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The Joint Chiefs of Staff recently stated that "there is more to sustaining a competitive advantage than acquiring hardware, we must gain and sustain an intellectual overmatch." The premise of this intellectual overmatch in a future fight is the ability to think under pressure and immediately translate thought to action, thus deciding rapidly. The dynamic nature of the future battlefield reveals it is no longer enough to presume conventional superiority, and the USMC must refocus training and education at every level to ensure the development of competent, agile, and intuitive decision-makers. Accordingly, this paper explores implications of the future battlefield and recommends the development of new unit-level platforms, simulations, curricula, standards, and evaluation criteria to cultivate the necessary environment for learning to decide quickly consistent with emerging threats.

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MASTER OF MILITARY STUDIES

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OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

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Executive Summary

Title: *Decision-making on the Future Battlefield: Keeping Pace*

Author: Major Stephen J. Shull, USMC

Thesis: Recognizing that the future fight may present a more capable force, “victory is going to go to the side that outthinks the other.”¹ The premise of this “intellectual overmatch”² is the ability to think under pressure and immediately translate thought to action, thus deciding rapidly. The dynamic nature of the future battlefield reveals that it is no longer enough to presume conventional superiority, and the USMC must refocus training and education at every level to ensure the development of competent, agile, and intuitive decision-makers.³

Discussion: America’s strategic landscape is evolving, and the United States Marine Corps (USMC) is at a critical juncture. A return to great power competition is encouraging senior leaders of the USMC to reimagine its purpose and contribution to warfare in an “increasingly complex” environment dominated by speed, uncertainty, and risk.⁴ The recognition of a quickly transforming character of war and its potential implications have set the pace for changes regarding how the USMC prepares for and engages in conflict. Emerging capabilities are likely to influence across regions, domains, and functions while increasing range, lethality, and tempo of both thought and action. As such, the amount of time available for a warfighter to decide today is considerably less and the consequences of those decisions greater.⁵

Evolution to facilitate the development of decision-making within the USMC includes partnerships with prominent research psychologists and organizations such as the American Institute of Learning and Cognitive Development. These collaborations stimulated discussion and resulted in the fielding of training platforms but, however meaningful, have seemingly failed to motivate the necessary evolution of decision-making training and education philosophy.⁶ This is a problem now exacerbated by rapidly emerging technologies and concepts. Hence, decision-making development within the USMC has not evolved in such a way to help Marines most effectively keep pace with the future fight.⁷

Conclusion: A more concerted and immediate effort is owed to the “D” in the OODA Loop, focused on the evolution of training and education meant to exercise, not just understand, the process of deciding rapidly at every level. Accordingly, the changing character of war calls for a renewed cognitive task analysis and the development of new platforms, simulations, curricula, standards, and evaluation criteria to cultivate the necessary environment for learning to decide quickly consistent with emerging threats.

Amid a historic period of self-evaluation that will certainly lead to a transformation of how the USMC trains and educates Marines, it must aggressively prioritize the development and formal implementation of enhanced decision-making learning tools. Specifically, the dynamic nature of the future operating environment demands the establishment of a standard for the development and sustainment of intuitive decision-making. To do otherwise, or without appropriate fervor, is accepting unnecessary risk to both man and mission.

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Preface

It is most important to me that the reader understand, above all else, that the words in these pages are meant to influence action. All too often, we speak or write and fail to act. Whether it be about risk, money, personnel, resources, time, policy, or some combination of these—it is much easier to craft a meaningful justification for hesitancy or inaction, especially if it ensures our own continued relevance. We must not shelve necessary change and fail to act decisively when it matters most. After all, you and I are quite small in the grand scheme of things.

I have worked diligently for hours researching and writing this project. I have stared at the empty page for just as long. I have read the works of many prominent scholars, some more than once. All of this led me back to a simple yet powerful affirmation that to do anything well enough to influence positive action, a substantial amount of critical thinking and effective deciding is necessary. Thus, I tried to recall any period in my career, other than on-the-job experience, where I had been exposed to an enduring form of decision-making training—that is, a standard meant to compel daily mental exercise and continuously develop and evaluate my ability to think under pressure and decide effectively. I could not offer any experience to memory. Even worse, other than a ‘letter’ on a fitness report, I had not otherwise been held formally accountable to such a process.

The ability to think and act quickly is even more relevant on a battlefield characterized by rapidly emerging concepts and technologies. As such, I found myself most interested in motivating the necessary evolution regarding how the United States Marine Corps (USMC) develops and endures the warfighter’s capacity to decide. Throughout this journey, I have relied upon the countless hours of mentorship provided by Dr. Paolo Tripodi and Dr. Rebecca Johnson. I offer endless thanks to both of you and am forever a friend. Most importantly, I must recognize

my wife and three daughters, who have sacrificed much more than I so that these thoughts could find a home on paper. I love you girls, very much.

You may not agree with the thoughts and recommendations herein. In fact, I expect that a passionate disagreement might better serve to influence you for action. Regardless, I simply ask that you “defend these words like you would a pride of lions...let them loose.”⁸ Have the conversation, and let it inspire where I have not. We live and serve in an hour of significant change, and the demands of the environment are considerable. We must implicitly recognize the individual roles we play and sacrifices we must make to facilitate institutional growth. We should not be deterred by risk, as it is our professional responsibility to constructively disrupt and establish new standards. We must relentlessly learn, innovate, and influence for necessary change at the expense of ourselves or we must cede the effort to those who will.

I dedicate this paper to the late Art Corbett, a Marine who became a concept developer for the USMC after retirement. I had the privilege of witnessing this man challenge standards and tirelessly advocate for necessary institutional change. He was a teacher and mentor to many—Art’s contribution throughout his career has undoubtedly and positively influenced the trajectory of the institution. His ability to understand, think, and decide was unmatched. Truly, I believe this individual is irreplaceable. I will remember you, Art, and with the help of many, I will struggle to carry the weight of your efforts. *Semper Fidelis.*

Introduction & Background

Everything starts and ends with the individual Marine... We will always focus on people over systems...

General David H. Berger, *Commandant's Planning Guidance*

America's strategic landscape is evolving, and the United States Marine Corps (USMC) is at a critical juncture. A return to great power competition is encouraging senior leaders of the USMC to reimagine its purpose and contribution to warfare in an "increasingly complex" environment dominated by speed, uncertainty, and risk.⁹ The recognition of a quickly transforming character of war and its potential implications have set the pace for changes regarding how the USMC prepares for and engages in conflict.¹⁰ The Joint Chiefs of Staff recently stated that "there is more to sustaining a competitive advantage than acquiring hardware, we must gain and sustain an intellectual overmatch."¹¹ The premise of the intellectual overmatch in a future fight is the ability to think under pressure and immediately translate thought to action, thus deciding rapidly. It is no longer enough to presume conventional superiority, and the USMC must refocus training and education at every level to ensure the development of competent, agile, and intuitive warfighters.¹² The dynamic nature of the future battlefield demands that the USMC focus more attention on ensuring the speed and effectiveness of the Marine's decision-making process in such an environment.

In 1999, General Krulak called upon the leaders of the Marine Corps to set the conditions for more effective training and education focused on intuitive decision-making. He believed this to be a critical element to prepare for the future fight, and his words arguably resonate with more intensity today. In his *Marine Corps Gazette* article published the same year, General Krulak stresses the importance of rapid decision-making and the changing character of war, arguing that "Marines involved in these amorphous conflicts will be confronted by the entire spectrum of tactical challenges in the span of a few hours, and potentially, within the space of three

contiguous city blocks.”¹³ He questions whether the USMC is properly preparing Marines to understand the environment and quickly adapt their decision-making skills as necessary, underpinning the argument that a Marine must be capable of thinking and deciding in a variety of ways. Further, he argues that intuitive decision-making is most advantageous according to observable changes in the environment. Most importantly, his assertion reveals a sentiment that traditional education might be overshadowing decision-making development.¹⁴

General Krulak provides several recommendations to improve the development of intuitive decision-making. His ideas to develop this type of learning and deciding range from establishing partnerships with relevant commercial professionals to regularly conducting simulations and repetitive decision-making drills at the lowest tactical levels.¹⁵ These recommendations came after the recognition of increasingly complex and entirely new battlefield considerations at the time, and his concerns are relevant to current institutional challenges. To accentuate General Krulak’s rationale, the amount of time available for a warfighter to decide today is considerably less while the consequences of those decisions are greater. The speed and mechanisms through which information is produced and shared in the present day have effectively complicated the decision-to-action cycle.¹⁶ As such, the USMC has attempted to evolve as appropriate to address the resulting immediate and enduring requirements.

Specific evolution to facilitate the development of decision-making within the USMC includes partnerships with prominent research psychologists and organizations such as the American Institute of Learning and Cognitive Development. These collaborations stimulated discussion and resulted in the fielding of training platforms but, however meaningful, have seemingly failed to motivate the necessary evolution of decision-making training and education philosophy.¹⁷ This is a problem now exacerbated by rapidly emerging concepts and

technologies. Hence, decision-making development within the USMC has not evolved in such a way to help Marines most effectively keep pace with the future fight.¹⁸

The primary consideration for this paper is to explore the implications of the future battlefield and identify ways in which the USMC can improve the Marine leader's decision-making process to account for them. It is important to first focus on literature regarding how individuals think and ultimately decide in rapidly emerging, dynamic, and uncertain environments, allowing for fair consideration to how certain ways of thinking may be congruent with the future fight. This paper will also explore the future operating environment and associated institutional considerations. Lastly, this paper will review how decision-making training and education is maturing to prepare the individual warfighter, therefore assessing current institutional capacity and potential to secure the intellectual offset.

This paper will bring attention to a neglected effort and recommend practical adaptations to training and education, therefore stimulating development congruent with potential decision-making dilemmas in a future fight. General Krulak recognizes the fundamental importance of this capability at the heart of institutional doctrine: "Decision-making is the foremost human factor, indeed unique contribution, involved in warfare. In effect, it is the means for implementing the human will."¹⁹ The USMC can, and should, do more to enable all its forces, not just the schoolhouses or training commands, to more effectively develop the type of decision-maker required for tomorrow's challenges. The dynamic nature of the future operating environment demands the establishment of a standard for the development and sustainment of intuitive decision-making. The end state is to facilitate increased intuitive readiness of the individual warfighter, therefore ensuring necessary action on a battlefield dominated by a type of risk, uncertainty, and speed with which he or she is entirely unfamiliar.

Thinking & Deciding

An assessment of current decision-making processes utilized by the military professional requires the exploration of literature regarding how individuals think and ultimately decide, with specific consideration to conducting these tasks in rapidly emerging, dynamic, and uncertain environments. Further, it is important to consider the impact of individual qualities, biases, and experiences that may play a critical role in the decision-making process. There are several theories and principles discussed in literature that define structures, processes, and behavioral implications of both thinking and deciding. This paper is organized using overarching terms to describe the schools of thought to be analyzed herein: intuitive and analytical decision-making.

Intuitive decision-making can be explained as the process of understanding and deciding immediately. It is a manner of preferring action to analysis.²⁰ It is “decision-driven.”²¹ Conversely, analytical decision-making can be understood as the act of comprehensive consideration of all variables and conditions. It involves a specific effort to evaluate all of the information and to decide based upon the most favorable outcome.²² It is “evidence-driven.”²³ The values of both approaches are obvious; however, the intuitive approach is more appropriate when considering the fast tempo of a decision to be faced on the future battlefield. A simple and well-known approach to deciding categorizes fast and slow thinking as an interaction of System 1 and System 2, and both the intuitive and analytical thinkers possess each system.²⁴ Advocates for both thinkers recognize the potential interaction between these systems but diverge according to the utility and “dominance” of each in the decision-making process.²⁵

Gary Klein is the most notable proponent of intuitive decision-making, in which System 1 is most prevalent. In the *Power of Intuition* and other works, Klein argues that developing a repository of skills meant to enhance intuition is entirely possible and enables the decision-

making process when confronted with uncertain or dynamic environments.²⁶ He advocates the concept of Naturalistic Decision-Making (NDM) and posits that analytical decision-making theories are not at all useful in situations that develop quickly.²⁷ NDM is the most visible theory for intuitive-style decision-making, and its principal argument is that decision-makers with extensive experience, or a well-established System 2, can more often be trusted to make the right decision if they act on their intuition.²⁸

Justin Okoli and John Watt reinforce the argument, offering “evidence that subjects who frequently ignored their intuition subsequently made poorer decisions compared to their counterparts.”²⁹ A principal element of NDM in which intuition is certainly not ignored is the Recognition-Primed Decision (RPD) model. This is the idea of the decision-maker drawing on experience, “patterns,” and “cues” to determine an effective solution.³⁰ Originally introduced in 1989,³¹ RPD is also recognized in Marine Corps Doctrinal Publication (MCDP) 7, *Learning*, as a rapid decision-making process that facilitates quick action and therefore more efficient adaptation.³² Models like RPD take shape from Herbert Simon’s introduction of bounded rationality, a concept that contends it may be impossible for individuals to analyze everything in their environment when deciding, even if they recognize it as necessary.³³

Daniel Kahneman is a scholar who recognizes first the imperfect nature of the human being and offers an evaluation of intuition in practice.³⁴ He has further developed the understanding of the interaction between System 1 and System 2, as he has explored the complexity of the relationship between them in his book *Thinking, Fast and Slow*.³⁵ He argues that the intuitive mind is ruled by beliefs and preferences that directly influence decision-making, referred to as heuristics and biases.³⁶ Simply detailed by Kahneman and Amos Tversky, heuristics explain the use of cognitive work-arounds to “reduce...complex tasks...to simpler

judgmental operations,” and this process is vulnerable to bias.³⁷ A common example of an applied heuristic, herein described by Andrei Shleifer, is the “anchoring heuristic,” where individuals are influenced by available but “objectively irrelevant” information that ultimately results in faster but misguided decision-making.³⁸ Examples of bias discussed by James Bowman range in character from the “status-quo” and “overconfidence” bias, manifested through inaction and over-action respectively, to the “ethicality” bias, manifested through a justification of an unethical choice leading to new standards for follow-on action.³⁹

Kahneman argues that these heuristics and biases can occur without the decision-maker’s awareness and are unrelated to the matter of expertise: “false intuitions are common, and indistinguishable from expert intuition...it is difficult to control.”⁴⁰ Fundamental to this argument is that System 1 is difficult to manage, dominates the thought process, and is guided by association—however erroneous or misguided that association may be. Further, System 2 is mostly inactive, or “lazy,” and is only engaged when System 1 needs help.⁴¹ Perhaps most concerning is that, according to Kahneman, System 2 has a “reluctance to invest more effort than necessary” and is therefore subservient to System 1.⁴² If Kahneman is correct, this is certainly an issue when attempting to develop decision aids that guard against potential bias.⁴³

Analytical decision-making, in which System 2 is most prevalent, offers processes and procedures that satisfy the critical mind. Judith Orasanu and Terry Connolly explain that it is “derived from economic theory...[and] used to study tasks for which the researchers could determine the optimal solution.”⁴⁴ Leading examples to consider are Game theory⁴⁵ (Neumann and Morgenstern) and Rational Choice theory⁴⁶ (Coleman and Fararo, Becker, and others). These foundational theories have guided the development of methods that offer precision through formulas, such as Decision Analysis and Multi-Attribute Utility Analysis,⁴⁷ which

facilitate the management of multiple characteristics and probabilities to determine the best possible outcome. There are several graphic methods and models, explained by Colin Sanderson, that facilitate this type of deep thinking, including the use of cognitive maps⁴⁸ (Tolman), comparative advantage charts⁴⁹ (Cushman and Rosenhead), and decision trees⁵⁰ (Thornton). These are comprehensive in nature and are often demonstrated through logical steps that guide the decision-maker in practice.

Analytical thinking, as detailed by Orasanu and Connolly, ensures that all or most of the relevant variables in the environment are identified, analyzed, and categorized. That is, the relevance of information is measured and its applicability for use is determined.⁵¹ This method increases control, allows for fair consideration of all available options, and facilitates the use of certain information in a specific manner to produce the “optimal solution.”⁵² It is less concerned with the characteristics of the user, as the processes are regulated and built to focus on the “decision outcome.”⁵³ A more comprehensive evaluation, relevant to the information known about the problem and the environment at the time, is certain to increase confidence in the decision and allow for more accurate anticipation for follow-on actions.

Bowman also offers insight in the role of behavioral science considerations in decision-making and argues that evidence indicates that the individual has little control over how and when “subliminal beliefs, emotional reactions, and mental shortcuts” influence decisions unreasonably.⁵⁴ Both Kahneman and Bowman suggest that intuitive decision-making is neither consistent nor reliable. Whether or not intuition can be trained and regularly exercised to be consistent and reliable through expertise, as Klein would argue, has significant implications on the development of decision-making tools for the future warfighter. According to Schleifer’s review of Kahneman’s book, he, just as Okoli and Watt, is met with uncertainty when attempting

to understand how and when the systems interact.⁵⁵ However, as there is obvious consensus regarding some sort of system interaction, it can be assumed that there is a degree of influence between them. Therefore, it is myopic to conclude that either system cannot be trained to dominate the process reliably.

Okoli and Watt further discuss the Information Filtering and Intuitive Decision Model (IFIDM), which emphasizes “information processing skills” in effective decision-making and “captures and articulates some of the nuances that exist between the analytical and intuitive constructs.”⁵⁶ This implies that an individual’s mental processing skills, when well trained, facilitate more effective decision-making through system preference at different points in the decision-making process. Notwithstanding the current debate, Kahneman’s argument that bias significantly influences decisions is sound. However, Klein’s work strongly challenges the idea that System 1 is not easily trained or controlled. His argument that System 2 can control System 1, in that intuition is a manifestation of experience and training,⁵⁷ offers a progressive approach to a complex problem. His training models⁵⁸ and previous work with the USMC⁵⁹ should be revisited.

Shleifer specifically recognizes that the limited understanding of the relationship between System 1 and 2, or when analysis shuts off and intuition kicks in and vice versa, is a necessary area of continued research.⁶⁰ Awareness of this is especially critical when considering the development and implementation of decision aids that facilitate preference towards a certain manner of information processing. As such, an understanding of forcing functions for each system is required. For example, Klein states that intuition is favored for “time pressure” situations and “dynamic conditions” while analysis is favored for “optimization” and “justification” for action.⁶¹ The analytical mind would agree.

Another example is Ken Hammond's "cognitive continuum," explained by Raanan Lipshitz as a tool used to measure when and how an individual will think intuitively or analytically. Essentially, it is the potential for failure and the type of task that force a person into a certain manner of thinking; he calls it the "inducement principle," which he argues explains "why decision makers oscillate between intuitive and analytical decision making as task characteristics change."⁶² Klein's categorization of environmental characteristics listed above fit nicely into Hammond's model, reinforcing when quick or deliberate thinking is most advantageous. A specific example provided by Lipshitz is that when time is a factor and the task is significant, intuition wins.⁶³

In order to understand effective decision-making holistically and tailor training and education accordingly, it is necessary to recognize the dominating characteristics of each type of decision-maker. Kamila Malewska presents both historical research and her own pilot study when discussing the relevant characteristics of both intuitive and rational decision-makers. Malewska's argument postures with that of Klein around the necessity of intuitive decision-making, arguing that "time pressure [is] ubiquitous in today's business operations."⁶⁴ Michael Wheeler also argues that the "fog of war" is felt by both "soldiers and civilians," regardless of varying degrees of consequence in the task.⁶⁵ As such, the time pressure of business operations can be associated with the time pressure of a future battlefield, in that technologies and learning adaptation requirements are likewise influencing commercial industry, though the consequences of decision-making in each environment are certainly different.

Referencing her own literature review, Malewska identifies many features of the intuitive mind: "concentration, motivation, self-awareness, innovativeness, the ability to process and filter information, sense of timing, creativity, mindfulness (sensitivity to stimuli coming from the

environment), risk propensity, confidence, rashness (lack of perseverance), and becoming bored easily.”⁶⁶ Her pilot study identifies that the intuitive thinker has greater self-esteem, is less deterred by uncertainty, and is willing to accept greater risk. Conversely, the study identifies that the analytical thinker is more ambitious and team-oriented.⁶⁷ Lastly, her research identifies that most individuals execute “various combinations of the intuitive and analytical approaches,” indicating the value of both systems of thinking.⁶⁸

There is healthy debate regarding how individuals most effectively process information and ultimately decide. Be it intuitive, analytical, fast, or slow, the process is certainly vulnerable to characteristics of the decision-maker, the environment, and the potential consequences of the decision. Additionally, there is much to be learned concerning how the mind engages a particular system to facilitate the decision while at the same time adequately accounting for erroneous influence. Existing literature, however, clearly indicates that the intuitive thinker is likely to dominate in a fast-paced environment. Further, a more complete understanding of the decision-maker’s environment will undoubtedly generate a system preference and should subsequently influence the necessary development for adequate thinking and deciding.

The Future Fight

There is a comprehensive recognition of the emerging technologies shaping the battlefield and therefore the decision-making process. These enabling capabilities are likely to influence across regions, domains, and functions while increasing range, lethality, and tempo of both thought and action; such technological advancement is enabling a return to great power competition that is encouraging senior leaders of the USMC to reimagine its purpose and contribution to warfare.⁶⁹ General Berger, the Commandant of the Marine Corps, recognizes that as these resources become more sophisticated, thereby enhancing the capability of the

adversary, the USMC must adapt both materially and in conceptual design. In the Commandant's Planning Guidance (2019), he states that "given the pace and consequence of ongoing technological change... [we cannot] be complacent when it comes to designing and preparing the force."⁷⁰ The Joint Chiefs of Staff echo this concern, stating that a primary reason for a necessary educational reform is the "evolving and dynamic security environment, which includes disruptive changes in the character and conduct of war."⁷¹ The tone of the current discussion indicates that the force is reacting to, instead of shaping, the current environment.⁷² This is concerning and emphasizes the need to move quickly.

A former force developer with the Marine Corps Warfighting Laboratory once argued that "the current paradigm is at [a] dead end...the next paradigm requires revolutionary vice evolutionary change."⁷³ This is not the first time in the history of the military institution that the collective influence of current conditions requires a disruptive change to standards of learning. Consequently, the way an individual Marine decides is directly influenced by the resulting change in the environment. Effective management of these considerations requires action commensurate to the problem; incremental recommendations for improvement guided by task-saturated working groups and risk-averse leadership will not satisfactorily keep pace with changes in the environment. Lastly, institutional priorities must not be a hindrance but rather facilitate bold action.⁷⁴

To influence necessary change within the USMC, General Berger's planning guidance introduces new operational concepts, including Expeditionary Advanced Base Operations and Stand-In Forces. These concepts introduce the application of "many small, affordable, low signature [forces and] platforms that persist forward in a distributed manner, meant to serve in a variety of functions while enabling 'ambiguity' and creating a targeting dilemma for adversary

anti-access / area denial (A2AD) capabilities.”⁷⁵ Therefore, the USMC must presume that these new operating concepts have the potential to considerably impact the process of deciding at every level. It is also likely that on a future battlefield, the Strategic Corporal will be forced to exercise time-sensitive decision-making with even greater strategic implications. As the USMC explores technical and conceptual innovation, it must equally consider methods to enhance the cognitive readiness of the individual Marine to operate effectively in conjunction with such development. If this does not occur in a timely fashion, it is trading one problem for another.

In the article “Exploring the Future Operating Environment,” Jeffery Becker and John DeFoor ponder how the current force must adapt to meet the challenges of a future fight.⁷⁶ A likely answer, amongst many: the rapid rate of change in the current environment demands quicker decision-making associated with new and unique operating requirements; Marines must be trained to make intuitive decisions with significant risk, operating against unfamiliar limitations. The realization of a rapidly evolving character of war has rightfully motivated research and development; however, the current institutional effort to address this issue is seemingly disproportionate. A significant amount of time and effort appears to be focused on material and conceptual changes, with the expectation that the warfighter will be intellectually ready to make the corresponding decisions. This is opposite the premise of the intellectual overmatch. Though senior leaders have outwardly recognized the necessity for the institution to intellectually adapt to the evolving character of war, it has not yet appeared to permeate the ranks and encourage an adequate response.

The anticipated requirements in a future fight defined by new technologies and operational concepts introduce new and unique conditions that will challenge a leader’s cognitive readiness and, unless adequately prepared, the essential ability to make quick decisions with

greater consequences, more uncertainty, and less time than ever before. Ultimately, however, the fundamental challenge to tomorrow's battlefield warfighter is not the existence of new capabilities or new ways to fight with them, but his or her ability to interact with a significantly more dynamic environment with which he or she is entirely unaccustomed. The USMC must evolve the education and development of decision-making in recognition of this challenge. Becker and DeFoor posit that a military will be adequately prepared if it "cultivate(s) the intellectual agility and mental resilience that will allow members [to have] a sense of déjà vu in the midst of crisis."⁷⁷ In order to explore how to achieve this, this paper will first explore how the USMC has prepared its warfighter to think and decide.

Institutional Considerations

The need to modify the military educational system is a timeless issue. Since its conception, the system has been consistently monitored and improved, but the implications of future operating environments have begun to realize a greater need for profound change. In May 2020, the Joint Chiefs of Staff released *Developing Today's Joint Officers for Tomorrow's Ways of War: The Joint Chiefs of Staff Vision and Guidance for Professional Military Education and Talent Management*. Within this document, the senior military leaders from across the services collectively recognize that the current system is not postured to educate and prepare the warfighter for the future fight. It states, "Warfare, geopolitics, technology, and instructional methods will continue to change, and our PME systems must keep pace."⁷⁸ The short document provides lateral limits and serves to garner attention on the topic and provide focus for future development of the educational arm of the joint force. As all the services slowly come to terms with the inadequacy of current educational processes and procedures, the USMC must act promptly to review institutional competence and associated constraints.

The Need to Reform

In February 2020, the USMC released MCDP 7, *Learning*. The document introduces the institution's learning philosophy and emphasizes "continuous learning" as the catalyst. With this publication, the USMC reinforces learning requirements in a manner appropriate to warfighting with essential consideration to a future battlefield. Though this publication does not change the process of learning and the expectation of a Marine to strive for intellectual growth remains similarly uninfluenced, it does provide a mechanism to raise expectations, establish new standards, and begin to enforce comprehensive accountability of the learning process.⁷⁹

The publication of this document is relevant in that it offers insight into how the USMC appreciates decision-making today. That is, deciding, through "active learning,"⁸⁰ is something a Marine is expected to understand, improve, and effectively execute in every environment.⁸¹ Though decision-making is a part of learning, it is also a distinct action that influences its degree of effectiveness. As such, additional attention is necessary to more effectively prepare Marines to develop and evaluate decision-making according to the significant change occurring in the modern environment. It is past time that the development and evaluation of a decision-making philosophy stand alone in a Marine Corps doctrinal publication. To this end, MCDP 7 invokes General Mattis in a useful way: "in a fast-paced world, Marines need to make time to reflect in order to build understanding, exploit lessons, and be ready to adapt as situations change."⁸² In other words, Marines must develop System 2, knowledge, to prepare System 1, intuition, for action. Further, Marines must consistently exercise the link between them.⁸³ The importance of this task defined by the evolving complexity of the environment demands immediate consideration and cautions against apathy.

Prior to the release of the Joint Chiefs of Staff vision statement, Pauline Kaurin provided her own assessment of current learning standards in “Professional Military Education: What Is It Good For?” Throughout her article, the author explores the differing perceptions amongst military officers regarding what professional military education should provide. Specifically, she offers contrasting arguments from students at varying professional schools regarding the usefulness and applicability of current curricula, with the intent to identify that there is little consensus regarding the product delivered back to the force upon graduation. A particular consideration she presents is the “question of whether we are to view professional military education primarily as training, as education, or as some combination of the two.”⁸⁴ This question is of specific importance, in that a simple correlation is made between the impact of training on intuitive decision-making and the impact of education on analytical thought. Further, a combination of both sets the condition for optimal decision-making development. The magnitude at which this consideration will influence the effectiveness of new learning methodologies must compel institutional leaders to prioritize decision-making growth in the development of a new curriculum.

Most recently, James Lacey stimulates this conversation with his piece “Finally Getting Serious About Professional Military Education,” where he provides a synopsis of the Joint Chiefs of Staff vision for educational reform. Lacey emphasizes the importance of this document, calling attention to the implications of joint force “buy-in” to such a change.⁸⁵ Especially important to this study, he reaffirms the postulation made by the Joint Staff that the next great offset is indeed intellectual. In recognizing that the future fight may present a more capable force, he states that “victory is going to go to the side that outthinks the other.”⁸⁶ He maintains that the current ways and means of learning must be replaced by “21st-century active

learning methodologies,” the details of which to be provided in forthcoming “implementation instructions” from the Joint Staff.⁸⁷ It is vital that this implementation plan and subsequent plans or publications recognize the importance of specific decision-making development to account for the fast-paced and entirely unpredictable future battlefield.

Learning from the Past to Shape the Future

It is necessary to evaluate how the USMC has matured in developing individual thinking and therefore the ability to make sound decisions. More specifically, how does the USMC “train the brain to respond in certain ways?”⁸⁸ To inspire thought, it is appropriate to revisit a simple review of battlefield decision-making offered by John F. Schmitt in a 1988 edition of the *Marine Corps Gazette*. He argues that decision-making is an art, not a science, due in large part to the significant and inconsistent role of certainty, information, time, and risk; and that there is “no substitute for the intuitive skills that comes from repeated practice.”⁸⁹ In multiple works, Schmitt promotes the use of decision games to build these skills, facilitate a “truer understanding” of the problem, and encourage Marines to find “patterns and opportunities...where others see chaos and confusion.”⁹⁰ Schmitt details his experience in Quantico during the late 1980s as part of a team dedicated to developing “tactical decision games” that would enable this sort of learning. Then Major General Van Riper discusses how this effort was also related to a collaboration with then Commandant, General Gray, on the publication of Fleet Marine Force Manual 1 (FMFM1), *Warfighting*.⁹¹ In 1994, Schmitt published a decision game workbook and, along with General Van Riper, smartly pointed out it is nearly impossible for a military official to gain experience at little cost, and that unit-level repetitive decision drills conducted with context are more affordable and as effective as larger exercises and wargames.⁹²

Shortly thereafter, in 1995, General Krulak assumed the position of Commandant and enlisted the assistance of Gary Klein to develop the intuitive decision-making ability of Marines. With “decision-making exercises,” Klein introduced a training program meant to exercise cognitive capability based on three principal elements: “identify and understand the decision requirements; practice the difficult decision in context; and review the decision-making experience.”⁹³ He worked closely with individual Marines at the squad level and found success in breaking an institutional misconception that junior Marines only follow orders. His training program influenced individual critical thinking and created a mechanism for collective participation and understanding of the decision-making process.⁹⁴ Klein communicated with Schmitt to develop these exercises for optimum results, and his tools and methods defy prescription, provide realistic context, and force the decision-maker to recognize how and why the decision was made in sufficient detail to incrementally improve capability through repetition. His training curriculum quickly gained popularity and proved useful to multiple organizations and agencies.⁹⁵

Beginning in 1995, the USMC Program Manager (PM), Training Systems, Science and Technology Division initiated the development of “tactical decisionmaking simulation (TDS) technology.”⁹⁶ The purpose of these ‘games’ was to facilitate the practice of decision-making via computer systems. Several programs were explored, resulting in the fielding of “low-cost, deployable systems” meant to enhance rapid decision-making skills.⁹⁷ Through context and repetition, the systems were meant to facilitate learning from the individual to the Marine Expeditionary Unit level. Notable examples included Tactical Operations Marine Corps, Close Combat: Marines, and Combat Decision Range. In 2004, systems under development included a Marine Air Ground Task Force (MAGTF) operation planning and execution TDS, a Logistics

TDS, an Anti-Terrorism TDS, a Joint Terminal Attack Controller TDS, and a “first person shooter simulation” meant for fireteam, squad, and platoon leaders. Of note, the PM identifies that these systems are developed according to a “cognitive task analysis” to ensure accurate context of the decision-making challenge.⁹⁸ Similar examples available to Marines today include the Supporting Arms Virtual Trainer, the Indoor Simulated Marksmanship Trainer, and the Deployable Virtual Training Environment.⁹⁹ Arguably, however, the institution can better enable the use of these and similar learning platforms in support of daily, comprehensive, and unrestricted use at the small unit level.

In 2009, then Major Matthew Tracy offered his thoughts regarding “mental performance training” (MPT). In his article, he details the relationship between the USMC, consulting groups, and the American Institute of Learning and Cognitive Development to help improve Marines’ performance in “high-stress, time compressed environments.”¹⁰⁰ Figure 1 represents a graphic provided by Tracy that has been modified by the author. It offers a perspective of the foundational elements of MPT as they relate to Daniel Kahneman’s systems of thinking and Klein’s argument that expertise generates intuitive thinking. Specifically, it posits that experience is developed through training and cultivates System 1. Further, it posits that knowledge is developed through education and cultivates System 2. Lastly, it posits that conducting mental conditioning regularly stimulates a system interaction that develops the intuitive mind.

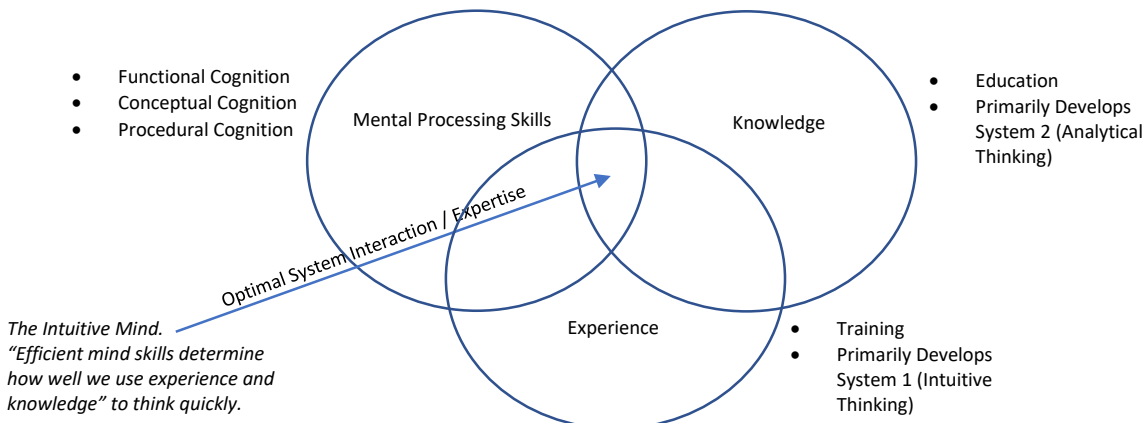


Figure 1: A Relationship between Mental Performance Training and System Thinking

Source: Adapted from Matthew W. Tracy, "Cultivate the Intuitive Decisionmaker," *Marine Corps Gazette* (January 2009), 37.

In his article, Tracy describes knowledge as education, experience as skills developed through action, and mental processing skills as the ability to translate thought to action.¹⁰¹ During this period, the USMC and contributing agencies explored ways in which to improve mental processing through experiments with Marines executing measurable tasks, with specific consideration to how these tasks related to a variety of cognitive skills.¹⁰² Improving mental processing skills in this manner is a method to develop an intuitive mind that is constructively interactive with, and not ruled by, characteristics of the decision-maker and the environment.

The purpose was to demonstrate that mental conditioning conducted frequently "developed more efficient pathways in the Marine's brain, which allow him [or her] to accomplish a specific task faster, better, and while under greater stress."¹⁰³ In Tracy's study conducted over a 10-week period, some Marines would participate in mental performance training and others would not. At the conclusion of the period, results indicated that Marines who conducted mental conditioning improved significantly at the observed measurable tasks compared to those who did not. Tracy recognized a potential

“paradigm shift” in not only training techniques but also overall training philosophy, as necessary to improve a Marine’s decision-making capacity. He recommended continued research to enhance decision-making training via MPT throughout the force, including integration with computer-simulated exercise games and use at introductory and follow-on schools to improve performance and self-esteem.¹⁰⁴

As a former Recruit Training Company Commander between 2012 and 2015, the author of this paper is intimately familiar with the use of repetition to improve performance. Some call it *déjà vu*, while others call it muscle memory. The goal is to develop the ability to think and act quickly according to the experience developed through doing the same task, repeatedly. The author also recognizes that “repetition of action under increasing complexity and stress” is a foundational principle of formal training executed throughout the USMC; examples range from introductory occupational schooling, training for special assignments, field exercises, and preparation for deployment.¹⁰⁵

However, even as the variables change according to the context of the scenario, most of these training opportunities are defined by and evaluated according to a specific procedure and outcome, which promotes rigid learning. Further, opportunities that most effectively develop combat decision-making skills through designed experience, such as large-scale exercises or resident attendance at a professional school, are expensive and time consuming and therefore rare to the individual Marine. Lastly, new capabilities and concepts are likely to influence expectations applicable to each training construct, further reinforcing an argument that necessitates bold action to enhance decision-making readiness on the future battlefield.

By 2025, the USMC is expected to have a fully operational “state-of-the-art” wargaming facility located in Quantico, VA. This facility is being developed to provide the warfighter an “accurate representation of future operating environments” and allows the institution to use a “thinking enemy” to “challenge concepts, capabilities, and force design.”¹⁰⁶ The facility will provide a host of gaming options ranging in size and complexity and will allow for the participation of “joint, interagency, intergovernmental, and multinational partners.”¹⁰⁷ The investment in such a facility is commensurate with the necessity to stay abreast with the current pace of global innovation. Still, the purpose of such a project will not likely reach maximum potential without the ability to involve the Marines at the lowest level of tactical operations. However useful a “state-of-the-art” facility located in Quantico might be for headquarters staff and school populations, the location and likely control of such a facility limits its potential reach and therefore its ability to influence profound learning at the necessary rate of change. MPT, decision exercise games, many affordable computer-based decision tools, or any other mechanisms for that matter do not appear to have sufficiently influenced current learning priorities in a manner to appropriately address this challenge.

To identify types of wargames, exercises, systems, models, and methods that can be used at every level and most effectively enable a Marine to process large amounts of information to decide and act in a short period of time,¹⁰⁸ it is necessary to first understand the type of knowledge that accelerates thinking. Proponents of NDM posit that “not all experiences support the development of expertise”¹⁰⁹ and that to develop a genuine form of expert knowledge, it is most critical to develop the ability to “recognize patterns” and make “perceptual discriminations” as opposed to “precise repetition”

based on facts or procedures.¹¹⁰ Klein describes this as the difference between “tacit” (or intuitive) and “explicit” knowledge. Specifically, Klein defines tacit knowledge as “perceptual skills required to make fine discriminations, to detect patterns, to judge familiarity (and therefore notice anomalies), to draw on a rich mental model of causal relations.”¹¹¹ Figure 2, extracted from the work of Klein, illustrates this definition.

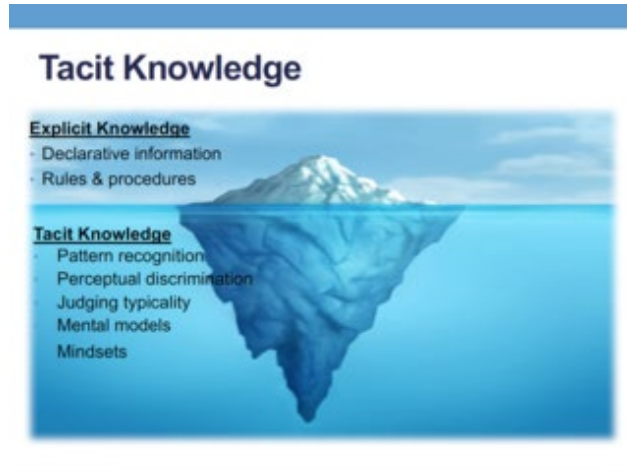


Figure 2: Explicit and Tacit Knowledge

Source: Gary Klein, “Getting Smarter; Nine tips for gaining expertise,” *Psychology Today* (November 6, 2018), <https://www.psychologytoday.com/us/blog/seeing-what-others-dont/201811/getting-smarter>.

Table 1 is developed by the author and represents a glimpse of several of Klein’s recommendations, as he describes them through his research, to maximize the potential for the development of tacit knowledge and therefore improve intuitive decision-making. In detailing the principals and fundamentals of learning which are clearly entrenched in the work of Klein, MCDP 7 thoroughly reinforces these methods and practices.¹¹²

Table 1: Methods to Improve Tacit Knowledge utilizing Tactical Decision Games (TDG)

Approach	Description	Outcome
Free-Form Tactical Decision Game (TDG)	Paper-and-pencil, simulations (software/live), or a combination of the two that provide a scenario that requires rapid decisions.	“Prepares decision-maker for uncertainty and time pressure.” Prepares and facilitates tailored training against potential heuristics and biases.
Doctrine/Policy-Based TDGs	TDGs that facilitate genuine knowledge of doctrine and/or	“Prepares decision-maker for emotional reactions.”

	policy through “consequences” of decisions.	Prepares and facilitates tailored training against potential heuristics and biases.
Structural TDGs	TDGs that facilitate “functional” knowledge of interactive systems through dynamic experience instead of memorization of technical characteristics.	Allows decision-maker to “form richer mental models” to aid in the decision-event. Prepares and facilitates tailored training against potential heuristics and biases.
ShadowBox TDGs	TDGs that are executed by both subject matter experts and novices separately, and “responses and rationale [are shared about] specific decision points” by each at the conclusion of the event.	Allows decision-maker to “see the situation through the eyes of the experts...helping [them] expand their own mental models.” Prepares and facilitates tailored training against potential heuristics and biases.
On-The-Job Learning	“Coaching from skilled decision-makers.”	Allows decision-maker to “observe [and] experiment with different strategies...[to better] diagnose reasons for success and failure.” Prepares and facilitates tailored training against potential heuristics and biases.

Source: Adapted from Gary Klein, “A Naturalistic Decision Making Perspective on Studying Intuitive Decision Making,” *Journal of Applied Research in Memory and Cognition* 4 (2015), 166-167.

Deciding quickly and effectively, Klein argues, is more than just evaluating and choosing the best option; it is “making sense of the events and conditions...and [anticipating] possible future states.”¹¹³ At the surface, Klein’s recommendations suggest that the optimal conditions to improve intuitive decision-making are: 1.) to combine knowledge and experience shaped by context; 2.) to exercise methods that prioritize “sensemaking”¹¹⁴ over procedural memorization; 3.) to introduce complexity, therefore invoking emotion and facilitating the recognition of heuristics and biases; 4.) to expose the decision-maker to different options that facilitate the same result; and 5.) to exercise in an environment that realizes just as much from failure as from success.

Exercising decision-making in such a way helps attain genuine expertise and realize the art of the intuitive mind through the growth and application of tailored knowledge.

Practices such as these must be considered by institutional leadership in the development of a decision-making philosophy and subsequent training standards.

In 2008, a U.S. Army publication recognized that decision-making in the military has become largely scientific and seeks to optimize control rather than exercise the art of problem solving.¹¹⁵ To this end, Milan Vego recently argued that all services have contributed to complicating the process of decision-making. Specifically, the process has become saturated “with poorly related or even unrelated considerations... [and] in turn, has made the decision-making process cumbersome, rigid, and time-consuming.”¹¹⁶ His most significant claim, Vego states that as the process has evolved, “caution is more valued than boldness in action.”¹¹⁷ Although this evaluation is rendered in his review of how the structured and deliberate planning models of each service facilitate a commander’s decision, his assessment emphasizes the foundational idea that the individual warfighter must execute a series of logical steps before deciding.¹¹⁸ A similar institutional stronghold does not exist to guide a warfighter in accepting more risk and deciding quickly. Vego continues: “what matters most is not the method (how a commander reached the decision) but whether that decision was made in a timely manner and ensured mission success.”¹¹⁹ This is especially critical when considering the dominance of speed, uncertainty, and risk in a future fight.

Klein’s reference to the work of evaluating military members and his recommendations for the development of intuitive decision-making are relevant to potential educational reform within the USMC, in that he offers empirical evidence that military members control and decide satisfactorily without engaging in analytical problem solving. He states, “under operational

conditions, decision makers rarely use analytical methods and nonanalytical methods can be identified that are flexible, efficient, and effective.”¹²⁰ This thought returns the conversation to the recognition of the future warfare environment and General Krulak’s evaluation of decision-making development, and it identifies the need to emphasize the application of more relevant decision-making tools that permeate the entire institution. Further, institutional accountability to the process requires a cultural shift that can only be achieved by a healthy recognition of the problem at every actionable level.

Since the introduction of John Boyd’s Observe, Orient, Decide, Act (OODA) Loop, it has become a foundational concept of USMC decision-making education and development, and it remains pivotal today. This process helps a warfighter understand the art of decision-making by illustrating the relationship between the decision-maker’s environment and the resulting preference for action, and the USMC has done well to ensure Marines have a basic understanding of this framework.¹²¹ However, the institution must continue to ardently cultivate the Marine’s working knowledge regarding how the decision-event is processed. As a result, leaders will more effectively set the conditions conducive to developing and enforcing decision-making training standards and activities.

The decision-event is arguably the governing element in this equation, as it drives the action that dominates the evolution of subsequent OODA loops.¹²² As such, a more comprehensive and immediate effort is owed to the “D,” focused on the development of training and education standards meant to facilitate a matured understanding regarding the mechanics of a decision on the future battlefield. Moreover, it is not enough to simply improve understanding, as the ability to decide rapidly according to potential operational environments is most effectively achieved through consistent, relevant, and evaluated exercise.

Recommendations

The following recommendations are provided from a mid-level action officer's perspective. That is, these recommendations are considered to facilitate both the development and evaluation of rapid decision-making from the individual fire team member to the staff operational planner, from Private to Lieutenant Colonel. Additionally, they are provided as a means to permeate the force, both supplementing and filling the gaps between introductory training, occupational schools, career-level schooling, traveling to training centers, and field exercises.

- 1.) Senior leaders within the USMC must execute a series of more spirited roadshows, bi-annually, to connect senior leaders' authority with small-unit intellect and enthusiasm. Common roadshows today have become too much of a scripted event; disruptive thinking and hard questions do not appear to be common in these forums. They should be conducted in a kneecap-to-kneecap sense, and questions should not be screened. If necessary, conduct them out of uniform to encourage free thinking: "rank matters, but knowledge matters more."¹²³ Roadshows like this will provide the optimal conditions to ensure all Marines understand and offer thoughts regarding the direction in which the institution is headed, and how it might impact cognitive preparedness and resiliency. In an environment characterized by change, there should be little more important to the institution than ensuring the individual Marine's capacity to understand and adapt to different variables and conditions as they become pertinent. This is best achieved through informal and consistent dialogue in all directions.
- 2.) The USMC must facilitate the immediate and comprehensive fielding of many standardized and affordable computer-based decision-making training platforms, analogous to the "Deployable Virtual Training Environment,"¹²⁴ which facilitate learning

according to current institutional challenges. This platform must be developed for liberal employment at the small-unit level. Further, these platforms must be more effectively integrated into current training and education curricula to enhance learning and facilitate instruction. Institutional investment and resource priorities must be aligned to facilitate this effort to ensure that individual Marines are able to consistently exercise their capacity to think and decide under pressure. Every command across the force must be equipped with this capability without discrimination.

- 3.) The USMC must reinforce those agencies responsible for conducting cognitive task analysis regarding the potential implications of future operating environments. Further, Training and Education Command must be empowered to integrate such analysis into the immediate development of 21st-century training standards and learning methodologies. The findings of such analysis and implications on training and education must also be communicated to the lowest levels of operations without delay. Getting this right will better connect the force to emerging mission requirements, increase awareness of individual responsibilities, and likely build morale around a more commonly understood context. This analysis is cyclical and must continuously shape decision-making training requirements, and training platforms must be equipped to manipulate variables and conditions, as necessary.
- 4.) The USMC must develop a standard for rapid decision-making training and education philosophy and, upon fielding of training platforms, hold leadership formally accountable for the implementation of unit-level training requirements through doctrine and policy. Individual Marines must be required to exercise mental processing skills and demonstrate growth through quarterly qualifications according to specific specialties. Performance

should be recorded within the Marine's individual training record and displayed on fitness reports, similar to a rifle score or physical fitness test.¹²⁵ Formal accountability, daily exercise, and quality feedback are required to enhance the cognitive readiness of the average Marine and enable the type of decision-making required for tomorrow's challenges. The institution must appropriately equip and expect Marines to formally maintain and refine this capability often.

- 5.) The USMC must reenergize partnerships with relevant commercial professionals and agencies to offer subject matter expertise and exercise in the areas of cognitive development, specifically psychology and decision-making. This will drastically improve the development, fielding, and evolution of decision-making training platforms and curricula and ensure integration with 21st-century learning methodologies. Further, this is an opportunity to capitalize on commercial growth that is advancing at a significant rate.
- 6.) The USMC must dedicate a professional school population for a complete calendar year to conduct supporting analysis regarding emerging capabilities and warfighting concepts. These efforts must complement Marine Corps Combat Development Command mission priorities, therefore further enabling the force developer to influence commensurate with the rate of change within the applicable environments. Deliverables of this effort will directly inform the acquisition and evolution of decision-making training platforms and curricula. If the institution is unable to invest so boldly, a less suitable but more realistic option is to assign a singular conference group instead of the entire population. A third option that will yield the least in return but requires extraordinarily little institutional

investment is to assign specific students to such tasks during the electives period to not interfere with the remainder of the school year.

- 7.) The USMC must establish an experimental force that is equipped to service cognitive assessment and innovation. This force should belong to Marine Corps Combat Development Command and must enjoy equal priority to service-level training. Further, senior institutional leaders must argue for increased “resources and opportunities for this experimental force to integrate and evaluate throughout all services.”¹²⁶ This will facilitate efficient evaluation of decision-making readiness according to certain conditions, allow for more meaningful cognitive task analysis across functions and domains, and identify those areas in need of attention that are not easily realized without undertaking.

Conclusion

A former Director of the School of Advanced Warfighting once argued that “training for...the art of decisionmaking is often neglected as Marines focus on the current demands dictated by operational tempo.”¹²⁷ The future fight indicates that this is a decision in which the institution can no longer afford to show preference. To call on Tracy, the USMC must “embark on a significant paradigm shift in how [it] think[s] about training” to ensure Marines are prepared to execute quick and effective decision-making at pace with the demands of the future battlefield.¹²⁸

Amid a historic period of self-evaluation that will certainly lead to a transformation of how the USMC trains and educates Marines, it must aggressively prioritize the development and formal implementation of enhanced decision-making learning tools. Further, adequately understanding how future operating environments will impact decision-making demands more disruptive attention than is currently dedicated. Accordingly,

rapidly emerging technologies and concepts call for a renewed cognitive task analysis and the development of new unit-level platforms, simulations, curricula, standards, and evaluation criteria to cultivate the necessary environment for learning to decide quickly consistent with emerging threats. To do otherwise, or without appropriate fervor, is accepting unnecessary risk to both man and mission.

¹ James Lacey, “Finally Getting Serious About Professional Military Education,” *Real Clear Defense* (May 19, 2020), https://www.realcleardefense.com/2020/05/19/finally_getting_serious_about_professional_military_education_313590.html.

² Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2.

³ James Mattis, *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, D.C.: Department of Defense, 2018), 3; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

⁴ James Mattis, *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, D.C.: Department of Defense, 2018), 1, 3, 7; Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2-3; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

⁵ David H. Berger, *Commandant’s Planning Guidance* (Washington, D.C.: U.S. Marine Corps, 2019), 1; Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2-3; U.S. Marine Corps, *Learning*, Marine Corps Doctrinal Publication 7 (Washington, D.C.: U.S. Marine Corps, 20 Feb 2020), 1-6, 1-17; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

⁶ Matthew W. Tracy, “Cultivate the Intuitive Decisionmaker,” *Marine Corps Gazette* (January 2009), 37-38; Staff, Program Manager Training Systems, Science and Technology Division, “Marine Corps Family of Tactical Decisionmaking Simulations,” *Marine Corps Gazette* (2004, reposted 18 July 2019), <https://mca-marines.org/blog/gazette/marine-corps-family-of-tactical-decisionmaking-simulations/>.

⁷ Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

⁸ Quote by Charles Spurgeon, adapted by the author, <https://www.goodreads.com/quotes/8561226-the-word-of-god-is-like-a-lion-you-don-t>

⁹ James Mattis, *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, D.C.: Department of Defense, 2018), 1, 3, 7; Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2-3; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

¹⁰ David H. Berger, *Commandant’s Planning Guidance* (Washington, D.C.: U.S. Marine Corps, 2019), 1; Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2-3; U.S. Marine Corps, *Learning*, Marine Corps Doctrinal Publication 7 (Washington, D.C.: U.S. Marine Corps, 20 Feb 2020), 1-4; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

¹¹ Office of the U.S. Joint Chiefs of Staff, *Developing Today’s Joint Officers for Tomorrow’s Ways of War* (Washington, D.C.: U.S. Joint Chiefs of Staff, 01 May 2020), 2.

¹² James Mattis, *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, D.C.: Department of Defense, 2018), 3; Joseph F. Dunford Jr., “The Pace of Change,” *Joint Force Quarterly* no. 84 (2017), 2-3; Joseph F. Dunford Jr., “The Character of War and Strategic Landscape Have Changed,” *Joint Force Quarterly* no. 89 (2018), 2-3.

¹³ Charles C. Krulak, “Cultivating Intuitive Decisionmaking,” *Marine Corps Gazette* (1999, reposted 18 July 2019), <https://mca-marines.org/gazette/cultivating-intuitive-decisionmaking/>.

¹⁴ Charles C. Krulak, “Cultivating Intuitive Decisionmaking,” *Marine Corps Gazette* (1999, reposted 18 July 2019), <https://mca-marines.org/gazette/cultivating-intuitive-decisionmaking/>; U.S. Marine Corps, *Learning*, Marine Corps Doctrinal Publication 7 (Washington, D.C.: U.S. Marine Corps, 20 Feb 2020), 1-18.

¹⁵ Charles C. Krulak, “Cultivating Intuitive Decisionmaking,” *Marine Corps Gazette* (1999, reposted 18 July 2019), <https://mca-marines.org/gazette/cultivating-intuitive-decisionmaking/>.

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