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Since the beginning of recorded history, armed forces have evolved to achieve a decisive advantage over their adversaries. Historical examples trace back centuries; yet recent Marine Corps evolutions can be closely examined and understood through the driving need for change. As we enter the twenty-first century, the need for change continues in most modern-day militaries. This monolog will narrow several examples of evolving Marine Corps innovations and focus specifically on the dynamic changes ongoing in the 21st century.

Monolog Thesis: The necessity for change enhances the Marine Corps ability to innovate and adapt as evident in recent Marine Corps wide innovation challenges, the Gray Scholars Programs at the Marine Corps Command and Staff College, and through service-level wargaming of future concepts and capabilities.

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U.S. MARINE CORPS | INNOVATION IN THE TWENTY-FIRST CENTURY

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EXECUTIVE SUMMARY

"Everything changes so fast and the rules are against us, the most important thing we can do is be open to new ideas. Not to create chaos, not to create friction. But I am confident enough in the intellect and advice, that we will come up with the right solution, even if it is only 80 percent. If we do nothing, we lose. I am willing to take risk."[1]

- General Robert B. Neller, Commandant of the Marine Corps

Over the last 243 years, the Marine Corps has continued to evolve with the changing of time, and over time, the Marine Corps has continued to develop new and emerging concepts to support modern warfare against near-peer competitors across the world. As the world's hegemon, the United States maintains global superiority through four instruments of national power: *diplomacy, information, military,* and *economics* (DIME). This monolog will focus on the military aspect of DIME, specifically the United States Marine Corps' ability to adapt and innovate to set conditions to fight and win America's battles to the potential future operating environment.

Major themes carried throughout this monolog will focus on discerning the difference between military innovation being either evolutionary or revolutionary; and I will argue that the Marine Corps necessity to evolve is the driving factor for change in the twenty-first century. This monolog is subcategorized into three different articles discussing Marine Corps innovation in the twenty-first century and explain several avenues that Marines can exploit to cultivate innovation from within. The following three paragraphs provide a short synopsis of three opportunities Marines may explore to cultivate innovation and change within.

[1] Lance M. Bacon, *Commandant looks to 'disrupt thinkers' to fix Corps' problems*. Marine Corps Times, March 4, 2016, 3. https://www.marinecorpstimes.com/news/your-marine-corps/2016/03/04/commandant-looks-to-disruptive-thinkers-to-fix-corps-problems/

Impact Within*: How You Can Affect Change through Innovation:* Describes several service-level programs designed to modernize the forces through individual initiative ideas from any Marine. The article expounds on several opportunities available to Marines and how Marines can influence the modernization of the force and make a direct impact to Marine Corps innovation initiatives.

Innovative Wargaming: The Marine Corps Warfighting Laboratory Developing Lifelong Learners: Provides a framework for resident Marine Corps Command and Staff College students to develop operational art and design through operational planning sponsored by the Marine Corps Warfighting Laboratory. This article explains how the Marine Corps University Gray Scholar Program affords students the opportunity to make service-level impacts through wargaming current operational plans and defense planning scenarios in support of operational force requirements. Additionally, the article serves as an information paper to recruit and educate prospective Gray Scholar candidates.

Command & Control of a Forcible Entry Operation in 2025: Discusses command and control considerations for a Marine Expeditionary Force and identifies several concerns with compositing forward deployed forces and aggregation with a Naval Component at sea. The basis for this article is derived from a Marine Corps Warfighting Laboratory wargame based of a joint staff Defense Planning Scenario.

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INTRODUCTION

Since the beginning of recorded history, armed forces have evolved to achieve a decisive advantage over their adversaries. Historical examples trace back centuries; yet recent Marine Corps evolutions can be closely examined and understood through the driving need for change. As we enter the twenty-first century, the need for change continues in most modern-day militaries. This monolog will narrow several examples of evolving Marine Corps innovations and focus specifically on the dynamic changes ongoing in the 21st century.

Monolog Thesis: The necessity for change enhances the Marine Corps ability to innovate and adapt as evident in recent Marine Corps wide innovation challenges, the Gray Scholars Programs at the Marine Corps Command and Staff College, and through service-level wargaming of future concepts and capabilities.

The Marine Corps is currently undergoing significant technological innovations and has laid out the process to adapt through the publishing of the Marine Corps Operating Concept. The Marine Corps Operating Concept emerged from a Headquarters Marine Corps service-level wargame (MAGTF WARRIOR 16) which focused on what the future force should look like in 2025. The premise of the MOC is moderately misleading, as it is not how the Marine Corps operates, but more a prelude to how the Marine Corps needs to operate. The MOC identifies key drivers of change in the Future Operating Environment with five critical tasks for the total force[2]. Simply put, the MOC defines a process for how to adapt.

[2] Headquarters US Marine Corps, *Marine Corps Operating Concept. How an Expeditionary Force Operates in the 21st Century*, (Washington, DC: Headquarters US Marine Corps, September, 2016), 12-23.

Chapter 1

Impact Within: How You Can Affect Change through Innovation

The term 'innovation' has become a staple in everyday conversation circulating around the Marine Corps, yet most Marines struggle to grasp where new innovative ideas are derived from or when new technologies and concepts may be fielded to using units. In September 2017, Marine Corps Base, Quantico hosted and co-sponsored the Modern Day Marine Expo with the Combat Development and Integration Command who are responsible for setting requirements, developing equipment and systems, and purchasing the equipment and systems that the Marine Corps will rely on in the years to come.[3] At this year's Modern Day Marine Expo, General Neller, Commandant of the Marine Corps, said, "I invite all of you [Marines] to take the time and talk to the vendors; look at the gear, get on it, climb on it, check it out, ask the hard questions, and make them try to answer them."[4] These words should resonate with all Marines. Adherent to the Marine Corps Operating Concept (MOC) – Individual Marines can make service-level impacts through individual innovative ideas, refine future technologies, and make relevant recommendations to service influencers at the highest levels.

Expounding on the Commandant's vision in the MOC, it identifies key drivers of change that are relatively open for interpretation as evident in the MOC's conclusion – five critical tasks for all Marines. The task may not be for all Marines to solve alone, but someone needs to initiate collaborative forward thinking to get after glooming struggles in the Future Operating Environment of the 21st Century. In response to these tasks, the Commandant has

[3] Marine Military Expos. *Modern Day Marine: Change is Coming*. https://www.marinemilitaryexpos.com/modern-day-marine/home/
[4] General Robert B. Neller, Modern Day Marine Speech https://www.youtube.com/%20watch?v=eYv0GyzIbvg

initiated service wide innovation challenges which can be found on Marines.mil via MARADMIN.

In 2016, Lieutenant General Dana, the Deputy Commandant, Installations and Logistics, initiated the first ever Marine Corps logistics innovation challenge targeting the entire Marine Corps in an effort to seek individual innovation ideas. Of the several selected innovation winners, two Marines went on to develop minimal viable prototypes which the Marine Corps has invested research and development funding and begun operationally testing within the Operational Forces.

One of the success stories belongs to Staff Sergeant Alexander V. Long, a 2016 innovation award winner, who introduced the idea and concept of a personal wearable logistics reporting device. The premise of the concept was to increase sustainment reporting timelines at the squad-level in order to lessen the physical logistics load on the individual Marine; in theory, if sustainment can be delivered when it is requested, the necessity to carry the typical three days of supply could be reduced down to two. Through the research and development process, Staff Sergeant Long developed a prototype called the Personal Combat Assistant and Reporting Device (PCARD), briefed senior leaders, and obtained funding to further develop his vision.[5] Over the past year, the PCARD has been showcased at multiple innovation demonstrations and has recently been selected to be operationally tested in 2018 by this year's experimental logistics unit, Combat Logistics Battalion 8, in 29 Palms, California and later at Exercise TRIDENT JUNCTURE 18 in the Kingdom of Norway. This example highlights the impact that individual Marines at any level can potentially make to the greater institution.

[5] Cathy Jett. *Caroline Marine's idea could lighten his peers' load.* The Free Lance-Star. Oct 8, 2017. http://www.fredericksburg.com/business

In 2017, the Lieutenant General Dana initiated a second innovation challenge to modernize logistics programs and mobile applications.[6] Of the 180+ submissions, ten ideas were selected.[7] The ten 'award winners' coordinate directly with Installations and Logistics Command (I&L), Next Generation Logistics (NEXLog) Cell and have begun rapid prototyping. The 2017 innovation award winners have been funded by I&L for all travel expenses and receive research and development funding from several Department of Defense incubators and research labs and over several months will develop a minimal viable prototype - culminating with a brief and demonstration to senior leaders. The outcome will determine if the innovation idea will proceed forward into development or implementation (or not).

These opportunities exist for all Marines – as the Commandant has initiated a series of quarterly innovation challenge throughout fiscal year 2018. In September, 2017, Lieutenant General Dana spoke to the students at the Marine Corps University, Command and Staff College and explained his vision behind standing up the Next Generation Logistics cell and urged all students to reflect on their experiences and offer assistance in helping the Marine Corps writ large with innovative solutions to contemporary problem sets.

Through the innovation life cycle, logistics innovation award winners will begin a 90-day sprint kickoff to introduce ideas to DoD funded incubators, accelerators, and research and development labs (to include Massachusetts Institute of Technology Lincoln Labs and Pennsylvania State University Applied Research Labs (PSU ARL)). Each Marine aims to receive a Department of Defense funded team. Once established with a team, Marines will have 90-days

[6] MARADMIN 459/17 - 2017 Logistics Innovation Challenge. www.marines.mil/News/Messages/MARADMINS/
[7] MARADMIN 546/17 - 2017 Logistics Innovation Challenge Results Announcement. http://www.marines.mil/News/Messages/MARADMINS/

to develop a minimal viable prototype or have the opportunity to assist, contribute, and advocate for current logistics application already under development. A select group of award winners were invited to PSU ARL in efforts to nest current innovation winning ideas into current logistics applications (APPs) already under development.

In 2014, the Office of Naval Research funded six logistics APPs developed by PSU ARL that never reached minimal viable prototype level and were shelved. The Tactical Service Oriented Architecture (TSOA) Project Office, under Marine Corps System Command (MCSC) has fully funded the continued development of the six logistics APPs and engaged I&L for advocates and subject matter experts to work with TSOA and PSU ARL.

Combat Development Directorate, Combat Development and Integration Command has prioritized Command and Control Information Systems to develop the mobile APPs. In efforts to modernize the force, LPV-2, I&L has advocated for nine logistics mobile APPs to be developed by the TSOA Project Office in accordance with the current Headquarter Marine Corps innovation vision. logistics APPs currently under development (programs of record):

- Global Combat Service Support Marine Corps (GCSS-MC)
- Transportation Capacity Planning Tool (TCPT)
- Common Logistics Command and Control Systems (CLC2S)

Some of the innovation award winners will continue forward and nest their ideas into further expansion and development of current funded logistics APPs by TSOA in partnership with PSU ARL. They will also be able to maintain a relationship will NexLOG for continued I&L advocacy, coordinate with PSU ARL for Log App development, work with TSOA/MCSC aboard Marine Corps Base Quantico to provide subject matter expert support and advise the Marine Corps Warfighting Laboratory (MCWL) on future experimentation options.

The endstate for the logistics innovation challenge is to provide a formal brief and demonstration to senior leaders in late 2018 or continue development of existing logistics applications. These opportunities exist for all Marines to make an impact within our ranks. As the Commandant has tasked in the MOC, individual initiative is required to enhance the Marine Corps warfighting capabilities with the changing of time and introduction of advanced web-based technologies. Do not miss these types of opportunities, stay informed and educated.

Chapter 2

Innovative Wargaming: *The Marine Corps Warfighting Lab Developing Lifelong Learners*

Marine Corps University, Command and Staff College offers the Gray Scholars Program which "*connects selected student volunteers seeking additional opportunities for research and engagement in order to examine contemporary operational problems in a manner that fosters increased creativity, innovation, and adaptation.*"[8]

- Professor Benjamin M. Jensen, PhD (1, August 2017 - Program Overview)

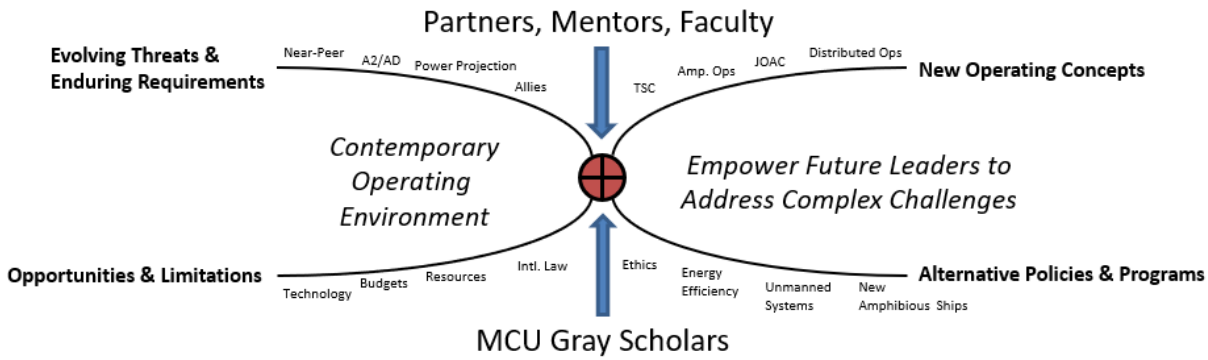

Figure 1: Gray Scholars Opportunity Diagram. [9]

Students selected to attend Command and Staff College at the Marine Corps University aboard Marine Corps Base Quantico are afforded the opportunity to participate in multiple Gray Scholar programs (formerly called Advanced Studies Programs). The *Fight Club* scholar program developed from a previous elective only course, but during academic year 2018, has elevated to a yearlong opportunity for Marines to form a core operational planning team (OPT) with oversight from Dr. Benjamin Jensen, Dr. Paul Gelpi, and Lieutenant Colonel Matthew Good. *Fight Club* provides a framework for resident Command and Staff College students to

[8] Advanced Studies Program AY17-18, Program Overview: Fight Club and The Mind at War. 1 Aug 2017, 1.
[9] Ibid, 1.

develop operational art and design skills through operational planning in conjunction with the Ellis Group, Marine Corps Warfighting Laboratory.

This article explains how the Gray Scholar program affords students the opportunity to make service-level impacts through innovative wargaming of current service and joint Operational Plans. It also acts a guide for future resident Command and Staff College students who may be interested in expanding their Marine Corps University experience. The Gray Scholars program affords students the opportunity to make service-level impacts through innovative wargaming, develop operational art and design, and achieve an additional Masters Certificate in Future Concept Development.

Gray Scholar selection process: In order to be considered for the Gray Scholars program, students must maintain an active secret, or above, security clearance and are required to submit a writing sample, biography, and survey identifying why they may be a viable candidate to participate in operational wargaming. A large population of students typically submit applications and approximately eighteen students are accepted each year - forming a core operational planning team. The planning team consists of multiple military operational specialties encompassing all warfighting functions and sister-service representation for the US Army, US Air Force, and US Navy. Coalition and foreign students are not eligible from participating due to the secret//no foreign classifications on multiple documents. Applicants selected for the program that are not selected receive first priority for the similar elective program offered in the second semester of the school year.

***Fight Club* Elective Only**: Students who register for the *Fight Club* elective must also maintain a secret clearance and conduct a condensed version of the Gray Scholar program. This past year, the Marine Corps University partnered with the Ellis Group which established a

wargame where students were required to develop a rough-cut scheme of maneuver utilizing fiscal year 2022 capability sets as a Combined Marine Corps Component Command conducting a Combined Joint Forcible Entry Operation (CJFEO) within a Geographic Combat Commands area of responsibility. The conduct of the wargame focused on Phase III Operations – Decisive Offensive Operations in which students were able to wargame defense planning scenario models with commercial off-the-shelf technologies. Each year, this elective is regarded as a rewarding experience for Marines who desire to stay connected with current operations while away from the operating forces during the academic year.

Assigned readings are distributed and students must conduct additional independent research in preparation for the wargames. Student participation accounts for 60% of your elective grade. The remaining 40% is evaluated by two 3-5-page analytical papers about either a warfighting function of choice or a capabilities and concept paper based of issues and/or observation during the game. Students written contributions are then consolidated by the professors into an X-File as cumulative contribution for the U.S. Marine Corps Lessons Learned community of interest.[10]

Student Requirements: Command and Staff College professors (civilian faculty advisors) and military faculty advisors develop a schedule throughout the year for students to participate weekly and operational wargaming at the Ellis group aboard Marine Corps Base Quantico. Typical planning sessions range from two-four hours depending on student driven requirements. Student learning outlines are clearly outlined and encompass three primary fundamentals: "1. Analyze the nature and character of war as interrelated military, political,

[10] Marine Corps University/Command and Staff College. *The Electives Program, Lesson Title: Fight Club 2.0: the Urban Littorals Dates:* (Secret) Authors: Dr. B.M. Jensen Maj. J.M. Geiger Revision Date: 15 Nov 17.

economic and social activities, 2. analyzing the relationship between the Range of Military Operations and the spectrum of conflict. And 3. comprehending the global security environment and U.S. strategy and policy within their historical context."[11] Throughout the year, student's time is used effectively and contributions are consistently captured by outside agencies (i.e. the Center for Naval Research, The Ellis Group, and the Office of Naval Research).

Expected material covered: During the wargaming progression, sample readings include (for example) the following: current case studies, RAND articles, major combat operations overviews, Marine Corps service-level wargaming scenarios, urban littoral operations, Marine Corps Concepts, future concepts, Combatant Command operational and contingency plans, and Future Operating environment briefs.

Expected premier briefs: Students are exposed to a vast array of premier briefs that have been or are heading to senior leaders for decisions. Some briefs are classified and given in secure space, and some are assigned readings and briefed by action officers and planners. Some of these briefs include *The Future Operating Environment* and *Key Drivers of Change* from the Marine Corps Intelligence Activity, Future *Low Cost off the Shelf (LOCUS)* experimentation briefs from the Marine Corps Warfighting Lab, *Defense Planning Scenarios* from the Ellis Group, and several concepts under development CD&I and Contingency Plans from MAGTF Planners across the tri-MEFs.

Networking Opportunities: During the academic year, *Fight Club* enhances the learning experience and keeps Marines informed of current operational force planning horizons, as they OPT becomes a secondary thinktank and wargame group for MCWL to utilize for service-level

[11] Marine Corps University/Command and Staff College. *Fight Club* (Secret) Authors: Dr. B.M. Jensen Maj. J.M. Geiger.

requirements. But it also provides students the opportunity to engage with senior leaders and action officers working on service-level initiatives. The networking opportunity expands students abilities to conduct independent research or gain access to interest items and plans not typically accessible to the average Marine. Forming a core OPT also allows students to interact with a second conference group of like minded individuals and share their experience with a close-nit group of comrades.

Achieving a Masters degree in Military Studies and a Masters certificate in Future Concept Development: Gray Research Scholars are provided different avenues to pursue their Masters in Military Studies. As a regular resident Command and Staff College student, all Marines are afforded the opportunity to write a master's thesis in addition to the standard course curriculum to achieve an accredited Masters degree in Military Studies (MMS) - the basic process is explained in the Masters of Military Studies guide[12]. However, Gray Scholars may receive the same degree, but are not confined to writing one singular thesis on one research topic. Instead they may choose three current innovative topics written in article form to submit for publication through multiple outlets. Gray Scholars will also receive a Masters certificate in Future Concept Development.

Conclusion: Command and Staff College is a great opportunity for any field grade Officer but becoming a Gray Scholar can enrich the learning environment, develop conceptual understandings, and hone pure operational art and design. Not all Marines can be accepted, but the opportunities exist for those seeking a challenge.

[12] United States Marine Corps, Command and Staff College, *Master of Military Studies Requirements for the Degree*. https://www.usmcu.edu/csc

Chapter 3

Command & Control of a Forcible Entry Operation in 2025

"It is essential that our philosophy of command support the way we fight. First and foremost, in order to generate the tempo of operations we desire and to best cope with the uncertainty, disorder, and fluidity of combat, command and control must be decentralized. That is, subordinate commanders must make decisions on their own initiative, based on their understanding of their senior's intent, rather than passing information up the chain of command and waiting for the decision to be passed down. Further, a competent subordinate commander who is at the point of decision will naturally better appreciate the true situation than a senior commander some distance removed. Individual initiative and responsibility are of paramount importance. The principal means by which we implement decentralized command and control is through the use of mission tactics, which we will discuss in detail later." [13]

- Marine Corps Doctrine Publication 1, Warfighting

Command and Staff College at the Marine Corps University has developed a classified Gray Scholars program and course elective called *Fight Club. Fight Club*, the elective focuses on wargaming Operational Plans utilizing the Marine Corps Planning Process and focuses on Marine Expeditionary Force level requirements in the future operating environment. *Fight Club* is hosted by the Ellis Group, Marine Corps Warfighting Lab which generates and facilitates wargaming of future concepts and future plans aligned toward operational force requirements. During the elective, students are screened and selected to participate in Defense Planning Scenarios and study correlating enemy threats within specific Geographic Combatant Command's areas of responsibility. For the purpose of this article, locations will remain generic to any littoral coastline across the globe, and enemy and friendly forces will be referred to as the RED Force and BLUE Force respectively. In 2018, the Fight Club elective focused on a Defense Planning Scenario to determine appropriate command relationships, command and control, and

[13] Headquarters, U.S. Marine Corps. Marine Corps Doctrine Publication 1 (MCDP 1), Warfighting. Pg 105. http://www.marines.mil/Portals/59/Publications/MCDP%201-0%20Marine%20Corps%20Operations.pdf

utilization of Marine and joint forces to conduct a Combined Joint Forcible Entry Operation (CJFEO).

First, it is imperative to understand the Marine Corps philosophy on command and control (C2). As referenced in Marine Corps Doctrine Publication 1 (MCDP 1), Warfighting, "in the context of command and control, also called Mission command and control. Mission tactics involve the use of mission type orders. Mission type orders are order to a unit to perform a mission without specifying how it is to be accomplished." [14] As the Marine Corps evolves during the twenty-first century, compositing forces to combat global threats remains a C2 challenge within the joint environment. As a warfighting function, command and control relies heavily on a Marine units' task organization and command relationships in order to accomplish assigned missions by compositing forward deployed forces, aggregating with the US Navy, and conducting reception, staging, onward movement, and integration (RSO&I). This article will establish a baseline of the DPS wargame and discuss the challenges of the three primary focus areas: compositing forward deployed forces, aggregating with the Navy, and conducting joint RSO&I.

Task Organization: During this war game, BLUE command and control relied heavily on the command relationship and task organization of forces available during each phase of the operation. At the conclusion of Phase II Operations (Shaping), A Marine Expeditionary Force (MEF) deployed to a permissive area of operations. Organic to this MEF is a Marine Division, two Marine Logistics Groups, a Marine Air Wing, and a task organized Marine Expeditionary

[14] Headquarters, U.S. Marine Corps. Marine Corps Doctrine Publication 1 (MCDP 1), Warfighting. Pg 105. http://www.marines.mil/Portals/59/Publications/MCDP%201-0%20Marine%20Corps%20Operations.pdf

Brigade (MEB) comprised of two organic Marine Expeditionary Unit (MEU) / Amphibious Ready Groups (ARG). In addition to joint enablers, the MEF received tactical control of coalition Division and received a US Army Infantry Brigade Combat Team. Additional baseline planning factors include the following: emerging equipment projected in 2025, the use of the F-35 Joint Strike Fighter, developing concepts to include Expeditionary Advanced Base Operations and Littoral Operations in a Contested Environment, and the addition of exploiting the information domain.

Compositing Forward Deployed Forces. There is an over reliance on assuming a MEF Command Element can conduct a combined joint forcible entry operation now or in 2025. Most recently, MEBs have developed techniques, tactics, and procedures to operate at sea utilizing the tri-MEF exercise life cycles commonly referred to as the Bold Alligator continuum, Dawn Blitz, and SsangYong exercises. These service-level exercises reinforce the Navy and Marine Corps team and highlight the importance of interoperability under the Department of the Navy. The Marine Corps has been deploying MEUs for decades, but not until recently has the service defined the requirements to composite forward deployed forces and aggregate at sea above the MEU MAGTF-level.

In 2014, Expeditionary Force 21 established the MEB's Concept of Operations as the capstone warfighting document that described the MEB as a medium weight singular MAGTF or a MEB of multiple MAGTFs.[15] As a wargaming result, it was determined that ship availability remained a limiting factor for projecting larger command elements afloat, and that rapid MEB

[15] Department of the Navy. Expeditionary Force 21. Headquarters, United States Marine Corps, Washington D.C. 4 MAR 2014. http://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/EF21/EF21_Marine_Corps_Capstone_Concept.pdf

deployments provide the most flexibility to the MEF Commander. During the defense planning scenario, the MEF span of control relied heavily on the MEB Command Element operating independently. Considering a CJFEO in the future operating environment should remain a MEB training mission essential task and be considered for Division-level staffs as the Marine Corps Exercise Force Synchronization allows.

During the wargame, the scenario required the rapid compositing of multiple MEU/ARGs under a MEB Command Element. This proved to be one of the most viable compositing models, yet a MEB may also act as a MEF Forward (FWD). As a MEF FWD, a MEB can rapidly composite additive Ground Combat Elements, Logistics Combat Elements, and Air Combat Elements. This concept is articulated in Expeditionary Force 21, yet the wargame revealed a historical shortfall with major planning scenarios writ large, which is the scaling of a MEU, to a MEB, to a MEF over time and escalation up the range of military operations. Too often, models jump directly to MEFs' commanding and controlling forward deployed forces sooner than they actually would. As concepts like Expeditionary Advanced Base Operations continue to evolve, it will be imperative for planners to realize the necessity to decentralize command and control to allow flexibility of independent units.

Naval Integration and Aggregation at Sea. As an amphibious force, the US Marine Corps habitually aggregates with the Navy aboard US Littoral Class Amphibious ships. At one end of the spectrum, MEUs consistently composite during pre-deployment workups and aggregate with their naval component over a three-month period prior to setting sail on a deployment cycle. This remains the primary foundation of amphibious roots for a majority of Marines. Unfortunately, future concepts call for MEBs compositing with Expeditionary Strike Groups (ESG). The command relationship between two General and Flag Officers is not overly complex, yet

planning for physical space aboard amphibious shipping can prove challenging. Furthermore, compositing a Marine Division afloat poses subsequent challenges when discussing the Commander Amphibious Task Force (CATF) and Command Landing Force (CLF): the question will arise, who is the Commander of the Amphibious Force (CAF)?

During the war game, BLUE decided to conduct a Division-level amphibious landing and recommended the CATF (in this case the Numbered Fleet) and CLF (the MEF) assign deputies. This allowed the CAF authority to be retained at the Combined Force Commander or Joint Task Force Commander level[16]. Additionally, in the future operating environment, the Navy will continue to purchase Amphibious ships and utilize Joint Force surface connectors. The introduction of the Joint High-Speed Vessel and utilization of Maritime Prepositioning Force shipping significantly increased the CLF's ability to call forward assault follow on echelons or follow on forces once a lodgment has been established.

Reception, Staging, Onward Movement, and Integration. Due to the force deployment model for BLUE, the deploying MEF required significant time to conduct a Maritime Prepositioned Squadron offload in order to conduct RSO&I. Additionally, to fully realizing the requirement and necessity to combat backload a preponderance of the equipment directly onto MPF ships in support of assault follow on echelon objectives.[17] The fundamental shortfall continues to be understanding the Arrival and Assembly Operations Group process. The Marine Logistics Groups and MEBs habitually train to these standards, yet the Marine Air Wing and Division typically only participate as required. This could cause significant delays when

[16] Joint Publication 3-32, Command and Control for Joint Maritime Operations. http://www.jag.navy.mil/distrib/instructions/JP3-32C2forJointMaritimeOps.pdf
[17] Headquarters, U.S. Marine Corps. Marine Corps Warfighting Publication (MCWP) 3-32/NTTP 3-02.3M, *Maritime Prepositioning Force Operations* http://www.marines.mil/Portals/59/Publications/MCWP3-32.pdf

conducting a full offload if there is a misunderstanding about what actually roles of an MPF offload, and in what priority order equipment is moved, assembled, or constituted with communications equipment or crew-served weapons systems.

Furthermore, considerations for establishing supporting and supported relationships with the Commander of the Maritime Preposition Squadron requires certain authorities and understanding of the higher headquarters intent for dissemination of Marine and Naval equipment sets and onward movement to Arrive and Assembly Operations Element marshalling areas. It is also important to realize the current prepositioned stocks only possess approximately 69% of a MEB [MEB of 18,000 Marines] worth of cargo with limited communications items. The additive requirement to ensure the command and control of tactical assets requires a significant fly in echelon of equipment which must be sourced from the tri-MEFs. To-date, these requirements have never been validated by any MEF and Blount Island Command, which is not responsible for sourcing the communications equipment for a majority of the rolling stock, nor do the MPF ships come equipped with CAPSETs. The major outputs of the scenario are to reevaluate MPF timelines including the fly in echelon, and most importantly, develop and understand the arrival and assembly operations group command relationship with a MAGTF-level headquarters.

The future operating environment remains uncertain; likewise, the Marine Corps Information Activity continues to project key drivers of change, as evident in the recent Marine Corps Operating Concept, which discusses the requirement to fully understand command relationships and their effects on compositing the future force[18]. Specifically considering a

[18] Headquarters US Marine Corps, *Marine Corps Operating Concept. How an Expeditionary Force Operates in the 21st Century*, (Washington, DC: Headquarters US Marine Corps, September, 2016), 8.

CJFEO, command and control and command relationships will remain a necessity to evolve to deter or defeat future threats. Compositing forward deployed forces, aggregating with the Navy, and conducting RSO&I remain at the top of the list when refining an operational plan.

CONCLUSION

"As steel sharpens steel, your review and professional recommendations will sharpen our concept of how we will fight in the future. Your proactive involvement in validating our operating concept is critical to ensuring we can Innovate, Adapt, and Win!"[19]

- General Robert B. Neller, Commandant of the Marine Corps

As the Marine Corps continues to develop concepts like Expeditionary Force 21, Expeditionary Advanced Base Operations, Littoral Operations in a Contested Environment, and the Marine Corps Operating Concept, Marines at all levels must remain vigilant and aware of the changing future operating environment. As outlines in the Marine Corps Operating Concept and reinforced by multiple service-level innovation initiatives, General Neller has made it abundantly clear to the force; Marines must contribute to the development of the future force.

As evident in the monolog above, there are several ways that Marines can influence change and innovation within the Marine Corps. The necessity for change enhances the Marine Corps ability to innovate and adapt as evident in recent Marine Corps wide innovation challenges, the Gray Scholars Program at the Marine Corps Command and Staff College, and through service-level wargaming of future concepts and capabilities.

Enriching the learning experience is echoed by many senior leaders through the Marin Corps. Professional military education must become a mainstay in every Marines arsenal, if it is not already. Developing future leaders will keep the Marine Corps adequately trained to face any future conflict.

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[19] Headquarters US Marine Corps, *Marine Corps Operating Concept. How an Expeditionary Force Operates in the 21st Century*, (Washington, DC: Headquarters US Marine Corps, September, 2016), i. http://www.mcwl.marines.mil/Portals/34/Images/MarineCorpsOperatingConceptSept2016.pdf?ver=2016-12-02-073359-207

Acronym Page

AAOE - Arrival Assembly Operation Element
ACE - Air Combat Element
AFOE - Assault Follow on Echelon
AOR - Areas of Responsibility
App - Applications
ARG - Amphibious Ready Groups
ARL - Applied Research Labs
ASP - Advanced Studies Programs
C2IS - Command and Control Information Systems
CAF - Commander Amphibious Force
CATF - Commander Amphibious Task Force
CD&I - Combat Development Command
CDD - Combat Development Directorate
CJFEO - Combined Joint Forcible Entry Operation
CLC2S - Common Logistics Command and Control Systems
CLB - Combat Logistics Battalion
CLF - Command Landing Force
CMC - Commandant of the Marine Corps
CMPF - Commander of the Maritime Preposition Squadron
CONOPS - Concept of Operations
CSC - Command and Staff College
DIME - Diplomacy, Information, Military, and Economics
DoD - Department of Defense
DOS - Days of Supply
DPS - Defense Planning Scenarios
EABO - Expeditionary Advanced Base Operations
ESG - Expeditionary Strike Groups
FoF - Follow on Forces
FOE - Future Operating Environment
FWD - Forward
GCC - Geographic Combatant Commands
GCE - Ground Combat Elements
GCSS-MC - Global Combat Service Support Marine Corps
HQMC - Headquarter Marine Corps
JHSV - Joint High-Speed Vessel
JSF - Joint Strike Fighter
LCE - Logistics Combat Elements
LOCE - Littoral Operations in a Contested Environment
MARDIV - Marine Division
MAW - Marine Air Wing
MCB - Marine Corps Base
MCDP - Marine Corps Doctrine Publication
MCU - Marine Corps University
MCSC - Marine Corps System Command
MCWL - Marine Corps Warfighting Lab
MEB - Marine Expeditionary Brigade
MEF - Marine Expeditionary Force
MEU - Marine Expeditionary Unit
MIT - Massachusetts Institute of Technology
MLG- Marine Logistics Groups
MOC - Marine Corps Operating Concept
MVP - Minimum Viable Prototype
PCARD - Personal Combat Assistant and Reporting PO - Project Office
PSU - Pennsylvania State University
R&D - Research and Development
ROMO - Range of military operations
RSO&I - Reception, Staging, Onward Movement, and Integration
TCPT - Transportation Capacity Planning Tool
TSOA - Tactical Service Oriented Architecture
TTP - Techniques, Tactics, and Procedures