REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
09-06-2021	FINAL	N/A

4. TITLE AND SUBTITLE

An Ethical Framework for Motivating Artificial Intelligence Leadership: A Case of Human versus Technical Dilemmas

5a. CONTRACT NUMBER
N/A

5b. GRANT NUMBER
N/A

5c. PROGRAM ELEMENT NUMBER
N/A

6. AUTHOR(S)

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5d. PROJECT NUMBER
N/A

5e. TASK NUMBER
N/A

5f. WORK UNIT NUMBER
N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Writing & Teaching Excellence Center
Naval War College
686 Cushing Road
Newport, RI 02841-1207

8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

N/A

10. SPONSOR/MONITOR'S ACRONYM(S)
N/A

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
N/A

12. DISTRIBUTION / AVAILABILITY STATEMENT
Distribution Statement A: Approved for public release; Distribution is unlimited.

13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the curriculum. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.

14. ABSTRACT

Artificial intelligence (AI) autonomously and cognitively multiplies combat power. A whole-of-government top-down push for capability may overwhelm the existing institutions and organizational processes for implementation. In addition, AI carries forward our human characteristics into multiple interconnected systems often unintentional consequences. AI development must expand from a software-centric focus on human and machine relationships to a multi-echelon system-of-systems development environment. In order to quickly scale up AI, a new ethical framework and toolset is necessary to develop, field, and operate new capabilities. This paper introduces an ethical framework for motivating leadership and promotes progress by integrating ethical egoism, character values, and rules utilitarianism into individual and organizational visions, processes, and performance objectives. The U.S. military's culture, code, and regulation provide a unique fit for ethical egoism. To enable this ethical framework, leaders need a revolution in the existing tools for personnel, bureaucratic, and organizational process. The vertical and horizontal complexity of implementing artificial intelligence in the Department of Defense necessitates automated and artificially intelligent tools for honesty, transparency, availability, and accountability to achieve short and long-term progress.

15. SUBJECT TERMS (Key words)
artificial intelligence, national security, strategy implementation, technical leadership

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE	N/A		Director, Writing Center
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED			19b. TELEPHONE NUMBER *(include area code)* 401-841-6499

An Ethical Framework for Motivating Artificial Intelligence Leadership:

A Case of Human versus Technical Dilemmas

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Date Submitted: 9 June 2021

A paper submitted to the Faculty of the United States Naval War College, Newport, RI in partial satisfaction of the requirements of the Ethics and Emerging Military Technology Graduate Certificate Program.

The contents of this paper reflect the author's own personal views and are not necessarily endorsed by the United States Naval War College or the Department of Defense.

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ABSTRACT

Artificial intelligence autonomously and cognitively multiplies combat power. *The Final Report* of the National Security Commission on Artificial Intelligence (NSCAI) provides funding recommendations for a $295 billion infusion of funds to maintain America's leadership in artificial intelligence implementation. Backed by the whole-of-government, a top-down push for capability may overwhelm the existing institutions and organizational processes for capability development and materiel acquisition. A leadership toolset gap exists between policy makers and those implementing solutions. In addition, artificial intelligence carries forward our human characteristics into multiple interconnected systems in the data, algorithms, products, and effects produced with often unintentional consequences. Artificial intelligence development must expand from a software-centric focus on human and machine relationships to a multi-echelon system-of-systems development environment including all stakeholders across the leadership gap from policy and strategy to capability fielding. In order to quickly scale up artificial intelligence, a new ethical framework and toolset is necessary to develop, field, and operate new capabilities.

This paper introduces an ethical framework for motivating leadership and promotes progress by integrating ethical egoism, character values, and rules utilitarianism into individual and organizational visions, processes, and performance objectives. The U.S. military's culture, code, and regulation provide a unique fit for ethical egoism. The three ethical systems motivate individual and organizational efforts by aligning interests, values, and rules and provide an in-depth ethical defense against the criticisms of egoism. To enable this ethical framework, leaders need a revolution in the existing tools for personnel, bureaucratic, and organizational process-tools. The vertical and horizontal complexity of implementing artificial intelligence in the

Department of Defense necessitates automated and artificially intelligent tools for honesty, transparency, availability, and accountability to achieve short and long-term progress.

ACKNOWLEDGEMENTS

I thank my wife, children, mentors, friends, and colleagues who helped motivate, advise, and otherwise support my completion of this paper. My advisor, Captain Michael O'Hara, along with Professor John Hanus provided the main forum for expressing my thoughts early in their new elective, "AI for Strategic Leaders – Unpacking the Black Box" conducted with the Massachusetts Institute of Technology (MIT) Lincoln Laboratories. In parallel, Captain Derek Wessman advised me on my National Security Decision-Making course paper on "Scaling up Artificial Intelligence Implementation" where I initially identified an imbalance in attention focusing on talent and technical issues over organizational issues. My Association for Practical and Professional Ethics (APPE) presentation "Science Fiction as a Lens on Ethics for Modern Military Leaders" would not have been possible without the assistance of Drs. Thomas Creely, Tim Schultz, and Douglas Hime. Throughout my academic year, Dr. Creely and Dr. Schultz have led an inspiring Ethics and Emerging Military Technology (EEMT) Graduate Program. Dr. Kathleen Walsh arranged a unique virtual visit to Washington, D.C. meeting with key leadership and stakeholders in artificial intelligence policy, strategy, and implementation. Isabel Lopes and Raine Sagramsingh were of great assistance in researching and proofing this paper. A special thank you to Dr. Aleksandar Milenkovic, who of all people, beyond my high school English teachers, understands my antipathy for writing and the difficulty of balancing family, work, Army Reserve duty, and academic study. Many thanks to my EEMT friends who have made this difficult socially distant COVID year bearable and who have helped expand my knowledge and understanding. Finally, and most importantly, I thank my supportive wife, Anne, managing the home 1100 miles away with our three children.

INTRODUCTION

Artificial intelligence engenders great focus on the delivered machine but rarely analyzes the human individuals and organizations developing the machine. Only in hindsight, such as in the the development of the atomic bomb, do we look at the scientists and projects. Artificial intelligence is the next Great Power Competition race. *Executive Order 13859 Maintaining American Leadership in Artificial Intelligence* initiated a whole of government response.[1] The National Security Commission on Artificial Intelligence recommends congress immediately fund $295 billion to rapidly scale up artificial intelligence implementation.[2] Unlike the atomic bomb, artificial intelligence is not a discrete product, but instead carries forward our human characteristics into multiple interconnected systems in the data, algorithms, products, and effects produced with often unintentional consequences. A leadership and toolset gap exists between the policy makers and those implementing solutions. Artificial intelligence development must expand from a software-centric focus on human and machine relationships to a multi-echelon system-of-systems development environment including all stakeholders across the leadership gap from policy and strategy to capability fielding. In order to quickly scale up artificial intelligence, a new ethical framework and toolset is necessary to preserve peace and humanity.

Background

Artificial Intelligence as National Power in the Current Multipolar Soft War

Artificial intelligence provides low-cost national power by enhancing economic and national security capabilities. Formerly, only nation-states with a strong economy could afford to develop specialized multimillion-dollar high-performance computing (HPC) platforms.

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[1] Donald Trump, "Maintaining American Leadership in Artificial Intelligence," Executive Order 13859, Federal Register 84, no. 3, title 3, February 14, 2019, https://www.federalregister.gov/documents/2019/02/14/2019-02544/maintaining-american-leadership-in-artificial-intelligence.

[2] National Security Commission on Artificial Intelligence, *NSCAI Final Report* (Washington, DC: National Security Commission on Artificial Intelligence, 2021), 729-739.

Artificial intelligence may now be performed on commercially available products such as networking a cluster of retail computers; leasing cloud enterprise services from online vendors, or purchasing a $50,000 - $500,000 high-performance computing (HPC) platform.[3] The Director of the Joint Artificial Intelligence Center (JAIC), Lt. Gen. Michael Groen, states, "Artificial intelligence is a way to generate essential advantages through the assessment and analysis of warfighting or enterprise decision-making for the department's support and business infrastructure."[4] Artificial intelligence goes beyond automating processes and replacing specialized personnel and equipment for economic and national security tasks. Artificial intelligence executes big data analysis tasks, draws new insights, and expedites decision-making, changing the character of the information war by delivering more capability with fewer resources. To scale up the delivery of artificial intelligence capability from initial demonstration to broad application, the cost of computer processing equipment and the maturity of the technology are no longer implementation obstacles. The issue is adapting and integrating artificial intelligence into the current workforce's existing and future software applications.

The United States' current multipolar soft war with Russia and China rampages across the cyberspace domain. Russia's elite hackers recklessly wage cyberwar across diplomatic, information, military, and economic forms of national power.[5] In the Great Power Competition between the United States and China, China's long-term goal to be a world leader of artificial intelligence by 2030 does not account for the good, bad, and ugly of its current practices in healthcare, social conformity, and genocide.[6] China's artificial intelligence applications enforce

[3] Cluster computing is a network of general-purpose computers such as desktop computers. Cloud enterprise services for high performance computing (HPC) translates to leasing someone else's computer. An entry level HPC platform with 256 cores may be purchased around $50,000 in 2020. The breakpoint between leasing services and maintaining an equivalent HPC environment is conservatively $500,000.
[4] Stew Magnuson and Yasmin Tadjdeh, "Artificial Intelligence Is 'Not IT'," *National Defense*, January 2021.
[5] For an account of Russia's past cyberattacks, see Andy Greenberg, *Sandworm: A New Era of Cyberwar and the Hunt for the Kremlin's Most Dangerous Hackers* (New York: Anchor Books, 2019).
[6] Hessy Elliott, "China and AI: What the World Can Learn and What it Should be Wary of," *The Conversation*, July 1, 2020, https://theconversation.com/china-and-ai-what-the-world-can-learn-and-what-it-should-be-wary-of-140995.

political policy, manage careers, award social compliance, and contribute to cyber warfare.[7] China's strategic soft-war in business and government empowers Chinese companies such as Baidu, Alibaba, and Tencent to innovate and operate in international markets within China's "well-capitalized, highly organized artificial intelligence plan."[8] As a bad actor, China deploys artificial intelligence with no ethical controls on the technology or those using the technology. China's forward businesses gain access to data and ideas behind international firewalls uninhibited by ethical principles of artificial intelligence such as personal privacy, systemic racism, and the dignity of life. United States innovation and action must scale at the speed of relevance to counter the growing threat exhibited by Russia, China, and other bad actors.

Politics and other Nontechnical Factors of Technological Progress

At the intersection of policy, technology, and the dual-use of commercial and military technology, military leaders must address the ethical problems of artificial intelligence. Obstacles to implementing emerging military technologies often find the root causes in political and other nontechnical factors. In technomilitarism as reflected in Kranzberg's Fourth Law, political leadership's overemphasis on machines and technology compromises the human aspects of warfare.[9] To address the nontechnical factors of technological progress, checks and balances are necessary to strengthen humanity's relationships and moderate technomilitarism. Military leaders have the opportunity through these checks and balances to inject ethical controls to benefit warfare and society. Forman provides a few facts of life in Maier and Rechtin's *The Art*

[7] Fabian Westerheide, "China-The First Artificial Intelligence Superpower," *Forbes*, January 14, 2020, accessed February 1, 2021, https://www.forbes.com/sites/cognitiveworld/2020/01/14/china-artificial-intelligence-superpower/?sh=4d404c72f053.
[8] Amy Web, "China is Leading in Artificial Intelligence--and American Business Should Take Note," *Inc.*, September 2018, https://www.inc.com/magazine/201809/amy-webb/china-artificial-intelligence.html.
[9] Melvin Kranzberg, "Technology and History: 'Kranzberg's Laws,'" *Technology and Culture*, 27, no. 3 (July 1986): 553.

of System Architecting, which expand upon the Kranzberg's Fourth Law with a few nontechnical factor examples:

#1: Politics, not technology, sets the limits of what technology is allowed to achieve.

#2: Cost rules.

#3: A strong, coherent constituency is essential.

#4: Technical problems become political problems.

#5: The best engineering solutions are not necessarily the best political solutions.[10]

Military leaders go before congress (#3) with a budget plan broken down into cost (#2), schedule (#1-5), and performance (#1) while mitigating risk (#4) such as closing the gap between military and congressional requirements (#5). Congress controls military technology through funding (#2). The past two decades of technomilitarism has produced military leaders with working knowledge of technology's history who are well positioned to influence the ethics of dual-use technologies. The combination of the history of technology and the experience of technology's practical application results in military leaders understanding the technology's impact on life, liberty, and property from the individual to genocide and from precision munitions to the Mother Of All Bombs (MOAB).

The roads of Rome led Roman soldiers rapidly to war, but also expedited enemy approaches to the gates. The history of technology helps temper inflated expectations of a new technology and fuel the imagination of positive and negative consequences to society. Military leadership of technology development peaked in the 1980s. The arrival of the Internet and the Information Age transitioned leadership through dual-use technology from the military to the consumer and commercial industry. Now, where previously academia and industry sought better

[10] Mark W. Maier and Eberhardt Rechtin, *The Art of Systems Architecting*, 2nd ed. (Boca Raton, FL: CRC Press, 2002), 235-248.

control of military technology development, the military is positioned to provide leadership on the ethical development and distribution of dual-use technology for military and commercial applications. The new road to Rome may be a quantum communications transceiver hidden in the embedded test circuitry of a microelectromechanical (MEM) device leaving the gates of Rome open to remote governance of the digital empire. A junior military leader in the first ten years of their career lacks the same authority and experience as the senior military leader in the last ten years of their career. Even with a shared vision and understanding, the two leaders have multiple echelons of organizational process and bureaucracy to overcome in order to close the leadership gap. The new race to artificial intelligence requires a road to be built between policy makers and military leadership promoting rapid resolution of technical and political problems.

Policy to Implementation Leadership Gap

Congress, the President, and the National Security Commission on Artificial Intelligence (NSCAI) seek funding to execute a top-down strategic push for artificial intelligence to encourage bottom-up military innovation. The National Defense Authorization Act for Fiscal Year 2021 (FY21 NDAA) granted additional authorizations to the Department of Defense (DoD) JAIC to include a direct report to the Deputy Secretary of Defense (DepSecDef) and included the National Artificial Intelligence Initiative Act.[11] NSCAI funding recommendations total $34 billion directly to the DoD with additional shared funding recommendations.[12] The civilian leadership of the military places great trust and expectation in the U.S. DoD to scale up artificial intelligence implementation.

The previous and current Presidential administrations recognize the importance of artificial intelligence as a critical technology to reducing cost. Dr. Kathleen Hicks, at The Center

[11] U.S. Congress, *National Defense Authorization Act For Fiscal Year 2021* (Washington, D.C.:U.S. Government Publishing Office. 2020).
[12] National Security Commission on Artificial Intelligence, *NSCAI Final Report,* 729-739.

for Strategic & International Study (CSIS) prior to becoming the DepSecDef, published a "Getting to Less?" series of reports providing insight into her policy recommendations. "The Innovation Superiority Strategy" seeks rapid artificial intelligence capability development while tempering expectations for large-scale modernization beyond 10 years from now.[13] Within 3 months of swearing in, the DepSecDef reaffirmed the DoD Artificial Intelligence Principles and established the Responsible Artificial Intelligence (RAI) tenets and a working council with the JAIC as the coordinator.[14] The new policy is an example of a top down negative aim of preventing the development of unethical systems by driving culture through additional requirements. Each new top-down requirement further delays capability development by a factor representing the number of leadership echelons between policy and implementation. A new leadership approach to motivating positive cultural change is necessary to close the gap from top-down policy and bottom-up implementation.

Need for Automated and Intelligent Bureaucratic and Organizational Tools

Leadership in artificial intelligence requires a multi-disciplinary integrated approach of theory and application fusing non-technical and technical perspectives. Scaling up artificial intelligence implementation will involve combining the philosophy of computer science with the elbow grease of implementation in practical applications of the emerging technology. Existing DoD acquisition tools provide the personnel and systems necessary to implement autonomy and artificial intelligence but do not address bureaucracy and organizational process.[15] Over the past

[13] Kathleen Hicks, et al., *Getting to Less? The Innovation Superiority Strategy*, (Washington, DC: Center for Strategic and International Studies, 2020), 6, accessed 1 February 2021, https://www.csis.org/analysis/getting-less-innovation-superiority-strategy.

[14] U.S. Deputy Secretary of Defense, "Implementing Responsible Artificial Intelligence in the Department of Defense" (26 May 2021).

[15] Examples of Department of Defense capabilities include the DoD Architecture Framework (DoDAF), operations research systems analysis (ORSA), Lean Six Sigma process improvement, and model-based systems engineering (MBSE). These contribute to the emerging acquisition strategy and processes for digital engineering. Office of the Deputy Assistant Secretary of Defense for Systems Engineering, *Department of Defense Digital Engineering Strategy*, June 2018, accessed February 1, 2021, https://ac.cto.mil/wp-content/uploads/2019/06/2018-Digital-Engineering-Strategy_Approved_PrintVersion.pdf.

two years, the economic and national strategy for artificial intelligence has been akin to a college new hire trying to help a supervisor as the supervisor hunts and pecks each character on a keyboard and adamantly refuses to use the voice-to-text feature. Leaders must overcome their learning obstacles to spin up quickly on artificial intelligence and its applications.

For example, the Joint Capability Integrated Development System (JCIDS), Defense Acquisition System (DAS), and Planning, Programming, Budgeting, and Execution (PPBE) process continue to use archaic manual processes with limited online data sharing via Microsoft Office software products. The DoD, by improving the autonomy and interoperability of the JCIDS, DAS, and PPBE process in accordance with the DoD AI Ethical Principles, would empower the implementers with transparency and accountability to push forward innovation more efficiently. This would assist in improving continuity, reducing competing narratives and friction in organizational process and product handoffs, and enable flexible decision-making. Leaders are often locked into a vertical chain of command, rigid acquisition strategy, and fixed-term defense contracts discouraging ethical behavior by compromising decision-making. A positive aim for improving organizational culture is to provide tools enabling bottom-up situational awareness and decision-making.

Document Organization

Chapter 1 explores leadership's requirement for the processes, tools, and motivation to expose, characterize and resolve obstacles in scaling up artificial intelligence implementation. The first chapter opens with an introduction of an ethical framework for motivating leadership by integrating ethical egoism, character values, and rules utilitarianism into individual and organizational visions, processes, and performance objectives. Subsequently, the human and machine perspectives inherent to architecting artificial intelligence are explored with a comparison of the human-centric U.S. Special Operations Command (SOCOM) and the

machine-centric U.S. Missile Defense Agency (MDA). The chapter concludes with an assessment of national versus individual applications of egoism whereby national power is produced but not at the expense of unchecked national egoism. Overall, the chapter demonstrates the need for a motivational ethical framework to challenge current artificial intelligence obstacles.

Chapter 2 analyzes the applicability of ethical egoism within the U.S. military to motivate individual and organizational efforts by aligning interests, values, and rules while addressing criticisms of unchecked egoism. First, the chapter opens with a taxonomy of ethical systems focusing on the three main categories of consequentialism, utilitarianism, and character values. Second, the chapter explores the characteristics of the U.S. military running contrary to a critical perspective of egoism. Third, the chapter surveys other criticisms of egoism such as national egoism, fascism, neo liberalistic careerism, motivational schizophrenia, and the loss of honesty, friendships, and emotional empathy. Finally, the chapter closes with the case for building the mission command and organizational process tools with autonomy and artificial intelligence necessary to enable the ethical framework.

Chapter 3 provides a summary of the characteristics necessary for artificial intelligence leadership and examples of developing early artificial intelligence ethical leadership tools to enable future artificial intelligence implementation. The vertical and horizontal complexity of implementing artificial intelligence in the DoD necessitates automated and artificially intelligent tools for honesty, transparency, availability, and accountability to achieve short and long-term progress. A revolution in existing policy, capability development, acquisitions, personnel, and budgetary systems provides the organizational tools necessary for individuals to overcome organizational process and bureaucracy. An ethical framework of interests, values, and rules

assists in addressing individual, bureaucratic, and organizational process obstacles to problems in developing and delivering artificial intelligence capability.

CHAPTER 1: An Ethical Framework for Motivating Leadership in Artificial Intelligence

Chapter 1 Introduction

Program management and technical leaders encounter numerous obstacles to the integration of new technologies into current and future capability development efforts. A single data exchange between weapon systems for an artificial intelligence implementation in a foreign military sale may involve multiple organizations within the DoD, Department of State, Director of National Intelligence, defense industrial base, and laboratories within academia. Leadership and their teams must navigate a complicated, complex, and often chaotic bureaucracy with an ever-changing set of organizational processes. Complicated, complex, and chaotic problems require time, expertise, iteration, and novelty to develop solutions.[16] In order to scale up artificial intelligence implementation, leadership requires the processes, tools, and motivation to expose, characterize, and resolve obstacles.

The following introduces an ethical framework for motivating leadership, architecting artificial intelligence solutions and resolving human and machine dilemmas to responsibly field capabilities. The ethical framework for motivating leadership integrates ethical egoism into the existing military ethical systems of character values and rules utilitarianism. This defense-in-depth ethical system provides a solid foundation, guideposts, and motivation to responsibly explore new opportunities in capability development. The broad, invasive, and embedded nature of artificial intelligence has multiple human and machine interface and relationship touchpoints. A comparison of the human-centric U.S. Special Operations Command (SOCOM) and the

[16] The Cynefin Framework categorizes problems as simple, complicated, complex, and chaotic with corresponding solutions of best practice, good practice, emergent practice, and novel practice. Complicated problems may be solved through analysis of existing cause and effect relationships, complex problems require iterating the problem to understand the relationships, and chaotic problems present no relationship between cause and effect depending upon non-intuitive or novel solutions. Different problems may require upfront analysis, multiple iterations of potential solutions, or accepting non-intuitive and novel approaches. David J. Snowden and Mary E. Boone, "A Leader's Framework for Decision Making," *Harvard Business Review* (November 2007):69-76.

machine-centric U.S. Missile Defense Agency (MDA) provides insight into the need for integrating ethical egoism into artificial intelligence's human-machine teaming. Ethics provides quality control for preserving peace through the application of artificial intelligence enabled national power. Effective and suitable quality control for ethical leadership requires whole-of-government autonomous tools to bring organizational processes and bureaucracy into the 21st century. Current processes and programs rely on reading documents, updating spreadsheets, and performing periodic manual reviews. An ethical framework is necessary to motivate leadership to challenge current obstacles and innovate better practices for implementing artificial intelligence.

Ethical Framework for Motivating Leadership

Artificial intelligence capability development calls for artificial intelligence tools. One of the first tools developed by military leadership through the JAIC are ethical principles for domestic and foreign development of artificial intelligence.[17] The civilian leadership reaffirmed the principles and established the RAI tenets and working council.[18] Of particular note is the foundational tenet for an "RAI Ecosystem to improve collaboration and to advance norms grounded in shared values."[19] The civilian leadership's RAI direction first and foremost is about establishing trust in artificial intelligence. Trust is established through honesty, relationship, and vulnerability enabled by transparency, accountability, and behavioral self-control. These are all traits observed in egoism.

Ethical egoism already exists informally in the military with each commander's decision, intent, or discretion. Ethical egoism is a normative philosophy of choosing self-interest. Each

[17] Joint Artificial Intelligence Center (JAIC), *Summary of the 2018 Department of Defense Artificial Intelligence Strategy* (Washington, DC: U.S. DoD CIO, 2018), 8,15-16.
[18] U.S. Deputy Secretary of Defense, "Implementing Responsible Artificial Intelligence in the Department of Defense" (26 May 2021), 1.
[19] U.S. Deputy Secretary of Defense, "Implementing Responsible Artificial Intelligence in the Department of Defense" (26 May 2021), 2.

individual's self-interest is cultivated by other ethical philosophies through their relations and experience. While the existing military environment is formally based upon rules utilitarianism and character ethics, ethical egoism provides an ethical net assessment tool for leaders, organizations, and artificial intelligence. From national interests and American values in the National Security Strategy to self-interest and the values of a U.S. service member within the Uniformed Code of Military Justice (UCMJ), the following ethical framework motivates leadership, assists in architecting artificial intelligence solutions, and, when enabled in organizational tools, assists in resolving human and machine dilemmas to responsibly field capability.

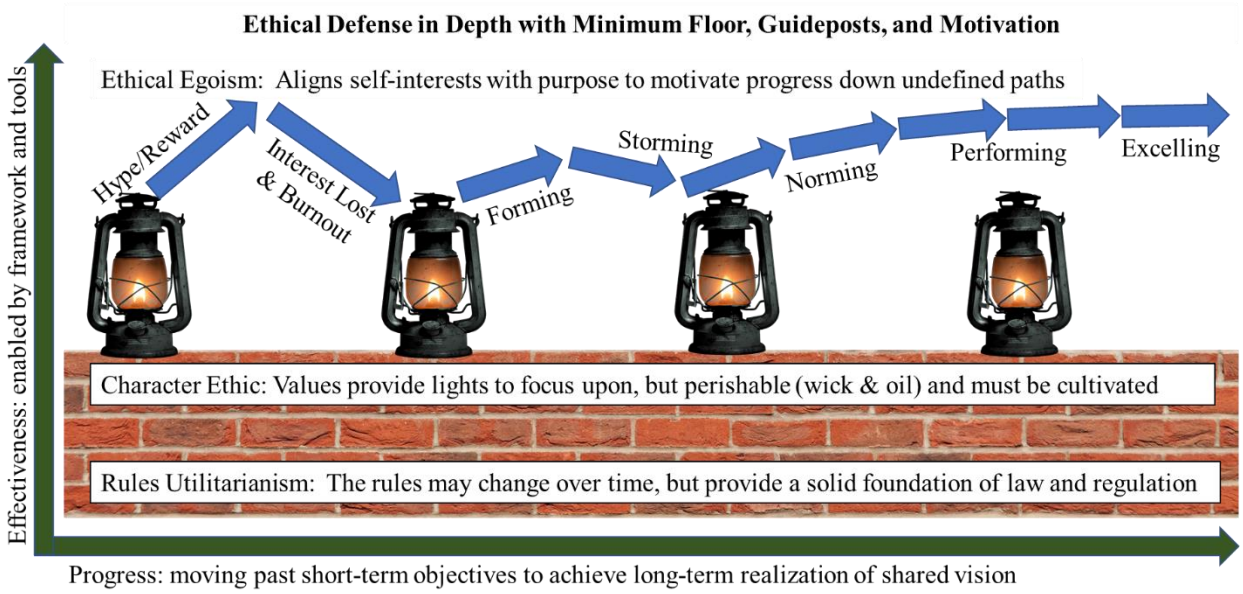

Figure 1. Ethical Framework for Motivating Leadership

Progress is measured in not only the management perspective of cost, schedule, and performance, but also measured in the organizational culture perspective of the people, values, and mission. Typically in programs, performance is compromised as the schedule slides to the right to a later date, and cost overruns. Ethical egoism aligns self-interest with progress improving effectiveness. A vanity, greed, or fear-based rewards system leverages hype and reward but results in an overall slowdown in motivation as interest is lost and individuals burn-

out. An individual, team, or organization's change in effective performance manifests in schedule and cost changes. Addressing long-term self-interests in team building integrates individuals through short-term goals contributing to team building. Locked into a chain of command, acquisition strategy, and defense contracts, technical leadership often lacks the flexibility to navigate the hype curve, create intermediate decision points, and pivot towards progress. A defense-in-depth ethical framework of rules, values, and interests provides a solid foundation, guideposts, and motivation to responsibly explore new opportunities in capability development while providing early indicators and warnings of change in effectiveness and progress. Organizational culture needs to open up to expressions of self-interest and provide tools to recognize and support self-interest as a motivational human resource.

Architecting Artificial Intelligence Solutions

Artificial intelligence is different from other critical technology elements. It is not a black box or point solution, but an invasive embedded subsystem supporting the mission. As such, it is not as simple as training artificial intelligence experts, establishing an A.I. product, program, or portfolio, and fielding operational capability. A.I. requires multiple relationships between the A.I. experts, capability developers, materiel developers, and operators.

Engineers may quickly be lost in the technical details of artificial intelligence while the users, or operators, are focused on mission-critical details. The MIT Lincoln Laboratory's "AI Canonical Architecture" provides a software-based systems engineering perspective on the elements and relationships for implementing artificial intelligence.[20] A key element in the heart of the process is human-machine teaming. "This collaboration will achieve operational speed by providing timely insight to users, increasing scale, and reducing the level of the consequence of

[20] Dave Martinez, et al. *Artificial Intelligence: Short History. Present Developments, and Future Outlook, Final Report* (Cambridge: Massachusetts Institute of Technology, 2019), Figure 2.5, 27.

actions."[21] Ethical egoism's key enablers of honesty, relationship, and accountability apply to integrating engineers, operators, and emerging technology.

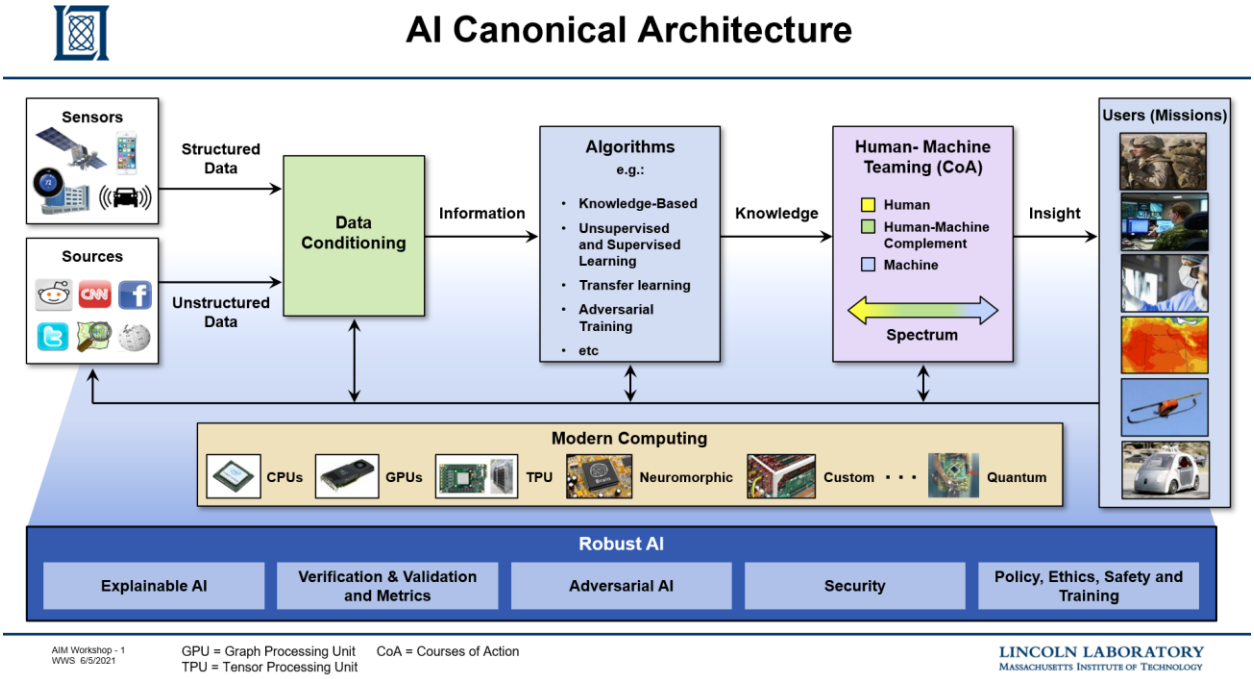

Figure 2. MIT AI Canonical Architecture[22]

Artificial intelligence is an embedded human-machine capability dependent upon a level of system maturity for access to interfaces, data, and processing. The Office of the Undersecretary of Defense for Research and Engineering (USD(R&E)), the DoD's Chief Technology Officer (CTO), identified eleven modernization technology priorities: Artificial Intelligence (AI); Biotechnology; Autonomy; Cyber; Directed Energy; Fully Networked Command, Control, and Communications; Hypersonics; Microelectronics; Quantum Science; Space; and 5G.[23] For artificial intelligence, seven of the other ten priorities are supporting capabilities. The priorities do not necessarily fall within an equivalent Maslow's pyramid of

[21] Martinez, et al. *Artificial Intelligence: Short History*, 31.
[22] Martinez, et al. *Artificial Intelligence: Short History*, Figure 2.5, 27, with minor revisions for presentation at AIM Workshop.
[23] U.S. Department of Defense, "Modernization Technology Priorities," accessed May 9, 2021, https://www.cto.mil/modernization-priorities/.

needs, but instead provide an indication and warning on artificial intelligence readiness.[24] For example, autonomy is a new categorization for unmanned systems which operate remote systems dependent upon a networked command, control, and communication system operating in the cyber domain enabled by microelectronics. Figure 2 shows the many exchanges necessary to architect an artificial intelligence solution. From sensors and sources to mission success, obstacles to implementation exist such as varying security classification, funding mismatch, requirements volatility, schedule dependencies, external influence, and internal controls. An organization's culture must build trust, relationships, and accountability with respect to its people and mission to motivate progress through the complicated, complex, and chaotic acquisition process.

Human versus Machine: The Mission and Values of SOCOM and MDA

How would the ethical framework of a human-centric organization compare to a machine-centric organization? The following is a comparison of the mission and values of Special Operations Command (SOCOM) and the Missile Defense Agency (MDA). Instead of comparing apples and oranges, comparing SOCOM and MDA is like comparing gasoline and grease. Both are petroleum products as they are both members of the DoD operating in accordance with the National Security Strategy, National Defense Strategy, and National Defense Authorization Act. Both are organized outside the services.[25] SOCOM has operators and support and MDA has engineers and overhead. But, gasoline will instantly burst into flames while grease will slowly burn. SOCOM is organized as a combatant command with chain of command and organizational process efficiencies to expedite mission execution while mitigating risk to U.S. policies and objectives. MDA is organized as an agency with the original goal of

[24] Abraham H. Maslow, "A Theory of Human Motivation," *Psychological Review* 50, no. 4 (1943): 370–396.
[25] U.S. Army, U.S. Marine Corps, U.S. Navy, U.S. Air Force, U.S. Space Force, and U.S. Coast Guard

providing an immediate strategic missile defense capability short-term and a layered system long-term. To achieve the short-term goal, policy makers exempted MDA from organizational processes necessary for the long-term operation and sustainment of forces. MDA's focus on the machine loses focus on the human element of developing, operating, and sustaining the capability. SOCOM maintains focus on the human element and created an organization with the necessary efficiencies to operate robustly like gasoline in a well-maintained vehicle. MDA's exemptions eventually delayed transfer of proven technology to the services increasing MDA's sustainment burden. The old grease is blocking new grease. MDA is unable to develop new technology as effectively as they continue to sustain the old technology. Effective solutions require addressing the human dilemmas of organizational process and bureaucracy.

Table 1. Comparison of SOCOM and MDA Mission

U.S. Special Operation Command[26]	**U.S. Missile Defense Agency**[27]
Mission	**Our Mission**
USSOCOM develops and employs fully capable Special Operations Forces to conduct global special operations and activities as part of the Joint Force to support persistent, networked and distributed Combatant Command operations and campaigns against state and non-state actors to protect and advance U.S. policies and objectives.	The Missile Defense Agency's (MDA) mission is to develop and deploy a layered Missile Defense System to defend the United States, its deployed forces, allies, and friends from missile attacks in all phases of flight.

Both SOCOM and MDA have clear mission statements in Table 1 to develop and deliver capability. Inversely in Table 2, SOCOM shares a motivational vision of what success looks like in fulfilling their mission while MDA provides a generalized policy statement authorizing their existence on their website followed by a set of strategic goals regulating relationships (Goals 1, 4, 6, 7, & 9) and proving their existence is warranted (Goals 2, 3, 5, & 8). SOCOM motivates

[26] "About USSOCOM." U.S. Special Operations Command, accessed May 9, 2021, https://www.socom.mil/about.
[27] "MDA Mission," U.S. Missile Defense Agency, accessed May 9, 2021, https://www.mda.mil/about/mission.html.

operators while MDA passively places a duty on engineers on how to interact with others and complete implied tasks supporting the MDA mission.

Table 2. SOCOM Vision and MDA Strategic Goals

U.S. Special Operation Command[28]	**U.S. Missile Defense Agency[29]**
Vision	**MDA Strategic Goals**
Empowered SOF Professionals, globally networked, partnered and integrated, relentlessly seeking advantage in every domain to compete and win for the Joint Force and the Nation.	In order to achieve our mission, the MDA is dedicated to the following goals: 1. Support the warfighter 2. Prove the power of missile defense through testing. 3. Continue development and fielding of the integrated Missile Defense System for homeland and regional defense. 4. Team approach to agency operations. 5. Optimize available resources. 6. Inspire professional excellence 7. Foster a supportive environment for a diverse and professional workforce. 8. Implement National Security Strategy through international cooperation in missile defense. 9. Capitalize on the creativity and innovation of the nation's universities and small business community.

DoD AI Ethical Principles provide a lens into organizations as well as capability development. SOCOM is mission specific with a valued focus on the human element (1, 2, 3, 4, 5), efficiency (2, 3, 4), planning ahead (3, 4), and building relationships (1, 5). MDA values are not mission specific. Removing "missile defense" from #3 makes MDA's value system applicable to any workforce. Therefore, the DoD AI Ethical Principles may be applied to SOCOM's value system but are in a greyzone with MDA. MDA's early exemption from JCIDS and DOTmLPF concerns results in a culture and system lacking the motivation and relationships necessary for the human element.[30] MDA's early successes were fueled by the self-interests of

[28] "About USSOCOM."
[29] "MDA Mission."
[30] DOTMLPF stands for doctrine, organization, training, materiel, leadership and education, personnel, and facilities. DOTmLPF focuses primarily on non-material aspects of capability development, also referred to as "DOTMLPF with a little m."

scientists and engineers in developing cutting edge hit-to-kill technology. MDA is currently burdened with the sustainment of fielded systems with the original self-interest no longer satisfied. This creates a workforce mismatch detracting attention from the mission to human resource issues. Table 3 provides a litmus test of the value placed on the human element.

Table 3. SOCOM SOF Truths, MDA Core Values, and DoD AI Ethical Principles

U.S. Special Operation Command SOF Truths[31]	U.S. Missile Defense Agency Core Values – Our core values define the MDA culture and set the tone for our workforce:[32]	Department of Defense Artificial Intelligence Ethical Principles[33]
1. Humans are more important than hardware 2. Quality is better than quantity 3. Special Operations Forces cannot be mass produced 4. Competent Special Operations Forces cannot be created after emergencies occur 5. Most special operations require non-SOF support	1. Respect: Mutual for each other with dignity 2. Teamwork: We accomplish more helping each other than as individuals 3. Dedication: To our nation and our missile defense mission 4. Integrity: In all things, all the time 5. Professionalism: Strive for it in all you do	1. Responsible (judgment and care) 2. Equitable (minimize unintended bias) 3. Traceable (transparent and auditable) 4. Reliable (safety, security, effectiveness) 5. Governable (detect, avoid, disengage, deactivate)

A comparative example of leadership failure and recovery from the special operations and missile defense communities can be made with General Stanley McChrystal and Lieutenant General Patrick O'Reilly. GEN McChrystal was the subject of a magazine article and LTG O'Reilly was the subject of an Inspector General (IG) investigation.[34] McChrystal, in SOF fashion, bounced back with candor, preserving relationships, and demonstrating a self-awareness of his leadership. Meanwhile, O'Reilly alienated the missile defense community, attempted to clear his name by hiring a marketing company to scrub the internet, and in essence locked

[31] "About USSOCOM."
[32] "MDA Mission."
[33] U.S. Deputy Secretary of Defense, "Implementing Responsible Artificial Intelligence in the Department of Defense," 26 May 2021.
[34] Michael Hastings, "The Runaway General," *Rolling Stone*, July 8-22, 2010, www.rollingstone.com/politics/news/17390/119236. U.S. Department of Defense Inspector General, "Report of Investigation Lieutenant General Patrick J. O'Reilly US Army Director, Missile Defense Agency," Defense.gov, May 2, 2012, https://media.defense.gov/2018/Jul/25/2001946766/-1/-1/1/O'REILLYROI.PDF.

himself out of an $8.9 billion industry.[35] He lacked self-awareness, abused colleagues and subordinates, and disregarded all attempts at constructive criticism. The human-centric environment of the SOF community created a flexible and adaptable GEN McChrystal, able to own up to mistakes and move on to new ventures while the machine-centric environment of MDA praised the technical prowess and intelligence of LTG O'Reilly while ignoring his lack of humanity. Both performed poorly, but GEN McChrystall demonstrated the benefits of normalizing within rules, values, and interests while LTG O'Reilly demonstrated critical faults in character with unchecked egoism. Beyond improving organizational culture near-term, the exercise provides insight into how individual and organizational characteristics may later be mirrored in the human and machine.

Integrating Ethical Egoism for Human-Machine Teaming

Artificial intelligence techniques such as natural language processing and deep learning provide an opportunity to quantify leadership and associate with quality assessments. Examples of leadership products include the commander's vision and evaluations with organizational products such as the mission, values, Command Inspection Program (CIP) results, and Defense Equal Opportunity Climate Surveys (DEOCS). Artificial intelligence enables the feature extraction, analysis, and correlation of attributes such as trust, honesty, relationship, vulnerability, transparency, accountability, and behavioral self-control. Individual and organizational friction points may be identified for resolution. The quality control of leadership

[35] Leada Gore, "Reputation of Former Missile Defense Agency Chief Lt. Gen. Patrick O'Reilly, Criticized as 'Toxic Leader,' Gets Online Makeover," 31 January 2014, https://www.al.com/breaking/2014/01/reputation_of_former_missile_d.html. U.S. Department of Defense, "Department of Defense Press Briefing on the President's Fiscal Year 2022 Defense Budget for the Missile Defense Agency," Defense.gov, May 28, 2021, https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/2639375/department-of-defense-press-briefing-on-the-presidents-fiscal-year-2022-defense/.

could also look at indicators and warnings of failure to support specific efforts; susceptibility to or support of extremism; and other patterns of toxic leadership.

Ethical Leadership of Artificial Intelligence Enabled National Power to Preserve Peace

Ethics provides quality control for preserving peace through the application of artificial intelligence enabled national power. Artificial intelligence goes beyond discrete munitions delivered against an adversary as it permeates all of society from personal consumer sales to global climate monitoring. After the invention, proliferation, and production of the atomic bomb with global delivery systems, warfare became limited. Bernard Brodie, a nuclear strategist, stated "[Prior to the atomic bomb,] the chief purpose of the military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose."[36] China and Russia have embraced the information age and amassed national power operating in cyberspace. Without international cooperation in ethical controls, the return of Great Power Competition and the current soft war in cyberspace is a prelude to the artificial intelligence equivalent of Hiroshima and Nagasaki.

The United States' leadership in artificial intelligence must go beyond principles and autonomous weapons to practical applications at individual, team, organizational, and national levels. Donald Kagan concludes his comments on preservation of peace with "Even when modern democratic countries have the material resources to do what is needed to keep the peace they find it hard to rally the spiritual resources that are at least as necessary."[37] Congress's FY21 NDAA and NSCAI's funding recommendations are providing the necessary resources and authorities. Technical leadership requires the individual, team, organizational, and national tools to implement artificial intelligence. Ethical egoism is a tool to align self-interests with national-

[36] Bernard Brodie, *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt, Brace and Company, 1946), 76.
[37] Donald Kagan, *On the Origins of War and the Preservation of Peace* (New York: Anchor Books, 1995), 572.

interests motivating implementation. Fear of power and self-interest is mitigated by honest transparency, open relationships, and the associated vulnerability required to learn and improve. Incorporating ethical artificial intelligence principles into personnel evaluation systems, organizational control systems, and national security systems enables the motivational force of ethical egoism. An example is the Army Talent Alignment Process providing a "decentralized, regulated, market-style hiring system that aligns officers with jobs based on their preferences."[38] Officers are provided an opportunity to formally express their self-interests in a transparent transaction contributing to relationship and team-building prior to their arrival at a new organization. Imagine adapting the same ethical egoism characteristics to organizational improvement programs such as the Manager's Internal Control Program (MICP) for efficient and effective management of government resources.[39] Current processes and programs are left to each organization and often rely on mandatory training, reading documents, updating spreadsheets, and performing periodic manual reviews. An ethical framework of interests, values, and rules built into organizational processes and tools frees self-determination and protects those brave enough to improve their personal state nested within improving their organization's state of affairs.

Chapter 1 Summary

The first chapter introduced an ethical framework using ethical egoism as a motivational tool for effective artificial intelligence leadership. SOCOM, MDA, and DoD perspectives demonstrate the need to responsibly address obstacles to implementing artificial intelligence. The ethical framework provides a defense-in-depth tool to resolve human and machine dilemmas, innovate better practices, and responsibly field artificial intelligence capabilities.

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[38] "Army Talent Alignment Process," U.S. Army Human Capital Enterprise, accessed June 8, 2021, https://talent.army.mil/atap/.

[39] Stephen Speciale, "The Managers' Internal Control Program" (*Defense Acquisitions University*, June 17, 2019), https://www.dau.edu/library/defense-atl/blog/The-Managers%E2%80%99-Internal-Control-Program.

Current informal expressions of self-interest need to be addressed within leadership tools. The following chapter addresses how ethical egoism benefits the military while most other egoism based moral theories run the risk of developing schizophrenic psychopathic leaders focused on careerism to the detriment of society. Then the third chapter explores the specific organizational processes and tools benefitting from the ethical framework and artificial intelligence.

CHAPTER 2: Ethical Egoism for Artificial Intelligence Leadership in National Security

Chapter 2 Introduction

Artificial intelligence mirrors the ethical dilemmas of its creator, environment, and society at large. A growing body of literature exists for addressing ethics within the machine and the machine's impact on society, but not the source of the machine.[40] The DoD's RAI initiative provides an initial structure for trust, transparency, and accountability.[41] But it also sets a tone of fear with a potential structure of debilitating regulation and oversight. Corporate ethical guidelines and government regulatory policies often do not improve ethical behavior and instead place an external risk avoidance strain on the morale and welfare of the employees.[42] Recognizing, documenting, and automating egoism enables internal controls for honesty, transparency, and accountability. Ethical egoism along with character values and rules utilitarianism provide a framework to motivate individual and organizational efforts by aligning interests, values, and rules.

Integrating ethical egoism into the existing military ethical systems of character values and rules utilitarianism motivates honesty through responsibly controlled individual and organizational transparency and vulnerability. Ethical egoism's non-intuitive application to military artificial intelligence development is unique from the multiple criticisms of egoisms in other forms. Criticized philosophers include Friedrich Nietzsche's "*Űbermensch* and the will-to-power" and Ayn Rand's *Virtue of Selfishness* on freeing people from the "impersonal, oppressive

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[40] A broad survey of ethical topics is Matthew Liao, *Ethics of Artificial Intelligence* (New York: Oxford University Press, 2020). Training and controlling artificial intelligence is addressed in Wendell Wallach and Colin Allen, *Moral Machines: Teaching Robots Right From Wrong* (New York: Oxford University Press, 2009) and Wendell Wallach, *A Dangerous Master: How to Keep Technology from Slipping Beyond Our Control* (Philadelpha, PA: Basic Books, 2013).

[41] U.S. Deputy Secretary of Defense, "Implementing Responsible Artificial Intelligence in the Department of Defense," 26 May 2021.

[42] Daniel H. Pink, *Drive: The Surprising Truth About What Motivates Us* (New York: Riverhead Books, 2009), 138-141.

machinery of the [government]."[43] The first being associated with Nazi fascism and the second with extremism and the storming of the U.S. Capital on January 6, 2021.[44] In order to build trust in expressing individual self-interest, this chapter assesses ethical egoism in the U.S. military highlighting exceptions to previous criticisms of the moral theory and potential negative effects mitigated by an ethical framework including character ethics and rules utilitarianism. The following will explain how the motivation, intuition, and fragility of the ethical egoism moral theory provide a valuable moral perspective to expose and capitalize on self-interest in support of developing artificial intelligence; discuss how the U.S. military counters many criticisms of ethical egoism; and recognize the importance of publicly proclaiming self-interest, building relationships, and cultivating moral sensitivity.

Ethical Egoism: Adding Interests to Values and Rules to Motivate Leadership

Ethics is not a rule, law, or recommendation, but a discourse and process informing rules, laws, and recommendations. Geddes MacGregor's dictionary statement for "good" simply states, "Good. See Ethics."[45] His redirection results in a long three-page entry on the endless pursuit for good through the use of "Ethics."[46] Brandon Sanderson in his fictional story *Warbreaker* describes a sword awakened to sentience with the single command of "destroy evil."[47] The story goes on to ask the question, how does a metal object so far removed from humanity understand the concept of evil when humanity understands so little of what is good?

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[43] Lawrence M. Hinman, *Ethics: A Pluralistic Approach to Moral Theory*, 5th ed (Boston: Cengage Learning, 2013), 110. Ayn Rand, *The Virtue of Selfishness* (New York: Signet, 1964), 93-99, 125-134.
[44] Scotty Hendricks, "How the Nazis Hijacked Nietzsche, and How It Can Happen to Anybody," *Big Think*, December 16, 2017, https://bigthink.com/scotty-hendricks/how-the-nazis-hijacked-nietzsche-and-how-it-can-happen-to-anybody. Jonathan Freedland, "The New Age of Ayn Rand: How She Won Over Trump and Silicon Valley," *Guardian*, April 10, 2017, https://www.theguardian.com/books/2017/apr/10/new-age-ayn-rand-conquered-trump-white-house-silicon-valley. Dustin T. Cox, "Ayn Rand's Role in the Capitol Insurrection: The 'Virtue of Selfishness' is Foundational to MAGA's Worldview," *The Apeiron Blog*, January 17, 2021, https://theapeiron.co.uk/ayn-rands-role-in-the-capitol-insurrection-44e5e4a908a3.
[45] Geddes MacGregor, *Dictionary of Religion and Philosophy* (New York: Paragon House, 1989), 282.
[46] MacGregor, *Dictionary of Religion and Philosophy*, 227-229.
[47] Brandon Sanderson, *Warbreaker* (New York: Tor, 2009), Chapter 51.

From an engineering perspective, ethics as presented thus far devolves into risk management of human thought, word, and deed. Sanderson's character must talk to the sword, develop a relationship, and provide will to direct the ethics impaired sword. Similarly, artificial intelligence technology requires humanity to provide will to bound inherent risks of developing new solutions.

Ethical egoism's motivation, intuition, and fragility provide a valuable moral perspective to expose and capitalize on self-interest in support of developing artificial intelligence. Ethical egoism considers the value of action, not based upon the inherent rightness, but the individual's self-interests. Other moral theories, such as act and rules utilitarianism within consequential ethics and deontological ethics, ignore motives or leave motives internal to the individual's decision-making.

Egoism is self-motivated. For effective leadership built on trust, relationships, and adaptability, each individual needs to have faith in their organizational environment to express their self-interests, their motives, which also expedites team building through the forming, storming, and norming phases, per Figure 1, by aligning interests and moving team focus from short-term to long-term goals. Of note, utilitarianism with consequences focused on the individual resolves to being ethical egoism.[48] At an organizational level, ethical egoism puts the motivation into effective leadership by aligning policy aims and military strategy with the self-interests of the leaders supervising implementation.

An honest accounting of self-interest provides insight into individual, team, and organizational situational awareness of the big picture and through artificial intelligence may recognize behavioral trends and patterns. This intuition is invaluable to timely resolution of issues as they develop and fester and empowers leaders to preserve morale and performance

[48] Hinman, *Ethics: A Pluralistic Approach*, 124.

rates. The criticisms of ethical egoism highlight the fragility of the moral theory. The same criticisms provide probes into human behavior for indicators and warnings of leaders' current and potential impact on individuals and organizational culture and performance. Examples such as building trust through honesty, balancing self-interest and team cohesion, and adapting self-behavior in response to constructive criticism, provide indications and warnings of behavior venturing into psychological egoism, neoliberalism, and other forms of toxic leadership lacking empathy and failing to respect human dignity. Institutionalizing ethical egoism assists with the first step in improving leadership by enabling self-awareness.

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[49] An individual perspective of setting ethical boundaries in a degrading environment is found in Susan Liautaud and Lisa Sweetingham, *The Power of Ethics: How to Make Good Choices in a Complicated World* (New York: Simon & Schuster, 2021).
[50] Hinman, *Ethics: A Pluralistic Approach*, 115.

Recognizing Ethical Egoism's Informal Role in the Military

Each service member's expression of self-interest from assignment requests to the commander's intent for a major operation provides a glimpse of ethical egoism's informal role in the U.S. Armed Forces. The profession of arms in the United States maintains morale and welfare with the UCMJ; service regulations, values, and traditions; and continuous self-development and professional military education. These are products establishing a military environment with a character values and rules utilitarianism ethical system of decision-making. Lawrence Hinman's exploration of ethical egoism from a pluralistic approach encounters multiple obstacles not applicable in a military environment.[51] The following summarizes the applicability of ethical egoism to military personnel and therefore to military leadership in implementing artificial intelligence.

Quality of Life Driving Self-Interest

An individual's quality of life may weigh on the priorities of self-interest. The quality of one's expressed self-interest may correlate with Maslow's hierarchy of needs where a lack of love and belonging leads to a lack of friendship and a lack of esteem leads to a lack of respect.[52] The U.S. military provides a defined and public compensation and benefits program providing basic needs for individuals and their families. This satisfies the minimum standards for "a stable and satisfactory level of well-being and security."[53] A service member achieving a 20-year retirement letter gains a greater sense of freedom in pursuing self-interest than a service member in fear of being separated from service prior to retirement age. The Uniformed Services Blended Retirement System eases the burden of achieving a 20-year retirement letter with additional

[51] Hinman, *Ethics: A Pluralistic Approach*, 94-121.
[52] Maslow, "A Theory," 380–382.
[53] Hinman, *Ethics: A Pluralistic Approach*, 95.

retirement benefits.[54] The U.S. military's care for service members and families reduces the risk of a quality of life bias in ethical egoism.

Egoism and Altruism

Philosophers are divided on whether egoism and altruism are opposites to be balanced or two separate characteristics of individual behavior. Alexander Moseley bases his assessment on opposites.[55] Hinman explores an orthogonal relationship.[56] The U.S. military's character ethics value-based morality supports Hinman's perspective.[57] In the proposed ethical framework, ethical egoism is a third line of defense to character ethics and rules utilitarianism. The three-dimensional pluralistic approach encourages imagination and contributes to new courses of action. "The more that societies are structured so that self-interest and concern for others overlap, the better the society."[58] Commander's discretion is an example of ethical egoism providing for variant thought in order to question rules, identify values moving out of balance, ensure self-interest does not ignore values and rules, and overall place the value of the mission and human dignity into perspective.

Issues in Utilitarianism

No one loves rules more than the Pharisees, Saduccees, and junior Non-Commissioned Officers (NCO). Jesus in the *New Testament* regularly chastises the Pharisees and Saduucees choosing rules over their relationship with God and neighbor. Soldiers are raised through the initial ranks on performance meeting tasks, conditions, and standards. Rules utilitarianism produces a solid foundation of regulation, but has issues in "reasoning about matters of life and

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[54] This may create a future issue of short-term self-interests prioritized over longer-term organizational interests. U.S. Department of Defense, "Military Compensation: BRS," accessed 9 June 2021 at https://militarypay.defense.gov/blendedretirement/.
[55] Alexander Mosely, "Egoism" IEP, Accessed 8 June 2021 at https://iep.utm.edu/egoism/.
[56] Hinman, *Ethics: A Pluralistic Approach*, 101-102.
[57] Each service has varying value sets specific to their mission and operating environment. For example, the Army Values are Loyalty, Duty, Respect, Selfless Service, Honor, Integrity, and Personal Courage. "The Army Values," Army.mil, accessed at https://www.army.mil/values/.
[58] Hinman, *Ethics: A Pluralistic Approach*, 117.

death, the role of emotions, limits of personal responsibility, and personal integrity."[59] In a military setting, these issues are important to warfare, leadership, command, and the profession of arms. Michael Stocker argues that utilitarianism and similar theories lead to a motivational schizophrenia creating disharmony "between one's motives and one's reasons, values, justifications."[60] Hinman's solution is to combine moral theories with character as the primary and utilitarian as secondary.[61] This is realized in the U.S. military's character values and rules utilitarianism. The addition of character ethics and ethical egoism provide alternate perspectives strengthening the gaps in utilitarianism.

Ethical Egoism in Choosing Values

A Commander's Vision for their command is an expression of ethical egoism in choosing the vision's underlying values. An exercise at the U.S. Army Pre-Command Course is for an incoming commander to iteratively reduce a stack of 52 or more values to 5 values.[62] The officer may use the standard deck or write in new values. Senior leaders preparing for battalion and above commands have a significant time in service and a mature value-based Aristotle morality as a first line of ethical defense. Beyond personal values, the subjective process of down selecting values provides opportunity for expressing self-interest.

Individual Ethical Egoism between the Ratee, Rater, and Senior Rater

Individual ethical egoism exists in the 3-person evaluation system. Hinman's definition for "individual ethical egoism [is] (1) that I ought to act in my own self interest and (2) that everyone else should also act in *my* self-interest."[63] The U.S. Army's evaluation reporting

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[59] Hinman, *Ethics: A Pluralistic Approach*, 134.
[60] Michael Stocker, "The Schizophrenia of Modern Ethical Theories" (*The Journal of Philosophy* 73, no. 14, "On Motives and Morals," 12 August 1976), 453.
[61] Hinman, *Ethics: A Pluralistic Approach*, 153.
[62] An example of a similar list of principles may be found in Susan Liautaud and Lisa Sweetingham, *The Power of Ethics: How to Make Good Choices in a Complicated World* (New York: Simon & Schuster, 2021), 27.
[63] Hinman, *Ethics: A Pluralistic Approach*, 108.

system includes the ratee self-reporting goals and accomplishments, rater evaluating performance, and senior rater evaluating potential.[64] Commanders establish goals from the top of the chain of the command down as a 3-person sliding window. While the ratee-rater relationship is important, the ratee-senior rater relationship is critical to receiving high potential marks and therefore improve eligibility for promotion. In a chain of command, career self-preservation aligns the ratees interests in accordance with the senior rater. No one outside the rater and senior rater signature blocks have the same level influence on the ratee's self-interests. This creates a localized and bounded form of individual ethical egoism.

Universal Ethical Egoism and Competitive Sports

Officer commissioning programs in the U.S. Armed Forces value applicants with experience in competitive team sports. The lessons learned translate well into the infantry squad tactics and leadership taught during officer training. Hinman claims universal ethical egoism leads to individual ethical egoism due to altruism directing others' interests to *my* interests, but Jesse Kalin counters with competitive games and the desire to beat the best. "Competitive games provide a notable example of situations in which it is not inconsistent for me to try to maximize my self-interest but also to will that you try to maximize your self-interest at the same time."[65] Members of the military often matriculate from competitive sports programs and spend a career of training, exercises, wargames, and red teams. Therefore, individual and universal ethical egoism are localized and bounded by the 3-person, sliding-window, performance and potential, evaluation system.

[64] Department of the Army, Army Regulation 623-3 Personnel Evaluation: Evaluation Reporting System (Washington, DC: 4 November 2015).
[65] Hinman, *Ethics: A Pluralistic Approach*, 108.

The Poisoned Tree of Low Hanging Fruit: Short-Term versus Long-term Self-Interest

Egoists often pursue short-term rewards over long-term contributions to mission success. I refer to this as the poisoned tree of low hanging fruit. Low hanging fruit and the desire for a quick win to sell an idea leads to never committing to more important longer-term problems. Corporate America sees this phenomenon regularly as executives maximize personal short-term gains over long-term commitments to stockholders and employees.[66] Service members are committed to a longer career than their civilian counterparts. Enlisted sign multi-year contracts eventually joining officers in volunteering indefinitely, thus requiring permission to separate or retire. Officers accrue obligations to serve additional time after completing a school, receiving a promotion, or transferring education benefits to their children. This dampens short-term malfeasance with long-term self-interest. Typical timeframes include quarterly counseling (3-4 months), annual evaluation (yearly), length of tour (1 to 3 years), length of rank/grade till next promotion (4-7 years), looking ahead two promotions (10 years), and across a career (20+ years). As an officer is promoted up the ranks, their roles and responsibilities increase, raising the risk of short-term opportunistic behavior tempered by a shrinking community of superiors. The ratee-rater and ratee-senior rater relationships accrued over a career provide a level of accountability and are an investment in future promotions. Superiors are familiar with the low hanging fruit and push their subordinates to nurture and climb for the longer-term accomplishments. Though a concern in the U.S. military, the short versus long-term self-interest risk is mitigatable.

Better World – Better Peace

The U.S. military satisfies the caveats to Hinman's counterargument to the ethical egoism "Better World" argument. The argument claims each person is best suited to promote their self-interest to produce more good than harm. Hinman attacks the claim as empirical and requiring a

[66] Hinman, *Ethics: A Pluralistic Approach*, 108-109.

truly equal society "solely of adults with roughly the same levels of skills and resources" and then uses rules utilitarianism in an attempt to force a contradiction.[67] The U.S. Armed Forces provides a common level of skills and resources to prepare service members to preserve peace in the world's multi-polar Great Power Competition. Pay scales are public knowledge and each career field has a professional military education track with common aims across the programs such as the Joint Professional Military Education Program.[68] Utilitarianism was previously discussed as a secondary moral theory to character ethics in the military. The military's definition of victory changes with respect to the policy aims of the nation. Basil Liddell Hart stated, "Victory in the true sense implies that the state of peace, and of one's people, is better after the war than before."[69] Put simply, the U.S. Armed Forces seek victory as a better peace resulting in a better world.

Summary of Ethical Egoism and the Military

Ethical egoism already exists and is a good fit in the context of the U.S. military environment. Service members maintain a grade specific quality of life with basic allowances for housing, sustenance, and other entitlements. Egoism and altruism are complementary with commander's discretion providing an opportunity for imagination. The proposed ethical framework places values ahead of utilitarianism to avoid rule worshiping to the detriment of mission and people. In turn, ethical egoism influences the selection of values. Both individual and universal ethical egoism is addressed by the 3-person, sliding window, evaluation system and the natural inclination of officers to matriculate from competitive sports programs while continuing to compete with each other, foreign partners, allies, and adversaries. Though a residual risk remains, the evaluation system also discourages obsessing over short-term goals in

[67] Hinman, *Ethics: A Pluralistic Approach*, 110.
[68] U.S. Department of Defense, "Defense Finance and Accounting Service," accessed at https://www.dfas.mil/. Joint Chiefs of Staff, "Joint Education," accessed at https://www.jcs.mil/Doctrine/Joint-Education.
[69] Basil Liddell Hart, *Strategy*, 2nd rev. (New York: Meridian, 1991), 357.

favor of longer-term contributions to mission success. Finally, the "Better World" argument is substantiated by the nature of U.S. Armed Forces and their mission to provide a "Better Peace."

Countering Other Ethical Criticisms

Ethical egoism's criticisms strengthen the case for formalizing interests, values, and rules in the military's ethical framework. "Ethical egoism pushes us to reflect on the ways our moral motives often coincide with self-interest, to question whether our moral outlook gives sufficient weight to legitimate self-interest, and to probe the extent to which we may be more responsible for our lives than we thought. Ethical egoism helps keep us honest with ourselves."[70] Ethical egoism responsibly motivates people through self-interest within the ethical norms of character values and rules utilitarianism. Together, the ethical framework improves efficiency and progress in organizational culture, process, and tools without compromising mission and people.

History, popular culture, and politics continuously demonstrate a morally degrading world. From a perspective of personal ethics, Susan Liautaud and Lisa Sweetingham push to "integrate ethics into our decision-making and ground it in reality."[71] In reality, the United States fields the most dangerous military ever known to humanity. Any likelihood of a failure in civil-military control, policy-strategy mismatch, on down to tactical-level errors carry lethal consequences. Any shortcomings in humanity will transfer to shortcomings in artificial intelligence. A bias of a specific demographic in a commercial application must not transfer over to a targeting system or the science fiction of Project Insight becomes reality followed by death and destruction.[72] Effective leaders need to go beyond personal moral obligations and their immediate organization "to democratize ethics…lending a voice to dilemmas at home, at

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[70] Hinman, *Ethics: A Pluralistic Approach*, 115.
[71] Susan Liautaud and Lisa Sweetingham, *The Power of Ethics: How to Make Good Choices in a Complicated World* (New York: Simon & Schuster, 2021), 5.
[72] The fictional Project Insight "[uses] an algorithm that evaluated an individual's behavior and eliminated humans who posed a possible threat." "Project Insight," Fandom, accessed June 8, 2021, https://marvelcinematicuniverse.fandom.com/wiki/Project_Insight.

work, and in society."[73] Therefore, the following reviews other ethical criticisms which also provide insight into harmful human behavior hidden by ignorance and arrogance.

National Egoism

Adolph Hitler's fascist speeches stirred up national egoism in the people of Germany in the lead up to the Second World War. According to Reinhold Neibuhr, "patriotism transmutes individual unselfishness into national egoism. The nation is given carte blanche to use [national] power for any purpose it desires."[74] Hitler was effective in adapting Nietzsche's writings to the Nazi world view to empower patriotism throughout Germany to fill the ranks of the military and the production lines of the factories. The previous section covered the fertile ground for ethical egoism in the military. Cultivation of self-interest from the National Security Strategy to the Commander's Vision must remain a series of nested individual interests lest self-determination be lost to an authoritarian ruler or Commander in Chief without necessary internal controls or checks and balances. A responsible ethical framework for artificial intelligence must ensure individuals are ends in themselves and not abused as means.

Neoliberalism: Corporate Egoism Subordinating Others with Act Utilitarianism

Corporate society cultivates and markets a neoliberalist lifestyle for success. The glamour hides the cult indoctrination of corporate slaves to their careers. Fredric Jameson observes how American capitalism appearing later in Japan and Russia established a version of careerism with "the central tenet of which is the infiltration of the "market principle" into the most private spheres of human existence and the most remote corners of the globe."[75] Here corporate society is cultivating a neoliberal egoist man to live a self-interest lifestyle in the

[73] Liautaud and Sweetingham, *The Power of Ethics*, 5.
[74] Reinhold Neibuhr, *Moral Man and Immoral Society* (New York: Charles Scribner's Sons, 1934), 91-92.
[75] Alexei Yurchak, "Russian Neoliberal: The Entrepreneurial Ethic and the Spirit of "True Careerism"," *The Russian Review* 62, no. 1 (January 2003):89. Also references Frederic Jameso, "Postmodernism, or, The Cultural Logic of Late Capitalism," *New Left Review* 146 (July-August 1984):52-92.

corporate sphere with all other elements of life reduced to transactions, such as sex, relaxation, and home maintenance. Alexei Yurchak reviews the moral theory espoused by the post-Soviet Russian magazine *Kar'era* marketed to the male businessman "born between the mid-1950s and the early 1970s that is the *last Soviet generation*."[76] This represents the corresponding age group of senior field grade and flag offices in the U.S. military possibly reading *GQ*, *Maxim*, and *Men's Health Best Life*.

Kar'era's neoliberalism takes form as corporate egoism subordinating the business class through act utilitarianism. "True careerists (nastoiashchie kar'eristy) [learn] a whole set of norms that demarcate everyday practices, dispositions, and one's relationship to the self and to the world."[77] Pierre Bourdieu labels the marketed image as "the winner, schooled in higher mathematics, bungee jumping, [and] moral Darwinism."[78] Duplicity is encouraged by knowing the "boundaries between 'speakable' and 'unspeakable' ideas"[79] Relationships are reduced to functional utility and stubbornness is idolized as expressing character, willpower, and indestructability. "The neoliberal ideal of a successful life is easier to objectify and control according to the principles, goals, and ethics of the market. By counterfeiting a neoliberal model of meaningful life that looks almost like "the real thing," corporate egoism provides a lifestyle "without the "trivialities" of human ethical dilemmas."[80] The military has a similar sphere of influence which could lead to a military form of corporate egoism as the number of unaccompanied tours increase and the stateside work ethic leaves little room for family and faith.

[76] Yurchak, "Russian Neoliberal":72-73.
[77] Yurchak, 73.
[78] Yurchak, 75.
[79] Yurchak, 77.
[80] Yurchak, 90.

Careerism Groomed Psychopaths

Careerism escalates beyond performance-based activities as the emerging psychopath's sphere of human existence becomes transactional, lacks trust, and seeks to win at others' expense. "Careerism refers to an individual's propensity to achieve their personal and career goals through non-performance-based activities. [Observations indicate] that emotional stability was negatively correlated with careerism."[81] "Psychopaths wear a 'mask of sanity'…skillfully distorting their responses thereby concealing their callousness, selfishness, and manipulativeness. [Careerism may be predicted] by monitoring quid-pro-quo balance, self-serving bias, importance of immediate transactions, or a preference for tangible outcomes."[82] Egoism without the ethical enablers of honesty, relationships, and empathy produces toxic leadership.

Lack of Honesty Compromising Trust

Honesty is the cornerstone of most ethical systems. Egoism is not beholden to honesty if the situation is not in one's self-interest. Dan Ariely summarizes a number of forces contributing to dishonest actions and "how ambiguous rules plus group dynamics equals a culture of cheating" and identifies four effective deterrents.[83] The common element is building a relationship on trust by issuing a pledge, requesting a signature, providing a moral reminder, and supervising performance of duties.[84] An ethical framework valuing honesty and trust is necessary for a successful ethical egoism implementation.

Lack of Moral Sensitivity Withering Relationships

Additional warning signs from criticisms of ethical egoism include a lack of empathy and an unwillingness to show vulnerability. Hinman questions the ethical egoists' moral sensitivity.

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[81] Dan S. Chiaburu, Gonzalo J. Munoz, and Richard G. Gardner, "How to Spot a Careerist Early On: Psychopathy and Exchange Ideology as Predictors of Careerism, ," *Journal of Business Ethics* 118, no. 3 (December 2013):473.
[82] Chiaburu, Munoz, and Gardner, "How to Spot a Careerist Early On," 484.
[83] Dan Ariely, *The (Honest) Truth About Dishonesty: How We Lie to Everyone – Especially Ourselves* (New York: HarperCollins Publishers, 2013), 191-216.
[84] Ariely, *The (Honest) Truth*, 245.

Inwardly and outwardly, are they self-aware, emotionally intelligent, and susceptible to self-deception? Daniel Goleman's empathy triad measures leadership effectiveness by cognitive empathy, emotional empathy, and empathic concern.[85] The dilemma stems from a need to cultivate awareness and build relationships. Otherwise, ambiguity, uncertainty, cognitive dissonance, and passive aggressiveness further erode the organizational culture.

Lack of Relations Leading to Extremism

The lack of a value system increases susceptibility to extremist indoctrination. The late capitalist surge of careerism in Russia demonstrates how a new set of norms redefines relationships between a disenfranchised generation and the world.[86] Russian "true careerists" believe in mind, body, and moral Darwinism.[87] Extremism and other forms of indoctrinating cults isolate potential recruits from their value system of and community relations with military, family, religion, public education, and the rule of law to replace recruits' degraded value systems. The advance of artificial intelligence implementation must prioritize maintaining the relationships between individuals and their social network of colleagues, family, friends, faith, continuous self-development, and conformance to community standards. The ethical perspective of the human and the machine depends upon the relationships between the creator, environment, and society at large.

Chapter 2 Summary

The second chapter analyzes ethical egoism's context, benefits, criticisms, and applicability to national security. Extremism, careerism, duplicity, and other psychopathic and sociopathic behaviors will migrate from humans to machines through artificial intelligence without the necessary internal controls and management tools. These controls and tools provide

[85] Daniel Goleman, "The Focused Leader: How Effective Executives Direct Their Own-and Their organizations'-Attention," *Harvard Business Review* (December 2013):7.
[86] Yurchak, "Russian Neoliberal," 73.
[87] Yurchak, 75.

an opportunity to also promote honesty, transparency, and vulnerability to build the relationships and networks necessary for scaling up artificial intelligence implementation. The following chapter provides a broad survey of opportunities to responsibly enable an ethical framework of interests, values, and rules in organizational processes and tools for scaling up the implementation of artificial intelligence solutions for national security.

CHAPTER 3: Applying the Ethical Framework to Cases for Artificial Intelligence

Chapter 3 Introduction

An ethical framework of publicly expressed interests bounded by the military's values and rules provides the motivation necessary to scale up artificial intelligence implementation. The characteristics of future leaders in artificial intelligence requires a person at the nexus of cost, schedule, and performance with the human and technical skillset and organizational tools to effect progress. In order to manage artificial intelligence impacting human organizations and technical mission systems, military artificial intelligence leadership needs organizational tools, some of which are enabled by artificial intelligence. The following looks at the human characteristics for technical leadership and recommendations for improving existing organizational tools to address individual, bureaucratic, and organizational process obstacles to problems.

Human Characteristics for Technical Leadership

Human characteristics weigh heavier than technical certifications in selecting artificial intelligence leadership. Both are perishable, but character develops over a lifetime, while technical skills can be mastered in 10,000 hours or less.[88] The proposed ethical framework of ethical egoism, character values, and rules utilitarianism is intended to motivate leadership by aligning self-interest with the mission, vision, values, and goals of artificial intelligence implementation. Key factors to enabling ethical egoism is publicly announcing self-interest, dedication to building trust and relationships, and cultivating moral sensitivity and empathy. Modifications to organizational processes must include transparency, accountability, and flexibility because in the human persona, interests have reasons, values have priorities, and rules have justifications. A good leader in artificial intelligence seeks to efficiently make progress,

[88] Malcolm Gladwell, *Outliers: The Story of Success* (Little, Brown and Company, 2008).

reduce the risk of mirroring negative human characteristics in the machine, and deliver an ethical, legal, and socially acceptable solution.

Artificial intelligence implementation involves tackling complex, complicated, and chaotic human and machine problems. MIT's recommendations relevant to technical leadership and organizational processes include reducing the user workload, enriching insight, collaborating across intelligent machines, migrating more routine tasks from human to machine, and improving human-machine relationships.[89] All are relevant to building trust for a stronger relationship, enabling a level of vulnerability to learn and improve. All of this will move existing users, managers, software developers, and project leaders out of their comfort zone. Any changes to the organizational chart or workload ripples through multiple funding, human resource, union, and performance concerns. Even without involving artificial intelligence, changing the workload of a U.S. Government organization is a daunting task.

Technical leadership needs to be both vertical and horizontal from Secretary of Defense to the Initial Entry Trainee and across fellow commanders, staff elements, and battle buddies. Ylli Bajraktari, Executive Director of the National Security Commission on Artificial Intelligence, recommends the DoD "establish artificial intelligence technical know-how at all levels and sustain top-down leadership to accelerate change and drive outcomes."[90] For mission success, "translating ideas into viable software requires having the right mindset, dedicated leadership, and a diverse support team."[91] Building a successful team requires the same features for a robust artificial intelligence solution consisting of trust, relationships, and vulnerability.[92]

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[89] Martinez, et al., *Artificial Intelligence: Short History*, 118.
[90] Ylli Bajraktari, "Four Things the Pentagon Needs to Do to Advance Its AI: The view from NSCAI's executive director," *Defense One*, accessed 9 June 2021 at https://www.defenseone.com/ideas/2021/04/four-things-pentagon-needs-do-advance-its-ai/173291/.
[91] Mariya Yao, Marlene Jia, and Adelyn Zhou, *Applied Artificial Intelligence: A Handbook for Business Leaders* (Columbia, SC: TPBOTS Inc., 2018), 53.
[92] Martinez et al., *Artificial Intelligence: Short History*, 62.

Personal honesty corresponds with data integrity, relationships with networks, and vulnerability with a willingness and capacity to learn. Businesses and other organizations only require familiarity with artificial intelligence to develop an implementation strategy bringing domain-specific and artificial intelligence expertise together.[93] However, the U.S. military is placing the "blood and treasure" of the nation on the line with future artificial intelligence solutions. Those solutions must reflect our interests, values, and rules.

National security artificial intelligence requirements vary from commercial industry. For example, human-machine teaming must be robust for the military while consumer products are more tolerant to errors; military data from legacy and current force systems are not labeled with metadata requiring additional data conditioning; and trust and explainability is critical to employing military artificial intelligence solutions.[94] And, this is before preparing the system to leave the office or garrison environment and placing it in a relevant operational environment with degraded/limited communications, hostile adversaries, and rugged tactical users.

Readiness requires preparation and an honest net assessment. "Commercial executive characteristics of an AI champion include: business and domain expert, credible and influential, technically knowledgeable, analytical and data-driven, controls sufficient budget, encourages experimentation, understands and accepts risks, and collaborates well with decision-makers across multiple business units."[95] But, military commanders have a different concept of readiness, budget, risk, and collaboration. Officers with a competitive sports mentality of "do anything to get off the bench and into the game" assume risk, misrepresent readiness, and overrun budget. Collaboration runs into rank, chain of command, and cross-organizational

[93] Rob Marvin & Brian T. Horowitz, "10 Steps to Adopting Artificial Intelligence in Your Business," *PC Magazine*, November 12, 2018, https://www.pcmag.com/news/10-steps-to-adopting-artificial-intelligence-in-your-business.
[94] Martinez, et al., *Artificial Intelligence: Short History*, 29.
[95] Yao, Jia, and Zhou. *Applied Artificial Intelligence*, 58-59.

conflicts with conversations not spoken freely. Technical leaders require organizational tools providing transparency to readiness, budget, and risk while encouraging collaboration.

Leadership, with the necessary tools of removing fear of reprisal, aligning self-interest with purpose, and empowering self-direction, will intrinsically motivate individuals to achieve. Daniel Pink's analysis of policies showed "corporate ethical guidelines didn't improve ethical behavior," but an ethical strategy of "autonomy, [capability], and purpose" shifted motivation from extrinsic policies to intrinsic self-fulfillment as well as extend motivation from short-term rewards to long-term achievement.[96] Individuals able to honestly make necessary learning mistakes are able to maintain a more positive outlook on the future to improve their capability.[97] Self-direction, personal capability development, and shared purpose require an honest and empathic relationship sensitive to each other.

Technical leadership must be grown through the practical exercise of resolving barriers to implementing artificial intelligence at the individual, team, and organizational levels. Tools such as the Army Talent Assessment Process and Blended Retirement System already provide service members with an opportunity to express self interest in pursuing jobs and managing their career destiny. Leaders are developed and promoted through the personnel performance and potential evaluation system, such as the U.S. Army Evaluation Entry System (EES). Equipment is developed through architectural systems engineering using the DoD Adaptive Acquisition Framework (DoDAF). A further incorporation of self-interest into the EES and DoDAF will address NSCAI's recommendations by enabling the scaling up of artificial intelligence implementation. By integrating self-interest and leveraging the mirroring of human

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[96] Autonomy and purpose are self-evident, but capability replaced the term mastery explained as the asymptopic approach of performance gained through a dedicated mindset, commitment, and grit. Daniel H. Pink, Drive: The Surprising Truth About What Motivates Us (New York: Riverhead Books, 2009), 83-145.

[97] Marshall Goldsmith and Mark Reiter, *What Got You Here Won't Get You There*, (New York: Hatchette Books, 2007), 114.

characteristics into the artificially intelligent machine, organizational tools, such as EES and DoDAF, may be engineered to promote technical leadership in the development of personnel and equipment.

Scaling the Leadership Gap by Tracking Self-Interest in Vision, Values, and Goals

Congratulations, you have been fired before you were hired! Welcome to the Battalion Command Assessment Program (BCAP) "[consisting 4-days of] physical fitness, verbal and written communications, and thorough cognitive and non-cognitive assessments culminating in a panel interview with senior Army officers."[98] The BCAP provides an immediate reality check on the results of the Command Selection Board with an original assessment on the officer's records. In a Clausewitzian perspective of risk, resources, and reward, the 4-day assessment mitigates the risk of a poor commander degrading readiness, reducing morale, or compromising the welfare of a unit. Now imagine an artificial intelligence algorithm evaluating your complete database of personnel records to decide the same fate, but instead provide insight throughout a career for self-development. Would you really read the report, take the results to heart, and work as hard to improve compared to arriving in person for a 4-day assessment face-to-face with the leadership deciding the fate of your career? A similar problem occurs with policy becoming strategy and six grades of rank between direction and implementation. The U.S. Army's 3-person, sliding window, evaluation entry system encourages individual egoism of the senior rater to command subordinates in the unit's local sphere of influence, but is disjointed across each additional echelon. In order to close the vertical leadership gap, the evaluation entry system requires additional autonomy to streamline the nesting of a commander's guidance, goals, and

[98] Christopher Denton, "BCAP: The Battalion Command Assessment Program," February 16, 2021, accessed https://www.army.mil/article/243040/bcap_the_battalion_command_assessment_program.

accomplishments by expanding evaluations from a 3-person window to an end-to-end continuum.

Integrating the unstructured data of vision, values, and goals into the evaluation system enables the correlation of mission command performance with respect to the commander's self-interest. As previously discussed in Chapter 2, the commander's vision is an expression of self-interest bounded by the values and rules of armed service. A commander's ability to receive, interpret, and reissue his superior's vision as one's own expression provides an opportunity to improve vertical and horizontal transparency across the commander's command and staff. Artificial intelligence deep learning then has the data to correlate vision with organizational performance through the Evaluation Entry System (EES), Digital Training Management System (DTMS), and the Defense Readiness Reporting System (DRRS). The gap between the policymaker and implementation reduces with micro-situational awareness feeding into an aggregated assessment. From a horizontal perspective, the rater and senior rater gain an objective assessment of performance and the potential to weigh with subjective personal observation.

A vertically and horizontally integrated evaluation system provides insight and consequence to performance reflected in short-term accomplishments and the longer-term reward of promotion(s). Trade space exists to build trust, strengthen relationships, and adapt to feedback by determining what is shared with whom and what is actually reflected on the permanent evaluation. In this case, ethical egoism's self-interest consisting of vision, values, and goals is labeled and data is conditioned for artificial intelligence to assist in closing the leadership gap between policy and implementation. The next section looks at tying persons to roles in the Adaptive Acquisition Framework.[99] The Army Futures Command has 26,000

[99] "Adaptive Acquisition Framework," accessed June 8, 2021, https://aaf.dau.edu/.

personnel and the Army Acquisition Workforce (AAW) has 40,000 personnel for 66,000 personnel not including the higher echelon functional, materiel, and funding personnel.[100] Each person has one or more roles contributing to the effectiveness and progress of Army acquisitions. Correlating commander's intent with roles and products provides insight into program management and engineering obstacles. From these obstacles or friction points, program managers and technical leadership may resolve disputes preventing implementation of artificial intelligence.

Managing Expectations with Progressive Internal Controls

MDA fused government, industry, and academia into an effective organization delivering a state-of-the-art kinetic hit-to-kill missile defense system. Despite the sterile mission, goals, and values discussed earlier, MDA aligned the self-interests of missile scientists and engineers on a common research and development solution. But, they also had the advantage of not operating fully under the JCIDS, significantly tailoring the DAS, and receiving generous funding through the PPBE process. SOCOM also benefits from having its own funding authority and acquisition organizations for SOCOM unique mission requirements. The three key systems in greatest need of autonomy and artificial intelligence are JCIDS, DAS, and PPBE.

Any revolutions in the administration of JCIDS, DAS, and PPBE will occur slowly over measured steps. Acquisition reform takes at least 8-10 years and acquisition outcomes are inherently hard to control as they are influenced by the overall funding climate.[101] The importance of the Defense Industrial Base (DIB) and the DIB's need for predictable market forecasts will continue to influence policy makers to take a risk averse approach to reform by taking small, slow incremental steps. Without waiting for the reform to finish, the Adaptive

[100] "About AFC," accessed June 8, 2021, https://www.army.mil/futures#org-about . "About the AAW," accessed June 8, 2021, https://asc.army.mil/web/career-development/about-aaw/.
[101] Laura H. Baldwin and Cynthia R. Cook, "Lessons from a Long History of Acquisition Reform," July 17, 2015, https://www.rand.org/blog/2015/07/lessons-from-a-long-history-of-acquisition-reform.html.

Acquisition Framework's products, processes, and hand-offs contributes to a potential artificial intelligence pipeline of data, information, knowledge, and insight. This produces the transparency necessary to identify the interests of stakeholders, build a network of relationships, and together work through obstacles to the implementation of artificial intelligence.

Architecture – Model Based Systems Engineering

The lack of systems architecture readiness for artificial intelligence is a human dilemma, not a technical dilemma. The systems engineering discipline of architecting characterizes behavior not represented well in requirement statements to include data structures, information exchanges, and interfaces. The DoD first published the Command, Control, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) Architecture Framework in 1996.[102] Subsequent evolutions include the Department of Defense Architecture Framework (DoDAF) and *2018 DoD Digital Engineering Strategy* for model-based systems engineering. During this time, JCIDS has maintained interoperability, net-centricity, and automated battle management aid (ABMA) requirements directing development of the data architectures necessary for artificial intelligence.[103] DoD digital engineering efforts over the past 25 years have already provided the methods for exposing data and processes across potential implementations. A program's lack of architecture products reflects either lack of priority, funding, or schedule. The architecture products are an example of a goal that could be flowed down vertically through the evaluation system through Program Executive Officers, Project Officers, Product Managers, and Assistant Product Managers with tracking metrics. Using ethical egoism and self-direction, system architects may be trained full-time or as an additional duty depending on the scope of work and

[102] P. Kathie Sowell, *The C4ISR Architecture Framework: History, Status, and Plans for Evolution* (MacLean, VA: MITRE), 1, accessed June 26, 2021, https://www.mitre.org/sites/default/files/pdf/sowell_evolution.pdf.
[103] Office of the Deputy Assistant Secretary of Defense for Systems Engineering, *2018 Digital Engineering Strategy*, June 2018, accessed February 1, 2021, https://ac.cto.mil/wp-content/uploads/2019/06/2018-Digital-Engineering-Strategy_Approved_PrintVersion.pdf.

periodicity of maintenance. These same architects are invaluable for supporting the human-machine teaming and user interaction building relationships with honesty and empathy.

Timeliness & Hypersonics

Military capability development and acquisitions require foresight to determine requirements for national security. "Consumer designers and marketers project new models out 3-years, engineers and entrepreneurs forecast innovations out 10-years, and inventors and utopian writers predict breakthrough inventions out long term."[104] In 2006, David Nye criticized a prediction on voice recognition made in 1998 not yet realizing Google's 2008 iPhone achievement, the 2014 launch of Siri, and the now ubiquitous use of voice recognition to the distress of all seeking customer service.[105] Hypersonic missiles are not new as the technology has existed since the 1950's. Russia and China are actually behind in hypersonic development to penetrate U.S. missile defenses. Meanwhile, the United States is developing regional missiles reducing the flash to bang time in area access, area denial, and high value target scenarios. Imagine how quickly the Afghanistan and Second Iraq War would have been over if a confirmed target such as Sadam Hussein or Osama Bin Laden had been hit before they departed the area. NASA engineers interested in hypersonic technology maintained U.S. dominance in the field until the requirement surfaced in the military's threat and opportunity assessments.

Corporate Self-Interest versus Warfigher Requirement

Raytheon's role as prime systems integrator was at risk as U.S. Army PEO Missiles and Space sought to componentize the existing tightly coupled architecture for theater missile defense network enabling sensors and shooters to plug and fight. "Fundamental innovations almost always seem to come from outside the established market leaders, who suffer from "path

[104] David E. Nye, *Technology Matters: Questions To Live With*, (Cambridge, MA: The MIT Press 2007), Table 3-1, 34.
[105] Nye, *Technology Matters*, 35.

dependency." Established firms are usually too committed to a particular conception of what their product is."[106] This was demonstrated by Northrop Grumman beating the Raytheon Company for the Army's Integrated Air and Missile Defense (IAMD) Battle Command System (IBCS). IBCS replaces the mission command component of Raytheon's Patriot Air and Missile Defense System with a distributed plug and fight network architecture. Raytheon's corporate self-interest of retaining the role of prime systems integrator and majority market share was subverted once it no longer aligned with customer interests.

Building Stronger Coalitions through Missile Defense and Artificial Intelligence Notes

The United States has demonstrated global excellence in missile defense technology from the space age to the fielding of a portfolio of joint, multidomain, layered, global, regional, and theater missile defense systems. The cohesion of presidential, congressional, and defense interests resolved human dilemmas enabling the development and fielding of missile defense capability. Of the technologies currently in development, the human relationships matter more to national security than the system itself. The sensor fusion of networking multiple sensors across the services, foreign partners, and areas of responsibility depends upon relationships between the DoD, Department of State, and foreign partners and allies. The regional insertion of hypersonic missile technology relies on autonomy and artificial intelligence for shrinking engagement timelines, but more importantly is the shared multi-polar understanding of conventional versus nuclear strike capability. Maneuvering threats, now at faster speeds, require an update to fire control's weapon-target pairing and real-time management of the defended asset list. Previously, the defended asset list was a pre-negotiated prioritized list of assets to protect, informing the lay down of missile defense sensors and launchers. Today's fast paced multidomain war requires real-time reassessment of asset value to effectively apply the limited

[106] Nye, Table 3-1, 38.

inventory of sensors and missile interceptors. Sharing the health, welfare, and readiness of the individuals, equipment, and structures on the defended asset list in real-time requires strong relationships to balance trust, transparency, and vulnerability amongst stakeholders. Missile defense is a valuable system for building coalitions. U.S. innovation in artificial intelligence will promote the conversations leading to stronger coalitions and the continued preservation of peace.

Chapter 3 Conclusion

Self-interest is a strong motivational factor for promoting progress and exposing issues earlier to improve efficiency. The JAIC and services are already pathfinding hundreds of artificial intelligence projects within an archaic set of capability, acquisition, and funding systems and processes. An efficiency in delivering capability is necessary to achieve "getting to less" or in more common slang "doing more with less."[107] By cultivating the leadership characteristics and tools for artificial intelligence, the U.S. military will scale up artificial intelligence implementation improving the ratio of capability delivered to resources required.

[107] Kathleen Hicks, et al., *Getting to Less? The Innovation Superiority Strategy*, 1.

CONCLUSION

Ethics finds the moral path to the end state. The provided ethical framework helps leadership find the moral path to scaling up artificial intelligence while keeping within the values, rules, and interests of the U.S. National Security Strategy. The atomic bomb limited Great Power warfare to negotiation and transactional relations with unlimited warfare restricted to non-nuclear proxy states. Unlike discrete bombs, artificial intelligence easily proliferates through interconnected systems exposing the world to each new capability and its unintended consequences. To avoid the worst traits of humanity becoming autonomous and cognitive weapons of civil and military destruction, an ethical framework and toolset is necessary for the responsible development, fielding, and operation of artificially intelligent capabilities. Technological progress depends upon humanity's conscious engagement.

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