

The Military Decision-Making Process in the Multi-Domain Operating Environment

A Monograph

by

MAJ Edward M. Hughes
US Army Reserve



School of Advanced Military Studies
US Army Command and General Staff College
Fort Leavenworth, KS

2021

Approved for public release; distribution is unlimited

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 23 05 2019		2. REPORT TYPE MASTER'S MONOGRAPH		3. DATES COVERED (From - To) JUNE 20-MAY 21	
4. TITLE AND SUBTITLE The Military Decision-Making Process in the Multi-Domain Operating Environment				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Major Edward M. Hughes				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, KS 66027-2301				8. PERFORMING ORG REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) ADVANCED MILITARY STUDIES PROGRAM				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The US Army's planning methodologies predate The US Army in Multi-Domain Operations concept. Additionally, China and Russia have risen to become competitors in a complex and non-linear operating environment (OE). The danger now exists that the US Army could become engaged in large scale combat operations (LSCO) against a near-peer adversary with doctrine that is based on domain supremacy instead of domain parity. The contemporary and future operational environments call for exploration of new concepts, as well as the examination of historical ones, which coordinate lethal and non-lethal effects simultaneously across all domains. An evolution to both detailed and conceptual planning methodologies will improve the ability to create the cross-domain convergence required for success on the battlefield.					
15. SUBJECT TERMS Multi-Domain Operations, MDO, Military Decision-Making Process, MDMP, Army Design Methodology, ADM, Large Scale Combat Operations, LSCO, Conflict Continuum, Doctrine					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Edward M. Hughes
(U)	(U)	(U)	(U)	53	19b. PHONE NUMBER (include area code) 703 200-3294

Monograph Approval Page

Name of Candidate: MAJ Edward M. Hughes

Monograph Title: The Military Decision-Making Process in the Multi-Domain Operating Environment

Approved by:

____//signed/01 APR 21/AEC//_____, Monograph Director
Anthony E. Carlson, PhD

____//signed 07 APR 21/VRS//_____, Seminar Leader
Victor R. Satterlund, COL

____//signed 20 APR 21/BAP//_____, Director, School of Advanced Military Studies
Brian A. Payne, COL

Accepted this 20th day of May 2021 by:

_____, Assistant Dean of Academics for Degree Programs
and Research, CGSC
Dale F. Spurlin, PhD

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the US Army Command and General Staff College or any other government agency. (References to this study should include the foregoing statement.)

Fair use determination or copyright permission has been obtained for the inclusion of pictures, maps, graphics, and any other works incorporated into this manuscript. A work of the US government is not subject to copyright, however further publication or sale of copyrighted images is not permissible.

Abstract

The US Army's planning methodologies predate *The US Army in Multi-Domain Operations* concept. Additionally, China and Russia have risen to become competitors in a complex and non-linear operating environment (OE). The danger now exists that the US Army could become engaged in large scale combat operations (LSCO) against a near-peer adversary with doctrine that is based on domain supremacy instead of domain parity. The contemporary and future operational environments call for exploration of new concepts, as well as the examination of historical ones, which coordinate lethal and non-lethal effects simultaneously across all domains. An evolution to both detailed and conceptual planning methodologies will improve the ability to create the cross-domain convergence required for success on the battlefield.

Contents

Abstract	iii
Contents.....	iv
Acknowledgements	vi
Abbreviations	vii
Figures.....	x
Part I: Introduction	1
Pivot to Great Power Competition.....	2
Shifting from counterinsurgency operations to large scale combat operations.....	2
The Army's Multi-Domain Operations Concept	3
Complexity, Non-Linearity, and the Fear of Fog.....	4
MDMP – Assumed to be Fine.....	7
The Changing Character of Warfare.....	7
Risk, Uncertainty, and the Pareto Principle	9
Knowledge, Exploration, and Exploitation.....	12
Summary	14
Part II: The History of the Military Decision-Making Process	14
The Estimate of the Situation.....	14
CGSC Student Texts.....	16
Planning Post – 9/11	18
Summary	20
Part III: The Present Military Decision-Making Process	21
Step 1: Receipt of Mission.....	24
Step 2: Mission Analysis.....	25
Step 3: Course of Action Development	26
Step 4: Course of Action Analysis.....	27
Step 5: Course of Action Comparison	28
Step 6: Course of Action Approval.....	28
Step 7: Orders Production.....	29
Planning in a Time-Constrained Environment.....	29
The Disconnect	29
Summary	30
Part IV: The Future.....	31
Introduction.....	31
Creating Convergence (The MDSC).....	31
The Maturation of ADM.....	33
Planning for Convergence.....	35
The Commander's Importance.....	37

Part V: Conclusions.....	38
Introduction.....	38
Doctrine.....	39
Training.....	41
Leadership Education.....	42
Conclusion	42
Appendix A	44
Appendix B.....	45
Appendix C.....	46
Appendix D	47
Bibliography	50

Acknowledgements

I would not have been able to complete this monograph without the love and support of my wife Morgan, my son Greyson, and my daughter Charlie. Your resilience, patience, and encouragement has been an inspiration over the past year apart.

To my monograph director and seminar leader, Dr. Carlson and COL Satterlund, thank you for corralling my disparate thoughts and ideas into a product which will hopefully provide value to the force. Your combined experience and insight were vital in developing the ideas and recommendations within the monograph.

Abbreviations

ALC	Advanced Leader Course
ADM	Army Design Methodology
ADRP	Army Doctrinal Reference Publication
ADP	Army Doctrine Publication
ATO	Air Tasking Order
ATP	Army Techniques Publication
ATTP	Army Tactics, Techniques and Procedures Publication
BCT	Brigade Combat Team
BOLC	Basic Officer Leader Course
C2	Command and Control
CCIR	Commander's Critical Information Requirements
CDMP	Combat Decision-Making Process
COA	Course of Action
COG	Center of Gravity
COIN	Counterinsurgency
CTC	Combat Training Center
DDMP	Deliberate Decision-Making Process
EMS	Electromagnetic Spectrum
FM	Field Manual
FSR	Field Service Regulation
GCC	Geographic Combatant Command
GWOT	Global War on Terror
IPB	Intelligence Preparation of the Battlefield
JATC	Joint Air Tasking Cycle
JOE	Joint Operating Environment

JOPP	Joint Operations Planning Process
JPP	Joint Planning Process
JP	Joint Publication
JTF	Joint Task Force
LSCO	Large Scale Combat Operations
MDB	Multi-Domain Battle
MDCO	Multi-Domain Concept of Operations
MDMP	Military Decision-Making Process
MDO	Multi-Domain Operations
MDOD	Multi-Domain Operations Directive
MDOO	Multi-Domain Operations Order
MDSC	Multi-Domain Synchronization Cycle
METT-TC	Mission, Enemy, Terrain, Troops available, Time, Civilian Considerations
NATO	North Atlantic Treaty Organization
NCO	Non-commissioned Officer
NSS	National Security Strategy
OE	Operating Environment
PAM	Pamphlet
PCS	Permanent Change of Station
PMESII-PT	Political, Military, Economic, Infrastructure, Information, Physical Environment, Time
QDMP	Quick Decision-Making Process
RDSP	Rapid Decision Synchronization Process
SITREP	Situation Report
SOP	Standard Operating Procedure
ST	Student Text
STANAG	NATO Standardization Agreement

TRADOC	Training and Doctrine Command
TLP	Troop Leading Procedures
TTP	Tactics, Techniques and Procedures
XO	Executive Officer

Figures

Figure 1. Risk and uncertainty in relation to staff proficiency and the OE	9
Figure 2. Pareto principle adapted to planning in the COIN OE.....	10
Figure 3. Pareto principle adapted to an experienced staff planning in the MDO OE	11
Figure 4. Pareto principle adapted to an inexperienced staff planning in the MDO OE.....	12
Figure 5. Integrated Planning	20
Figure 6. Steps of the Military Decision-Making Process.....	22
Figure 7. Notional, 24-hour-based multi-domain synchronization cycle battle rhythm.....	32
Figure 8. Visualization of the past planning paradigms of large-scale conflict	34
Figure 9. Visualization of the future planning paradigm need for success in large-scale conflict.	35
Figure 10. MDSC with ATP 5-0.1's Integrated Planning graphic overlayed with Coordinated independent planning	36
Figure 11. MDSC with ATP 5-0.1's Integrated Planning graphic overlayed with consolidated planning effort	36
Figure 12. Pareto principle adapted to planning in the COIN OE.....	37
Figure 13. Planning methodology recommendations in relation to staff proficiency and the OE..	40

Part I: Introduction

Only the layman thinks that he can see in the course of the campaign the consequent execution of an original idea with all details thought out in advance and adhered to until the very end.

—Helmuth von Moltke the Elder, *Moltke on the Art of War*.¹

Army Doctrinal Publication (ADP) 5-0 *The Operations Process* defines the military decision-making process (MDMP) as, “an iterative planning methodology to understand a situation and mission, develop a course of action (COA), and produce an operation plan or order.”² Army Field Manual (FM) 6-0 *Commander and Staff Organization and Operations* contains the detailed method of the MDMP and begins by describing it as, “a process that helps leaders apply thoroughness, clarity, sound judgment, logic, and professional knowledge to understand situations, develop options to solve problems, and reach decisions.”³ The seven-step process has remained unchanged, with only minor adjustments to sub-steps, since 1997. Defining a problem and choosing the best COA is a transcendent quality for professional military forces. However, two key factors are creating the potential for a critical vulnerability in the Army’s operations process. First, the operational environment (OE) where the Army anticipates having to fight and win in the future is becoming increasingly complex and non-linear. Second, Russia and China have emerged as near-peer adversaries, competing below the level of armed conflict to achieve regional dominance and global influence. Taken together, and viewed from the perspective of a complex adaptive system, there are likely to be emergent properties for which the Army’s current detailed planning methodology, the MDMP, is ill prepared. The Army’s last full

¹ Helmuth von Moltke, *Moltke on the Art of War: Selected Writings*, ed. Daniel J. Hughes (New York: Ballantine Books, 1995), 92.

² US Department of the Army, Army Doctrine Publication (ADP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2019), 2-17.

³ US Department of the Army, Field Manual (FM) 6-0, Change No. 2, *Commander and Staff Organization and Operations* (Washington, DC: Government Printing Office, 2016), 9-2.

revision of FM 6-0 occurred in 2014. As the Army continues to modernize equipment and training, it must also explore the continued viability of a linear planning process in an increasingly non-linear and complex OE.

Pivot to Great Power Competition

The US Army has not fought conventional large-scale combat operations (LSCO) since the end of the Second Gulf War in 2003. Since then, the main emphasis of organizing, training, and equipping the force has been on counterinsurgency (COIN) and stability operations in Afghanistan and Iraq.⁴ The National Security Strategy (NSS) of 2017 marked a distinct shift in American foreign policy. The NSS acknowledged the timelessness of geopolitical competition. It also recognized that technology had increased the speed of this competition in both new and traditional arenas.⁵ The NSS declared that great power competition had returned, identifying China and Russia as the nation's two most capable adversaries. However, it also acknowledged a majority of the contest occurs below the threshold of armed conflict at the edges of international law.⁶ The NSS tasked the American military with being capable of operations across the full spectrum of conflict in multiple domains at once.⁷ This change in mindset, priorities, and resources has been the driving force behind the Army's modernization initiatives.

Shifting from counterinsurgency operations to large scale combat operations

The fundamental shift from COIN operations to LSCO also encompasses a significant cultural change in the US Army. The 1991 Gulf War, combined with the collapse of the Soviet

⁴ Dominik Josef Schellenberger, "From Domination to Consolidation: At the Tactical Level in Future Large-Scale Combat Operations," (Art of War Papers, US Army Command and General Staff College Press, 2020), 2.

⁵ White House, *National Security Strategy* (Washington, DC: White House, 2017), 26.

⁶ Ibid., 27-28.

⁷ Ibid., 28. Domains in this context refer to the military domains described in detail in Joint Publication 3-0 *Joint Operations* and Joint Publication 5-0 *Joint Planning*. They include the land, air, maritime, space, cyber, and information domains.

Union, created a unipolar world with the United States as the lone dominant military power. Nations that have found themselves in such a powerful position rarely prepare for a loss of dominance.⁸ This is due in part to an inability to adapt to changes in the OE because of the perception that they already control it. Over the last twenty years, the paradigm of COIN campaigns has been one of domain supremacy. The United States has conducted COIN operations from a position of relative advantage, relying on overmatch to incur negligible loss of personnel and equipment per mission.⁹ New doctrinal concepts do not envision this luxury when competing in contested space – cognitive, information, or physical – with a near-peer adversary. *Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World*, published in 2016, was one of the first documents to describe an emerging security environment full of contested norms and persistent disorder.¹⁰ This document provides the foundation and context for the military services’ expectations of the future OE.

The Army’s Multi-Domain Operations Concept

In December 2018, US Army Training and Doctrine Command (TRADOC) published the Army’s new operating concept in Pamphlet (PAM) 525-3-1 *The US Army in Multi-Domain Operations 2028*. The concept envisions transforming Army doctrine to meet the challenges of twenty-first-century warfare.¹¹ TRADOC Pamphlet 525-3-1 is the Army’s operating concept for engaging in persistent near-peer competition. In many ways, it recognizes that the Army has been in a competency trap. A competency trap is a stable suboptimal solution found within adaptive

⁸ James G. March, *A Primer on Decision Making: How Decisions Happen* (New York: The Free Press, 1994), 253.

⁹ Schellenberger, “From Domination to Consolidation: At the Tactical Level in Future Large-Scale Combat Operations,” 2.

¹⁰ Chairman of the Joint Chiefs of Staff, *Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World* (Washington, DC: 2016), 4.

¹¹ Mark Balboni, John A. Bonin, Robert Mundell, and Doug Orsi, “Mission Command of Multi-Domain Operations,” (Carlisle Barracks, PA: US Army War College Press, 2020), 18, <https://press.armywarcollege.edu/monographs/918>.

systems. It is a resistance to adoption of new rules, technologies, or practices due to fear of short-term performance decreases. Institutions sustain these competency traps because while they are arguably inferior, a high level of skill, training, and resources have been invested in them.¹²

Near-peer threats, combined with new and emergent technologies, have already altered the way military forces are thinking about and employing current and future capabilities within warfighting functions. The most difficult transition may be occurring within command and control (C2) for two reasons. First, a future adversary will contest the electromagnetic spectrum (EMS), making persistent communication a tenuous assumption. Second, the multi-domain operations (MDO) concept describes an OE which will likely require a multi-domain synchronization process evolving from the continuous collaboration between commanders and staffs across all domains and environments throughout planning and execution cycles.¹³ The United States has not fought against a peer competitor in 75 years; as a result, individual services have focused conceptually on fighting their own symmetrical domain wars and paid less attention to supporting other services in other domains.¹⁴ The institutional memory of detailed planning against an equally capable enemy has atrophied.

Complexity, Non-Linearity, and the Fear of Fog

Complexity, for the purposes of this monograph, describes an environment with a multitude of interrelated agents. Each agent is capable of autonomy, and by acting autonomously can impact any other of the system's agents. This interaction can become patterned behavior or can change based on new challenges or stimuli internal or external to the environment/system.¹⁵

¹² March, *A Primer on Decision Making: How Decisions Happen*, 96-97.

¹³ Mark Balboni, John A. Bonin, Robert Mundell, and Doug Orsi, "Mission Command of Multi-Domain Operations," ix.

¹⁴ Ibid.

¹⁵ Everett Carl Dolman, *Pure Strategy: Power and Principle in the Space and Information Age* (New York: Routledge, 2005), 95.

The interrelationship between the agents is the most important factor when trying to understand the capacity to react to change without implied or direct instruction.¹⁶ Complexity research provides a foundation for inquiring where the influence and significant compromises of a complex system may lie.¹⁷

Complexity is a relative term. If interviewed, most commanders throughout history would argue that their armies were fighting within a complex environment. The difference today is that the academic body of knowledge concerning complexity, as well as the vocabulary supporting it, allows for the precise expression of environmental changes which should cause concern. The nature of complexity is rooted in the interaction of agents. Therefore, the Information Revolution of the post-WWII era has created an exponential increase in the number of these interactions. Barriers to interaction among processes that were previously isolated from each other in time or space are now gone or greatly reduced. The world has now entered a complexity revolution.¹⁸

Non-linearity is an equally important term to define because it can be an adjective when describing the interaction between the agents of a complex system or as a noun to describe a system itself. Non-linearity is the extreme sensitivity or indifference to input or stimuli.¹⁹ Cause and effect exist, but they are difficult or impossible to accurately determine. A non-linear system is thus a system in which its subsequent parts do not add up to output quantitatively or qualitatively and cause and effect are an equal mystery.²⁰ A system can be both complex and non-linear when it interacts with other systems. When any of the agents exhibit activity that

¹⁶ Dolman, *Pure Strategy: Power and principle in the space and information age*, 95.

¹⁷ Robert Axelrod and Michael D. Cohen, *Harnessing Complexity: Organizational Implications of a Scientific Frontier* (New York: Basic Books, 2000), 21.

¹⁸ Ibid., 26.

¹⁹ Dolman, *Pure Strategy: Power and principle in the space and information age*, 94.

²⁰ Ibid., 108.

appears in contradiction to previously understood behavior it is an indicator of potential non-linearity.

The MDMP is a linear planning methodology which relies upon discernable cause and effect feedback. Planners then use this projected feedback to produce an order for military action that will accomplish a mission or achieve a desired end state. Today's complex non-linear OE makes this basic assumption a luxury. A contemporary OE has multiple complex actors that will all display adaptative non-linear responses to the use of military force. This dynamic makes the concept of fog and friction, aptly articulated by Prussian military theorist Carl von Clausewitz almost 200 years ago, as relevant as ever. Friction is the force that makes the apparently easy so difficult.²¹ Clausewitz admitted that it is this force that theory can never quite define, but maybe that is because he knew it would evolve side by side with the character of warfare. Today, hyper-interconnectivity produced by the maturation of the Information Revolution has established an OE ripe with both fog and friction.

MDMP requires a staff to develop at least two friendly and two enemy COAs. The staff builds both sets of COAs upon the same OE foundation. This foundation, known as intelligence preparation of the battlefield (IPB), utilizes several different visual and text-based products to create suitable, feasible, and acceptable COAs. The MDMP's outputs create a thorough analysis of an OE, but a synthesis of a COA's effects before, during, and after a mission is lacking. While the plan may be against an enemy, the effects of friendly action on an OE will always be multiple and difficult to predict.²² This interconnectedness has always been present. The advent of the space, cyber, and information domains has increased the quantity and density of this systems

²¹ Carl von Clausewitz, *On War*, trans. and ed. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 121.

²² Robert Jervis, *System Effects: Complexity in Political and Social Life* (Princeton: Princeton University Press, 1997), 10, 17.

theory characteristic. The MDMP has become vulnerable due to this characteristic because “interconnections can defeat purposive behavior.”²³

MDMP – Assumed to be Fine

These challenges have not gone unnoticed. Army combat training centers (CTCs) assess a unit’s execution of the MDMP in training environments that attempt to simulate the non-linear complexity of the future OE. For several consecutive years, evidence has shown most brigade combat teams (BCTs) struggle to plan, prepare, and execute synchronized operations in a time-constrained environment.²⁴ Beginning in the mid-1990s, the MDMP’s steps have slowly ballooned to the point where many units fail to execute it well in training and operational environments.²⁵ “The single most important responsibility of the commander in combat is to make decisions for combat employment of subordinate forces.”²⁶ The Army invests in multi-million dollar modernization initiatives but appears to be assuming risk in its method for arranging them in time and space. The nature of this trend indicates a need to examine it further. New modernization technology and equipment will be poorly utilized, and MDO’s goal of convergence will not be consistently achieved if units do not have a detailed planning methodology they can successfully implement.

The Changing Character of Warfare

The first step in reducing this risk is a reexamination of the character of warfare. Taken to abstraction, the MDMP is the Army’s chosen method for turning information into knowledge to generate and communicate decisions. Understanding the character of warfare is critical because it

²³ Ibid., 18.

²⁴ Warren E. Sponsler, and Jason C. Gallardo, “Commander-Driven Operations Process: Observations and Recommendations,” *CALL Newsletter 2017 Ten Fundamental Skills Required to Win First the First Fight*, no. 17-19 (August 2017): 2.

²⁵ Milan Vego, “The Bureaucratization of the U.S. Military Decisionmaking Process,” *Joint Force Quarterly* 88 (First Quarter 2018): 35, <https://ndupress.ndu.edu/Publications/Article/1411771/the-bureaucratization-of-the-us-military-decisionmaking-process/>.

²⁶ Ibid., 44.

will frame the structure, analysis, and presentation of information to the decision maker. The Army's MDO concept is an important milestone in this conversation because it attempts to illustrate how the changing character of war will impact military operations. General Valery Gerasimov, the Russian Chief of the General Staff, recently stated "In the 21st century, a tendency toward the elimination of the differences between the states of war and peace is becoming discernible. Wars are now not even declared, but having begun, are not going according to a pattern we are accustomed to."²⁷ This new era of great-power competition is being conducted through the use of layered standoff in the political, military, and economic realms to separate the United States from our partners as the nation's adversaries seek to achieve their strategic aims short of armed conflict.²⁸

Technological advancement continues to strengthen the two newest operational domains of space and cyber. Leaders in military academia are now discussing application of combat power in terms of domain interdependence. In other words, the superior force can create, plan, and synchronize lethal and non-lethal effects from, to, and through multiple domains. This creates both opportunity and vulnerability that military professionals must strive to understand and master. Competency in how to learn, plan, and operate in this increasingly interconnected OE may be the most important mission command challenge we face.²⁹ The decision-making process will require much greater speed; staff will need to quickly gather and assess information and intelligence so that commanders can make the decisions at increasingly rapid rates. As a result, engagements will be fast, but campaigns could be a protracted series of kinetic engagements or

²⁷ Charles Bartles and Lester W. Grau, *Russia's View of Mission Command of Battalion Tactical Groups in the Era of "Hybrid War"* (Leavenworth, KS: Foreign Military Studies Office, 2018) 7.

²⁸ Mark Balboni, John A. Bonin, Robert Mundell, and Doug Orsi, "Mission Command of Multi-Domain Operations, 18-19.

²⁹ Ibid., 20.

conflicts short of war.³⁰ Military planning and its supporting methodologies must adapt to incorporate this evolution in the character of warfare.

Risk, Uncertainty, and the Pareto Principle

Military planning methodologies must adapt because of the changing balance between risk and uncertainty in military operations. A staff or commander can quantitatively or qualitatively describe risk, while uncertainty is hard to measure and difficult to articulate.³¹ US force's domain dominance during the past twenty years has facilitated longer planning horizons to turn uncertainty into risk. In future OEs, near-peer adversaries' operational tempo will not afford the same luxury. Figure 1 shows how a staff's ability to turn uncertainty into risk is related to their capability and the complexity of the OE.

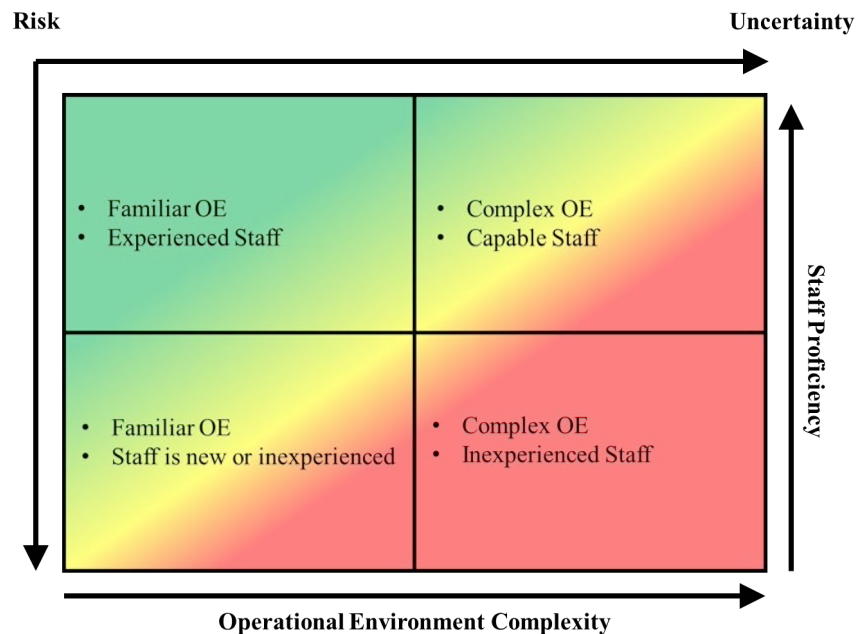


Figure 1. Risk and uncertainty in relation to staff proficiency and the OE. *Source:* created by author on January 16, 2021.

³⁰ Training and Doctrine Command (TRADOC) G2, *The Operational Environment and the Changing Character of Future Warfare* (Leavenworth, KS: TRADOC G2, 2019), 15.

³¹ Nate Silver, *The Signal and the Noise* (New York: The Penguin Press, 2012), 29.

The Pareto principle provides insight into this change. Also known as the “80/20 rule,” the original Pareto principle argued that 80% of a business’s profits came from 20% of its customers.³² Modified to the realm of military planning, in a familiar OE with a large body of experience, drafted plans have an 80% chance of success with only 20% effort. Paired with domain dominance, like in the COIN environment, and the competitive advantage over the adversary looks like this:

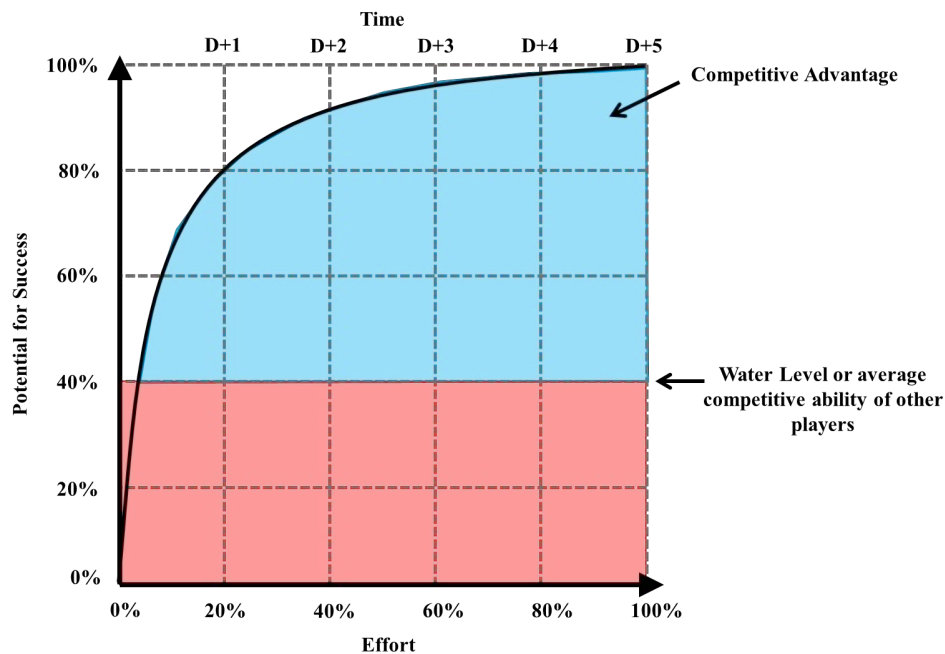


Figure 2. Pareto principle adapted to planning in the COIN OE. *Source:* created by author, derived from original graph of The Pareto Principle of Prediction found in Nate Silver, *The Signal and the Noise* (New York: The Penguin Press, 2012), 314.

US forces have a large competitive advantage in the COIN OE. This will not be the case against a near-peer in the MDO OE. The “water level” of the competition, the minimum threshold of performance required to fight to a stalemate, is much higher against a near-peer. To create competitive advantage in this environment a staff will have to employ more effort over more time at a rate of diminishing returns.³³ Figure 3 and Figure 4 show the difference between experienced

³² Ibid., 312.

³³ Silver, *The Signal and the Noise*, 314

and inexperienced staffs in a future OE. An experienced staff's plan can meet the water level threshold with enough time left for refinement to create competitive advantage against the adversary. An inexperienced staff takes longer and exerts more effort to arrive at the water level, then has little time left for subsequent improvement.

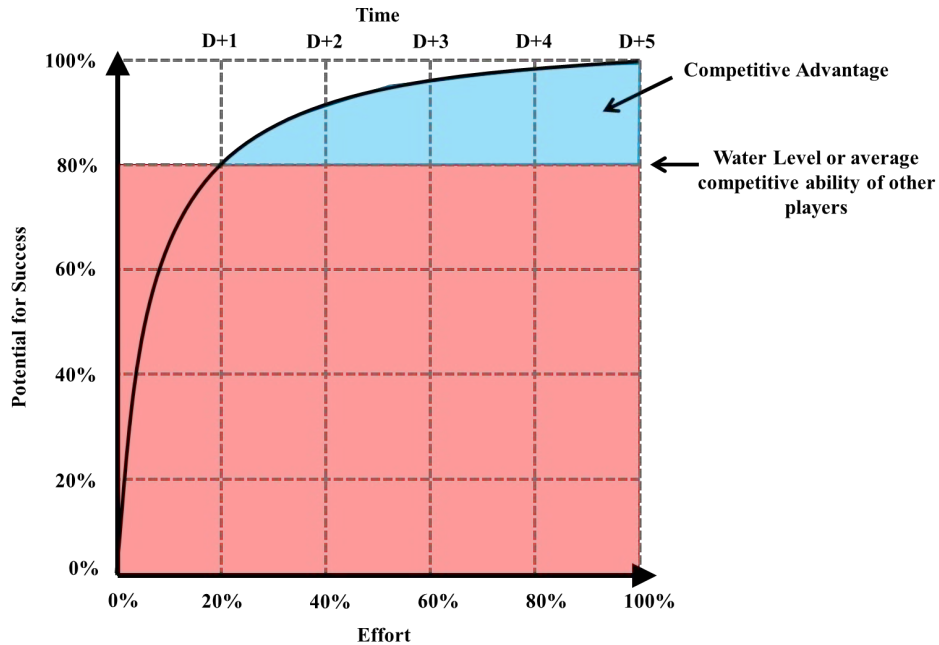


Figure 3. Pareto principle adapted to an experienced staff planning in the MDO OE. *Source:* created by author, derived from original graph of The Pareto Principle of Prediction found in Nate Silver, *The Signal and the Noise* (New York: The Penguin Press, 2012), 314.

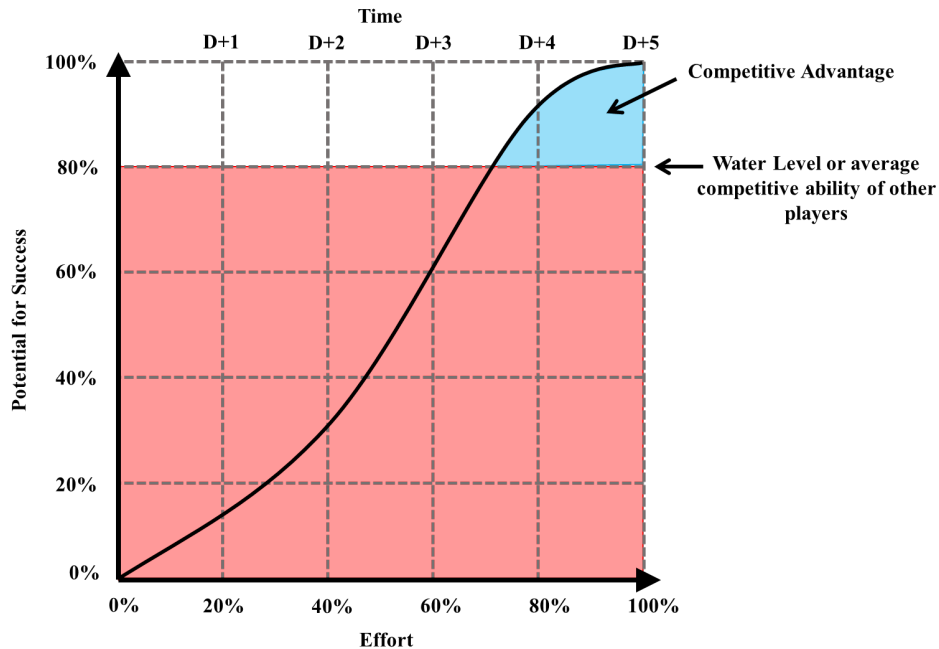


Figure 4. Pareto principle adapted to an inexperienced staff planning in the MDO OE. *Source:* created by author, derived from original graph of The Pareto Principle of Prediction found in Nate Silver, *The Signal and the Noise* (New York: The Penguin Press, 2012), 314.

Knowledge, Exploration, and Exploitation

Many external factors are changing the character of warfare, but the OE is an open system. There are powerful internal factors that the US Army can leverage which could impact the evolving character of warfare to an equal degree. Knowledge is the foundation of the MDMP that frames approaches to problems and drafts decisions presented for the commander's approval. Therefore, if MDMP practitioners alter how they create knowledge, or shape the frame, then the context created for problems and decisions will change as well.

Knowledge is not neutral. It reflects the origins of its creation. Economics sees the world as a system of voluntary exchanges among actors willing to satisfy their wants through trade of resources. Sociology views the same world as a system of norms, belongings, and identities

sustaining itself through socialization and maintenance of an order.³⁴ In similar fashion diplomacy sees dialogue, discourse, and negotiation where the military perceives conflict, physical struggle, and manipulation. These disciplines are not looking at different things, they are looking at the same things differently. The alternate lenses produce advantages and disadvantages for decision making.³⁵ Within each of these perspectives are tensions that shape the lens further. An ambassador can juxtapose knowledge for diplomacy between realist and liberalist viewpoints. Similarly, a military leader can structure knowledge with dichotomies such as western and eastern ways of war, or psychological and physical.

The Army must balance competing demands between knowledge exploration and knowledge exploitation. This dynamic occurs at the institutional and strategic level to produce documents like the MDO concept, but it also occurs at the operational and tactical levels in approaches units take towards conceptual and detailed planning. This balance is persistently upset by the forces of adaption that lead decision makers to over-espouse one or the other.³⁶ Glorification of exploration, often encapsulated by the clichéd phrase “thinking outside the box,” obscures the reality that most new ideas are bad ones. Decision systems that emphasize exploration over exploitation suffer the costs of experimentation without reaping the benefits.³⁷ Conversely, exploitation can be an equal trap. The positive reinforcement from an established decision system is quick and engenders repetition. Exploration comes with risk of failure; its positive returns are unknown. The Army’s MDMP shows evidence of this weakness. Exploration of the Army’s decision-making system for detailed planning has not occurred in over two decades. An update to the MDMP would reflect the Army’s institutional assessment on how detailed planning is prepared for the changes in the character of warfare.

³⁴ March, *A Primer on Decision Making: How Decisions Happen*, 257-258.

³⁵ Ibid., 258.

³⁶ March, *A Primer on Decision Making: How Decisions Happen*, 270.

³⁷ Ibid., 238-239.

Summary

The Army must not look upon the MDMP as a sacred artifact exempt from the possibility of revision. On the contrary, it is time for the MDMP to adjust to the environment of its utilization or risk becoming obsolete. The modern OE calls for exploration of new concepts, and examination of historical ones, which coordinate lethal and non-lethal action simultaneously across all domains. Today, a detailed planning methodology must be able to cope with challenges inherent within a complex non-linear era of great power competition. Room for improvement lies with both practitioner and process.

Holistic assessment creates the foundation for recommended changes to the MDMP. First, a historical review of MDMP evolution will place the present model in appropriate context in relation to OEs of the past. It will also illuminate previously removed techniques or procedures that warrant reconsideration for inclusion in a future doctrinal update. Second, an analysis of the current MDMP's logic and theory will expose strengths and weaknesses of the model. Finally, an appraisal of concurrent doctrinal initiatives regarding military planning processes will allow discussion on the impact of assimilation. Taken together, this holistic analysis will provide a platform for a synthesis of recommendations to the MDMP.

Part II: The History of the Military Decision-Making Process

The Estimate of the Situation

The problem of commanding and controlling armed forces, which includes planning for their employment, is as old as war itself.³⁸ In the US Army, the origins of a detailed planning process begin in 1910. The 1910 US Army Field Service Regulation (FSR) included a single paragraph of a version of a process called the "estimate of the situation." This regulation stated:

To frame a suitable field order the commander must make an estimate of the situation, culminating in a decision upon a definite plan of action. He must then actually draft or

³⁸ Martin van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1985), 1-2.

word the orders which will carry his decision into effect. An estimate of the situation involves a careful consideration from the commander's viewpoint of all the circumstances affecting the particular problem. In making this estimate he considers his mission as set forth in the orders or instructions under which he is acting, or as deduced by him from his knowledge of the situation, all available information of the enemy, conditions affecting his own command and the terrain insofar as it affects the particular military situation. He then compares the various plans of action open to him and decides upon the one that will best enable him to accomplish his mission.³⁹

The regulation did not include a formal procedure, but within the paragraph there are origins for what will later become familiar steps. The next major update to detailed planning did not occur until the 1932 FM 101-5 *Staff Officers' Field Manual*. The 1932 manual provided a comprehensive command and staff doctrine from which many modern staff processes are still based.⁴⁰ Still titled as the "Estimate of the Situation," it contained five paragraphs: Mission, Opposing Forces, Enemy Situation, Own Situation, and Decision.⁴¹

The 1940 update to FM 101-5 saw the first codification of steps that considered multiple COAs for both friendly and enemy forces. In 1950, there was guidance on how to analyze COAs, and the 1954 version was the first to include requirements for staff estimates.⁴² The June 1968 edition saw inclusion of planning assumptions.⁴³ The MDMP steps described in this version are identical to rational decision-making theory. It was the first version to define war-gaming and its procedures and was more detailed than any previous version in every aspect.⁴⁴ While outside the scope of this monograph, one can assume that many of these inclusions were in response to the escalation in complexity and intensity during the Vietnam conflict.

³⁹ Todd C. Runyon, "A MDMP For All Seasons: Modifying The MDMP For Success" (monograph, School of Advanced Military Studies, 2004), 15.

⁴⁰ Christopher R. Paparone, "US Army Decisionmaking: Past, Present and Future," *Military Review* (July-August 2001): 46.

⁴¹ John W. Charlton, "Digitized Chaos: Is our Military Decision Making Process Ready for the Information Age?" (monograph, School of Advanced Military Studies, 1998), 10.

⁴² Todd C. Runyon, "A MDMP For All Seasons: Modifying The MDMP For Success," 15-16.

⁴³ Paparone, "US Army Decisionmaking: Past, Present and Future," 46.

⁴⁴ Runyon, "A MDMP For All Seasons: Modifying The MDMP For Success," 16.

The Army initiated sweeping institutional change in the years following the Vietnam conflict. This included its operating concept. AirLand Battle, created in the early 1980s, was a response to the changing dynamics of the Cold War OE. Its intent was to be a deterrent to the Soviet Union and a reassurance to NATO partners.⁴⁵ To complement the Army's new operating concept the 1984 FM 101-5, retitled *Staff Organization and Operations*, implemented eight (NATO Standardization Agreements) STANAGs. This indicated an American commitment to a more purposeful NATO interoperability to both our European partners and the Soviet Union. For the first time, Army staff doctrine discussed the joint planning process and included a more comprehensive discussion of specialized staff roles and organization.⁴⁶ This was also the last version to title the decision-making process the "Estimate of the Situation."

CGSC Student Texts

Between 1984 and 1997, the Army's Command and General Staff College (CGSC) published Student Texts (STs) that provided additional insight and instruction on staff processes, including the MDMP. The MDMP was also known as the "Tactical Decision-Making Process" and broken down further into three distinct models. Both the 1993 and 1995 ST 100-9 included the following four-phase decision processes: the Deliberate Decision-Making Process (DDMP), Combat Decision-Making Process (CDMP), and Quick Decision-Making Process (QDMP).

At the time, CGSC's rationale for the instruction and use of the DDMP was that it followed "crawl-walk-run" methodology. The DDMP most closely represented the "crawl" portion of the methodology, not because it was the simplest, but because it required the most time. CDMP was the "run" portion, requiring advanced application of tactical decisionmaking.⁴⁷

⁴⁵ Huba Wass de Czege, *Commentary on The US Army in Multi-Domain Operations 2028* (Carlisle Barracks: US Army War College Press, 2020), xi.

⁴⁶ Paparone, "US Army Decisionmaking: Past, Present and Future," 47.

⁴⁷ Command and General Staff College, Student Text (ST) 100-9, *The Tactical Decisionmaking Process* (Leavenworth, KS: Command and General Staff College, 1993), 1-3.

The DDMP provided the most thorough approach available and arrived at an optimum solution to a tactical problem by analyzing in detail several friendly options against the full range of reasonable and available enemy options.⁴⁸ The DDMP was supposed to be complete prior to deployment or commencement of operations.

Once operations had commenced, CGSC STs recognized the need for a revised process. The 1995 ST 100-9 described the CDMP as follows: “The fast tempo of the modern battlefield requires rapid, ‘close enough,’ acceptable decisions that allow the command to decide, move, and execute in the limited time available.”⁴⁹ The CDMP was also crafted with the understanding that a completed DDMP was the start point for all subsequent tactical decisions until a new mission or OE necessitated another full DDMP. CDMP’s goal was to maintain the initiative with the input to its steps reflecting real-time events. Compared with today’s MDMP, its most striking deviation was its clear direction for personal commander involvement and COA evaluation limited to one friendly and one enemy COA.⁵⁰ Because the CDMP was its own distinct process it clearly articulated a faster way to plan and execute operations in a time constrained environment.

However, in 1997 an updated version of FM 101-5 redefined the TDMP as the MDMP. The earlier three-model concept of the STs became distilled into a single process only abbreviated at a commander’s discretion. A strong influence in this consolidation was in part due to the newly released Joint Operations Planning Process (JOPP). Nevertheless, many in-depth explanations of how to accomplish specific subtasks contained in earlier versions became discarded in this latest version.⁵¹ What it added was a focus on command and staff relationships. The 1997 FM 101-5

⁴⁸ Command and General Staff College, Student Text (ST) 101-5, *Command and Staff Decision Processes* (Leavenworth, KS: Command and General Staff College, 1995), 1-6.

⁴⁹ Ibid.

⁵⁰ Ibid., 1-8.

⁵¹ James H. Centric and Margaret S. Salter, *The Division Level Military Decision-Making Process (MDMP): Design and Development of a Prototype Computer-Based Training Product*, RR 1738 (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1999), 2-3.

was the first to add the concepts of commander's intent and commander's critical information requirements (CCIR).⁵² This was the prevailing doctrine on September 11, 2001. The Army would conduct the first four years of the Global War on Terror (GWOT) before its next doctrinal update to the planning process.

Planning Post – 9/11

The Army only revised FM 101-5 six times between 1940 and 1997, with thirteen years between the most recent of these updates. However, the advent of 21st century COIN warfare would stress the Army's planning methodologies in new and unexpected ways. The MDMP received six doctrinal revisions between 2005 and 2016. Within the same period, the Army also formally codified its conceptual planning process and reintroduced a doctrinal version of the rapid decision-making and synchronization process (RDSP).

FM 5-0 *Army Planning and Orders Production*, published in 2005, was the first of these GWOT revisions. FM 5-0 focused solely on planning, with a new FM 6-0 addressing C2, command and staff relationships, information management, and more.⁵³ Field Manual-Interim (FMI) 5-0.1, *The Operations Process*, released a year later and again in 2008 with Change No. 1. Chapter 4 of this FMI reintroduced the RDSP. Commanders now had doctrinal guidance on how to deliberately truncate the decision-making process.⁵⁴ The other major doctrinal release during this time was FM 3-24, *Counterinsurgency*, in December 2006. This manual was significant because it was the first official publication to discuss the relationship between design and planning. It recognized that the detailed planning process was failing because situations were not conforming to established frames of reference.

⁵² US Department of the Army, Field Manual (FM) 5-0, *Army Planning and Orders Production* (Washington, DC: Government Printing Office, 2005), vii.

⁵³ Ibid., vii.

⁵⁴ US Department of the Army, Field Manual-Interim (FMI) 5-0.1 C1, *The Operations Process* (Washington, DC: Government Printing Office, 2008), iv.

FM 5-0, *The Operations Process*, released in 2010, superseded both 2005's FM 5-0 and FMI 5-0.1. In his forward, General Martin Dempsey addressed the importance of understanding complex problems in a more complete manner before striving to solve them through traditional planning processes.⁵⁵ Chapter 3 of this version of FM 5-0 presented a maturation of the Army's thoughts on design. RDSP also kept its place in the main body within chapter 5. The manual did not neglect to include the MDMP, but relegated it to Appendix B. The 2010 FM 5-0 represented the last time all the Army's planning methodologies were listed in a single document.

This consolidation lasted less than 18 months. The Army published Army Tactics Techniques, and Procedures (ATTP) 5-0.1, *Commander and Staff Officer Guide*, in 2011. It superseded the appendices of the previous year's FM 5-0 and parts of 2003's FM 6-0. A brand-new manual, it consolidated all the tactics, techniques, and procedures (TTP) associated with planning, preparing, executing, and continually assessing operations.⁵⁶ ATTP 5-0.1 contained 12 chapters and 26 annexes, but for all it brought together it failed to include design or the RDSP in its content. However, the MDMP returned to center stage and chapter 4 presented it in detail.

The Army released another new planning publication, Army Doctrinal Reference Publication (ADRP) 5-0, *The Operations Process*, in 2012. It did not intend to supersede 2010's FM 5-0 or 2011's ATTP 5-0.1, but rather expanded on the principles of the operations process.⁵⁷ Army design methodology (ADM) was the new name given to the design process, which received its third iteration of doctrinal thought with the release of this publication. Chapter 2 devoted

⁵⁵ US Department of the Army, Field Manual (FM) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2010), 2.

⁵⁶ US Department of the Army, Army Tactics Techniques and Procedures (ATTP) 5-0.1, *Commander and Staff Officer Guide* (Washington, DC: Government Printing Office, 2011), vi.

⁵⁷ US Department of the Army, Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2012), v.

several pages to a conceptual planning initiative that had started in 2006 and 2010. Chapter 2 also linked ADM with conceptual planning and operational art.⁵⁸

Further doctrinal bifurcation occurred in 2015 with the publication of ATP 5-0.1 *Army Design Methodology*.⁵⁹ Nine years after its doctrinal introduction in FM 3-24, ADM matured into a distinct 82-page document. It carefully addressed the symbiotic relationship between conceptual and detailed planning.

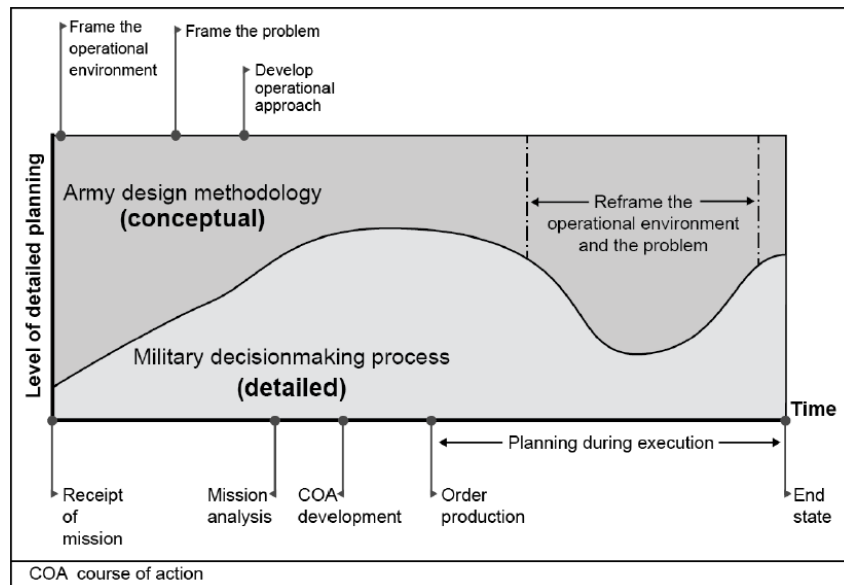


Figure 5. Integrated Planning. *Source:* US Department of the Army, Army Techniques Publication (ATP) 5-0.1, *Army Design Methodology* (Washington, DC: Government Printing Office, 2015, 2-2).

The MDMP currently resides in FM 6-0 *Commander and Staff Organization and Operations*. Originally released in 2014, it received updates in 2015 and 2016 and superseded ATP 5-01.1. Chapter 9 presents the MDMP in complete detail and in its fifth paragraph provides guidance for when to consider using ADM. It does not mandate the use of ADM; rather, it makes it a command decision based on time available and complexity of the problem.

Summary

⁵⁸ Ibid., v.

⁵⁹ US Department of the Army, Army Techniques Publication (ATP) 5-0.1, *Army Design Methodology* (Washington, DC: Government Printing Office, 2015).

The MDMP's definition has remained fluid throughout the last twenty years. While the process itself remains consistent, if even more detailed, these subtle modifications to definition show a conceptual tension. Today, the Army's doctrinal environment remains difficult to navigate. The detailed planning methodology is largely unchanged from 2014. Conceptual planning methodology is from 2015. Both predate current conceptual shifts towards MDO and LSCO, which require a renewed interest in navigating complex adaptive nonlinear OEs. The danger now is that the Army may become engaged in near-peer competition or conflict with doctrine that is based on a foundation of domain supremacy instead of domain parity.

Part III: The Present Military Decision-Making Process

The MDMP today remains a method constructed upon a limited rational theory of choice. Its processes are consequential, and preference based. This means that action is dependent upon anticipation of the consequences and future effects of present actions.⁶⁰ The logic of rationality within the process is "limited" because staffs and decision makers do not have access to all relevant information when constructing alternatives for a decision. Additionally, time and other actors within the OE create additional friction and constraints so actions will inherently be less than perfectly rational.⁶¹ In other words, military commanders must make decisions with only partial information.

The MDMP consists of seven steps. Each step has a series of processes or sub-steps that produce the outputs. The outputs enhance understanding of the situation, enabling a transition to the next step of the MDMP.⁶² The commander is the most important participant in the process. This will continue to be the case in future OEs as they will need to synchronize the employment

⁶⁰ March, *A Primer on Decision Making: How Decisions Happen*, 3.

⁶¹ Ibid., 9.

⁶² US Army, FM 6-0, C2 (2016), 9-2.

of capabilities and resources that may not reside or even operate physically in theater, but that play a critical part of the operation.⁶³ Current doctrine acknowledges that executing all the steps is detailed, deliberate, and time-consuming. Doctrine also provides commanders flexibility to alter the steps to fit time-constrained circumstances.

Key inputs	Steps	Key outputs
Higher headquarters' plan or order or a new mission anticipated by the commander	Step 1: Receipt of Mission	- Commander's initial guidance - Initial allocation of time
- Commander's initial guidance - Higher headquarters' plan or order - Higher headquarters' knowledge and intelligence products - Knowledge products from other organizations - Army design methodology products	Step 2: Mission Analysis	Warning order - Problem statement - Mission statement - Initial commander's intent - Initial planning guidance - Initial CCIRs and EEFI - Updated IPB and running estimates - Assumptions - Evaluation criteria for COAs
- Mission statement - Initial commander's intent, planning guidance, CCIRs, and EEFI - Updated IPB and running estimates - Assumptions - Evaluation criteria for COAs	Step 3: Course of Action (COA) Development	Warning order - COA statements and sketches - Tentative task organization - Broad concept of operations - Revised planning guidance - Updated assumptions
- Updated running estimates - Revised planning guidance - COA statements and sketches - Updated assumptions	Step 4: COA Analysis (War Game)	- Refined COAs - Potential decision points - War-game results - Initial assessment measures - Updated assumptions
- Updated running estimates - Refined COAs - Evaluation criteria - War-game results - Updated assumptions	Step 5: COA Comparison	- Evaluated COAs - Recommended COAs - Updated running estimates - Updated assumptions
- Updated running estimates - Evaluated COAs - Recommended COAs - Updated assumptions	Step 6: COA Approval	- Commander approved COA and any modifications - Refined commander's intent, CCIRs, and EEFI - Updated assumptions
- Commander approved COA and any modifications - Refined commander's intent, CCIRs, and EEFI - Updated assumptions	Step 7: Orders Production, Dissemination, and Transition	Warning order - Approved operation plan or order - Subordinates understand the plan or order
CCIR commander's critical information requirement COA course of action		EEFI essential element of friendly information IPB intelligence preparation of the battlefield

Figure 6. Steps of the Military Decision-Making Process. *Source:* US Department of the Army,

⁶³ Balboni, Bonin, Mundell, and Orsi, "Mission Command of Multi-Domain Operations, 25.

Field Manual (FM) 6-0, Change No. 2, *Commander and Staff Organization and Operations* (Washington, DC: Government Printing Office, 2016), 9-3.

James March, in his book *A Primer on Decision Making*, outlines four basic questions a rational procedure answers when built upon a logic of consequence. They include:

1. The question of alternatives: What actions are possible? The MDMP achieves this during Step 3 COA development.

2. The question of expectations: What future consequences might follow from each alternative? How likely is each possible consequence, assuming that alternative is chosen? The MDMP accomplishes this during Step 2 mission analysis and Step 4 COA analysis.

3. The question of preferences: How valuable are the consequences associated with each of the alternatives? Step 5 COA comparison provides this capability.

4. The question of the decision rule: How is a choice to be made among the alternatives in terms of the values of their consequences? The commander makes the decision in Step 6 COA approval.⁶⁴

Imperfect information will always be a reality, but communications and intelligence assets have experienced a dramatic increase in capacity, capability, and speed. Today, many commanders have come to expect the availability of real-time information. Combined with maintenance of air, space, and sea supremacy, this has enabled planning doctrine to grow and expand the sub-steps, tools, and other requirements to create a decision close to the maximizing ideal. The MDMP in its current form consists of approximately 60 sub-steps with 49 products required throughout the process.⁶⁵ Detail of this magnitude will likely not be sustainable for Army units in a contested future OE. The Army's CTCs have already annotated a growing trend in the inability of most units to successfully execute detailed planning in time constrained environments. As a result, plans then lack synchronization and the flexibility to adapt based on a

⁶⁴ March, *A Primer on Decision Making: How Decisions Happen*, 3-4.

⁶⁵ The author produced these numbers by examining both the MDMP found in FM 6-0 Chapter 9 and the IPB manual ATP 2-01.3. IPB is itself a sub-step of Step 2 – Mission Analysis. The numbers are partially subjective with the author using his best judgement when choosing to count partial sub-steps as a whole.

changing or developing situation. This in turn creates challenges that persist throughout the plan, prepare, execute, and assess steps of the operations process.⁶⁶

MDO, due to its emphasis on convergence, has increased the interdependence of the Army to the joint force and the interdependencies of Army planning processes to the overall success of a joint mission. Interdependence refers to the understanding of dependencies between parts of a system. It includes a recognition that action within a complex system will create both direct and indirect effects due to these dependencies.⁶⁷ In MDO, an Army unit conducting MDMP is part of a larger whole, the joint force, with dependencies above, below, and adjacent to itself. The MDMP must nest appropriately within plans produced from the joint planning process (JPP) of higher echelons. It also must conclude quickly enough for subordinate units to conduct their own iterations of the MDMP or troop leading procedures (TLP). To attempt to solve the paradox of improving the quality of a detailed planning process by potentially removing some of the details it is necessary to examine the current process in its entirety.

Step 1: Receipt of Mission

The MDMP begins when a unit receives or anticipates a mission from a higher headquarters. A critical variable created at this initiation is the total amount of planning and preparation time until expected execution. Another important sub-step within Step 1 is the staff estimates for each section. Doctrine stresses the need for an accurate status of friendly units and resources within this first staff estimate.⁶⁸ The first decision a commander makes during the MDMP process is the structure of their initial planning guidance. This guidance, heavily influenced by the amount of time available to plan, impacts the staff's actions concerning the

⁶⁶ Sponsler, and Gallardo, "Commander-Driven Operations Process: Observations and Recommendations," 1.

⁶⁷ Yaneer Bar-Yam, *Making Things Work: Solving Complex Problems in a Complex World* (Cambridge, MA: NECSI Knowledge Press, 2004), 27-28.

⁶⁸ US Army, FM 6-0 C2, 9-5.

employment of ADM or the abbreviation of the MDMP.⁶⁹ Staffs often overlook these deliberate actions, but successful units are ones that have a rehearsed refined standard operating procedure (SOP) specific to Receipt of Mission. This SOP formulates knowledge management practices that set positive conditions for the rest of the MDMP.⁷⁰

Receipt of Mission, if not trained to the point of routine, can create significant issues for a unit before they initiate a detailed planning process. Having a SOP that clearly identifies knowledge management practices and communication procedures will ensure that subordinate units also have adequate time for their own planning cycle. This establishes a battle rhythm early, sets the conditions for shared understanding and a continuous operations process.⁷¹

Step 2: Mission Analysis

Doctrine identifies mission analysis as the most important MDMP step because it is the step that demands a clear understanding of the problem in the OE before proceeding to Step 3.⁷² Mission analysis requires both analysis and synthesis to properly support the detailed planning process. The MDMP includes IPB as a sub-step within mission analysis. IPB is “the systematic process of analyzing the mission variables of enemy, terrain, weather, and civil considerations in an area of interest to determine their effect on operations.”⁷³ IPB creates the foundation for both friendly and enemy COA development by defining domain constraints of the unit’s OE.

CTCs have identified numerous common deficiencies with unit execution of mission analysis. Units struggled to understand the OE because most did not integrate all warfighting

⁶⁹ Ibid.

⁷⁰ Sponsler, and Gallardo, “Commander-Driven Operations Process: Observations and Recommendations,” 4.

⁷¹ Operations Group, “Common Observations at Echelon,” *National Training Center Update* (Fort Irwin, CA: National Training Center, 2020), 88.

⁷² US Army, FM 6-0 C2, 9-6.

⁷³ US Department of the Army, Army Techniques Publication (ATP) 2-01.3, *Intelligence Preparation of the Battlefield* (Washington, DC: Government Printing Office, 2019), 1-1.

functions into IPB.⁷⁴ This begins to erode shared understanding early in the MDMP process. Poor staff participation in IPB also causes the process to take longer. Units that leave IPB predominantly to the S-2 section tended to under-develop an event template to drive information collection and future planning.⁷⁵ One or more of these deficiencies creates adverse effects on upcoming steps in the MDMP.

Step 3: Course of Action Development

Doctrine defines a COA as “a broad potential solution to an identified problem.”⁷⁶ COAs represent options to a commander when built correctly. COAs are distinctly separate ways to accomplish the mission with varying strengths, weaknesses, and levels of risk. Planners produce different COAs by using creativity in the application of operational and tactical art. This section of FM 6-0 makes liberal use of complexity theory without overtly signaling the reader. It acknowledges the complex adaptive non-linearity of the OE in paragraph 9-86 by stating that the interaction of an OE’s multiple variables can lead to limitless options and outcomes.⁷⁷ It recommends a staff plan around information that is known while not hesitating to act just because an OE is unpredictable and uncertain.⁷⁸

The CTCs have observed that many staffs have difficulty creating, refining, and communicating COA sketches and statements. Like IPB issues, COA development frequently failed to include all warfighting functions that led to a failure to mass effects at the decisive point

⁷⁴ Mission Command Training Program, “FY20 Mission Command Training in Large-Scale Combat Operations Mission Command Training Program (MCTP) Key Observations,” (Leavenworth, KS: Center for Army Lessons Learned, 2020), 6.

⁷⁵ Sponsler, and Gallardo, “Commander-Driven Operations Process: Observations and Recommendations,” 4.

⁷⁶ US Army, FM 6-0 C2, 9-6.

⁷⁷ Ibid., 9-17.

⁷⁸ Ibid., 9-18.

during execution.⁷⁹ The time-constrained training environment, having already usually led to a compression of mission analysis, also rushed the COA development process. Many staffs failed to address branch plans or sequels, which then made them unprepared to react to the enemy.⁸⁰

COA development has the potential to become the part of the overall process where staffs spend too much time. It is also often the step where a non-cohesive staff will dissolve back to their individual sections and “wait for the S3” to tell them what to do so they can backwards plan their warfighting functions contribution. This usually results in a bottleneck effect, or points of congestion in a production system, and the MDMP becomes delayed.

Step 4: Course of Action Analysis

COA Analysis, or wargaming, is the step that visualizes the flow of the operation and enables commanders and staffs to identify strengths, weaknesses, risks, and consequences both internal and external to the unit.⁸¹ It is a critical step that often determines a mission’s success or failure.⁸² Well executed COA analysis may uncover new decision points or opportunities, highlighting areas of friction or fragility. The results of wargaming are COAs, a completed synchronization matrix, and decision support templates and matrixes for each COA.⁸³ Commanders often choose this step as the first to drop when planning in a time constrained environment. This is due to it being underutilized even when a staff executes it as prescribed.⁸⁴

⁷⁹ Sponsler, and Gallardo, “Commander-Driven Operations Process: Observations and Recommendations,” 6.

⁸⁰ Ibid., 6.

⁸¹ US Army, FM 6-0 C2, 9-26.

⁸² Sponsler, and Gallardo, “Commander-Driven Operations Process: Observations and Recommendations,” 7.

⁸³ US Army, FM 6-0 C2, 9-26.

⁸⁴ Eric Slater, “Course of Action Analysis for Intelligence Professionals: How to Maintain Collaboration When Assuming an Adversarial Position,” *Small Wars Journal*, December 02, 2020, <https://smallwarsjournal.com/jrnl/art/course-action-analysis-intelligence-professionals-how-maintain-collaboration-when-assuming>.

Modern wargaming also tends to be more reliant on quantitative rather than qualitative assessment between COAs, particularly when adjudicating engagements. A commander assumes risk when relying too heavily on historical planning ratios without also equally weighing the intangible elements which also influence the outcome of a COA.⁸⁵ This step will become increasingly difficult to do well because of the modern OE. New technology has produced impressive advancement in lethality and range of weapon systems, but it has also improved defensive capabilities as well. The new domains of space and cyber also make use of their own forms of offensive and defensive tasks and their own version of environmental variables such as cover and concealment. From a cross-domain perspective, space and cyber have equally impressive defensive application for concepts like cover, concealment, and obscurity. Commanders and staffs of future OEs will have to become increasingly creative because a near-peer adversary will certainly be doing the same.

Step 5: Course of Action Comparison

COA comparison is where the commander and staff use the evaluation criteria built in mission analysis to objectively evaluate the COAs used for the wargame. The purpose is to compare strengths and weaknesses that allow selection of a COA with the highest probability of success.⁸⁶ The tool a staff typically creates for briefing is the decision support matrix. This tool allows a commander to compare all COAs simultaneously and augments their judgment prior to selecting a COA for approval.

Step 6: Course of Action Approval

In this step, the commander, after receiving the COA decision brief, makes a decision by selecting a COA or rejecting all of them and directing a return to COA development.⁸⁷ If all

⁸⁵ Vego, "The Bureaucratization of the U.S. Military Decisionmaking Process," 41.

⁸⁶ US Army, FM 6-0 C2, 9-39.

⁸⁷ Ibid., 9-41.

COAs are rejected, it may signal that flaws in mission analysis exist or that the OE has changed enough to invalidate the current COAs. When the commander does approve a COA it will also include final planning guidance, new CCIR, and refined commander's intent if necessary.⁸⁸

Step 7: Orders Production

Orders production is the final step in the MDMP. The orders production step serves as a link between planning and preparations. It marks the transition of responsibility from the plans or future operations cell to the current operations cell.⁸⁹ This step takes the selected COA's statement and sketch and turns them into the concept of operations and operations overlay.⁹⁰

Planning in a Time-Constrained Environment

Doctrine recognizes that time is often the most critical resource when planning and it is rare to have a sufficient amount. Time constraints can be due in equal parts to a mission requiring execution close after receipt, or an unanticipated opportunity presented by the enemy. The end of chapter 9 in FM 6-0 discusses this reality and offers recommendations on how to manage planning in a time constrained environment. However, it begins with a qualifier by stating that a unit must demonstrate mastery in the full MDMP process before they will be effective in a more dynamic setting. It continues by stating, "applying an inflexible process to all situations does not work."⁹¹ This begins to explain the difficulty that units have perennially experienced at CTCs. Units that have not honed a mastery of the MDMP attempt to inflexibly apply the entire process in a time constrained environment.

The Disconnect

⁸⁸ Ibid., 9-42.

⁸⁹ US Army, FM 6-0 C2, 9-43.

⁹⁰ Ibid., 9-42.

⁹¹ Ibid., 9-44.

The Army should treat the trend of mediocre MDMP execution within formal training environments as an indicator. The MDMP itself has almost reached full institutionalization, that is, only the most senior Army leaders have experience in anything other than the post-1997 process. Therefore, evaluators at CTCs have largely spared the process itself of much criticism. Instead, units receive the directive to train and integrate the MDMP as much as possible at home station. This might create improvement, except units' problems compound due to high rates of personnel turnover from permanent change of station (PCS) and internal dynamics. It is rare for any section's personnel to remain for six months. To reverse this trend, the Army must be willing to implement changes to the MDMP or continue to risk substandard performance in training and operational environments.

Summary

The MDMP is a proven methodology for generating options to support a commander's decision for a plan optimized to the assigned mission. As the US Army's Center for Army Lessons Learned acknowledges, "Historically, a unit's success is directly related to the ability of the staff to execute the military decisionmaking process (MDMP)."⁹² When allowed sufficient time, the MDMP can create overwhelming success as evidenced by Operations Just Cause, Desert Storm, and the first three months of Iraqi Freedom. Yet, many units continue to struggle within CTC training environments to effectively execute the MDMP. The pace of operations that the MDO concept requires, combined with the complexity of the future OE, make this inability to routinely conduct detailed planning a foreboding trend. The joint force cannot assure domain dominance in future OEs, and operational tempo will be high and chaotic. This requires an evolution in the relationship between detailed and conceptual planning methodologies. To achieve this new synthesis, the planning processes of the future OE must incorporate the

⁹² Center for Army Lessons Learned, Handbook No 15-06, *MDMP, Lessons and Best Practices*, (Fort Leavenworth, KS: Government Publishing Office, 2015), iii.

changing character of war while facilitating the integration of joint and combined arm formations across multiple domains.⁹³

Part IV: The Future

Introduction

In 2018, TRADOC tasked the US Army War College with undertaking a new project. The project's goal was to describe a new or modified operational framework capable of supporting the Army's execution of MDO within the Joint Force against peer competitors.⁹⁴ This vision will require planning methodologies that embrace the interdependence required by being part of the Joint Force. The Army may have to accept risk in the predictability of its planning cycle while maintaining the unpredictability of its actions. The MDO concept stresses the need to create convergence to overwhelm an adversary's decision-making ability. This War College project proposed the multi-domain synchronization cycle (MDSC). While not yet doctrinal, the proposal presents a comprehensive potential solution for the coordination of Joint Force capabilities and effects. What the War College project does not discuss is the efficacy of the MDMP and its ability to deliver plans within the time constraints of the MDSC.

Creating Convergence (The MDSC)

The US military faces a unique challenge today. This is the first occasion modern militaries have had to simultaneously synthesize two new domains into the calculus of warfare. Domains present significant risk and immense opportunity because they exponentially increase

⁹³ Balboni, Bonin, Mundell, and Orsi, "Mission Command of Multi-Domain Operations," 32.

⁹⁴ Balboni, Bonin, Mundell, and Orsi, "Mission Command of Multi-Domain Operations," vii.

the variables at play in conflict. The United States, Western European powers, Russia, and China are all pursuing slightly different paths regarding cross-domain coordination. The proposed MDSC is an echeloned, integrating staff process designed to synchronize directly with operational headquarters on a routine basis.⁹⁵ The MDSC builds upon the familiarity of the Joint air tasking cycle (JATC). The JATC produces an air tasking order (ATO). The ATO forms around a 24-hour period, scalable to mission requirements, but typically planned, executed, and assessed within a 5-day battle rhythm.⁹⁶ The MDO concept recognizes that time and cycles will be necessary to achieve convergence within decisive spaces. Five elements create a capability-convergence cycle will be preparation time, planning and execution time, duration time, reset time, and cycle time.⁹⁷

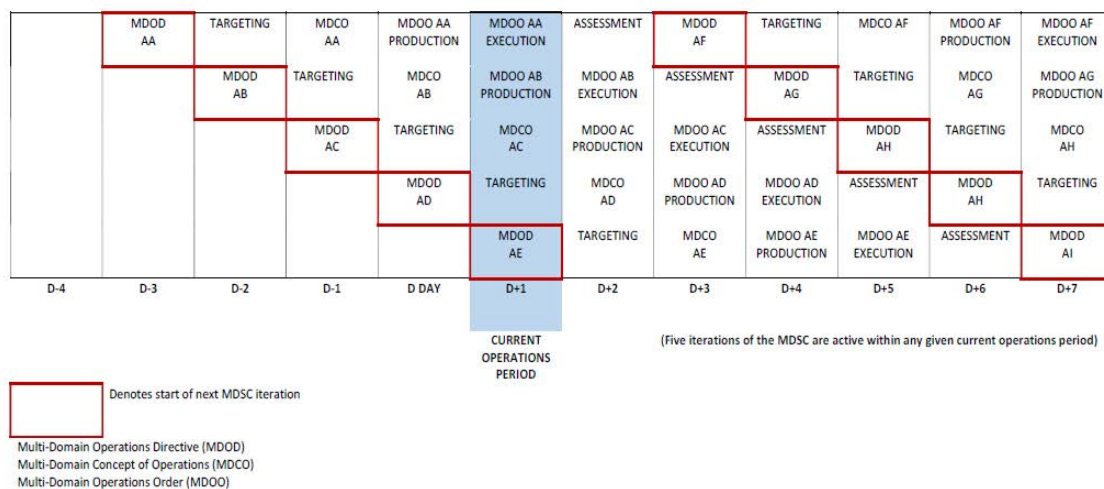


Figure 7. Notional, 24-hour-based multi-domain synchronization cycle battle rhythm. *Source:* Mark Balboni, John A. Bonin, Robert Mundell, and Doug Orsi, “Mission Command of Multi-Domain Operations,” (Carlisle Barracks, PA: US Army War College Press, 2020), 52, <https://press.armywarcollege.edu/monographs/918>.

The figure above shows the cascading characteristic of the MDSC. The iterative nature of the 24-hour cycle creates the routine conducive for coordination of deliberate convergence when

⁹⁵ Ibid., 45.

⁹⁶ Balboni, Bonin, Mundell, and Orsi, “Mission Command of Multi-Domain Operations,” 46.

⁹⁷ Training and Doctrine Command, *The U.S. Army in Multi-Domain Operations 2028*, TRADOC Pamphlet 525-3-1, (Ft. Eustis, VA: Training and Doctrine Command, 2018), C-7.

the capabilities are available. It also retains the flexibility to exploit opportunities as they arise. Although the majority of the MDSC stages or products are not new, the reorganization of sequence or pacing enhances coordination and synchronization.⁹⁸ Despite the planning implied within the MDSC, these processes are not a substitute for detailed planning processes such as the JPP or the MDMP.⁹⁹ The Army's planning methodologies will need updating to realize the MDSC's potential.

The Maturation of ADM

Design theory has not remained dormant in between its inclusions in Army doctrine. Its interdisciplinary nature drives it forward, often faster than many other creative arts. Design functions as an iterative conceptual approach to sense-making and will likely never reuse the same solution for a future problem.¹⁰⁰ This makes design inherently difficult to understand and codify for an Army that has existed, and succeeded, within the confines of limited-rational decision making. A scholar researching almost any generation can discover claims about its environment's speed and complexity. Complexity today, and in the near future, will be characterized by near-instant communication that generates the potential for action, reaction, and counteraction in real time. In the past, the paradigm of near-real-time feedback was largely confined to the tactical level of warfare. Limits on communications technology created a time delay to operational and strategic leaders' decisions.

⁹⁸ Balboni, Bonin, Mundell, and Orsi, "Mission Command of Multi-Domain Operations," 50.

⁹⁹ Balboni, Bonin, Mundell, and Orsi, "Mission Command of Multi-Domain Operations," 50.

¹⁰⁰ Ben Zweibelson, "An Awkward Tango: Pairing Traditional Military Planning to Design and Why It Currently Fails to Work," *Journal of Military and Strategic Studies*, Vol. 16, no. 1 (March 2015): 30.

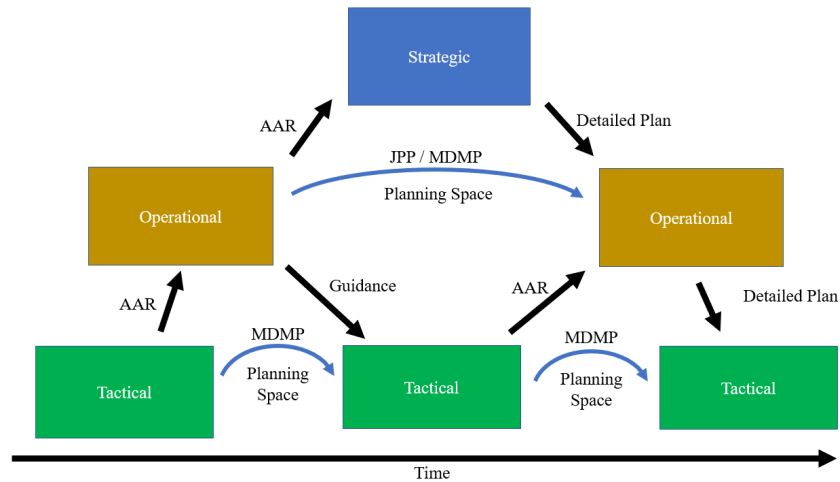


Figure 8. Visualization of the past planning paradigms of large-scale conflict. *Source:* Created by author on December 6, 2020.

Today, planning space has become compressed. The potential pace of change in the operational environment, including the adaptation of enemies or adversaries, has taken away cognitive maneuver space. Design provides the tools to understand, visualize, and describe the systems and their interdependencies.¹⁰¹ It does not endow the gift of prediction, but design does illuminate paths of anticipation. Persistently reframed design is what will be the foundation of detailed planning that achieves the effects it intends. Leaders who do not leverage design will not be able to manage the non-linear reactions and interactivity in their OEs. They will commit resources inefficiently and risk losing the initiative if currently held or fail to regain the initiative if it has already been wrestled away.

¹⁰¹ US Army, ATP 5-0.1, 2-3.

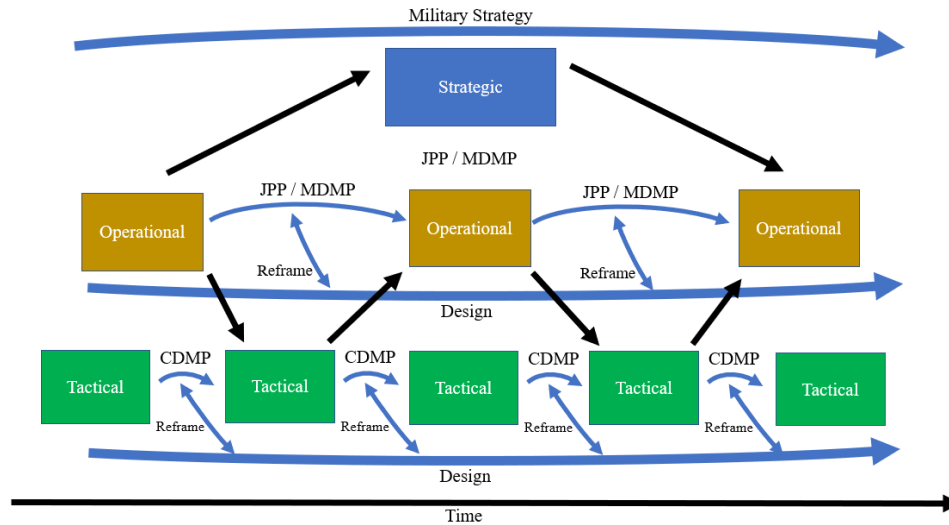


Figure 9. Visualization of the future planning paradigm need for success in large-scale conflict. Source: Created by author on December 6, 2020.

Planning for Convergence

Convergence in decisive spaces will require planning with a cyclic mindset. Design supports this mindset, but units must still conduct detailed planning to arrange personnel and resources in an advantageous manner. Design lights the path, detailed planning propels the unit forward towards its goals. A cyclic process gives planners and decision-makers the opportunity to reapply conceptual and detailed thinking to increase their understanding of an unfamiliar OE.¹⁰² Rather than a burden, this reexamination should be viewed as an opportunity to scrutinize past actions and future plans, particularly for MDSC convergence synchronization. If friendly forces possess the initiative, a near-peer adversary will conduct defensive maneuver – likely cross-domain defensive maneuver – in an attempt to desynchronize friendly operations. A cyclical process provides the flexibility to maintain a commander’s options instead of committing resources to a more rigid plan without adequate branches or sequels.

¹⁰² Wayne W. Grigsby, Jr., Scott Gorman, Jack Marr, Joseph McLamb, Michael Stewart, and Pete Schifferle, “Integrated Planning: The Operations Process, Design, and the Military Decision Making Process,” *Military Review* XCI, no. 1 (Jan-Feb 2011), 15-16.

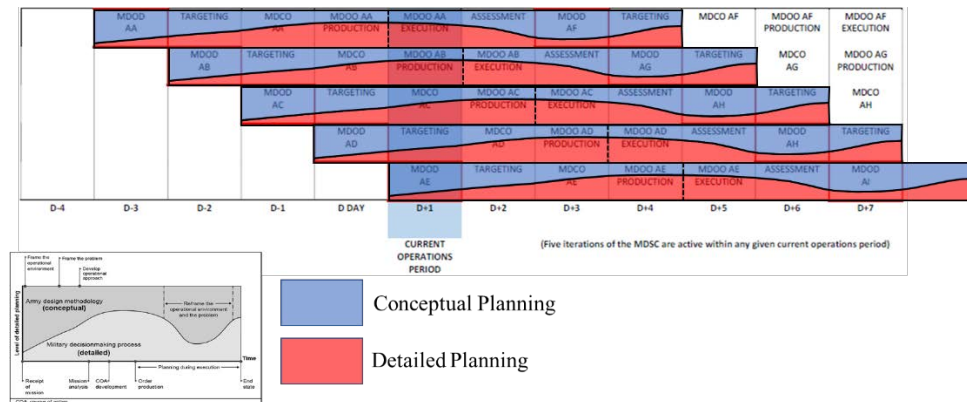


Figure 10. MDSC with ATP 5-0.1's Integrated Planning graphic overlaid with Coordinated independent planning. *Source:* Created by author on December 6, 2020.

Figure 6 above shows a way integrated planning could support the MDSC. In this example, a parent unit has five subordinate units planning independently. The parent unit retains responsibility for each day's convergence goals as dictated by the joint task force (JTF) or Geographic Combatant Command (GCC), but only one of five units is in execution per day. This format retains the greatest flexibility but may not apply the requisite mass necessary depending on the enemy or mission.

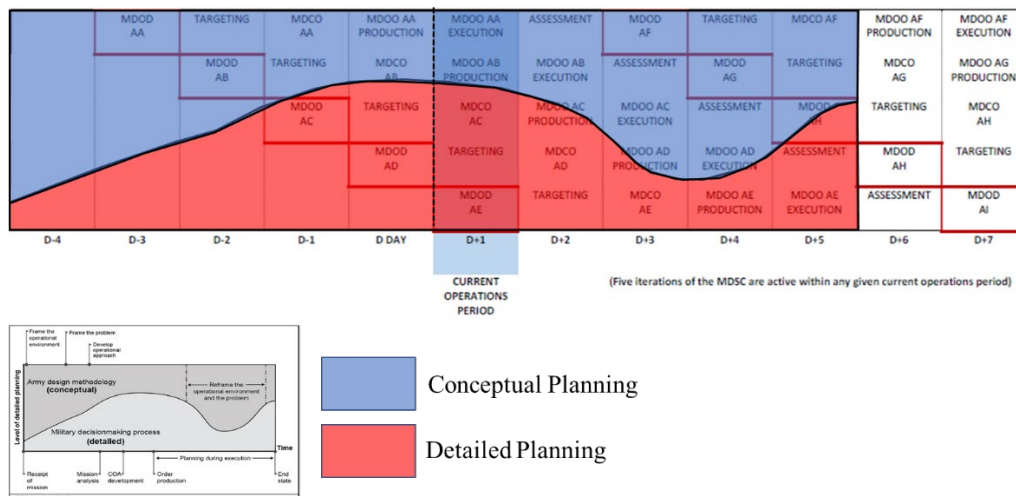


Figure 11. MDSC with ATP 5-0.1's Integrated Planning graphic overlaid with consolidated planning effort. *Source:* Created by author on December 6, 2020.

Figure 11 shows the internal planning process of the first unit from Figure 10. The unit's Operation Order (OPORD) production coincides with the Multi-Domain Operations Order (MDOO) of the MDSC. Even after its day of execution the unit continues the planning process and is prepared to contribute effects on subsequent days as required. The battle rhythm this

establishes facilitates the convergence that MDO requires to create windows of opportunity. The concept of these windows is the same as the Pareto principle's competitive advantage. Figure 12 shows how the MDSC improves the ability of a staff to perform in a competitive OE while remaining realistic to the fluctuations of the planning cycle.

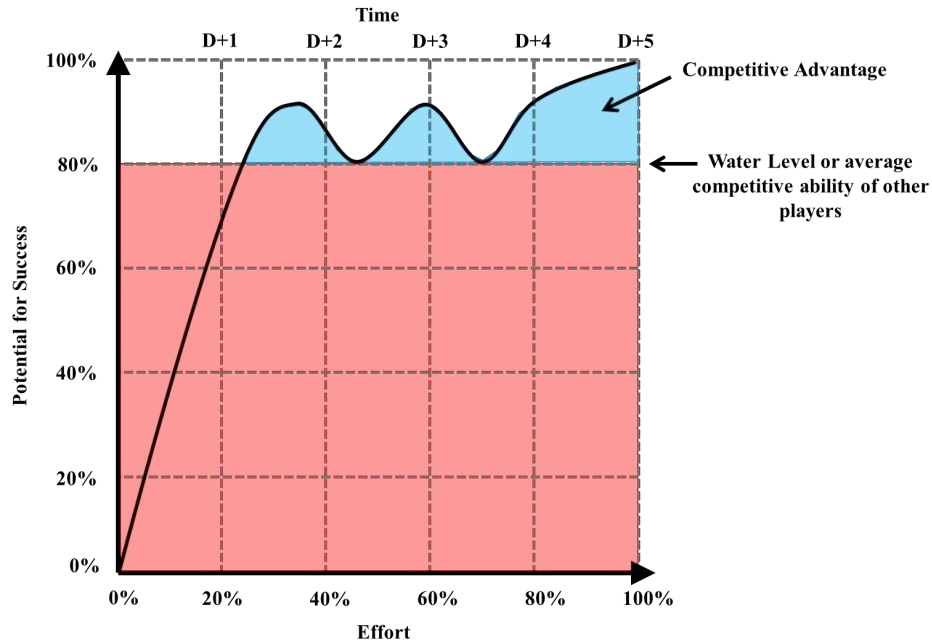


Figure 12. Pareto principle adapted to planning in the COIN OE. *Source:* created by author, derived from original graph of The Pareto Principle of Prediction found in Nate Silver, *The Signal and the Noise* (New York: The Penguin Press, 2012), 314.

The Commander's Importance

Commanders will become even more important to both conceptual and detailed planning in the future OE. Descriptions of the future environment and the general trends of units not displaying adequate proficiency in the MDMP indicate a need for an increase in commander's involvement. Planning within the larger confines of a MDSC will require continuously planning in a time-constrained environment. FM 6-0 and ATP 5-0.1 offer several options for a commander to assist their staff in the planning process. A commander's involvement in ADM is critical to success, but they must be careful to balance their participation. Too much involvement and they

risk stifling the creativity of the team. If they are too disconnected from the process they will find it difficult to understand the logic of the staff's work..¹⁰³

FM 6-0 prescribes commander's involvement to an extent throughout the MDMP, highlighted by formal briefs at the end of Steps 2 through 6. The more a commander participates in each of the steps the faster the staff can generate plans..¹⁰⁴ Commanders have several options to facilitate faster planning before directing execution of a single COA. A commander that remains involved throughout each step of MDMP may be able to reduce or eliminate many of the formal briefs. These efficiencies enable the staff to maintain planning initiative. CTC trends indicate that battlefield circulation and other demands on commanders' time have had a distinctly negative impact on units' ability to conduct planning..¹⁰⁵ The MDO concept may warrant the commander and executive officer (XO) switching what have become traditional roles. The commander would lead the detailed planning process while the XO manages current operations.

Part V: Conclusions

Introduction

The Army's MDO concept continues to evolve. Concepts are not perfect; rather, they drive institutional debate and discourse. *The U.S. Army in Multi-Domain Operations 2028* does not mention MDMP. What it does offer are ideas on expectations of multi-domain formations. It insists these formations will require resiliency derived from flexible planning..¹⁰⁶ The MDO concept does not outline a new MDMP, therefore it is up to the force to consider if change is necessary. The challenge today and in the future is that complexity, non-linearity, and interdependencies between systems appear to be multiplying. The Army must explore methods

¹⁰³ US Army, ATP 5-0.1, 2-3.

¹⁰⁴ US Army, FM 6-0 C2, 9-45.

¹⁰⁵ Sponsler, and Gallardo, "Commander-Driven Operations Process: Observations and Recommendations," 2.

¹⁰⁶ Training and Doctrine Command, *The U.S. Army in Multi-Domain Operations 2028*, 19.

and tools that aid in shared understanding for the future OE, but still respect the time needed to conduct and execute a detailed planning process. Large scale combat that will require synchronization and coordination of dozens of units consisting of over 5,000 personnel and 600 vehicles across multiple domains will mandate a mastery of detailed planning.¹⁰⁷ Ideas for changing established planning methodologies must address these three variables.

Doctrine

The first doctrinal recommendation is to reintroduce FM 5-0. All Army planning methodologies in this single FM would create efficiency and simplicity across all echelons of Army staffs. The Army needs a central resource that describes both conceptual and detailed planning methodologies in relation to the MDO concept. Additionally, this new manual should revive a more prescriptive, streamlined, CDMP from the MDMP. Taking cues from the CGSC STs of the mid-1990s, the MDMP should only be employed prior to arriving in theater and only when there is sufficient time to complete all the steps. The commander-led CDMP would be based off a previous MDMP-developed plan. The CDMP is the decision-making process that will enable the agility required to successfully execute within a MDTC operational framework. Figure 13 shows the recommended planning methodologies to employ based on staff proficiency and OE complexity.

¹⁰⁷ Paul Hill, The MDMP Actually Provides Flexibility – You Just Have to Know How to do it,” *Task & Purpose*, last modified October 22, 2018, <https://taskandpurpose.com/thelongmarch/military-decision-making-mdmp-defense>.

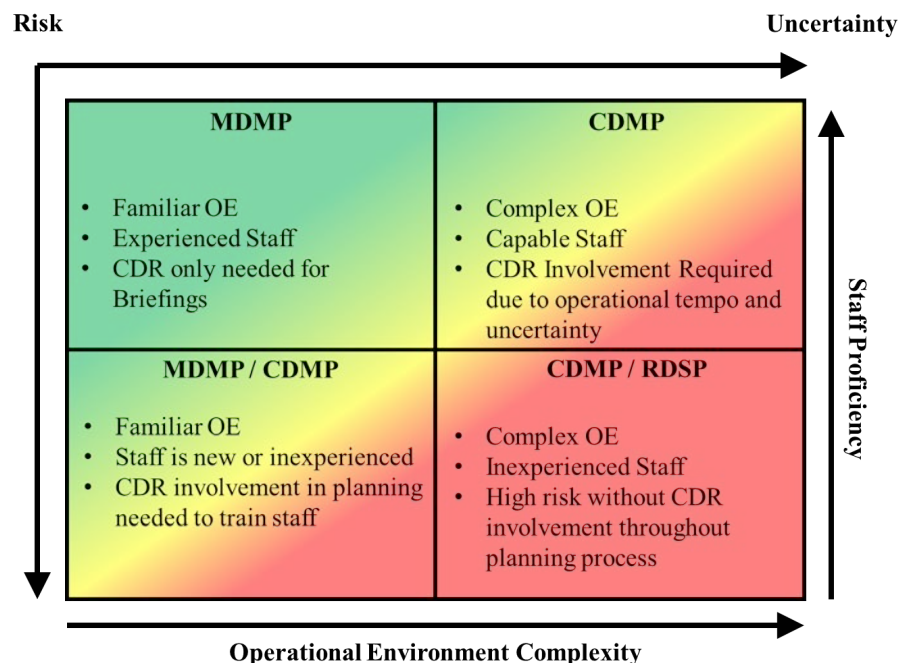


Figure 13. Planning methodology recommendations in relation to staff proficiency and the OE.
Source: created by author on January 16, 2021.

Doctrine should also require design during detailed planning, not just recommend it if time is available. Since design's formal inception into doctrine beginning in 2010, there has been much debate over this topic within military academic literature. Currently, doctrine states that, "depending on the situation's complexity, commanders can initiate ADM before or in parallel with the MDMP."¹⁰⁸ However, the future OE described in *JOE 2035* contains enough persistent complexity to recommend persistent use of design in Army planning. Just as the Army cautiously approached the inclusion of armor into permanent formation after WWI, the Army must decide to implement a more rigorous adoption of design methodology throughout the enterprise. Design can actually save time during the MDMP if it is performed well enough. Design's ability to visualize a system and identify its range of constraints could substitute for multiple COA generation. With a commander's assistance, there may only be one COA worth pursuing with several branches or decision points to stress a system's constraints. Conversely, design can

¹⁰⁸ US Army, FM 6-0 C2, 9-1.

illuminate the need for consideration of different COAs. With limited time, a commander may have to choose which actors in a system to influence, and design will inform their choice of what they are deciding ‘not’ to affect.

Design can also be symbiotic with many aspects of IPB. The PMESII and METT-TC frameworks are well known and almost always used. Design thinking can help create a richer picture between these variables. Starting design early can influence the guidance given to reconnaissance assets by asking them to identify or verify links or actors within a system. Sustaining design thinking through the wargaming process is also vital because the staff can leverage it as a valuable COA evaluation tool. Design can provide deeper insight into Center of Gravity (COG) analysis. It can also help validate that a COG is truly a COG and not just an important but redundant capability. Lastly, if design is persistently employed, it will enhance a commander’s decision-making ability regarding branches and sequels. Design ensures a greater understanding of the OE and the enemy and allows better planning for follow-on operations.

Training

Streamlined curriculum to support the new FM 5-0 would bolster shared understanding of the Army’s updated approach to planning within the MDO concept. Training would provide clarity on the similarities and differences between the MDMP and the CDMP. Staffs that become proficient in the new commander-driven CDMP will gain confidence in executing the traditional MDMP. New training would also promote design thinking by using examples and vignettes common to each branch. Design is not a new checklist, or a substitute for mission analysis, it is a way to see in color what used to only be visible in gray scale. To reinforce this new doctrine, the Army should develop a planning competition. Like other Army-wide competitions, a planning competition would create esprit de corps and determine which battalions, brigades, and divisions could produce the best plans in both time-rich and time-constrained environments.

Leadership Education

Nested with the doctrine and training recommendations, institutional education must incorporate more design-based instruction. The Army should not treat design as oppressively complicated or intellectually elite. The Army should begin familiarization to design in the Basic Officer Leadership Course (BOLC) and the Non-commissioned Officer Advanced Leader's Course (ALC). Junior officers and mid-grade non-commissioned officers (NCOs) make up a large part of a battalion's staff. When most of a battalion staff is familiar with design concepts, such as systems theory and non-linearity, the quality of plans will increase as will each facet of the commander's role in the operations process. Battalions and brigades educated with design concepts would begin to write situation reports (SITREPs) and staff estimates with deliberate design language. When all echelons begin communicating this way, division and corps commanders' and staffs' ability to assess, understand, visualize, describe, direct, and lead increases. Similarly, if corps and divisions disseminated a "design running estimate" to their brigades and battalions all leaders would be more sensitive to non-linear responses to current and previous operations. Exposing young leaders to design concepts will create more cohesive planning teams.

Conclusion

The military profession will continue to require talents in both art and science, critical and creative thinking, and conceptual and detailed planning. As a learning organization, the Army is constantly attempting to generate new methods and evolve or discard old methods. This persistent review of TTPs is vitally important in a changing, contested environment..¹⁰⁹ While the Army has undergone dozens of other modernization initiatives over the past twenty-three years, a significant change to its detailed planning methodology is not one of them. The future operational environment feels burdensome because there is much that is hard to comprehend today.

¹⁰⁹ March, *A Primer on Decision Making: How Decisions Happen*, 238.

Commanders must still execute decision-making, their most important responsibility in combat. Commanders ably directing subordinate forces will still require art even art assisted or augmented by impressive scientific advancement.¹¹⁰ It is equally valuable to critique the Army's decision-making methodology using advancements in social, economic, and behavioral sciences. The dawn of artificial intelligence, quantum computing, and robotics parallels how the armies of the world in 1860 grappled with the emergence of the railroad, telegraph, and breech-loading rifle. The tools that will provide light in the darkness of uncertainty are conceptual and detailed planning. Continuing to apply and better integrate both sense-making methodologies will create the understanding necessary to fight and win on future battlefields.

¹¹⁰ Vego, "The Bureaucratization of the U.S. Military Decisionmaking Process," 44.

Appendix A

Doctrinal Definitions of the MDMP from 1997 to Present:

1997: “The military decision-making process (MDMP) is *a single, established, and proven analytical process*. The MDMP is an adaptation of the Army's analytical approach to problem solving. The MDMP is a tool that assists the commander and staff in developing estimates and a plan.”¹¹¹

2005: “The military decision-making process is *a planning model that establishes procedures* for analyzing a mission, developing, analyzing, and comparing courses of action against criteria of success and each other, selecting the optimum course of action, and producing a plan or order.”¹¹²

2010: “The military decisionmaking process is *an iterative planning methodology that integrates* the activities of the commander, staff, subordinate headquarters, and other partners to understand the situation and mission; develop and compare courses of action; decide on a course of action that best accomplishes the mission; and produce an operation plan or order for execution.”¹¹³

2012: “The military decisionmaking process *is an iterative planning methodology to understand* the situation and mission, develop a course of action, and produce an operation plan or order. The MDMP integrates the activities of the commander, staff, subordinate headquarters, and unified action partners to understand the situation and mission; develop and compare courses of action; decide on a course of action that best accomplishes the mission; and produce an operation plan or order for execution.”¹¹⁴

2016: “The military decisionmaking process *is an iterative planning methodology to understand* the situation and mission, develop a course of action, and produce an operation plan or order. The MDMP helps leaders apply thoroughness, clarity, sound judgment, logic, and professional knowledge to understand situations, develop options to solve problems, and reach decisions.”¹¹⁵

2019: “The military decision-making process is *an iterative planning methodology to understand* the situation and mission, develop a course of action, and produce an operation plan or order. It is an orderly, analytical process that integrates the activities of the commander, staff, and subordinate headquarters in the development of a plan or order.”¹¹⁶

¹¹¹ US Department of the Army, Field Manual (FM) 101-5, *Staff Organization and Operations*, (Washington, DC: Government Printing Office, 1997), 5-1.

¹¹² US Army, FM 5-0 (2005), 3-1.

¹¹³ US Army, FM 5-0 (2010), B-1.

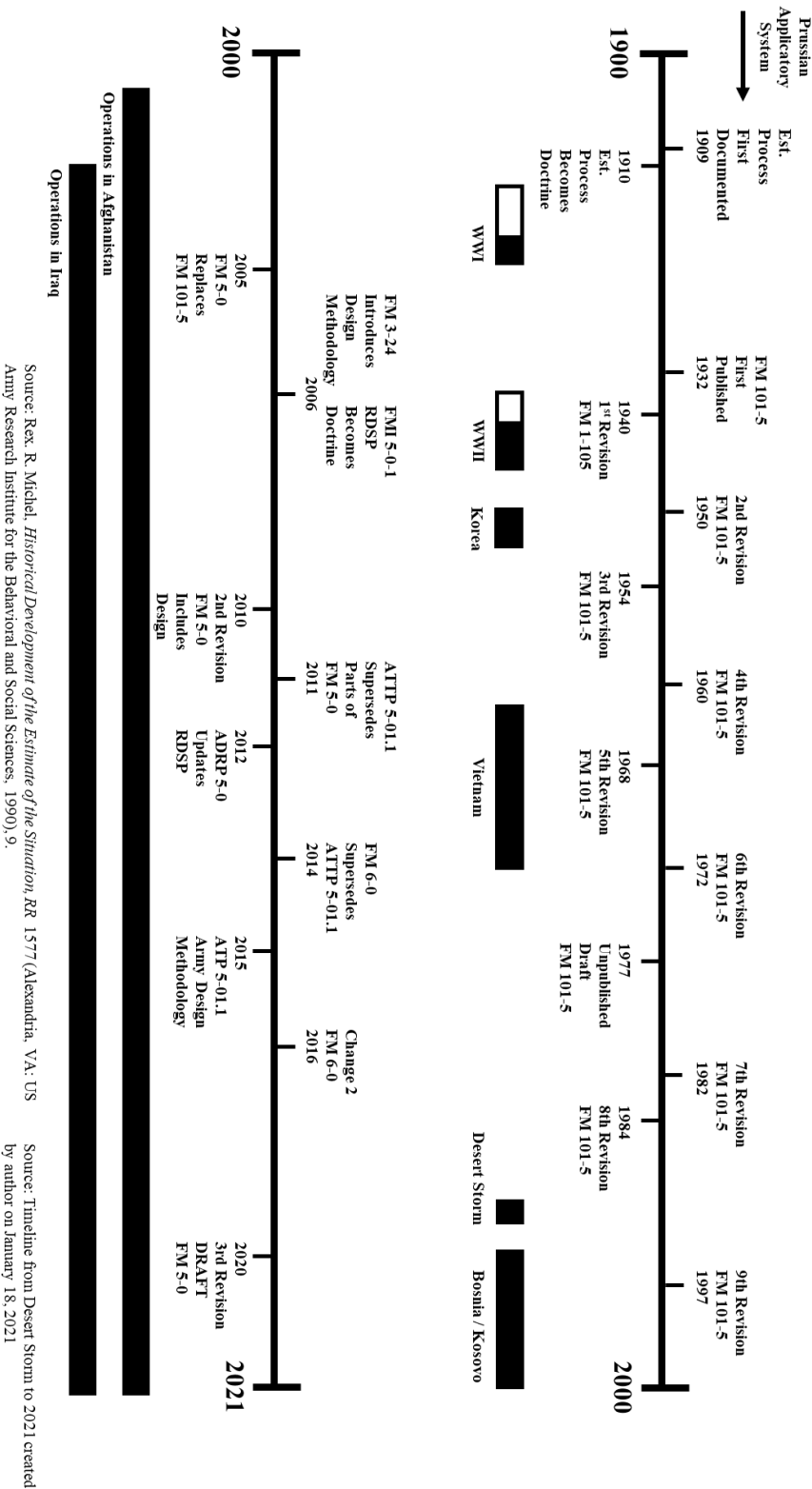
¹¹⁴ US Army, ADRP 5-0 (2012), 2-11.

¹¹⁵ US Army, FM 6-0, C2 (2016), 9-1.

¹¹⁶ US Army, ADP 5-0 (2019), 2-17.

Appendix B

Timeline of US Army Decision Making Processes in Doctrine



Appendix C

US Army historical MDMP formats:

FM 101-5 1932

1. Mission
2. Opposing Forces
 - a. Enemy forces
 - b. Own forces
 - c. Relative combat strength
3. Enemy Situation
 - a. Plans open to enemy
 - b. Analysis of enemy's plans
 - c. Enemy's probable intentions
4. Own Situation
 - a. Plans open to you
 - b. Analysis of plans
5. Decision

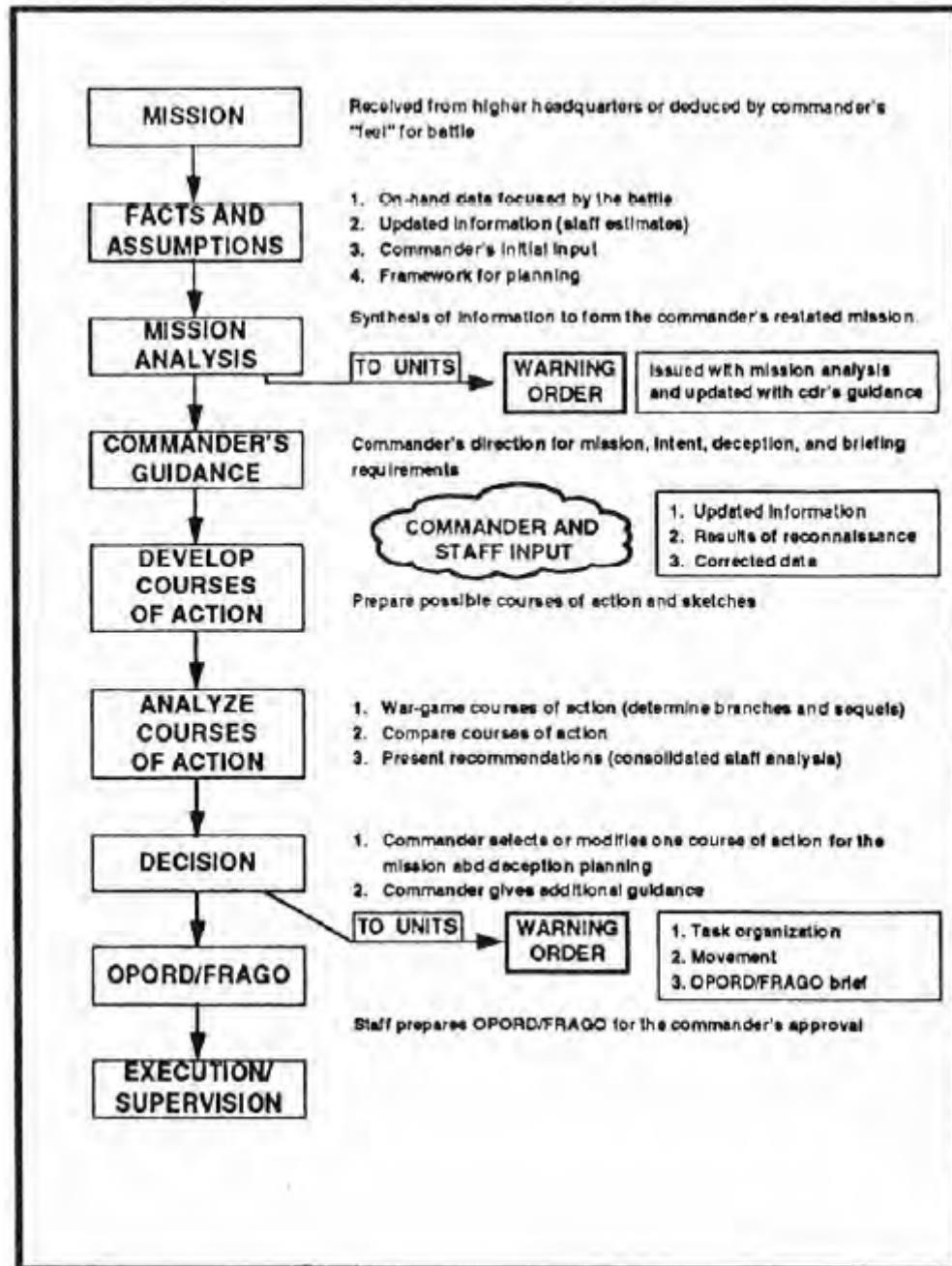
FM 101-5 1984

1. Mission
2. Situation and COA
 - a. Considerations
 - 1) Area of operations
 - a) Weather
 - b) Terrain
 - c) Other factors
 - 2) Enemy situation
 - a) Dispositions
 - b) Composition
 - c) Strength committed reinforcements artillery air & NBC other
 - d) Significant activity
 - e) Peculiarities & weaknesses
 - 3) Analysis of COA
 - a) Dispositions
 - b) Composition
 - c) Strength committed reinforcements artillery air & NBC other
 - d) Significant activity
 - e) Peculiarities & weaknesses
 - 4) Relative combat power
3. Analysis of COA
 - a. List of enemy capabilities
 - b. Analysis of each COA vs. each enemy capability
4. Comparison of COA
 - a. List advantages & disadvantages of each COA
 - b. Conclusion on best COA
5. Decision (Recommendation)

Source: Rex. R. Michel, *Historical Development of the Estimate of the Situation*, RR 1577 (Alexandria, VA: US Army Research Institute for the Behavioral and Social Sciences, 1990), 5.

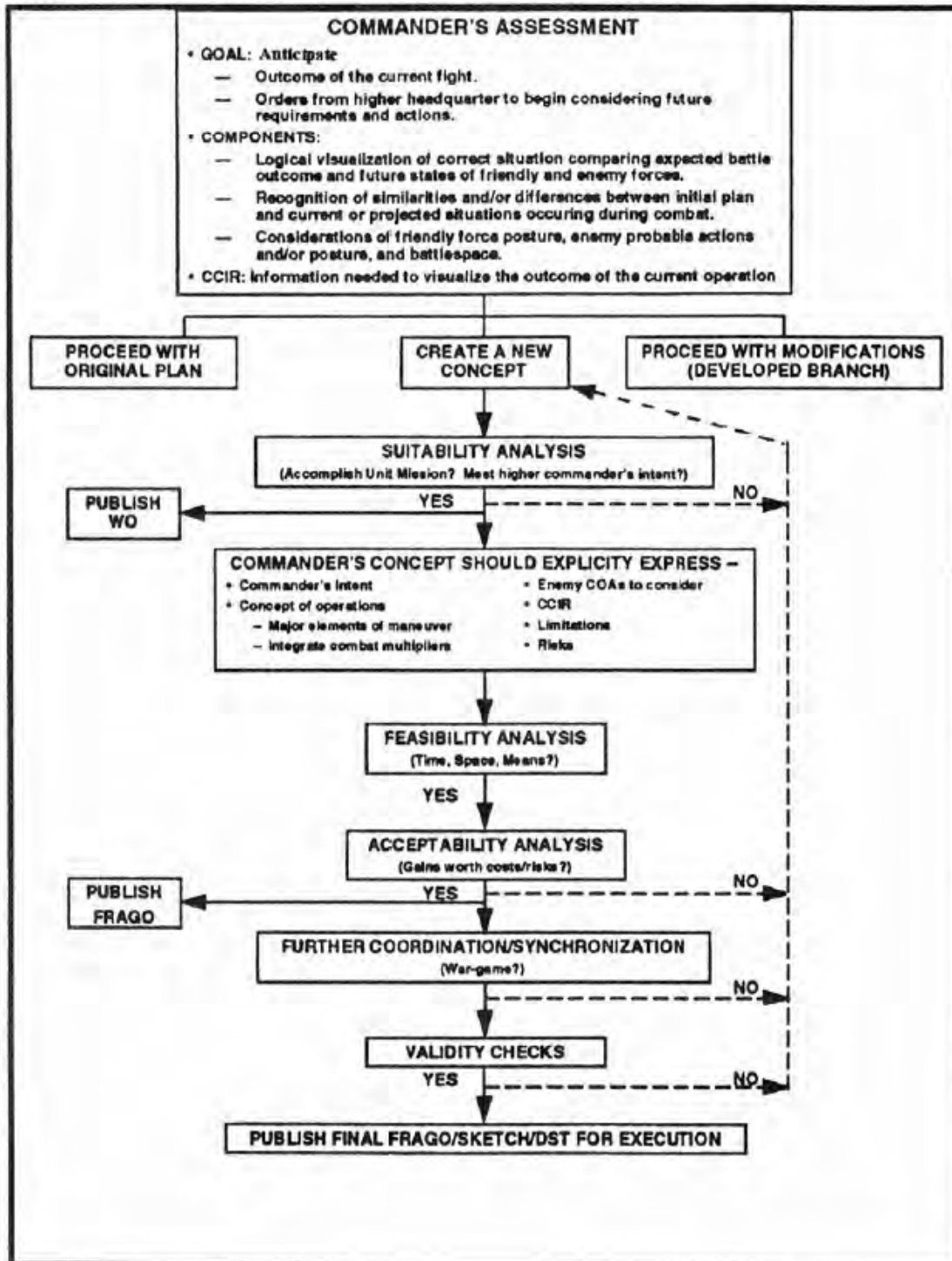
Appendix D

US Army Deliberate Decision-Making Process (DDMP) circa 1995:



Source: Command and General Staff College, Student Text (ST) 101-5, *Command and Staff Decision Processes* (Leavenworth, KS: Command and General Staff College, 1995), 1-7.

US Army Combat Decision-Making Process (CDMP) circa 1995:



Source: Command and General Staff College, Student Text (ST) 101-5, *Command and Staff Decision Processes* (Leavenworth, KS: Command and General Staff College, 1995), 1-11.

Excerpt from ST 101-5 explaining similarities and differences between DDMP and CDMP:

a. Similarities between the deliberate and combat decisionmaking processes.

(1) Both processes represent the coherent mental activities that support sound decisionmaking. They both include the logical identification of the mission, development of concepts for executing the mission, evaluation of the concepts, and communications of the decision in a clear, concise manner.

(2) The commander is the prime mover in both processes, and both are part of the tactical decisionmaking process.

(3) Both processes allow for adjustment to the reality of the situation, and neither is a rigid, lockstep approach to decisionmaking.

b. Differences between deliberate and combat decisionmaking methodologies.

(1) The DDMP stops after a COA is developed into a plan or order. The CDMP is ongoing; its goal is to maintain the initiative.

(2) The DDMP is based on assumptions; the CDMP reflects real-time events.

(3) The DDMP is primarily a sequential set of actions with discrete points in the process where decisions are made or additional guidance is given. The CDMP is characterized by continuous planning for future events based on the commander's assessment of the outcome of the situation.

(4) In the DDMP, multiple COAs are analyzed against the full range of enemy options. In the CDMP, a single concept is normally evaluated against a limited number of or a single most probable enemy COA. Although not restricted to one COA, the commander's continuous involvement in the CDMP supports the development of one friendly and enemy COA to be analyzed with branch and/or sequel option development.

(5) While the commander is the most critical player in both processes, the staff has more latitude for involvement in the DDMP. The staff receives the commander's guidance or decisions at distinct points in time. They then thoroughly gather, analyze, and synchronize the information before further input from the commander. The commander personally drives the COMP through to execution with the input of his staff. His experience and expertise are critical as he continuously conducts his personal assessment, formulates concepts, and makes decisions.

(6) The DDMP results in a thorough, detailed plan that is essential as an effective starting point for the command as it enters operations. The CDMP staff then adjusts that plan to arrive at rapid, acceptable decisions concerning the situation at hand. The DDMP sets the force and conditions that are absolutely essential for the COMP to work.

Bibliography

- Adamsky, Dmitry. "Cross-Domain Coercion: The Current Russian Art of Strategy." Proliferation Papers 54, IFRI Security Studies Center, Paris, France, 2015.
- Axelrod, Robert, and Michael D. Cohen. *Harnessing Complexity: Organizational Implications of a Scientific Frontier*. New York: Basic Books, 2000.
- Balboni, Mark, John A. Bonin, Robert Mundell, and Doug Orsi. "Mission Command of Multi-Domain Operations." Monograph, United States Army War College, Carlisle Barracks, PA, 2020.
- Bar-Yam, Yaneer. *Making Things Work: Solving Complex Problems in a Complex World*. Cambridge: NECSI Knowledge Press, 2004.
- Buchanan, Richard. 1992. "Wicked Problems in Design Thinking." *Design Issues*: 8, no. 2 (Spring 1992): 5-21. <http://www.jstor.com/stable/1511637>.
- Charlton, John W. "Digitized Chaos: Is our Military Decision Making Process Ready for the Information Age?" Monograph, School of Advanced Military Studies, United States Army Command and General Staff College, Fort Leavenworth, KS, 1998.
- Clare, Phil. "The Answer is Multi Domain Operations – Now What’s the Question?" *Wavell Room*, February 13, 2020. <https://wavellroom.com/2020/02/13/the-answer-is-multi-domain-operations-now-whats-the-question/>.
- Clausewitz, Carl von. *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1976.
- Command and General Staff College. Student Text 100-9, *The Tactical Decisionmaking Process*. Fort Leavenworth: Command and General Staff College, 1993.
- . Student Text 101-5, *Command and Staff Decision Processes*. Fort Leavenworth: Command and General Staff College, 1995.
- Creveld, Martin van. *Command in War*. Cambridge: Harvard University Press, 1985.
- Czege, Huba Wass de. "Commentary on 'The US Army in Multi-Domain Operations 2028.'" Strategic Studies Institute, United States Army War College, Carlisle, PA, 2020.
- Davis, Michael C. and Frank Hoffman. "Joint Force 2020 and the Human Domain: Time for a New Conceptual Framework?" *Small Wars Journal*, June 10, 2013. <https://smallwarsjournal.com/jrnl/art/joint-force-2020-and-the-human-domain-time-for-a-new-conceptual-framework>.
- Dolman, Everett Carl. *Pure Strategy: Power and Principle in the Space and Information Age*. New York: Routledge, 2005.

- Grigsby Jr., Wayne W., Scott Gorman, Jack Marr, Joseph McLamb, Michael Stewart, and Pete Schifferle. "Integrated Planning: The Operations Process, Design, and the Military Decision Making Process." *Military Review* XCI, no. 1 (January-February 2011): 15-22.
- Heftye, Erik. "Multi-Domain Confusion: All Domains are not Created Equal." *The Strategy Bridge*, May 26, 2017. <https://thestrategybridge.org/the-bridge/2017/5/26/multi-domain-confusion-all-domains-are-not-created-equal>.
- Hill, Paul. "The MDMP Actually Provides Flexibility – You Just Have to Know How to do it." *Task & Purpose*, October 22, 2018. <https://taskandpurpose.com/thelongmarch/military-decision-making-mdmp-defense>.
- Jervis, Robert. *System Effects: Complexity in Political and Social Life*. Princeton: Princeton University Press, 1997.
- Loasby, Brian J. Choice, *Complexity and Ignorance: An Inquiry into Economic Theory and the Practice of Decision-making*. Cambridge: Cambridge University Press, 1976.
- March, James G. *A Primer on Decision Making: How Decisions Happen*. New York: The Free Press, 1994.
- March, James G., and Johan P. Olsen. *Ambiguity and Choice in Organizations*. Bergen: Universitetsforlaget, 1976.
- Michel, Rex R. *Historical Development of the Estimate of the Situation*. Alexandria, VA: US Army Research Institute for the Behavioral and Social Sciences, 1990.
- Moltke, Helmuth von. *Moltke on the Art of War: Selected Writings*, edited by Daniel J. Hughes. New York: Ballantine Books, 1995.
- Nisperos, Ernest. "Joint All Domain Effects Convergence: Evolving C2 Teams." *Over the Horizon*, March 10, 2020. <https://othjournal.com/2020/03/10/joint-all-domain-effects-convergence-evolving-c2-teams/>.
- Nutt, Paul C. *Why Decisions Fail: Avoiding the Blunders and Traps that Lead to Debacles*. San Francisco: Berrett-Koehler Publishers, 2002.
- Osinga, Frans P.B. *Science, Strategy and War: The Strategic Theory of John Boyd*. Edited by Colin Gray and Williamson Murray. New York: Routledge, 2007.
- Perkins, William and Andrea Olivieri. "On Multi-Domain Operations: Is NATO Today Sufficiently 'Joint' to Begin Discussions Regarding Multi-Domain Command and Control?" Joint Air Power Competence Centre, August 8, 2020, <https://japcc.org/on-multi-domain-operations/>.
- Reilly, Jeffrey. "Over the Horizon: The Multi-Domain Operational Strategist (MDOS)." *Over the Horizon*, November 8, 2018. <https://othjournal.com/2018/11/08/oth-mdos-reilly/>.

- Reilly, Jeffrey and August Pfluger. "OODA Point: The Requirement for an Airman's Approach to Operational Design (Part I)." *Over the Horizon*, August 16, 2019. <https://othjournal.com/2019/08/16/ooda-point-the-requirement-for-an-airmans-approach-to-operational-design-part-i/>.
- . "OODA Point: The Requirement for an Airman's Approach to Operational Design (Part II)." *Over the Horizon*, August 20, 2019. <https://othjournal.com/2019/08/20/ooda-point-the-requirement-for-an-airmans-approach-to-operational-design-part-ii/>.
- Riel, Jennifer, and Roger L. Martin. *Creating Great Choices*. Boston: Harvard Business Review Press, 2017.
- Scott, Harry D. "Time Management and the Military Decision Making Process." Monograph, School of Advanced Military Studies, United States Army Command and General Staff College, Fort Leavenworth, KS, 1993.
- Schellenberger, Dominik Josef. "From Domination to Consolidation: At the Tactical Level in Future Large-Scale Combat Operations." Thesis, Art of War Papers, United States Army Command and General Staff College, Fort Leavenworth, KS, 2020.
- Silver, Nate. *The Signal and the Noise*. New York: The Penguin Press, 2012.
- Slater, Eric. "Course of Action Analysis for Intelligence Professionals: How to Maintain Collaboration When Assuming an Adversarial Position." *Small Wars Journal*, December 02, 2020, <https://smallwarsjournal.com/jrnl/art/course-action-analysis-intelligence-professionals-how-maintain-collaboration-when-assuming>.
- Sponsler, Warren E., and Jason C. Gallardo. 2017. "Commander-Driven Operations Process: Observations and Recommendations." *CALL Newsletter 2017*: 17-19 (August 2017): 1-11.
- Stafford, Nicholas J. "The Alliance Strikes Back: Using Multi Domain Operations to Counter Russian Hybrid Warfare in the Baltics." Thesis, Art of War Scholars, United States Army Command and General Staff College, Fort Leavenworth, KS, 2019.
- Taylor, Curt, and Larry Kay. "Putting the Enemy Between a Rock and a Hard Place: Multi-Domain Operations in Practice." *Modern War Institute*, August 27, 2019. <https://mwi.usma.edu/putting-enemy-rock-hard-place-multi-domain-operations-practice/>.
- Townsend, Stephen A. 2018. "Accelerating Multi-Domain Operations: Evolution of an Idea." Large-Scale Combat Operations Special Edition, *Military Review*: 98, 5 (September October): 4-9.
- US Department of the Army. Army Doctrine Publication 3-0, *Operations*. Washington, DC: Government Publishing Office, 2019.
- . Army Doctrine Publication 5-0, *The Operations Process*. Washington, DC: Government Publishing Office, 2019.
- . Army Doctrine Publication 6-0, *Mission Command*. Washington, DC: Government Publishing Office, 2019.

- . Army Doctrine Publication 6-22, *Leadership*. Washington, DC: Government Publishing Office, 2019.
- . Army Doctrine Reference Publication 5-0, *The Operations Process*. Washington, DC: Government Publishing Office, 2012.
- . Army Techniques Publication 2-01.3, *Intelligence Preparation of the Battlefield*. Washington, DC: Government Publishing Office, 2019.
- . Army Techniques Publication 5-0.1, *Army Design Methodology*. Washington, DC: Government Publishing Office, 2015.
- . Army Training Techniques Publication 5-0.1, *Commander and Staff Officer Guide*. Washington, DC: Government Publishing Office, 2011.
- . Field Manual 101-5, *Staff Organization and Operations*. Washington, DC: Government Publishing Office, 1997.
- . Field Manual 3-0, *Operations*. Washington, DC: Government Publishing Office, 2017.
- . Field Manual 5-0, *Army Planning and Orders Production*. Washington, DC: Government Publishing Office, 2005.
- . Field Manual 5-0, *The Operations Process*. Washington, DC: Government Publishing Office, 2010.
- . Field Manual 6-0, C2, *Commander and Staff Organization and Operations*. Washington, DC: Government Publishing Office, 2016.
- . Field Manual Interim 5-0.1 C1, *The Operations Process*. Washington, DC: Government Publishing Office, 2008.
- . TRADOC, *Multi-Domain Battle: Evolution of Combined Arms for the 21st Century 2025-2040 Version 1.0*. Washington, DC: Government Publishing Office, 2017.
- . TRADOC Pamphlet 525-3-1, *The U.S. Army in Multi-Domain Operations 2028*. Washington, DC: Government Publishing Office, 2018.
- . TRADOC Pamphlet 525-3-8, *U.S. Army Concept: Multi-Domain Combined Arms Operations at Echelons Above Brigade 2025-2045*. Washington, DC: Government Publishing Office, 2018.
- US Department of Defense. Joint Staff. Joint Publication 3-0, *Joint Operations*. Washington, DC: Government Publishing Office, 2017.
- . Joint Staff. Joint Publication 5-0, *Joint Planning*. Washington, DC: Government Publishing Office, 2017.
- . Joint Staff. Joint Publication 5-0, *Joint Planning*. Washington, DC: Government Publishing Office, 2020.

- . Joint Staff. Doctrine Note 1-19, *Competition Continuum*. Washington, DC: Government Publishing Office, 2019.
- . Joint Staff. Doctrine Note 2-19, *Strategy*. Washington, DC: Government Publishing Office, 2019.
- . Joint Staff. *Capstone Concept for Joint Operations Version 2.0*. Washington, DC: Government Publishing Office, 2005.
- . Joint Staff. *Joint Operating Environment (JOE) 2035, The Joint Force in a Contested and Disordered World*. Washington, DC: Government Publishing Office, 2005.
- . Joint Staff. *Joint Concept for Integrated Campaigning*. Washington, DC: Government Publishing Office, 2018.
- . Joint Staff. *Joint Concept for Operating in the Information Environment (JCOIE)*. Washington, DC: Government Publishing Office, 2018.
- . Joint Staff. *Joint Concept for Robotic and Autonomous Systems (JCRAS)*. Washington, DC: Government Publishing Office, 2018.
- . Joint Staff, J-7 Joint and Coalition Warfighting. *Planner's Handbook for Operational Design Version 1.0*. Suffolk, VA: Government Publishing Office, 2011.
- Vego, Milan. "The Bureaucratization of the U.S. Military Decisionmaking Process." *Joint Force Quarterly* 88 (1st Quarter 2018): 34-45.
<https://ndupress.ndu.edu/Publications/Article/1411771/the-bureaucratization-of-the-us-military-decisionmaking-process/>.
- Vowell, J. B. "Between Discipline and Intuition: The Military Decision Making Process in the Army's Future Force." Monograph, School of Advanced Military Studies, United States Army Command and General Staff College, Fort Leavenworth, KS, 2004.
- White House. National Security Strategy. Washington, DC: White House, 2017.
- Zweibelson, Ben. "An Awkward Tango: Pairing Traditional Military Planning to Design and Why It Currently Fails to Work." *Journal of Military and Strategic Studies*: 16, 1 (March 2015): 11-41.
- . "Changing Change while it Changes: The Rise of Disruptive Military Thinking (Part 1 of 3)." *Over the Horizon*, December 3, 2018. <https://othjournal.com/2018/12/03/changing-change-while-it-changes-the-rise-of-disruptive-military-thinking-part-1-of-3/>.
- . "Changing Change while it Changes: The Rise of Disruptive Military Thinking (Part 2 of 3)." *Over the Horizon*, December 5, 2018. <https://othjournal.com/2018/12/05/changing-change-while-it-changes-the-rise-of-disruptive-military-thinking-part-2-of-3/>.
- . "Changing Change while it Changes: The Rise of Disruptive Military Thinking (Part 3 of 3)." *Over the Horizon*, December 7, 2018. <https://othjournal.com/2018/12/07/changing-change-while-it-changes-the-rise-of-disruptive-military-thinking-part-3-of-3/>.