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Mission Command Will Not Save the Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Joint Maritime Operations Department.

The contents of this paper reflect my own personal views and are not endorsed by the Naval War College or the Department of the Navy.

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14. ABSTRACT

As the Navy returns to near-peer competition and the potential for operations in a communication-denied environment, mission command has been proposed as a mitigator to the loss of traditional command and control (C2) procedures. Unfortunately, mission command is not a stand-alone administrative or planning function, but a philosophy of fighting that requires a pre-existing ecosystem to function properly. Mission command is poorly suited to the modern Navy both in general and under communications-denied environments specifically, due to its command structure, exquisite platforms, and dependence on information warfare. This paper will address how the unique nature of the Navy undermines many benefits of mission command due to the Navy's centralized nature, shared informational picture, and composite warfare doctrine (CWD). It will also look at how the exquisite platforms that the Navy employs are poorly suited to utilize mission command due to the increased risk to capital assets, lack of a reserve force, and the high-level approval required for many actions. Finally, this paper will demonstrate that no C2 system (mission command or otherwise) will solve the problems arising from communications-degraded environments due to the decrease in situational awareness, loss of over the horizon (OTH) targeting, and the limits of line of sight (LOS) communication.

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Abstract

As the Navy returns to near-peer competition with the potential for operations in a communication-denied environment, the Navy has increasingly turned to mission command as a potential mitigator to the loss of traditional command and control (C2) procedures. Unfortunately, mission command is not a stand-alone administrative or planning function, but a philosophy of fighting that requires a pre-existing ecosystem to function properly. Mission command is poorly suited to the modern Navy both in general and under communications-denied environments specifically, due to its command structure, exquisite platforms, and dependence on information warfare. This paper will address how the unique nature of the Navy undermines many benefits of mission command due to the Navy's centralized nature, shared informational picture, and composite warfare doctrine (CWD). It will also look at how the exquisite platforms that the Navy employs are poorly suited to utilize mission command due to the increased risk to capital assets, lack of a reserve force, and the high-level approval required for many actions. Finally, this paper will demonstrate that no C2 system (mission command or otherwise) will solve the problems arising from communications-degraded environments due to the decrease in situational awareness, loss of over the horizon (OTH) targeting, and the limits of line of sight (LOS) communication.

Introduction

Mission command, according to the US Army, is a command and control (C2) strategy "that empowers subordinate decision making and decentralized execution appropriate to the situation."[1] This C2 approach has a long military history: the US military modeled this term after the German Army's *Auftragstaktik* approach in WWII, which was an adaptation of Prussian

[1] Headquarters Department of the Army, *Introduction to Mission Command,* Army Doctrine Publication (ADP) 6-0, (Washington D.C., Department of the Army, 2019), 1-3.

army strategy in the late 1800s.[2] Mission command aims to increase the decision-making tempo of friendly forces by setting high level objectives (mission-type orders) and the commander's intent, and then allowing subordinates to figure out the best means to accomplish them. The guiding principles of mission control are competence, mutual trust, shared understanding, commander's intent, mission orders, disciplined initiative, and risk acceptance.[3] The term is widely accepted in the Army, but has only recently become prevalent in Joint Publications after Chairman of the Joint Chiefs of Staff GEN Dempsey's 2012 *Mission Command* White Paper. There are many who champion its use as a mitigating factor in communications-denied environments. Even *Joint Publication 3-0*, *Joint Operations*, states: "If a commander loses reliable communications, mission command enables military operations through decentralized execution based on mission-type orders."[4] While the US Navy has resisted formal adoption of mission command, the term has crept into many Navy publications.

As the Navy returns to near-peer competition with the potential for operations in a communication-denied environment, the Navy has increasingly turned to mission command as a potential mitigator to the loss of traditional command and control (C2) procedures. Unfortunately, mission command is not a stand-alone administrative or planning function, but a philosophy of fighting that requires a pre-existing ecosystem to function properly. Mission command is poorly suited to the modern Navy both in general and under communications-denied environments specifically, due to its command structure, exquisite platforms, and dependence on information warfare.

[2] John T Nelson II, "Auftragstaktik: A Case for Decentralized Battle" (research paper, US Army War College, Carlisle, PA, Sep 1987) 22.
[3] Army, ADP 6-0, 1-7.
[4] Joint Chiefs of Staff, *Joint Operations,* Joint Publications (JP) 3-0, (Washington, D.C., Joint Staff, 2018), II-1-II-2.

First, the unique nature of the Navy undermines many benefits of mission command due to the Navy's centralized nature, shared informational picture, and composite warfare doctrine (CWD). Secondly, the exquisite platforms that the Navy employs are poorly suited to utilize mission command due to the increased risk to capital assets, lack of a reserve force, and the high-level approval required for many actions. Finally, no C2 system (mission command or otherwise) will solve the problems arising from communications-degraded environments due to the decrease in situational awareness, loss of over the horizon (OTH) targeting, and the limits of line of sight (LOS) communication.

Nautical Nuances

Decision making in the Navy cannot be delegated below the ship captain level, which minimizes the applicability of mission command. A major benefit of mission command is the increase in speed due to decentralized command and the removal of redundant approval processes.[5] However, with the platform-centric nature of the Navy, there are relatively few links in the chain of command between the decision makers and the combatant commander. Mission command makes sense in the Army where every private with a rifle is a decision maker capable of conducting fires, and the commander must organize thousands of these units into a cohesive force. However, mission command does not make sense in the Navy where a typical carrier strike group consists of a maximum of eight ships, and the decision to utilize fires is held at the ship's captain level. With these small numbers and high-ranking decision makers, the Navy can afford to centralize and ensure maximum unity of effort and effect through a more centralized form of command. Since the commanders and captains which command the Navy's ships today

[5] GEN Martin E Dempsey, *Mission Command,* U.S. Government White Paper (Washington, DC: Joint Chiefs of Staff, April 2012), 4.

would be the main drivers of mission command, they would have to fully embrace the independent nature that it requires. However, these senior officers have a career's worth of exposure to the deeply embedded zero-defect mentality of the current Navy, and would be unlikely to quickly embrace the risks that mission command imposes.[6] No matter how clear the commander's intent, ships must operate as a single unit and that unit is controlled by the captain, a senior officer. Mission command is poorly suited for the Navy because its structure prevents delegation to the lowest levels, diminishing the risk-taking spirit that mission command requires and the speed advantage that its adoption would bring.

Along with a tighter command structures, the Navy has a unified distribution of information and situational awareness, which degrades the benefits of mission command's decentralization. A presupposition of mission command is that situational awareness erodes rapidly from the tactical level to the operational.[7] However, with modern communications systems and tactical data links, information is being shared between ships, aircraft, and headquarters at near real-time speeds. The Advanced Extremely High Frequency (AEFH) satellite network has a stated speed of 2.1 Gbps capacity, and the latest satellite (AEFH-6 which launched in March 2020) is touted as having ten times the previous capacity.[8][9] The age when captains fought from the bridge with their eyes processing all the data they needed ended in World War II. Admiral Nimitz recognized that and formalized the precursor to Combat

[6] Milan Vego, "Mission Command and Zero Error Tolerance Cannot Coexist," *USNI Proceedings* 144/7/1,385,(July 2018). https://www.usni.org/magazines/proceedings/2018/july/mission-command-and-zero-error-tolerance-cannot-coexist.
[7] Andrew Hill and Heath Niemi, "The Trouble with Mission Command: Flexive Command and the Future of Command and Control," *Joint Forces Quarterly* 86 (3rd Quarter 2017), 96.
[8] Lockheed Martin, "Advanced Extremely High Frequency – 06." Accessed 02 May 2020. https://www.lockheedmartin.com/en-us/products/aehf.html
[9] US Air Force, "Wideband Global SATCOM Satellite" Accessed 02 May 2020. https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104512/wideband-global-satcom-satellite/

Information Center (CIC)—the windowless compartment where the ship processes electronic information needed for combat—to focus on the new radar systems that ships increasingly relied on for targeting.[10] Today, every Navy ship has as common operating picture that synchronizes friendly and enemy locations from every sensor, and synchronizes it into a graphical overlay that is shared between ships and shore commands. While Navy ships can and do use their own radars, increasingly the Navy prefers to attack over the horizon (OTH), and ships may be fighting against a unit they have no organic information on. In these cases, the ships are receiving the exact same information as the headquarters about their targets. The advanced communications arrays at naval headquarters may even allow the component commander more situational awareness than the unit, since they have access to live feeds from other units, satellite imagery, and other high-bandwidth tools that ships at sea cannot access. The Navy's transition to automated sensors for its situational awareness has increased the operational headquarters' access to data. This inversion of the Army's informational paradigm erodes the major benefits of mission command, making it a poor choice for the Navy.

To overcome the information and command problems, the Navy developed the CWD, which already incorporates the major benefits of mission command. The CWD gets around the Navy-specific difficulty of delegation to levels lower than the ship's captain by sub-dividing a ship group into functional warfare areas such anti-submarine warfare or anti-surface warfare. The functional areas are then assigned to one composite warfare commander (CWC) for each warfare function. These CWCs coordinate the weapons systems on their assigned ships collectively in their assigned warfare area, allowing for unity of effort and for each ship to handle multiple functions simultaneously without overloading the individual ships' captains. The

[10] Craig L. Symonds, *World War II at Sea: A Global History* (New York: Oxford University Press, 2018), 478.

result is the type of dispersed execution that mission control attempts to create. Joint Publication 3-23, Command and Control of Joint Maritime Operations, explicitly states that "USN tactical commanders typically exercise decentralized control over assigned forces through use of composite warfare doctrine."[11] By doctrine, the CWC is the commander of the asset that has the best capability and training in the assigned warfare area. This mirrors the mission command tenet of putting the decision where there is the most situational awareness. The Navy does not need mission command because the CWD already allows for flexibility, decentralized control, and quick response times.

Exquisite Platforms

The increased risks that mission command involves are not compatible with the Navy's current assets, which require intensive capital to build. An integral part of mission command is accepting risk at lower levels. For the Navy, its platforms are so expensive and difficult to replace that any additional risk must be approached with extreme caution. According to the Congressional Budget Office, each of the *Ford* class aircraft carriers will cost 16.2 billion dollars, the *Arleigh Burke* class destroy flight III will cost 1.8 billion dollars, and even the newly proposed small combat ship will cost 1.3 billion dollars per ship.[12] For the Army, purchasing an updated Bradley infantry fighting vehicle would cost an estimated 9.6 million dollars.[13] The difference in these numbers demonstrates how much of the Navy's budget it tied up into each of its assets. The Army may be able to take a few losses with minimal operational impact, but the

[11] Joint Chiefs of Staff, *Joint Maritime Operations,* Joint Publications (JP) 3-32, (Washington, D.C., Joint Staff, 2018), II-14.
[12] U.S. Congressional Budget Office, *Report to the Congress: An Analysis of the Navy's Fiscal Year 2020 Shipbuilding Plan*,(Washington, DC: Congressional Budget Office, 2019), 18,24,26.
[13] U.S. Congressional Budget Office, *Report to the Congress: The Army's Ground Combat Vehciles Program and Alternatives*, (Washington, DC: Congressional Budget Office, April 2013), 35.

Navy needs to get the most out of the ships it has and cannot afford to endanger them. The additional risk that mission command brings is not compatible with the Navy's limited capital assets.

Beyond the cost in money, the Navy cannot accept the opportunity cost of losing a warship due to the increased risk to forces that mission command requires. Unlike the Army, the Navy does not use an operational reserve that can be quickly brought up to reinforce the battle; instead, it puts every asset into the fight.[14] If a ship is lost, the Navy would have to fight without it until it was replaced. The Navy's current building plans allow for two to three submarines and large-scale combatants per year, a max of four small-scale combatants per year, and one aircraft carrier every four years.[15] A lost ship or fleet would not be replaced for years under this plan. Even if the US authorized increased spending and ship building activity, the US cannot compete with China (the US's most likely near-peer competitor) in production. The US Navy currently has four naval shipyards, seven private construction shipyards that are its primary construction vehicles, and three US commercial shipyards that the Navy does not currently partner with that could possibly be used in the future.[16] As of 2007, China had ninety-two state-run shipyards with military production occurring at fifteen domestic shipyards.[17] In a near-peer struggle with China, the Navy cannot afford in cost or numbers to accept a one-for-one or even one-for-many kill ration. With this deficit, the additional risks mission command brings with it are unacceptable for the Navy, which should use a more centralized C2 to maximize efficiency.

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[14] Milan Vego, *Operational Warfare at Sea: Theory and Practices,* (Abingdon, Routledge, 2017), 79.
[15] Budget Office, *Navy's Fiscal Year 2020 Shipbuilding*, 12.
[16] Office of the CNO, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*, (Washington Dc: Department of the Navy, March 2019), 15-16.
[17] Collins, Gabriel and Grubb, Michael C., "A Comprehensive Survey of China's Dynamic Shipbuilding Industry" *CMSI Red Books*, Study No. 1, 2008, 9.

As expensive capital assets, Navy platforms have destructive potential in so many domains that they need strategic and operational guidance to focus their effort, straining the shared understating required for mission command. The ship's captain of a modern US warship commands more firepower, in that one ship, than most countries' entire navies. This firepower can be directed against targets that are sub-surface, surface, air, ground, and even space-based. In the international commons with poorly marked boundaries, this is a dizzying array of potential targets. Approval for many of the targets a Navy vessel can attack are held at the Presidential, Secretary of Defense, or Combatant Commander level. The CJCS Standing Rules of Engagement contains guidance to forces, but there are 699 mission specific supplemental measures.[18] This number shows the complexity and coordination required when moving from the tactical to the strategic in military operations. The Navy's far reaching destructive potential and the political ramification of many of their actions require continued centralized guidance. A decentralized approach would require the ships' captains to have a shared understanding of not just the component commander's intent, but also of strategic level intent and shared understanding with the highest levels of government. That is a difficult task for any admiral, much less the commanders and captains commanding ships. Mission command could easily cause political disaster or wasted effort due to the wide-ranging options available to Navy ships, making it a poor choice of C2.

Information Warfare Centric

During communications-denied environments tactical commanders would be left without the situational awareness to which they are accustomed, removing many benefits of mission

[18] Chairman of the Joint Chiefs of Staff (CJCS), CJCS *Standing Rules of Engagement/Standing Rules for the use of Force for US* Forces. CJCS Instruction 3121.01B13, (Washington DC: CJCS, June 2005), I-1.

command. Both commander's intent and situational awareness are perishable, using mission command will not extend the timeliness of either. Without the intelligence reports from headquarters, ships operating in SAGs or independently will be left with only their organic sensors and aircraft for situational awareness. The MH-60, the most commonly embarked aircraft, has a range of 380NM and could potentially scout out to 100NM from the ship.[19] However, the MH-60 is limited to a 4 hour on station time, a poor substitute for the constant updates from the common operating picture. Radar could also be used to increase situational awareness but would bring with it additional risk of counter detection. This limited situational awareness may be acceptable for short period, or when the objective is clearly defined, and the target's position known. However, for the multi-day time periods for which mission command is being proposed, the timeliness of the last intelligence update will begin to lag, leaving ship commanders increasingly uniformed and vulnerable.[20] Without networking capability in a high-threat environment, the situational awareness of isolated US naval forces could shrink to only what they can see. Under these conditions, the only part of mission command that would be useful to the commander is the mission-style orders. However, the core of mission style orders is the commander's intent, which is already mandated for any naval orders by *NWP-5, Naval Planning*. Because commander's intent is already being issued under current naval doctrine, and mission command does not provide any additional situational awareness to isolated units there are few benefits to adopting it during communications-denied environments. The Navy should focus on developing non-radio frequency communications, such as lasers, which are impervious to jamming. Satellites or aircraft equipped with these types of transmitters would allow

[19] U.S. Navy Fact File. "MH-60 Sea Hawk Helicopter" accessed 30 April 2020. https://www.navy.mil/navydata/fact_display.asp?cid=1200&tid=500&ct=1

[20] ADM Scott Swift, "Master the Art of Command and Control," *Proceedings Magazine*, Feb 2018, vol 144/2/2,380. https://www.usni.org/magazines/proceedings/2018/february/master-art-command-and-control.

information flow, even if intermittent. The Navy should also conduct more training in isolated communication-denied environments so that commanders are competent at interpreting the commander's intent.

Like situational awareness, the loss of OTH targeting information during a communications-denied environment would strip commanders of the ability to attack from a distance, a requirement for nearly any mission or C2 structure. Network centric warfare and communications allow the Navy to conduct precision long-range attacks that form that backbone of fleet engagements. The Navy's Tomahawk Land Attack Missile (TLAM) can effectively attack a surface ship at 900NM if properly guided, yet in a communications-denied environment it would be nearly useless.[21] The law of armed conflict would still require Navy vessels to positively identify targets before shooting, meaning ships must expose themselves or send an aircraft to identify any target, potentially giving away its own position.[22] Being forced to wait for identification and lacking OTH targeting information would inhibit the commander's ability to abide by the Navy's highest tactical maxim: "attack effectively first."[23] Without proper communications, the Navy is incapable of engaging in a long-range, coordinated battle. Any major conflict would soon devolve into a melee with each ship using its weapons as it saw best.[24] Under these conditions, the type of C2 (be it mission commander or otherwise) will become largely irrelevant. Mission command will not overcome the vastly reduced weapon's ranges that

[21] U.S. Navy Fact File. "Tomahawk Cruise Missile" accessed 30 April 2020. https://www.navy.mil/navydata/fact_display.asp?cid=2200&tid=1300&ct=2.
[22] U.S. Department of the Navy. *The Commanders Handbook on the Law of Naval Operati*ons. Naval Warfare Publication 1-14M (Washington DC: Chief of Naval Operations, Aug 2017), 8-7.
[23] Wayne P. Hughes Jr and Robert P. Girrier, *Fleet Tactics and Naval Operations*, (Annapolis, Naval Institute Press, 2018),29.
[24] Robert C. Rubel, "Mission Command in a Future Naval Combat Environment," *Naval War College Review*, Vol 71 No2 Springs 2018, 114.

need to be addressed in a communications-denied environment. The Navy's vital information warfare function must be made less dependent on satellite communications and carrier-launched aircraft so that isolated on-scene commanders can take advantage of local networks. The Navy should focus on equipping SAGs with organic, long-range unmanned aerial vehicles (UAVs) that can be used to provide OTH targeting.

The restricted distances over which cooperative tactics can be employed during communications-denied environments may force the Navy to use strict adherence to a plan to achieve its goals, contrary to the principles of mission command. The Navy currently uses distributed lethality to deploy spread out independent surface action groups (SAGs). The separation increases survivability, while networked connections between the ships maintain mutual support and concentrated firepower (missiles from different ships striking the same target or targets).[25] However, without networked communications the SAGs would be limited to line of sight (LOS) communications. LOS communications using microwave or millimeter wave systems would have a maximum range of 28 NM, given a 128ft antenna (105-110 is US surface ship average) and fair conditions, but rain or other weather would rapidly attenuate the signal and decrease its range.[26] With these limits, surface ships would have to operate near each other and accept an increased risk of counter-detection to gain any level of mutual support. While the ships could continue to operation dispersed, they would likely lack the coordinated firepower needed to destroy an enemy force, making them vulnerable to defeat. The only other options to achieve coordinated effects would be strict adherence to doctrine or a pre-ordained plan. Using these

[25] Vice Admiral Thomas Rowden, Rear Admiral Peter Gumataotao, and Rear Admiral Peter Fanta, "Distributed Lethality," *Proceedings*, January 2015, Vol. 141/1/1,343.
[26] Tom Schlosser, *Potentials for Navy use of Microwave and Millimeter Line-of-Sight Communications*, (Technical Report 1719, Naval Command, Control and Ocean surveillance Center, September 1996), 3.

techniques, ships could still engage in cooperative tactics, but would lose the ability to modify their plan after the ships lost sight of each other.[27] These options would be directly contrary mission command but have been used successfully many times in naval history. Instead of mission command, the Navy should focus on satellite hardening and redundancy in order to raise the cost and political ramifications of attacking the US network, and to ensure the Navy's continued ability to coordinate over long distances.

Counter Argument

Some argue the Navy needs to embrace mission command as its primary C2 principle in order to balance the increasingly technical aspects of C2. Things will not always go according to plan or work as expected. The human commander on scene must compensate and figure out a way to fight through the complications.[28] If the Navy's C2 system does not allow for and nurture independent thought and actions, the Navy will only be able to fight in the uncontested areas where it is least needed. Mission command should be a Navy tenet in order to put the human element, that has been pushed aside for network centric warfare, back into the forefront of Navy thinking.[29] Proponents of using mission command would also say that the Navy will lose many aspects of the CWD in a communications-denied environment and will need a way to continue to function. If mission command is not utilized the Navy's only other option is retreat. Mission command principles, especially mission type orders, are a great counterbalance to the micromanaging tendencies of today's instantly connected command structures.

[27] Rubel, Mission Command, 113.
[28] Swift, Master the Art. https://www.usni.org/magazines/proceedings/2018/february/master-art-command-and-control.
[29] Milan N. Vego, *Joint Operational Warfare: Theory and Practice*. (Newport, U.S. Naval War College, 2007), XIII-3.

Conclusion

From its inception the Navy has always valued the independence and initiative of its subordinate commanders. The ship's captains of the Navy's earliest frigates were given mission orders long before the Army came up with the term. While the Army's discovery and application of mission command has brought the subject to the forefront of the military communities' discussion, the Navy-applicable parts of mission command are already captured in Navy doctrine. The CWD acknowledges that "flexibility of implementation, reinforced by clear guidance to subordinates, and use of command by negation" are essential to its employment.[30] NWP 5-01, *Navy Planning*, stresses the commander's intent and assigning a mission statement to each assigned unit in a similar fashion as mission command would require.[31] If the Navy is not satisfied with the current level of initiative in its commanders, the problem is cultural not doctrinal. Formal adoption of mission command by the Navy would add nothing to the Navy planning process and could cause great harm.

The harm would stem from overly decentralizing Navy operations. The Navy uses mutual support, distributed lethality, and network centric warfare as force multipliers in the maritime domain. These tactics all require close synchronization and cooperation to achieve, which a more centralized execution accomplishes better than mission command. The Navy also assumes additional risk, as compared to the Army, during its operations due to both the increased cost of Navy assets and the increased potential for negative political ramifications due to the destructive power of the Navy. Increased involvement of higher commanders, especially through

[30] Joint Chiefs, JP 3-32, *Joint Maritime Operations*, II-14.
[31] US Department of the Navy, *Navy Planning*, Naval warfare publications (NWP) 5-01, (Washington DC: Department of the Navy, 2013), 2-11,2-12.

command by negations, is a necessary check to those higher risks. The Navy should continue to develop a service-appropriate level of decentralization and not formally adopt mission command.

Instead of focusing on what C2 method should be employed during communications-denied environments, the Navy needs to focus on what tools their commanders need. Mission Command offers a chimaera that increased fighting spirit will solve the Navy's problem with fighting an enemy that attacks its networks. However, fighting spirit must be coupled with solid tactics, training, and the tools required for mission accomplishment. Commanders at all levels need to be honest with themselves and their superiors when assessing their forces, their environment, and their adversary. Relying heavily on fighting spirit to overcome force mismatches is not motivational, it is delusional. Near-peer competition will require the Navy to strive for excellence in both the technical and human elements of war; no C2 process, including mission command, will be enough on its own.

Bibliography

Collins, Gabriel and Grubb, Michael C. "A Comprehensive Survey of China's Dynamic Shipbuilding Industry" *CMSI Red Books*, Study No. 1, 2008.

GEN Dempsey, Martin E. *Mission Command,* U.S. Government White Paper. Washington, DC: Joint Chiefs of Staff, April 2012.

Hill, Andrew and Heath Niemi. "The Trouble with Mission Command: Flexive Command and the Future of Command and Control," Joint Forces Quarterly 86. 3rd Quarter 2017.

Hughes Jr, Wayne P. and Robert P. Girrier, *Fleet Tactics and Naval Operations*, Annapolis, Naval Institute Press, 2018.

Lockheed Martin, "Advanced Extremely High Frequency – 06." Accessed 02 May 2020. https://www.lockheedmartin.com/en-us/products/aehf.html

Nelson II, John T. "Auftragstaktik: A Case for Decentralized Battle." Research paper, US Army War College, Carlisle, PA, Sep 1987.

Vice Admiral Rowden, Thomas, Rear Admiral Peter Gumataotao, and Rear Admiral Peter Fanta. "Distributed Lethality," *Proceedings*, January 2015, Vol. 141/1/1,343.

Rubel, Robert C. "Mission Command in a Future Naval Combat Environment," Naval War College Review, Vol 71 No2 Springs 2018.

Schlosser, Tom. *Potentials for Navy use of Microwave and Millimeter Line-of-Sight Communications*. Technical Report 1719, Naval Command, Control and Ocean surveillance Center, September 1996.

ADM Swift, Scott. "Master the Art of Command and Control," *Proceedings Magazine*, Feb 2018, vol 144/2/2.

Symonds, Craig L. *World War II at Sea: A Global History.* New York: Oxford University Press, 2018.

U.S. Air Force, “Wideband Global SATCOM Satellite” Accessed 02 May 2020. https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104512/wideband-global-satcom-satellite/

U.S. Army. Headquarters Department of the Army. *Introduction to Mission Command,* Army Doctrine Publication (ADP) 6-0. Washington DC: Department of the Army, 2019.

U.S. Chairman of the Joint Chiefs of Staff (CJCS), *CJCS Standing Rules of Engagement/Standing Rules for the use of Force for US Forces*. CJCS Instruction 3121.01B13, Washington DC: CJCS, June 2005.

U.S. Congressional Budget Office. *An Analysis of the Navy’s Fiscal Year 2020 Shipbuilding Plan*. Report to Congress. Washington, DC: Congressional Budget Office, 2019

U.S. Congressional Budget Office, *The Army’s Ground Combat Vehicles Program and Alternatives*. Report to Congress. Washington, DC: Congressional Budget Office, April 2013.

U.S. Department of the Navy, *Navy Planning.* Naval warfare publications (NWP) 5-01, Washington DC: Department of the Navy, 2013.

U.S. Department of the Navy. *The Commanders Handbook on the Law of Naval Operations*. Naval Warfare Publication 1-14M. Washington DC: Chief of Naval Operations, Aug 2017.

U.S. Joint Chiefs of Staff, Joint Chiefs of Statt. *Joint Operations,* Joint Publications (JP) 3-0. Washington, DC: Joint Staff, 2018.

U.S. Joint Chiefs of Staff, *Joint Maritime Operations,* Joint Publications (JP) 3-32, Washington, D.C., Joint Staff, 2018.

U.S. Navy Fact File. "Tomahawk Cruise Missile" accessed 30 April 2020. https://www.navy.mil/navydata/fact_display.asp?cid=2200&tid=1300&ct=2.

U.S. Navy Fact File. "MH-60 Sea Hawk Helicopter." accessed 30 April 2020. https://www.navy.mil/navydata/fact_display.asp?cid=1200&tid=500&ct=1

U.S. Office of the CNO, *Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*, Report to Congress. Washington DC: Department of the Navy, March 2019.

Vego, Milan. *Operational Warfare at Sea: Theory and Practices*, Abingdon, Routledge, 2017.

Vego, Milan. "Mission Command and Zero Error Tolerance Cannot Coexist," *USNI Proceedings* 144/7/1,385, July 2018. https://www.usni.org/magazines/proceedings/2018/july/mission-command-and-zero-error-tolerance-cannot-coexist.

Vego, Milan N. *Joint Operational Warfare: Theory and Practice*. Newport, U.S. Naval War College, 2007.