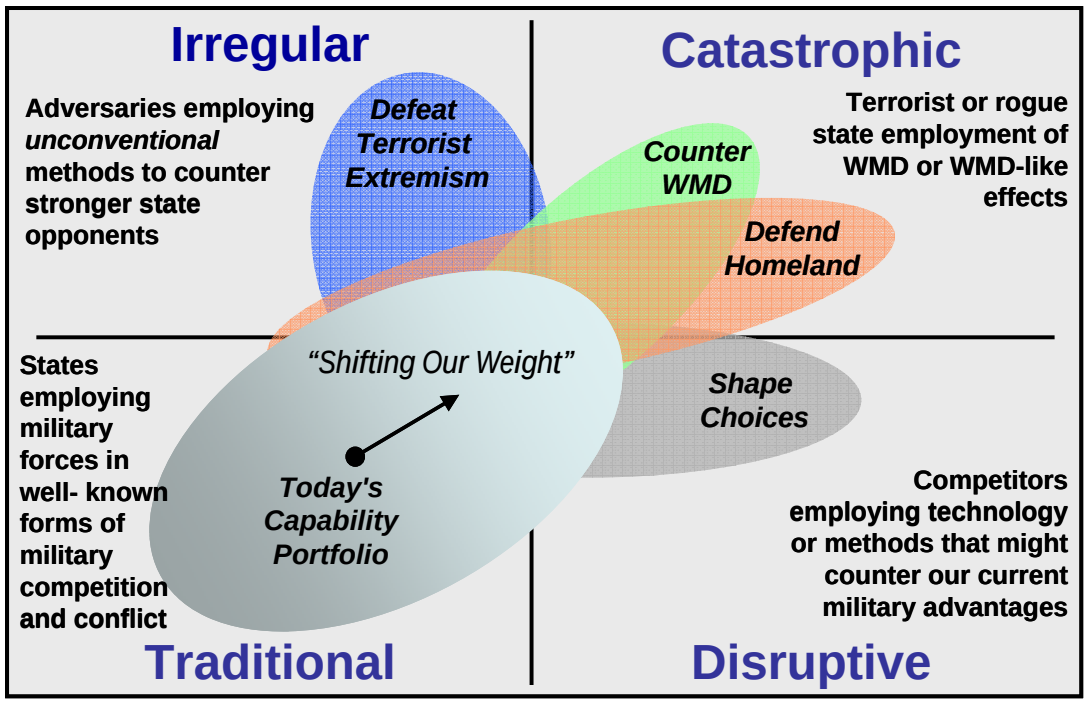


Figure 22 - Emerging Threats

[60] Frank C. Pandolfe, "2006 Quadrennial Defense Review," (2006).

- **Traditional** challenges are those posed by states employing conventional armies, navies, and air forces in well-established forms of military competition.
- **Irregular** challenges come from state and non-state actors employing methods such as terrorism and insurgency to counter our traditional military advantages, or engaging in criminal activity such as piracy and drug trafficking that threaten regional security.
- **Catastrophic** challenges involve the acquisition, possession, and use of weapons of mass destruction (WMD) by state and non-state actors; and deadly pandemics and other natural disasters that produce WMD-like effects.
- **Disruptive** challenges are state and non-state actors who employ technologies and capabilities (such as biotechnology, cyber and space operations, or directed-energy weapons) in new ways to counter military advantages the United States currently enjoys.[61]

Transformation planning guidance issued by Secretary of Defense Rumsfeld maintains that "we must achieve: fundamentally joint, network-centric, distributed forces capable of rapid decision superiority and massed effects across the battlespace. Realizing these capabilities will require transforming our people, processes, and military forces."[62]

> As we prepare for the future, we must think differently and develop the kinds of forces and capabilities that can adapt quickly to new challenges and to unexpected circumstances. We must transform not only the capabilities at our disposal, but also the way we think, the way we train, the way we exercise and the way we fight. We must transform not only our armed forces, but also the Department that serves them by encouraging a culture of creativity and prudent risk-taking. We must promote an

[61] Bush.pp.43-44.
[62] Donald H. Rumsfeld, "Transformation Planning Guidance," (OSD, 2003).p.1.

entrepreneurial approach to developing military capabilities, one that encourages people to be proactive, not reactive, and anticipates threats before they emerge.[63]

The concept of *transformation* expands the production possibility frontier and overall adaptive capacity of an organization by focusing on the human capitol elements in force structure, innovative leadership and transformational processes. (See Figure 23.)

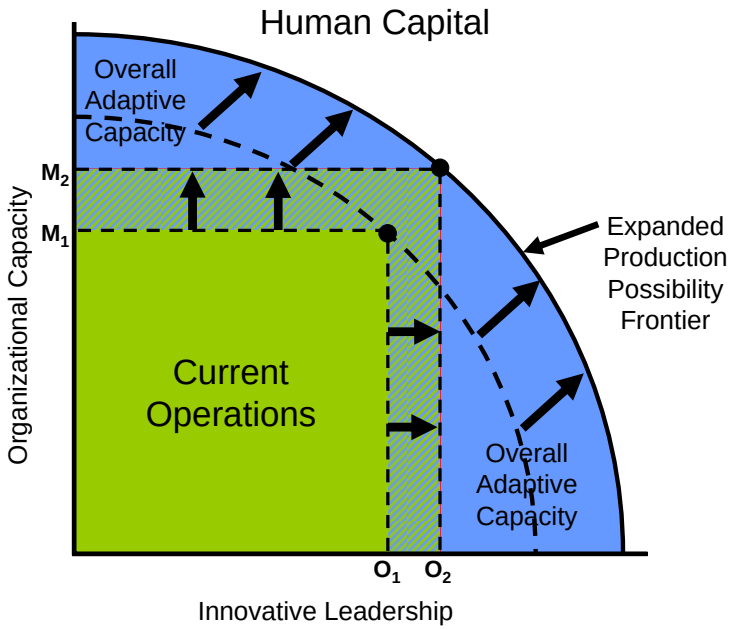


Figure 23 - Transformation Expansion of PPF

Transformation "shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position."[64] *Transformation is a process that will increase the military's adaptive capacity to overcome the diverse challenges it will face in the dynamic threat environment of future crises.* Increasing this crisis threshold of today's military organizations is essential to the maintenance of peace and stability in the world.

Strategy for Transforming

The Department of Defense's overall strategy for implementing transformation consists of three parts:

[63] Ibid.p.1.
[64] Ibid.p.3-4.

- **Transformed Capabilities Through Force Transformation**: The supporting strategy for force transformation rests on four pillars:
  - Strengthening joint operations
  - Exploiting U.S. intelligence advantages
  - Experimenting in support of new warfighting concepts
  - Developing transformational capabilities.[65]
  - **Transformed Culture Through Innovative Leadership**: The DOD must continue to encourage innovation. This will require a strong commitment from senior leaders, represented most visibly by the promotion of individuals who lead the way in innovation. History suggests that this is a decisive characteristic of innovative military organizations. Senior leaders must also be prepared to execute their responsibilities for implementing DOD's transformation strategy, and be equally ready to eliminate current practices that stifle innovation.[66]
- Transformed Processes: The DOD must balance the requirements of current operations against the need to invest in capabilities needed to support future operating concepts. This portion of the strategy has two parts:
  - Reformed Capabilities-Identification Process: The DOD must reform the requirements system to better identify and assess specific options for mitigating elements of future crises. This will be accomplished by investing in capabilities based on joint operating concepts.

[65] Ibid.p.8,9.
[66] Ibid.p.8,9.

- Transformed Strategic Analysis: In addition to a reformed capabilities identification process, the DOD needs a transformed analytic capability that can identify and assess risks for strategic planning. The military must be able to support a capabilities-based planning process that accounts for greater uncertainty in threats and capabilities, and must be capable of comparing risks across time and between multiple theater-level operations.[67]

Distributed Operations

"While the Marine Corps has not historically used the term Network Centric Warfare, its principles embodied by the term have been an integral part of Marine Corps operations for years."[68] Integrating the doctrine of expeditionary maneuver warfare and the theory of network-centric operations, April 2005 the Commandant of the Marine Corps established the concept of "Distributed Operations" (DO).

DO maximizes the benefits of MAGTF structure, expeditionary

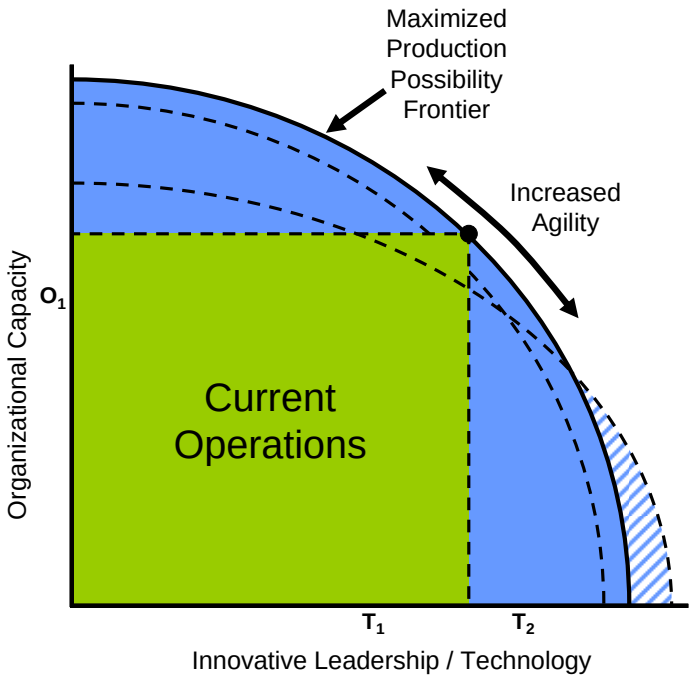


Figure 24 - Distributed Operations Maximized PPF

[67] Ibid.p.8,9.
[68] DOD, *Network Centric Warfare, Department of Defense Report to Congress*.p.A-8.

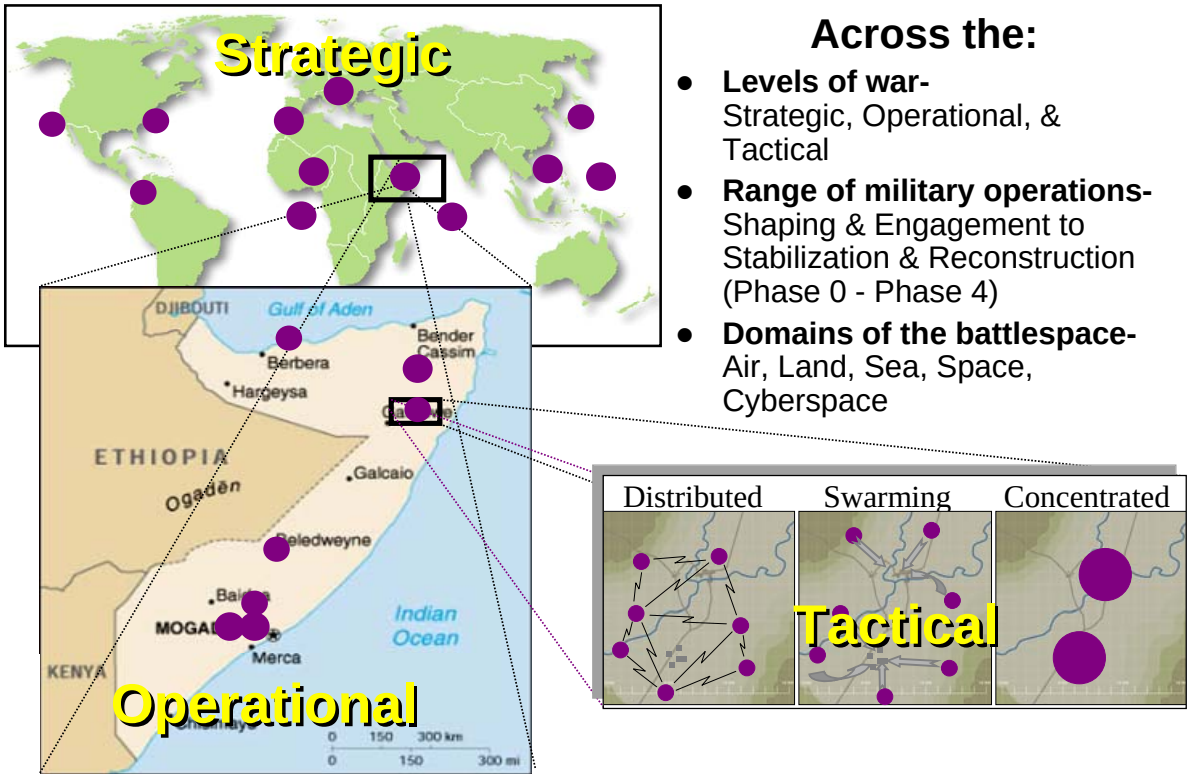
culture, and processes of the Marine Corps; combines the human capitol element of transformation and innovative small unit leadership, and the technological advantages of network-centric warfare, in order to create organizations with the maximum possible adaptive capacity. In essence, the Marine Corps concept of DO provides a crisis response force with a maximum possible crisis threshold. (See Figure 24.)

> *Distributed Operations* describes an operating approach that will create an advantage over an adversary through the deliberate use of separation and coordinated, interdependent, tactical actions enabled by increased access to functional support, as well as by enhanced combat capabilities at the small-unit level. The essence of this concept lies in the capacity for coordinated action by dispersed units, throughout the breadth and depth of the battlespace, ordered and connected within an operational design focused on a common aim. *Distributed Operations* constitutes a form of maneuver warfare. Small, highly capable units spread across a large area of operations will provide the spatial advantage commonly sought in maneuver warfare, in that they will be able to sense an expanded battlespace, and can use close combat or supporting arms, including Joint fires, to disrupt the enemy's access to key terrain and avenues of approach.[69]

Based on greater situational awareness, and guided by commander's intent, distributed forces could aggregate or remain distributed. They will be able to use simultaneous, overwhelming firepower against an increasingly confused and paralyzed adversary, allowing the main force access to the battle space. When pockets of adversaries are found, the distributed units could use swarming attacks to defeat them in detail. By attacking from multiple directions, distributed units will be seemingly everywhere. Using fire and maneuver with the benefits of a networked operational picture and combined arms, the adaptive capacity of Marine units will be extremely high.

[69] Michael W. Hagee, "A Concept for Distributed Operations," (U.S. Marine Corps, 2005).p.I-II.

Distributed Operations



Across the:

- **Levels of war-** Strategic, Operational, & Tactical
- **Range of military operations-** Shaping & Engagement to Stabilization & Reconstruction (Phase 0 - Phase 4)
- **Domains of the battlespace-** Air, Land, Sea, Space, Cyberspace

Figure 25 - Distributed Operations

70

> DO is predicated on decentralized command and control. It requires situational awareness, autonomy, and increased freedom of action at lower tactical levels, enabling subordinate commanders to compress decision cycles, seize the initiative, and exploit fleeting opportunities. Improved situational awareness, including real time and high fidelity data from dispersed teams, improves the vertical transmission of information. Shared situational awareness, the product of extensive training as well as a common operating picture, accelerates the horizontal integration and mutually supporting actions of spatially dispersed units.[71]

The concept of DO describes an operating approach that requires new ways to educate and train Marines, an expansion of the expeditionary culture and that guides the use of emerging technologies.[72] Continuing the trend toward decentralization, this concept distributes decisionmaking authority across a wide number of junior leaders, who are directly engaged in the fight. By moving authority "downward," speed of

[70] USMC, "21st Century Marine Corps: Speed, Flexibility, & Agility…Globally."
[71] Ibid.
[72] Hagee.

command will be dramatically increased. "Units conducting distributed operations will use these advantages to focus on the enemy's critical vulnerabilities, exploiting fleeting opportunities, and thereby achieving tactical successes that will build rapidly to decisive outcomes at the operational level of war."[73]

Analysis and Recommendations

As organizations apply principles such as transformation, network-centric warfare, and distributed operations in an effort to increase their adaptive capacity and raise their crisis threshold, care should be taken to ensure the implementation of new ideas, structure, culture, and processes are not counter-productive. Senior leadership must encourage innovation and adaptation of information age technologies and concepts within their organizations, as well as ensure that the processes and practices that do not support these goals are eliminated.[74] The following items, discussion, and recommendations identify areas of focus that enable organizations to maximize the human capital advantage that will increase their adaptive capacity.

Response and Finite Timeline

Discussion

A basic measure of the adaptive capacity of an organization is the speed of command within the organization, or in other words, "the time it takes to recognize and understand a situation (or change in the situation), identify and assess options, select

[73] Ibid.p.II.
[74] Rumsfeld.p.6.

an appropriate course of action, and translate it into actionable orders."[75] In many respects, the speed of command we are accustomed to in "industrial age" hierarchical organizations is insufficient to respond to more agile adversaries, crises, and complex emergencies. Even when decisions are made, the reaction time of the organization may be inadequate.

Marine Medium Helicopter Squadron 268 (HMM-268) was assigned the role of casualty evacuation for coalition forces operating in Al Anbar province Iraq. The chances of a combat casualty's survival are dramatically increased if the casualty can receive care at a medical facility within one hour, the "golden hour," from the point of injury. Normal startup time for the CH-46E is about 30 minutes, entirely too long for the challenge that they faced. By modifying their structure, culture, and processes, they were able to reduce their launch time from 30 minutes to under 5 minutes. The following describes measures that they implemented to increase their adaptive capacity, as a squadron in order to meet the demands of their mission, as related by Maj Bryan Simmons, HMM-268 OpsO.

> Basic data:
>
> - Average 46 crew sitting in the ready room watching TV to airborne was 4.5 - 5.0 min.
> - Crews would literally sprint to the aircraft and on average we would [have the rotors turning] in about 90 seconds from the bell ringing. Some of the things that would slow us down were aircraft specific (generators crossing over and resetting [Global Positioning Systems] and radios, etc...).
> - Some things that helped us improve speed were:
>   - Specific Crew Responsibilities: Right Seat/Left Seat actions on startup.
>   - Responsibilities Briefs: Everyone knowing exactly what they were to do, down to the Corpsman.
>   - Gear Staging: All vests and body armor laid out and prepped for quick donning. Laid in an area that would facilitate each crewmembers location during a normal startup.
>   - Redundant Capabilities: Always spin three aircraft in the expectation that one will break and the [mission] will call for two. Typically it only called for one

[75] Alberts, Garstka, and Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*.p.164-165.

plus an [escort] aircraft, but a launch never was delayed due to aircraft availability (waiting for [the location] was the only reason to exceed 6 min, from our standpoint).
    - One aircraft (aircrew in the number one position during that time) would taxi to runway.
    - Second aircraft would taxi short of holdshort (if there was a problem when one took the runway then number two could [move into its position]).
    - Finally we had a third [aircraft] that would spin and hold position in the chalks and listen, any hint of a problem with the number one then he would also taxi toward the runway in anticipation of a two ship launch.
- All three crews had the "go" mindset.
- When the CASEVAC went then everyone would bump up one in the lineup and number 4 would be introduced into the mix as the new number three. Everyone knew where they stood in the mix and knew how their aircraft/aircrew would perform (ie.. debrief any issues during the previous turnup/shutdown).
- One more thing that helped was to run every aircraft through the range for test fires [at the start of the shift]. This gave the crews the initial [warm-up], not only to detect aircraft deficiencies, but to set up the aircraft and cock it for the next evolution. In other words we would do a normal "slow" start checklist straight out of the [the book] for the first start and then for any additional starts we would use a placard on the instrument panel of the aircraft that had the [mandatory start] items in order for everyone to read. 'Challenge and response' gave way to a running commentary [on the checklist].[76]

Through concerted effort on the part of their entire organization, they set the standard for CASEVAC operations in OIF. Every CASEVAC mission they flew had elements of crisis and virtually every element was mitigated by HMM-268's adaptive capacity.

Recommendation

Organizations must develop a cognizance of challenges they know or believe they will face. Then, to the extent of the resources they have available, implement changes that can be applied in the event the organization is called to react/respond. Measures must not only address the foreseeable challenge, but include any branches, sequels, or contingencies as well.

Information Management and the Common Operating Picture

[76] Bryan Simmons, "CASEVAC response time," ed. Joseph E. Rupp (2006).

Discussion

A common sign posted on the wall throughout the Marine Corps next to the duty desk reads, "What do I know? Who needs to know it? Have I told them yet?" This implies the need for information management.

On the battle field today there is almost an infinite about of information that is accessible. "This ability to network the force is very, very powerful. It has changed everything,"[77] The influx of information into Combat Operations Centers is growing at a rate faster than the ability to process it. All indications are that conditions in the next century promise to increasingly tax the decisionmaking skills in organizations of all sizes and at all levels.[78]

There is significant potential for inundating all participants with an ever-increasing flow of data masquerading as information because it has been slickly packaged within the common operating picture. The danger lies in the picture's collapsing all participants' perceptions of what is tactical versus operational versus strategic, and, by doing so, creating strong incentives for all to engage in information overload with this overly ambitious big picture. The push for speed of command and self-synchronization will drive organizations to an over-reliance on the common operating picture. Transparency is also a problem with regard to information. NCW promises to flatten hierarchies, but the grave nature of military operations may push too many commanders into becoming control freaks, fed by an almost unlimited data flow. In the end, the quest for sharing may prove more disintegrating than integrating. The infusion of information technology into hierarchical organizations typically reduces the traditional asymmetries

[77] Bruno.
[78] Charles C. Krulak, "Cultivating Intuitive Decisionmaking," in *Marine Corps Gazette* (1999).

of information that define superior-subordinate relationships. Taken in this light, the common operating picture is an attempt by military leaders to retain the high ground of command prerogative—a sort of nonstop internal spin control by commanders on what is necessarily a constantly breaking story among all participants, given their access to information that previously remained under the near-exclusive purview of senior officers.[79]

Commanders must not succumb to the temptation of information gluttony. The concept of information sufficiency by level of command must be implemented.[80] Leaders with a great amount of information need to guard against a tendency to micromanage situations that they become aware of, unless their involvement is necessary in the execution of the mission.

Modifying Organizational Structure to Increase Adaptive Capacity

Discussion

In an effort to provide greater ACE capabilities, command and control functions, and aviation support to the MEU commander, the Commanding General of the 1st Marine Aircraft Wing implemented a "MEU ACE Experiment" (MAX) over a one year period from 2003-2004. The concept was that by creating an ACE Command Element (CE), that the squadron commander could focus on the tactical employment of squadron aircraft and the newly established ACE commander could focus on the operational level. This would enable the MEU to better function as a Joint Task Force. During the course of the experiment, I was assigned as the OpsO for the ACE CE.

[79] Thomas P.M. Barnett, "The Seven Deadly Sins of Network-Centric Warfare," *Proceedings* (1999).
[80] Ibid.

Figure 26 depicts the normal MAGTF structure with a traditional ACE.

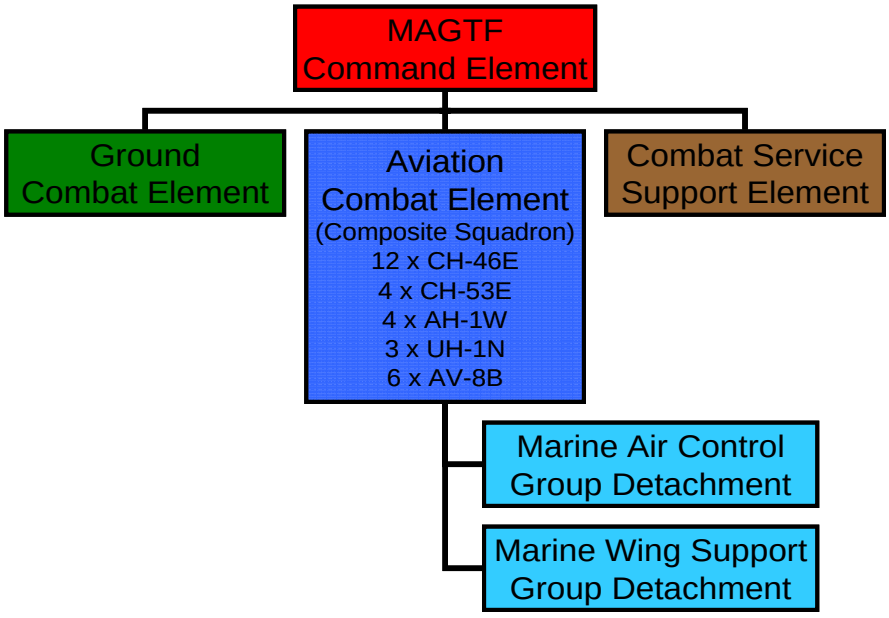


Figure 26 - Normal ACE

Figure 27 is the MEU with the "enhanced ACE." Note the additional layer of command between the composite squadron and the MEU Command Element.

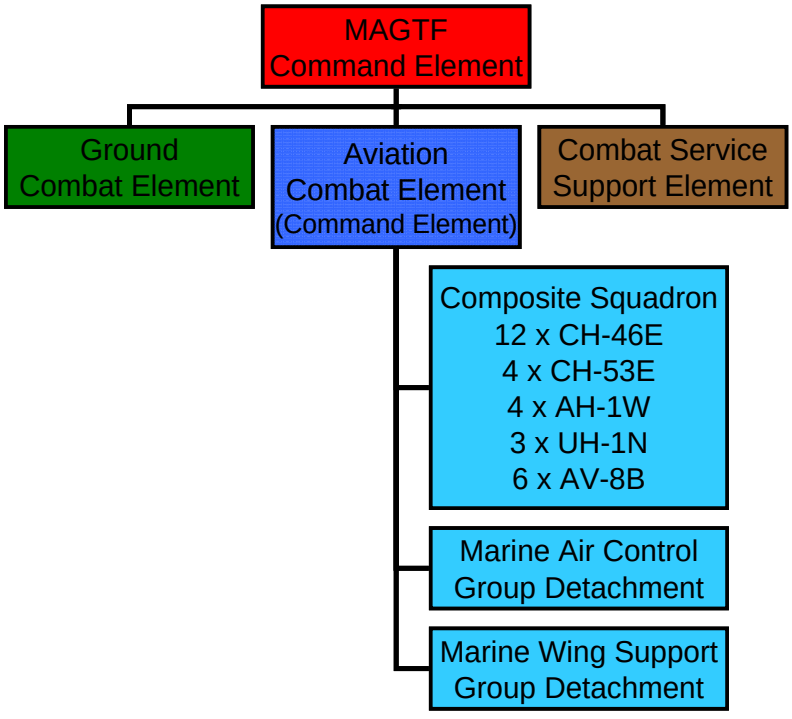


Figure 27 - ACE Command Element

From the outside, this would appear to increase the adaptive capacity of the ACE and the MEU as a whole. With the additional ACE CE structure, we were able to process a significantly increased amount of information. The span of control of the ACE was significantly increased and the squadron commander was able to focus on the tactical employment of the squadron aircraft while the ACE Command Element stayed focused on the operational level.

After the year experiment, the experiment had proven its worth in many areas. The capacity of the ACE to manage more aircraft and battlespace was proven. What was also identified was that this structure would not work. The culture and processes were there, but the organizational structure was missing. The unity of command was disrupted within the ACE. The question was always being asked, "Now which ACE OpsO do I talk to about this, the ACE MAX or the ACE squadron?" There was more fog and friction in ACE operations over that year than I have experienced before or since.

Recommendation

Mechanisms created to process information must not be allowed to complicate the process.

Apply the KISS principle. The idea of "Keep It Simple" is many times more effective at increasing the adaptive capacity of an organization.

Experimentation and creative thinking should be encouraged. It is not necessarily a bad thing just because a particular experiment does not turn out as expected. There were many lessons learned through the MAX that were capitalized on within the composite squadron and enhanced the squadron's capabilities even though

the MEU capabilities as a whole were not significantly increased. Sometimes the lessons learned are, "let's not do it that way anymore." The effectiveness of current processes or structure can be validated through experimentation.

Organizational Structure

Discussion

Marine General Anthony Zinni, former CENTCOM commander, and one of the most experienced U.S. leaders in a variety of military contexts, recognized that the commander needs only a few staff sections in order to command and control low threat missions, humanitarian missions, more to handle peace operations (which vary according to the likelihood that the parties will threaten or attack one another or the peacekeepers), and still more in major combat. Moreover, the importance of various functions will vary–lawyers, doctors, logisticians, civil-military specialists, military police, the political advisor function, and information (media) specialists may form the major sections in a humanitarian operation.[81]

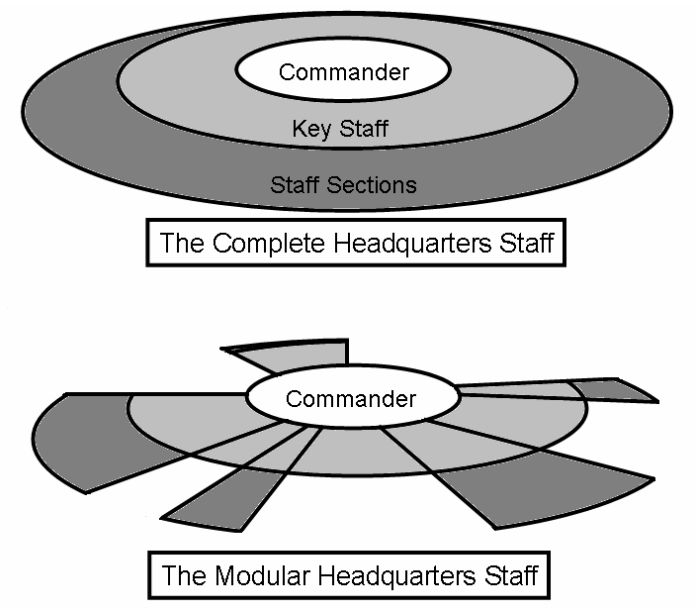


Figure 28 - Modular Staff

Recommendations

Organizations should be task organized based on the

[81] Alberts, "Power to the Edge: Command and Control in the Information Age."p.155.

challenges they face. This will ensure the knowledge, insight, and expertise are addressing the crisis and that additional resources will be maximized in other areas. These modular staffs should be comprised of those components or individuals that can dominate the factors that characterize the elements that the organization is most likely to face. For example, if it is greatly anticipated that the majority of crises a squadron could expect on a given assignment will be maintenance intensive, then the modular staff should perhaps be maintenance. Likewise, if the crises are expected to be operations intensive, then the "crisis action team" should have more of an operational focus. These modular staffs should be created in advance of a crisis and those members of an event specific staff should be informed of their role on those staffs.

Decisionmaking

Discussion

> An armor battalion recently returned from Bosnia used a few different techniques to mitigate the effects of insufficient leader training for peacekeeping operations. The battalion operated in a mountainous area that limited the communications ranges of their radios necessitating decentralized operations. To facilitate the decentralized operations of leaders with limited knowledge, the battalion conducted detailed…planning at all levels, followed by in-depth back briefs to the Battalion Commander, and extensive rehearsals. The main product resulting from the planning was an execution/decision matrix. This tool contained execution instructions for the most likely situation as well as the most dangerous situation. Soldiers down to section level used the matrixes. A soldier could look at the matrix to determine what to do in a given situation. However, if the soldier could think of a better solution then he was free to use it. The matrixes became less detailed as the soldiers developed their knowledge through the conduct of operations and therefore less control was necessary.[82]

Success or failure will rest, increasingly, with the individual Marine on the ground and with their ability to make the right decision, at the right time, while under extreme duress. Without direct supervision, young Marines will be required to make rapid, well-

[82] Michael F. Pappal, "Preparation of Leaders to Make Decisions in Peacekeeping Operations," (Fort Leavenworth KS: U.S. Army Command and General Staff College, 2002).p.38.

reasoned, independent decisions while facing a bewildering array of challenges and threats. These decisions will be subject to the harsh scrutiny of both the media and the court of public opinion. Their actions will not only influence the immediate tactical situation, but will operational and strategic implications as well.[83]

Using a decision matrix may work for a limited time, and will have more utility in making simple decisions. The real answer lies in developing intuitive leadership in junior leaders, truly increasing their adaptive capacity.

Thus far, advances in information technology have increased, not diminished, the burden on leaders to make the "hard calls." Marines must rapidly distinguish between information that is useful in making decisions, and that which is not pertinent. Often, they must avoid the natural temptation to delay their decision until more information makes the situation clearer or risk losing the initiative. Our leaders must be able to "feel" the battlefield tempo, discern patterns among the chaos, and make decisions in seconds.[84]

Recommendations

Character is the answer to intuitive decisionmaking. The first step in laying a foundation for intuitive decisionmaking is developing sound character. The tough issues that organizations must confront are the ethical and moral quandaries, and small unit leaders must have the wherewithal to handle them appropriately. A matrix cannot be all inclusive and organizations cannot anticipate every situation they may face. Individuals

[83] Krulak.
[84] Ibid.

and organizations must develop a moral consistency to serve as their compass. Making the right ethical decisions must be a thing of habit.[85]

> Maneuver doctrine, to be successful, demands high tempo in order to retain the initiative and impact the enemy's will to fight. Without leaders who can make timely decisions under extreme duress, this doctrine simply cannot succeed. These leaders cannot rely on the traditional, analytical approach to decisionmaking. Advances in information technology will never clear Clausewitz's "fog of war" to the point where the analytical model is timely enough to guarantee victory. Marine Corps leaders, therefore, need to develop confidence in their own intuition -- an intuition rooted firmly in solid character. We must actively seek out means for cultivating intuitive decisionmaking skills among our leaders at all levels from the strategic corporal to his or her Marine Expeditionary Force commander. Since these intuitive skills result from experience, we must include repetitive decisionmaking drills and exercises in all of our formal school's curriculum and in the training programs of our operational units. Finally, our commanders must foster a climate within their units that is supportive of intuitive skill development.[86]

Flexibility

Discussion

Flexibility is the ability to command and control operations from anywhere, at any time, in a variety of situations and conditions, without loss of effectiveness. Flexible and adaptive systems/processes take into account a thinking and adaptive enemy and enable course corrections with minimal disruption since they are built to respond to multiple situations or events. From a decisionmaking standpoint, commanders at all levels can quickly select a COA without being locked into it. From an organizational, systemic standpoint, this attribute enables a timely, effective response to an altered and/or unforeseen operating environment. "Such operating environment changes, often caused by adversary actions, may require modifying organizational structures, workflows, and decision-making processes."[87]

Recommendations

[85] Ibid.
[86] Ibid.
[87] DOD, "Command and Control Joint Integrating Concept Final Version 1.0."pp.27-30.

Wargaming, simulation exercises, templated preplanned responses are all tools that can help increase the flexibility of an organization. Flexibility must be built into the culture of an organization. Flexible organizations achieve the most success in maximizing the adaptive capacity of their organizations. They are quick to adjust priorities and reallocate resources, maximizing the full range of resources available to them.

Commander's Intent and Operational Trust

Discussion

Essential to the adaptive capacity of an organization are an understanding of commander's intent at the lowest levels and an operational trust in subordinates at the highest levels. As units rely more on decentralized decisionmaking and the role of the small unit leader, the importance of understanding commander's intent gains greater significance. The adaptive capacity of the organization as a whole is dependent on the adaptive capacity of its individual components. Commander’s intent is the purpose behind the mission. It provides the larger picture of what is to be achieved and how an individual mission fits. Knowing the commander’s intent allows organizations to make decisions in accordance with the overall plan. This understanding allows organizations to exploit new opportunities and achieve success.

In describing how he was assigned tasks in Iraq, one young officer related the following. He was told, “Here is your task, here is your purpose, we don’t have as much information that may be necessary to complete the whole mission, but the information is

out there for you to get." Another officer described the command climate as, "Here, a lot of times it is, 'Here it is, figure it out, go, you have one hour.'"[88]

Subordinates must understand the commander's intent and commanders must have an operational trust in their subordinates that their intent will be adhered to. Operational trust is the aggregate level of trust from each person and earned from each entity (person, object, system) to accomplish a mission or endeavor. Complex operations using interdependent forces require a level of operational trust in order to gain operational efficiency and effectiveness. Operational trust refers to the sum of a variety of trust perspectives including (but not limited to) commander/subordinate, subordinate/commander, peer/peer, operator/equipment and warfighter/tactics.[89]

Recommendations

When an order is given, subordinates must seek to understand the total tactical picture. If the commander does not give his intent, the subordinate needs to ask for it. When issuing orders to subordinates, be sure they understand why you are assigning them a task. Commander's intent should include an explanation of the mission at least one level up. Issue *Mission Orders*, that provide a clear picture of the commander's intent so that subordinates have decision making flexibility while they maintain a clear focus on your unit's goal.

Transformation Timing

Discussion

[88] Wong.p.15.
[89] DOD, "Command and Control Joint Integrating Concept Final Version 1.0."pp.27-30.

Some believe that, with the United States in the midst of a difficult and dangerous war on terrorism, now is not the time to transform the U.S. armed forces. The opposite may very well be true. *Perhaps now is precisely the time to make changes.* [90]

Although there are many criticisms of postwar Iraq as being avoidable, undesirable, and unwinnable, it nevertheless is producing a generation of junior leaders who are acquiring adaptive capacity critical to the future of the armed forces. "In the crucible of OIF, captains and lieutenants are becoming more creative, innovative, and confident as they learn to deal with the complexities, unpredictability, and uncertainties."[91]

One study reveals that through deployments in support of the war on terrorism, junior officers are developing adaptability, a competency that the Army has recognized as vital to future warfare, yet very difficult to develop outside of deployed operations.[92] "By being confronted with complexity, unpredictability, and ambiguity, junior officers are learning to adapt, to innovate, and to operate with minimal guidance."[93]

There is a whole generation of junior officers and noncommissioned officers who are fully prepared to assume much greater authority and responsibility than is traditionally expected at the small-unit level. They have proven their critical thinking skills and tactical competence in combat, achieving results that exceed our highest expectations, and demonstrating a capacity for small-unit leadership that will enable us to realize the full promise of maneuver warfare philosophy, through maximum decentralization of informed decisionmaking, guided largely by commander's intent.

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[90] Donald H. Rumsfeld, "Transforming the Military. (planning US military policy for the 21st century, according to Donald Rumsfeld)," *Foreign Affairs* 81, no. 3 (2002).p.5.
[91] Wong.p.2.
[92] Ibid.p.3.
[93] Ibid.p.3.

The U.S. Army has historically valued the ingenuity and creativity of its leaders, the ambiguous and decentralized combat environment of the 21st century has made *adaptive* leaders an especially valuable resource.[94] Today's junior officers are not afraid to lead in ambiguous conditions. They can execute a mission with minimal guidance. They are an incredibly valuable resource to a transforming Army that has desired and sought adaptive capacity in its leaders. The crucible of OIF has delivered a cohort of adaptive leaders.[95]

Recommendations

The challenge for organizational leadership is to encourage and leverage this priceless potential. Today's young military leaders have far more adaptive capacity than ever before. They have a support to effect change, they have the experience to know what needs to be changed, and they have tools that enable changes to take effect. Their lessons learned must be incorporated into the concept of transformation.

Distributed Operations

Discussion

The ability to conduct distributed operations and network small forces so that collective resources can be brought to bear as the situation dictates is a tremendous capability. Collaborative planning allows units to apply economy of force principles and maximize the resources at their disposal.HMM-265(Rein) conducted distributed operations in western Al Anbar province Iraq. The relationships that were developed

[94] Ibid.p.1.
[95] Ibid.p.20.

between the aviation detachment and the supported units were very productive. The detachment officer in charge sent the following back to the squadron at Al Asad.

> "We have really developed a team here, not just with the pilots, but with the [infantry] and [escort aircraft] as well. Our missions have gone exceptionally well and all players are excited at the work we are doing. [Task Force] Naha has snagged a handful of [High Value Targets] in as many hours and is really rolling with us aboard. We surely do make them bigger and they are very grateful."[96]

A detriment to conducting distributed operations for an extended period of time is that relationships between commanders are not developed. Small unit leaders tend to thrive in their environment and become very effective. After a period of time, distributed units tend to develop a "det mentality" and their own culture. This can be counter productive when friction is increased among units, both laterally and vertically. The following email is from the same detachment in western Iraq quoted above. "Bottomline: we are currently executing and have been 100% capable and leaning forward everyday to help the GCE in any assigned mission. Why does it appear that the MAG is still under the impression that we are just sitting on our [butts] out here? We are flying Marines daily. I know you know this...just venting."[97]

Frustration can build between organizations over time if all planning is collaborative.

Recommendations

Adaptive capacity is increased so long as distributed units conduct close coordination and maintain the flexibility and agility that the concept of distributed operations is intended to provide. Relationships, both at the command level and at the personal level must be maintained in order to maximize the effects of DO. Rotating

[96] Ian Courtney, "Email, 19 Nov 2004," ed. Joseph E. Rupp (2004).
[97] Scott Whitaker, "Email, 18 Nov 2004," ed. Joseph E. Rupp (2004).

distributed units and personnel on a regular basis will aid in avoiding complacency, building situational awareness, and understanding commander's intent.

Conclusion

During the course of HMM-265(Rein) combat operations in Iraq, it became apparent that the infantry was not using aviation assets to much potential. When the issued was investigated, it became apparent that heliborne assaults were not used because it took too much time to get the aviation assets scheduled. Indeed, the commanding general of the air wing wanted to be briefed at least one day prior to any mission that involved tactical operations. One email from higher headquarters read as follows:

> For the subject mission that you are currently in the process of planning, lend a hand by providing a template for the Concept of [Operations] brief that the [Marine Aircraft Group] will have to deliver to the [Commanding General] on your behalf. The CG has a standing order that all insert missions be briefed to him at least one day prior to the planned execution. Since this is planned for only 2 days from now, need to work quickly to get a brief to the CG by tomorrow. Will greatly appreciate a quick turnaround to give us something to work with to brief the general.[98]

This meant that the general's staff wanted the brief two days prior. Two days was not a feasible time to get a full brief in to the general. Two days was too far out. The ground forces were getting actionable intelligence that needed to be acted on within the next day, sometimes within hours. They did not have the luxury to start planning two days out.

HMM-265, in conjunction with the 31st MEU, developed a process whereby ground forces could conduct heliborne assaults within a 6 hour period. The following

[98] Mitch Cassell, "Email, 11 Nov 2004," ed. Joseph E. Rupp (2004).

concept of time sensitive targeting was presented by HMM-265 (Rein) and 31st MEU(SOC) to the Wing and Division Commanding Generals.

Background

31st MEU prosecuted time sensitive targets (TST) on a routine basis. Most of these targets were engaged using Deep Reconnaissance Platoon or larger forces as required via ground means of transportation. However, as the intelligence picture in the area of operations (AO) became clearer, a better understanding was developed of how the insurgency worked. Recent operations throughout the AO had verified that the insurgents were constantly on the move. They would remain in one location for a short period of time, and have a “phone tree” network alerting one another of military presence or activity. Increased improvised explosive devices (IEDs) and mines along land routes also add to the need of an alternative method of insertion. Based on these factors, it became necessary to be able to react in a timely manner using new techniques when receiving intelligence on a wanted individual’s location. The strike needed to be “unannounced” and in a non-conventional manner to avoid the insurgents being “tipped-off”. The proposed solution was to implement a defined, on-call heloborne time-sensitive-target (TST) capability in the AO to strike quickly; avoiding enemy detection and while covering the vast AO with the limited number of troops available.

Proposed Concept of Operations

A set of template missions were pre-planned, pre-briefed, and *pre-approved* with the Wing and Division CGs. This pre-approval process facilitated a timely coordinated

response to actionable intelligence and allowed commanders at every level up the chain of command to provide their commander's intent. This was the key to the process.

The MEU maintained a list of high value targets with established target packages. Once actionable intelligence came in, a preset approval process was implemented. Based on the time available, quality of intelligence, importance of the target, enemy disposition, location of friendly forces, and other factors a decision was made on how the target will be prosecuted. Liaison is made with adjacent commands to ensure they were not planning the target as well.

After examining the target and consulting the MEU Air Officer, the decision would be made to plan a heliborne assault. The Air Officer would then call the Tactical Air Command Center watch officer and request to put the rapid planning procedure into motion. A "small" or "large" package would be identified and the Air Officer would then notify the ground forces and aircrews. At this point, key planners would conduct rapid, detailed planning and the MEU commander would be briefed and would approve the mission. The Tactical Air Command Center watch officer would approve the mission based on prior template approval by the Wing CG. The Division and Wing CGs would be alerted for their situational awareness. Mission planning would then continue until the mission was launched. The time from notification to launch was 6 hours. [99]

This is one example of how an industrial age, hierarchical organization can adapt to maximize the benefits of transformation, network-centric warfare, and the implementation of MAGTF concepts.

Organizations must identify the crises that they expect to face and then break out the elements of the crises. They then need to look to themselves in order to determine

[99] Joseph E. Rupp; Christopher F. DeLong, "31st MEU Vertical Assault TST " (2004).

what resources they can bring to bear on the elements of the crises that they might foresee.

A close analysis of the organization's components and the adaptive capacity of each of the components must be conducted. At this point, decisions need to be made regarding priorities and the allocation of resources within the organization. Are they properly allocated? Are there enough? Are the resources available the right type of resources? These are all questions that organizations must ask themselves.

Once a thorough assessment has been conducted, any changes or alterations to organizational structure, organizational culture, and processes must be implemented. After such a transformation has taken place, the organization needs to start over again and identify possible crises and challenges. This should be a continual process with no room for complacency.

Through concerted efforts in the areas of structure, culture, and processes, organizations can increase their adaptive capacity and raise their crisis threshold.

Works Cited

Alberts, David S., John Garstka, and Frederick P. Stein. *Network Centric Warfare: Developing and Leveraging Information Superiority*. 2nd ed. CCRP publication series. Washington, D.C.
Vienna, VA: Dept. of Defense. Center for Advanced Concepts and Technology (ACT) ; Distributed by CCRP Publications Distribution Center, 1999.

Alberts, David S.; Hayes, Richard E. "Power to the Edge: Command and Control in the Information Age." DOD Command and Control Research Program, 2003.

Barnett, Thomas P.M. . "The Seven Deadly Sins of Network-Centric Warfare." *Proceedings* (1999).

Bennis, Warren G., and Robert J. Thomas. *Geeks & Geezers: How Era, Values, and Defining Moments Shape Leaders*. Boston: Harvard Business School Press, 2002.

Bruno, Michael. *Western Iraq Most Networked in History of War*. 2005.

Bush, George W. "The National Security Strategy of the United States of America, March 2006." ed. President of the United States, 2006.

Cassell, Mitch. "Email, 11 Nov 2004." ed. Joseph E. Rupp, Email from Maj Cassell, MAG-16 Future Ops, to Maj Rupp, HMM-265(Rein) OpsO, 11 Nov 2004., 2004.

Cebrowski, A. K. "The Implementation of Network-Centric Warfare." Washington D.C.: Office of the Secretary of Defense, 2005.

Courtney, Ian. "Email, 19 Nov 2004." ed. Joseph E. Rupp, Email from Maj Courtney, HMM-265(Rein), to Maj Rupp, HMM-265(Rein) OpsO, 19 Nov 2004., 2004.

DeLong, Joseph E. Rupp; Christopher F. "31st MEU Vertical Assault TST ", 2004.

DOD. *Network Centric Warfare, Department of Defense Report to Congress*. 2001.

_____. "Command and Control Joint Integrating Concept Final Version 1.0." Department of Defense, 2005.

Dupuy, Trevor Nevitt. *Understanding War: History and a Theory of Combat*. New York: Paragon House, 1987.

Fuentes, Gidget. "Working on the same page." *Marine Corps Times*, January 30, 2006 2006, 10.

Hagee, Michael W. "A Concept for Distributed Operations." U.S. Marine Corps, 2005.

Hermann, Charles F. *International Crises: Insights From Behavioral Research*. New York,: Free Press, 1972.

JCS. *Joint Vision 2010*: Chairman of the Joint Chiefs of Staff.

_____, ed. *Joint Pub 5-0 Doctrine for Planning Joint Operations*: Joint Chiefs of Staff, 2005.

Jones, James L. *Marine Corps Strategy 21*. Washington DC: United States Marine Corps, 2000.

Krulak, Charles C. "White Letter No. 3-98 ", ed. All Commanding Officers All General Officers, All Officers in Charge, Sustaining the Transformation. Washington DC, 1998.

_____. "Cultivating Intuitive Decisionmaking." In *Marine Corps Gazette*, 1999.

Lebow, Richard Ned. *Between Peace and War: The Nature of International Crisis*. Baltimore: Johns Hopkins University Press, 1981.

MCWL. *Combat Squad Leader Decision Making* X-Files, ed. MCWL. Quantico VA: Marine Corps Warfighting Lab, 2003.

MOD, United Kingdom. *Networked Enabled Capability*: Ministry of Defence UK, 2005.

Pace, Peter. "The 16th Chairman's Guidance to the Joint Staff - Shaping the Future -." Washington DC: Chairman of the Joint Chiefs of Staff, 2005.

Pandolfe, Frank C. "2006 Quadrennial Defense Review." 2006.

Pappal, Michael F. "Preparation of Leaders to Make Decisions in Peacekeeping Operations." Fort Leavenworth KS: U.S. Army Command and General Staff College, 2002.

Rumsfeld, Donald H. "Transforming the Military. (planning US military policy for the 21st century, according to Donald Rumsfeld)." *Foreign Affairs* 81, no. 3 (2002): 20.

_____. "Transformation Planning Guidance." OSD, 2003.

Simmons, Bryan. "CASEVAC response time." ed. Joseph E. Rupp, 2006.

Snyder, Glenn Herald, and Paul Diesing. *Conflict Among Nations: Bargaining, Decision Making, and System Structure in International Crises*. Princeton, N.J.: Princeton University Press, 1977.

USMC. "Expeditionary Maneuver Warfare." United States Marine Corps, 2001.

_____. "Marine Corps Planning Process, MCWP 5-1." 2001.

_____. "21st Century Marine Corps: Speed, Flexibility, & Agility…Globally." 2005.

Whitaker, Scott. "Email, 18 Nov 2004." ed. Joseph E. Rupp, Email from LtCol Whitaker, HMM-265(Rein) XO, to Maj Rupp, HMM-265(Rein) OpsO, 18 Nov 2004., 2004.

Wong, Leonard. "Developing Adaptive Leaders: The Crucible Experience of Operation Iraqi Freedom." 2005: Strategic Studies Institute of the U.S. Army War College, 2004.