"Hey Siri, Who's in Charge?"

Preparing for leadership in the Age of AI

by Capt W. Stone Holden & Mr. Tramario Adams

What does it mean to be a leader when machines gain greater and greater autonomy? Artificial intelligence (AI) is challenging what it means for humans to be *in control*. Whether finding your way around town, driving cars, or even putting fires on target, AI-enabled tools create choices previously reserved for humans. The Marine Corps will need to grapple with the impacts of this technological shift, particularly as AI advances toward genuinely autonomous systems that may create leadership challenges.

Faced with technology developing even as it proliferates across civilian and military domains, the Marines Corps must now wrestle with the implications now or risk getting caught flat-footed. The Corps is a leadership-centric organization, priding itself on developing leaders at a more junior level than other Services while emphasizing strategic impacts that even the most junior leader can have on the modern battlefield.[1] As AI improves and emerges on battlefield platforms, it begs the question of how leaders will need to adapt to maximize the capabilities of this technology while mitigating its potential disruptive influence. As machines gain abilities that will one day approach that of a human in some respects, how does that change leadership dynamics? A great place to start is with the Marine Corps leadership traits, focusing on those likely to see the most impact from AI.

>*Capt Holden is a Marine Officer currently assigned to United States Southern Command, where he has held billets in security cooperation and collections management, as well as managing a variety of projects that implemented cutting-edge technological solutions to address a range of threats in the AOR. He previously served in the INDOPACOM AOR with 3rd Mar and Combat Logistics Battalion 3, where he deployed in support of the PACOM Augmentation Team Philippines (PAT-PHL) and aboard the USNS SACAGAWEA in support of Task Force KOA MOANA 17 executing a range of partner nation engagements across the Pacific.*

>> *Mr. Adams is a Management and Program Analyst for United States Southern Command, where he serves as a Program Manager for the Innovation Office, Science and Technology Branch. He spearheads technology and capability assessments for next-generation Intelligence, Surveillance, and Reconnaissance assets. He previously served in the Army and deployed to Iraq, Afghanistan, Honduras, and Colombia in support of various operational deployments.*

AI: Impacts Begin Now

Organizations are already developing and applying AI-enabled technologies to military systems.[2] In 2021, the former chair of the U.S. AI Council stated that AI is the most crucial part of the coming competition in the 21st century because it is a "field of fields," or foundational technology, for so many other pieces of emerging technology.[3] The 2021 final report from the National Security Commission on AI stated, "AI-enabled capabilities will be tools of first resort in a new era of conflict."[4] To prepare for these conflicts, the DOD "requested $14.7 billion for science and technology programs," $847 million (or 6 percent) of which directly supported AI efforts.[5] The United States is rapidly moving toward an AI-integrated future.

Our strategic competitors share the importance of AI to their military and national security. The People's Republic of China is investing heavily in AI development efforts. It may enjoy some advantages in this pursuit, derived from a top-down authoritarian structure that allows them to marshal resources and direct private and government collaboration.[6] The Chinese military is actively experimenting with AI, seeking to integrate it into their overall defense strategy at every echelon while gathering data to refine these initial efforts.[7] The People's Republic of China is the most pressing concern for AI development, but Russia is also developing AI for military and national security purposes.

In 2017, Vladimir Putin responded to the publication of the People's Re-

public of China's AI policy, stating, "Whoever becomes the leader in this sphere will become the ruler of the world."[8] The Russian security establishment sees the integration of AI into their armed forces as a critical component of their future military power.[9] They are willing to experiment with early capabilities, even creating a dedicated department within the Ministry of Defense focused on AI in 2021.[10] While AI has not played a prominent role in the war in Ukraine, it has already played on the periphery. One usage of AI to support Russia's 2022 invasion was releasing of an AI-based, deepfake video of Ukrainian President, Volodymyr Zelenskyy, telling troops to surrender.[11] Despite Russia's many challenges in Ukraine, their national drive for AI is still a concern. As these adversaries make strides in AI and integrate these tools, the Marine Corps cannot be left behind.

Initiative: Letting the Roombas® Rumble

One of the main functions of leadership is to allow people to act in coordinated ways under a set of unified guidance. This amplifies the effects that any one individual can have at a time. Every fire team leader gives his team orders that they need those orders to have the ability to execute independently. They will do so to the best level that they understand those orders and can execute given personal and environmental limitations. Squad leaders do this for their fire teams, and this goes on up the chain of command. This chain of trust in the ability of subordinates to accomplish the tasks you have assigned to them is a powerful thing and requisite for the success of any organization. This trust is developed through human interaction, observing and working together through training to understand the nuances of the leader's intent and the limits of the ability of subordinates to accurately make that intent reality. What happens when your subordinate is no longer human?

Systems are still decades from gaining human-like initiative.[12] Still, cars are already driving with minimal human interaction and everyday people

A Marine with III MEF experiments with a micro unmanned ground vehicle's capabilities.
(Photo by LCpl Stephen D. Himes.)

allow their Roombas® to make simple decisions as they clean their homes.[13] As AI-enabled systems become more capable and ubiquitous on the battlefield, tactical and operational leaders must learn how and when to allow these machines to exercise initiative. Just as you develop confidence in your subordinates through training and evaluation, leaders must also build trust and understanding of their AI systems.[14] Through rigorous training, leaders will gain an

> *... everyday people allow their Roombas® to make simple decisions ...*

understanding of the capabilities and limitations of platforms. This will help them discern the situations these assets can handle and those that require a more nuanced human approach.[15] Nevertheless, the battlefield is moving toward automation, forcing leaders to decide when to let AI exhibit various degrees of autonomy.

A poignant example comes from the Second Nagorno-Karabakh War in the Fall of 2020. Azerbaijan, having lost the conflict with Armenia in 1994, invested in unmanned aerial systems (UAS) and loitering munitions in the lead-up to the war.[16] These systems used an AI feature called computer vision to identify enemy positions, vehicles, and personnel. The computer vision algorithm then made targeting recommendations to their human controllers, who could then decide whether attack or wave off. The Azeris used these unmanned aerial systems and loitering munitions to compensate for the lack of traditional airpower and achieved impressive combined-arms effects against well-entrenched personnel, armor, and logistical support of the Armenians, largely due to the rapid tempo they were able to generate.[17]

They intentionally avoided limiting the computer vision's autonomy by establishing a "human-on-the-loop" relationship with the weapons vice a "human-in-the-loop" structure. This relationship provided a level of control and relieved personnel from monitoring the weapons full-time until the systems identified a target.[18] Human-on-the-loop constructs place the controller on the edge of the decision-making (DM) process, allowing the AI to take initiative when targets are identified. Decision points are reached much faster than possible with the human-in-the-

loop model, where the person still has complete control over starting or stopping an action."[19] Can the culture of the Marine Corps adapt to the "human on the loop" model?

Leaders across the Marines must aggressively pursue early opportunities to integrate these technologies into their training environments. This not only allows the systems to be improved by increased data inputs, but it also allows the leaders to develop the trust that is critical for determining when a subordinate (AI or human) can and should take initiative, and when to let their "Roombas®" take the fight themselves.

Decisiveness: Speeding Up the OODA-Loop

The ability of leaders to quickly synthesize data and make informed decisions is a critical element of their role, and technology has been an enabler throughout the history of warfare. AI promises to be yet another leap in the DM evolution. AI-based DM comes in various forms that generally take three basic stages. The first is by providing support when making decisions. Humans pair their contextual knowledge and common sense with AI, which provides descriptive, diagnostic, or predictive data. With more advanced AI, it may be allowed to augment decisions. Using data, the AI suggests a decision or options to a human counterpart. The most advanced level is automated DM, in which an AI-enabled system uses predictive or prescriptive analysis to make decisions without human intervention. This offers inhuman speed, scalability, and consistency but lacks the mitigating role of human experience.[20]

A 2021 panel examining how emerging technologies like AI would impact the U.S. intelligence community specifically highlighted AI for its potential to speed up the DM of leaders. AI is incredibly good at taking vast amounts of data (at a scale that would be meaningless for humans) and quickly finding patterns and relations.[21] They found that AI had the potential to speed DM by assisting in the automated processing of data, triage and notification, adaptive tasking, and pattern recognition.[22] While specifically focused on intelligence organizations, some of these benefits translate to the battlefield and will inevitably impact a leader's ability to be decisive.

Knowledge: If you Don't Know, Now You (Should) Know

Understanding the capabilities and limitations of the equipment your element employs, and at least the basic concepts of what your personnel specialize in, is critical for leaders to execute any mission properly. This holds true for AI, where Marine leaders need to start getting familiar with the types of AI, the way that this technology interfaces with their equipment, and its capabilities and limitations. This does not mean that every squad leader needs to become a programmer; however, in the same way that ground element leaders do not need to know how to fly a fighter jet, they still need to understand the basic capabilities and limitations of those platforms so they can effectively utilize them to deliver outcomes.

In 2020, DOD's Joint Artificial Intelligence Center published the DOD AI Education Strategy, which provides a framework for how to educate personnel and leaders on the basics of AI as it enters the force.[23] Importantly, it differentiates the types of knowledge required at different levels of interaction. Most Marine leaders will fall into an "employment" role, defined as interpreting the output of AI systems to help their DM, understanding basic concepts with an eye toward future applications, and proficiency in engaging with and interpreting AI applications on the battlefield.[24]

The Marine Corps has also taken steps toward creating a more AI-literate workforce. In 2019, the Marine Corps partnered with Northern Virginia Community College to provide AI training for intelligence data engineers, (NMOS 2652).[25] Similarly, the Naval Post Graduate School now offers distance learning programs in AI, which opens this education to a swath of the officer community.[26] While these are important steps, there are greater opportunities to engage staff non-commissioned officers and even more junior non-commissioned officers. Courses could be tailored to address the relevant systems and interactions that they would face at their level while providing a better depth of knowledge for future system integration.

Leaders need to take the initiative to bridge the knowledge gap informally while the Marine Corps develops its own curriculum. Training resources are available online that provide an understanding of fundamental principles and foundational knowledge for leaders to build from.[27] These can be tailored

---

AI is coming to warfighting in a way that may disrupt key elements of how the Marine Corps fought over the last decades.

---

into hip-pocket lessons that can provide Marines with a head start. It is critical as a leader to learn and be conversant with the technology you are employing. There is an urgent responsibility for Marine leaders to know and understand AI-enabled systems.

Conclusion: Meeting the Challenge of AI Integration

AI is coming to warfighting in a way that may disrupt key elements of how the Marine Corps fought over the last decades. Technological revolutions can provide tools that make a force dominant, but militaries that build the best doctrine for adopting those tools often come out on top. How well is the technology understood, tested, and applied? The demands for AI are no different. Leaders throughout the Marine Corps need to be prepared for the impact on the speed of their decisiveness, the questions over allowing autonomous systems to exercise initiative, and to develop the foundational knowledge

that will provide the foundation for the successful integration of AI.

Notes

1. Franklin Annis, "Krulak Revisited: The Three-Block War, Strategic Corporals, and the Future Battlefield," *Modern War Institute*, February 3, 2020, https://mwi.usma.edu/krulak-revisited-three-block-war-strategic-corporals-future-battlefield.

2. Congressional Research Service, "Defense Primer: Emerging Technologies," *Congressional Research Service*, November 2022, https://crsreports.congress.gov/product/pdf/IF/IF11105.

3. Council on Foreign Relations, "Artificial Intelligence and the Future of U.S.-China Technology Competition," *YouTube*, 59:35, March 30, 2021, https://www.youtube.com/watch?v=mRUsT2C4E78.

4. National Security Commission on Artificial Intelligence, "Final Report: National Security Commission on Artificial Intelligence," *National Security Commission on Artificial Intelligence*, March 2021, https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf.

5. Colin Demarest, "Hundreds of AI Projects Underway as Defense Department Eyes Future Combat," *C4ISRNet*, February 22, 2022, https://www.c4isrnet.com/artificial-intelligence/2022/02/22/hundreds-of-ai-projects-underway-as-defense-department-eyes-future-combat.

6. Department of Defense, "Military and Security Developments Involving the People's Republic of China: 2022 Annual Report to Congress," *Department of Defense*, November 2022, https://media.defense.gov/2022/Nov/29/2003122279/-1/-1/1/2022-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF; and Christian Brose, *The Kill Chain: Defending America in the Future of High-Tech Warfare* (New York: Hachette Books, 2020).

7. Army Mad Scientist, "How China Fights," The Convergence Podcast, podcast audio, December 2021, https://madsciblog.tradoc.army.mil/372-how-china-fights.

8. Interview with Ian Sullivan, Peter Woods, et al., "How China Fights," *The Convergence Podcast, Mad Scientist*, Podcast audio, December 9, 2021, https://madsciblog.tradoc.army.mil/372-how-china-fights.

9. Vladimir Putin, Speech on Artificial Intelligence, (2017), quoted in Jessica Harris, "Weapons of the Weak: Russia and AI-Driven Asymmetric Warfare," *Brookings Institute*, November 2018; The International Center for Not-for-Profit Law, "Overview of the Package of Changes into a Number of Laws of the Russian Federation Designed to Provide for Additional Measures to Counteract Terrorism," (Washington, DC, July 2016). That statement merely made public efforts that were already ongoing by the Russian State. Since 2016, the Russian Federal Security Service openly collected Russian social media and telecom user data, in what is speculated to be part of an effort to develop and integrate AI into their intelligence services.

10. Congressional Research Service, "Artificial Intelligence and National Security," *CRS Reports*, April 2018, https://crsreports.congress.gov/product/pdf/R/R45178/3.

11. Jeffrey Edmonds, Samuel Bendett, et al., "Artificial Intelligence and Autonomy in Russia," *Center for a New America*, May 2021, https://www.cna.org/reports/2021/05/Artificial-Intelligence-and-Autonomy-in-Russia.pdf.

12. Digital Forensics Research Lab, "Russian War Report: Hacked News Program and Deepfake Video Spread False Zelenskyy Claims," *New Atlanticist, Atlantic Council*, March 16, 2022, https://www.atlanticcouncil.org/blogs/new-atlanticist/russian-war-report-hacked-news-program-and-deepfake-video-spread-false-zelenskyy-claims.

13. Dalvin Brown, "Robot Vacuums Are Learning to Avoid Dog Poop, But That's Not All They Can See," *The Washington Post*, September 14, 2021, https://www.washingtonpost.com/technology/2021/09/14/roomba-ai-vacuum-dog-poop.

14. *The Kill Chain*.

15. International Crises Group, "The Nagorno-Karabakh Conflict: A Visual Explainer," *International Crises Group*, June 2022, https://www.crisisgroup.org/content/nagorno-karabakh-conflict-visual-explainer.

16. IBM, "What is Computer Vision," *IBM*, n.d, https://www.ibm.com/topics/computer-vision.

17. John F Antal, *Seven Seconds to Die: A Military Analysis of the Second Nagorno-Karabakh War and the Future of Warfighting* (Philadelphia Oxford, Casemate, 2022).

18. Ibid.

19. Jackson Barnett, "AI Needs Humans "on the Loop" Not "in the Loop" for Nuke Detection General Says," *Fedscoop*.com, February 14, 2020, https://fedscoop.com/ai-should-have-human-on-the-loop-not-in-the-loop-when-it-comes-to-nuke-detection-general-says.

20. Naveen Joshi, "Here's How AI Optimizes Executive-Level Decision-Making In Mega-Corporations," *Forbes*, April 4, 2022, https://www.forbes.com/sites/naveenjoshi/2022/04/04/heres-how-ai-optimizes-executive-level-decision-making-in-mega-corporations/?sh=3f5c44034fe5.

21. CSIS Technology and Intelligence Task Force, "MAINTAINING THE INTELLIGENCE EDGE," *Center for Strategic and International Studies*, January 2021, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/210113_Intelligence_Edge.pdf.

22. Ibid.

23. DOD Joint AI Center, "2020 Department of Defense Artificial Intelligence Education Strategy," *DOD Joint AI Center*, September 2020, https://www.ai.mil/docs/2020_DoD_AI_Training_and_Education_Strategy_and_Infographic_10_27_20.pdf.

24. Ibid.

25. Northern Virginia Community College, "Northern Virginia Community College and the United States Marine Corps Partner, in Collaboration with Amazon Web Services, to Develop a New Course of Study," *Northern Virginia Community College*, June 10, 2019, https://www.nvcc.edu/news/press-releases/2019/nova-usmc-aws.html.

26. Naval Post Graduate School, "AI For Military Use Certificate," *Naval Post Graduate School*, n.d., https://nps.edu/web/ciser/ai-certificate.

27. MIT Lincoln Laboratory, "Artificial Intelligence-Foundational Concepts for an AI Workflow," *YouTube*, 24:30, August 28, 2021, https://www.youtube.com/watch?v=RaE33j9IkN4&t=1150s.