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LEGISLATIVE ACTION FOR THE PROTECTION DOD INTELLECTUAL PROPERTY AND STIMULATION OF THE INNOVATION ECOSYSTEM

by

Zachary A. Finch

September 2022

Thesis Advisor: Nicholas Dew
Second Reader: Cecilia Panella

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This capstone seeks to address the primary research question of, How can antiquated legislation be addressed and adapted to support the challenges of innovation warfare? Adversaries such as the People's Republic of China have studied the United States and developed methods for undermining existing U.S. civil-military architecture and legislation. Rightly so, the National Security Council and Department of Defense (DOD) recognize this threat—and the need to respond to it in new and dynamic ways—in their overarching strategies. Both the *National Security Strategy* (NSS) and the *National Defense Strategy* (NDS) state the need for the adoption of innovative tools and practices necessary to outpace near-peer competitors, and yet there has been no significant shift in underlying architecture to shape true change to that end. The DOD innovation and acquisition system remains over-inundated, complex, and mired in intellectual property law. This research proposes that senior DOD and Congressional leaders use the National Defense Authorization Act (NDAA) to 1) leverage existing intellectual property law to stimulate the innovation ecosystem and 2) drive a Congressionally directed response for the development of an intellectual property strategy that is aligned with the end states outlined in the NSS and NDS.

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LEGISLATIVE ACTION FOR THE PROTECTION DOD INTELLECTUAL PROPERTY AND STIMULATION OF THE INNOVATION ECOSYSTEM

Zachary A. Finch
Major, United States Marine Corps
BSCJ, University of Mississippi, 2006

Submitted in partial fulfillment of the
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NAVAL POSTGRADUATE SCHOOL
September 2022

Approved by: Nicholas Dew
Advisor

Cecilia Panella
Second Reader

Carter Malkasian
Chair, Department of Defense Analysis

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ABSTRACT

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LIST OF ACRONYMS AND ABBREVIATIONS

ARPA	Advanced Research Projects Agency (Precursor to DARPA)
DARPA	Defense Advanced Research Projects Agency
DHS	Department of Homeland Security
DOD	Department of Defense
IP	Intellectual Property
NASA	National Aeronautics and Space Administration
NDAA	National Defense Authorization Act
NDS	*National Defense Strategy*
NSS	*National Security Strategy*
OODA	Observe, Orient, Decide and Act
T2	Tech Transfer

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EXECUTIVE SUMMARY

A. PURPOSE

This capstone seeks to address the primary research question of: How can antiquated legislation be addressed and adapted to support the challenges of innovation warfare? Furthermore, this capstone also addresses the need for an intellectual property strategy for the Department of Defense (DOD) and recommends methods that might be adopted to support a modern whole of government competition strategy. The capstone focuses on defining and exploring intellectual property from a defense perspective, how current law might be more effectively leveraged and how a defined intellectual property strategy might support that effort.

B. KEY FINDINGS

- Existing intellectual property law is a critical element of the DOD innovation ecosystem and, when used properly, supports growth and development at the lowest levels. Education and training for the effective use of such tools falls short. Redesign and reform of innovation doctrine and policy is dependent on said education and training and change in the legislation can serve as a tool to refocus the force.

- Dual-use technology forms the space of modern competition in defense though the DOD is confined by existing intellectual property law and lacks the tools necessary to accelerate U.S. competition in this space. Standing intellectual property law confines the DOD to a specific set of parameters that are not aligned with the strategic end states outlined in the *National Security Strategy* (NSS) and *National Defense Strategy* (NDS). A modernized approach to an Intellectual Property Strategy is necessary to stimulate the space of dual use technology and close the gap between the DOD and the civilian sector.

- Further attempts to achieve desired end states inside the existing legal construct will be fruitless endeavors as current legislation limits what is in the realm of possible. Reform and redesign of innovation doctrine and policy is dependent on change in the legislation.

- Lack of awareness of legal options, a failure to effectively enforce intellectual property protections and a disincentivized DOD are all contributing factors in what has become full-scale economic and intellectual warfare.

- The Naval Postgraduate School requires a formalized relationship with DOD legislative affairs to support policy and legislation-based capstones and theses.

- The Naval Postgraduate School does not provide incoming students formalized education with respect to intellectual property.

C. OVERVIEW

This capstone intends to address the necessity of cultural change that is driven by, with and through the legislative process that is the National Defense Authorization Act (NDAA). More broadly, this author proposes that the legislative branch—U.S. Congress—is the most fitting and able body in the federal government to protect American intellectual property and has a moral and ethical responsibility to do so. With this assumption in mind, the author intends to propose the establishment of an intellectual property strategy and legislation that that achieves two goals. First, this proposed legislation will protect DOD intellectual property and increases security in the relationship with the commercial sector. Second, implementation of this legislation will promote a culture of progress by addressing the legal barriers to innovation while supporting critical elements of the *National Security Strategy* (NSS) and the *National Defense Strategy* (NDS). Innovation in the DOD is often a problem of infinite regression or trying to find the source of the problem. There are many that speculate that the problem of innovation can be addressed through reform or redesign

of the policy and doctrine.[1] Others believe the system that is in place works and it is the failure to understand processes and procedures. This author believes that the preponderance of the issues in innovation are rooted in antiquated legislation and the failure to adopt design for warfare that supports desired ends.[2]

Intellectual property strategies have long since been employed by the private sector in corporations around the globe. This system of tools harmonized with a business strategy supports a company's ability to advance its station in strategic business competition with its rivals. The author posits that there is substantial overlap of private business and public defense in modern conflict and that this common space exists in the form of dual use technologies: their ideation, development, acquisition, and employment. This overlap is both an incredible asset and possible security weakness, and thus demands that the DOD endeavor to secure those technologies and innovations in a manner like that of its allies in the private business.

The underlying architecture and legislation developed in the years following the conclusion of World War II served as the foundation from which the United States would engage the Soviet Union during the Cold War. As the U.S. enters a new period of strategic competition with China and Russia, it must assess the validity and strength of such antiquated tools and how they serve to guide the defense of the nation moving forward into the future. This requires a blank-slate review of how, when, where and why the DOD protects the intellectual property of its service members. As such, where standing legislation is deemed valid, it must reinforce this objective; where it is deemed inadequate, it must discard extant processes and rebuild to support modern-day competition. Design for warfare is iterative and must constantly evolve to remain competitive.[3]

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[1] "The Red Queen Problem – Innovation in the DOD and Intelligence Community," Steve Blank, October 17, 2017, https://steveblank.com/2017/10/17/the-red-queen-problem-innovation-in-the-dod-and-intelligence-community/.

[2] John Arquilla and Nancy C Roberts, "Design of Warfare" (faculty publication, Monterey, CA: Naval Postgraduate School), 2017.

[3] Arquilla and Roberts.

Adversaries such as the People's Republic of China have studied the U.S. and developed methods for undermining existing American civil-military architecture and legislation. The National Security Council and DOD recognize this threat- and the need to respond to it in new and dynamic ways- in their overarching strategy. The interim NSS states that "we will provide our workforce with the cutting-edge technology they need, while encouraging new organizational structures and the culture of innovation required to address today's complex challenges."[4] This sentiment is further reflected in the 2018 NDS and serves as a call from the highest levels of government to establish an innovation ecosystem that "empowers the warfighters with the knowledge, equipment and support systems to fight and win."[5] This capstone endeavors to answer that call through the reinforcement and augmentation of standing legislation pertaining to intellectual property and defense. Furthermore, it highlights the necessity for new, more expansive legislative scaffolding for an overarching intellectual property strategy. These, easily achievable and minimally invasive approaches are necessary to the grand strategy and more importantly can be realized with minimal effort and zero force restructure.

D. ROADMAP

The first section of this capstone highlights existing legislative and statutory protections of intellectual property for DOD employees. Specifically, DODI 5535.8 is rooted in Title 15 U.S. Code Section 3710c and explains the entitlements due to uniformed servicemembers and their civilian counterparts in the sale of patented technology developed while employed by the DOD.[6] Historically, servicemembers are largely unaware of their legal rights as they pertain to intellectual property development, protection, and utilization. This capstone posits that while these historical pieces of law are crucial towards preserving a servicemember's right to leverage his or her own ideas for the

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[4] White House, *Interim National Security Strategic Guidance* (Washington, DC: White House, 2021).

[5] Department of Defense, *Summary of the 2018 National Defense Strategy* (Washington, DC: Department of Defense, 2018), 14.

[6] Department of Defense, *Technology Transfer (T2) Program* Department of Defense Instruction 5535.8 (Washington, DC.: Department of Defense, 1999), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/553508p.pdf?ver=2018-10-22-082514-847.

betterment of the nation, the reality is that this legal structure is a meagre skeleton in the face of a well-muscled and malignant strategic competitor. Furthermore, this capstone posits that by creating a broader awareness of the legal structure the force will be able to better support talent management initiatives by insuring greater opportunity for personal advancement while in service.

The second section of the capstone lays out the historical and competitive analysis of America's strategic competitors. Pacing threats like China have repeatedly stolen American intellectual property with ease and impunity. Lack of awareness of legal options, a failure to effectively enforce intellectual property protections, and a disincentivized DOD are all contributing factors in what has become full-scale economic and intellectual warfare. An assessment of the legal options lays out a clear path forward: Congress, through the NDAA, can and should develop new law and leverage existing law and doctrine to achieve the desired end states outlined in the NSS and the NDS. Without substantial legislative attention to these issues, the U.S. will not be able to effectively compete with the China in terms of intellectual property development or preservation.

The third section of this capstone highlights the ethical implications of protecting American intellectual property. The author utilizes the "Innovation Warfare" argument laid out in Suchodolski and Harrison's article by the same title to posit that while the United States may have the capacity to resist strategic threats like the PRC, we lack the capability and organization to implement those resistance methods.[7] More specifically, "innovation warfare does not just threaten American jobs or prosperity… [it] also poses an existential threat."[8] To this end, the author posits that intellectual property development, protection, and weaponization is a whole-of-government rather than a whole-of-defense problem set, thus complicating the moral and ethical implications of acting in this space.

The author of this capstone believes that to achieve such objectives, Congress must direct the DOD to advertise the monetary value of patented technology and make available

[7] Jeanne Suchodolski, Suzanne Harrison, and Bowman Heiden, "Innovation Warfare," *North Carolina Journal of Law & Technology* 22, no. 2 (December 1, 2020): 175, https://scholarship.law.unc.edu/ncjolt/vol22/iss2/4.

[8] Suchodolski, Harrison, and Heiden.

patent training to all uniformed and civilian personnel. Furthermore, the author recommends that Congress direct the DOD to develop an intellectual property strategy that supports the ends outlined in the NSS and the NDS. The former a proposal that this author believes will help jump start the innovation ecosystem within the DOD and the later the overarching protective strategy that makes such an endeavor productive towards the desired ends.

E. RECOMMENDATIONS:

1. Through the NDAA, implement a program designed to educate, train, and enhance awareness of intellectual property rights and the monetary value associated with innovation action within DOD as a whole.

2. Develop legislation that directs the research, development, and implementation of an intellectual property strategy designed to support competition in a modernized dual use technology arena.

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The inspiration for this thesis came from the most unlikely places. Jeanne Suchodolski, an intellectual property lawyer for the Office of Naval Research, illuminated the possibility of changing the trajectory of the future and how the United States engages in a whole-of-government approach to warfare. The idea that intellectual property had anything to do with that would never have occurred to me had she not helped me to connect the dots. Innovation warfare is the way of the future and the past. Had it not been for Jeanne, I would not have recognized the necessity of this tool in strategic design for warfare. Jeanne, thank you for the direction and guidance. You are a true patriot, and I am incredibly proud to know you and call you a friend.

To my advisory team, Nick Dew and Cecilia Panella: thank you for encouraging and fostering grand plans and for helping me open the doors necessary to affect real change. This is not a capstone that will lie dormant and, thanks to you, may shape the future of the American fighting force. The Naval Postgraduate School should be incredibly proud to have professionals such as you that are educating the future of the force. You are both tremendous educators and mentors.

To Christopher Miller, Bill Gallagher, Mike Mackay, Ray Kaplan, Andrew Cote, Doug Livermore, Noah Kanter, Neal Heaton and the many others I worked alongside in the depths of the Pentagon: Thank you for teaching me how real change happens and for always challenging me to attack forward. Our goal has never been to engage in a long, drawn-out academic endeavor but instead to hone the blade that is and will remain this country's greatest asset: the men and women of the armed forces.

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I. INTRODUCTION

Congressional leaders, senior civilian leaders, and general officers are responsible for the culture and structure of the DOD and must understand the complexity and necessity of balanced and effective legislation that support the ends, ways, and means of the United States military. The strategic design for warfare that affords victory.[1] For those leaders that deal with innovation, research, development, testing and experimentation, an understanding of the nuance and complexity of intellectual property laws and intellectual property strategies is necessary to the healthy development of the defense innovation ecosystem. How intellectual property strategies are used by corporations around the globe serves as a touchstone from which the DOD must drive the future of its innovative capabilities. Patents, trademark protection, design protection, and copyrights are all tools used in an intellectual property strategy to ensure the commercial viability of a company or organization.[2] As the DOD enters a space of strategic design for competition with increased corporate interaction and the lines blur between defense-based industries and civilian corporations.[3] As such, DOD senior leaders must seek the adoption of an Intellectual Property Strategy that aligns with the *National Security Strategy* (NSS) and the *National Defense Strategy* (NDS) and strengthens its ability to compete at the strategic level.[4]

Intellectual property strategies have long since been employed by the private sector in corporations around the globe. They are used with and nested within an overarching business strategy that supports a company's ability to advance its position in strategic business competition with its rivals. With the rise of unrestricted warfare, there is

[1] John Arquilla and Nancy C Roberts, "Design of Warfare" (faculty publication, Monterey, CA: Naval Postgraduate School), 2017.

[2] "Intellectual Property Rights Strategy," Swedish Intellectual Property Office PRV, August 22, 2019, https://www.prv.se/en/knowledge-and-support/glossary/intellectual-property-rights-strategy/.

[3] Arquilla and Roberts, "Design of Warfare."

[4] Arquilla and Roberts.

substantial overlap in the space between private business and public defense in this area.[5] More narrowly, this common space exists in the form of dual use technologies: their ideation, development, acquisition, and employment. This overlap is both an incredible asset and possible security weakness, and thus demands that the DOD endeavor to secure those technologies and innovations in a manner like that of its allies in the private business for the safety and security of the nation. Inculcation of a robust intellectual property strategy also supports the basic premise of innovation and fosters an environment in which to do so.

Through legislation, Congress was able to address the ends, ways, and means necessary to defeat Russia in the Cold War.[6] This design for warfare and of strategic competition is stable and ensures the military is prepared to defend against a Russian invasion of Europe or compete through irregular conflicts like Korea, Vietnam, or Afghanistan.[7] It enabled organizations like National Aeronautics and Space Administration (NASA) and Defense Advanced Research Projects Agency (DARPA) to develop and implement technology through structured processes in line with defense needs. It was the perfect strategy for the U.S. from 1946 to 1991. The brilliance of American leadership was the legislation and strategic direction that enabled the innovation ecosystem to prosper in response to the commonly agreed-upon threat. Further, the leadership promoted an American culture unified behind the mission to achieve victory over the Soviet Union. All of this is well studied in deterrence circles and understood by the legal community. What is lacks is security in the face of evolving threats. Aquilla and Roberts offer that the realization of a Marxist theory that the liberal, capitalist world system is sowing the seeds of its own destruction does not have to be realized and instead offer

[5] Qiao Liang and Wang Xiangsui, *Unrestricted Warfare: China's Master Plan to Destroy America* (Medina University Press International, 2021).

[6] H. Richard Yarger, "Toward a Theory of Strategy: Art Lykke and the U.S. Army War College Strategy Model," Vol. I: (Strategic Studies Institute, U.S. Army War College, 2010), https://www.jstor.org/stable/resrep12114.6.

[7] Arquilla and Roberts, "Design of Warfare."

"Design for Warfare.[8] Simply stated, warfare is a competition of design in innovation.[9] "Whatever weapons are crafted, however military forces are structured, their information flows determined, and no matter the ways in which the use of these various elements in battle is pondered, all must come together in a manner that enables them to contend with and then prevail against the adversary's designs."[10]

The U.S., unfortunately, is still fighting through a design for warfare framework of liberal policy and antiquated legislation that stems from a 76-year-old strategy.[11] Despite achieving success in the Cold War, this strategy fails to consider the benefits of a truly integrated approach to intellectual property and defense. From this strategy, the idea that bigger and better guns achieve victory simply no longer dominates the space of defense competition. While not irrelevant in its entirety, the strategy loses relevance in its failure to consider defense across the spectrum of dual use technology. This strategy worked to defeat the Soviets and their competing but non-overlapping economic base, but it does not suffice in modern-day strategic competition against a country like China that maintains an intertwined global economy.

The terrain and battlefield dynamics shifted entirely with the advent of nuclear weapons. The dynamics of power polarity and competition on the global stage could no longer rely entirely on the use of firepower but instead force consideration of alternate methods of competition. The concept of mutually assured destruction drove powerful nation states to consider the idea that conventional warfare and military dominance was no longer the marker of global dominance and power. This is not because of the morality of their use, but because of the implications of survivability and sustainability beyond their use. Nation state elites seek power and control through means that ensure longevity.[12] The

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[8] Arquilla and Roberts.

[9] Arquilla and Roberts.

[10] Arquilla and Roberts.

[11] Jeanne Suchodolski, Suzanne Harrison, and Bowman Heiden, "Innovation Warfare," *North Carolina Journal of Law & Technology* 22, no. 2 (December 1, 2020): 175, https://scholarship.law.unc.edu/ncjolt/vol22/iss2/4.; Arquilla and Roberts, "Design of Warfare."

[12] Reid B.C. Pauly, "Would U.S. Leaders Push the Button? Wargames and the Sources of Nuclear Restraint," *International Security* 43, no. 2 (November 1, 2018), https://doi.org/10.1162/isec_a_00333.

use of nuclear weapons in competition produce a result quite opposite the desired end state, thus resulting in the rise in multi-domain warfare.

The increasing prevalence of economic warfare, Hollywood psychological operations, and theft of intellectual property represent micro-escalations that U.S. systems have yet to appreciate or categorize as threats, let alone trigger a reaction.[13] Our adversaries were keen observers of the American war machine during the Cold War and have, in turn, built strategy that patiently seeks to undermine standing U.S. legislation, strategy, process, and procedures for competing in innovation warfare.[14]

A. DEFINITIONS

For the purposes of this capstone, it is important to establish a common baseline to ensure understanding across the language used within this text. The definitions provided here serve as reference for the entirety of this work.

- Innovation: the process of converting inventions into useful products and services, including developing the infrastructure necessary to do so.[15]

- Innovation Ecosystem: We use the term "innovation ecosystems" to refer to the inter-organizational, political, economic, environmental, and technological systems of innovation through which a milieu conducive to business growth is catalyzed, sustained and supported. A vital innovation ecosystem is characterized by a continual realignment of synergistic relationships that promote harmonious growth of the system in agile responsiveness to changing internal and external forces.[16]

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[13] William J. Holstein, *The New Art of War: China's Deep Strategy Inside the United States* (Brick Tower Press, 2019).

[14] Andrew Scobell et al., *China's Grand Strategy: Trends, Trajectories, and Long-Term Competition* (Rand Corporation, 2020).

[15] Suchodolski, Harrison, and Heiden, "Innovation Warfare."

[16] Ove Granstrand and Marcus Holgersson, "Innovation Ecosystems: A Conceptual Review and a New Definition," *Technovation* 90–91 (February 1, 2020): 102098, https://doi.org/10.1016/j.technovation.2019.102098.

- Innovation Warfare: executable doctrine with specific strategic goals and elements. The articulation of this doctrine is believed to be new and novel.[17]

- Intellectual Property: Any product of the human intellect that the law protects from unauthorized use by others. The ownership of intellectual property inherently creates a limited monopoly in the protected property. Intellectual property is traditionally comprised of four categories: patent, copyright, trademark, and trade secrets.[18]

- Technology transfer: Technology transfer means those activities that lead to the adoption of a new technique or product by users and involves dissemination, demonstration, training, and other activities that lead to eventual innovation.

[17] Suchodolski, Harrison, and Heiden, "Innovation Warfare."

[18] U.S. Patent and Trademark Office, "Intellectual Property," LII / Legal Information Institute Cornell Law School, accessed September 2, 2022, https://www.law.cornell.edu/wex/intellectual_property.

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II. INTELLECTUAL PROPERTY AND EXISTING LEGISLATION

A. WHERE THE RUBBER MEETS THE ROAD

In November of 2021, the Air Force Times published an article titled "How One Airman Fixed the Air Force's Night Vision Problem with a 4-Cent Chunk of Plastic."[19] The article is a case study in innovation and adaptation out of necessity and is intended to promote innovative thought at the lowest level.[20] In this case study, a Staff Sergeant built an adapter to support the mounting of new night optic devices to an outdated integrated helmet mount.[21] The article went on to describe the painstaking process that the young Staff Sergeant went through; first supergluing washers and bolts and then using a 3D printer and material he procured with his own money.[22] Investing his own time, he developed a solution to mount the new night optics by using a printed piece of plastic with a production cost of 4 cents.[23]

The actions of this Airmen are estimated to have saved the Airforce approximately $19,000 per unit across a required 38,000 units.[24] The innovation saved a significant amount of money and ensured that airmen could use a superior night optic, an element critical to the safety of its personnel. Though the intentions were admirable, this case study is an example of a critical failure by the DOD to leverage the innovative and adaptive thought of its people beyond this single Staff Sergeant. This man's actions produced a cost savings of approximately $722 million and yet there is no report of personal benefit to him as an individual. Unfortunately, there was no leveraging of standing intellectual property laws to ensure this Airmen earned his fair share and, in turn, a massive opportunity was

[19] David Roza, "How One Airman Fixed the Air Force's Night Vision Problem with a 4-Cent Chunk of Plastic," *Task & Purpose* (blog), November 17, 2021, https://taskandpurpose.com/news/air-force-security-forces-night-vision/.

[20] Roza.

[21] Roza.

[22] Roza.

[23] Roza.

[24] Roza.

missed. This case study could have served as advertisement for the benefits afforded to service members and civilians under Title 15 U.S. Code Section 3710c, but the organization failed to seize such an opportunity.[25]

B. ORGANIZATIONAL RESPONSE AND WHY IT MATTERS:

On March 8, 2022, General Berger, the 38th Commandant of the Marine Corps, addressed the entirety of the Marine Corps on the Russian invasion of Ukraine and the grave consequences of further escalation. He referenced the Marine Corps foundational doctrinal publication MCDP - I as a 33-year-old example of the last time the Marine Corps truly reflected on warfare and the conduct of warfare. In doing so he called on Marines of all ranks to rally in the face of strategic competition and reflect on the current state of warfare. MCDP-I, he states, "reminds us of essential factors in war that we ignore at our peril: the power of the human will and spirit; the ever-present influence of friction, fog, and chaos; and the likely futility of any approach to warfare that seeks an unattainable certainty or prioritizes a single element of the combined arms equation over the integrated application of the whole."[26] A reminder that failure to consider all options to combat the enemy may in turn be the true weakness of our strategy.

In keeping with General Berger's call for action in the face of strategic competition, the Marine Corps and the DOD has a moral and ethical obligation to address the need for a cultural change that can be achieved through legislative action. In part this is a matter of reinvigorating documents like MCDP I and bolstering law like Title 15 U.S. Code Section 3710c. This can be actioned on multiple fronts but is specifically accomplished by action at the General Officer level and their call for congressional leaders to develop and support meaningful legislation that drives structure, systems, and cultural change in the military.

Jacob M. Parks, author and chief operations officer of the Profitable Ideas Exchange, speaks to the idea of "prescribing the wrong medicine for innovation ills" in his

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[25] Distribution of Royalties Received by Federal Agencies, 15 U.S. Code § 3710 (1980), https://www.law.cornell.edu/uscode/text/15/3710c.United States Congress.

[26] Commandant of the Marine Corps David H Berger, "FMFM1-Warfighting Anniversary Letter" (Department of the Navy, Headquarters United States Marine Corps, March 8, 2022), https://mca-marines.org/wp-content/uploads/FMFM1-Warfighting_Anniversary-Letter-from-CMC.pdf.

paper "Struggling to Innovate? Examine Your Structure, Systems, and Culture."[27] Relevant to the DOD is his outline of issues and an understanding of why the DOD often fails to succeed in innovating in a time and space where innovation is so critical to competition at the strategic level.[28]

Far too often, the DOD's answer to the problem of innovation is to spend more money, but research shows that those companies that dedicate significant resources to innovation do not always produce the most significant results.[29] Bennett & Parks notes a study that showed "7 of the 10 topmost innovative companies were not among the top spenders."[30]

MCDP I notes that "a centralized system theoretically needs only one competent person, the senior commander, who is the sole authority.[31] A decentralized system requires leaders at all levels to demonstrate sound and timely judgement."[32] Further study offers that an appropriate balance between centralized and decentralized, a balance the DOD has yet to accomplish in the modernization of the force, is what actually drives success in the space of innovation adoption.[33] The current innovation and acquisition system functions in a centralized space where decisions are made by senior level policy makers without input of the end user. This is damaging to the force and prevents innovative action at the lowest levels.[34]

Centralized vs decentralized action and "prescribing the wrong medicine" are all culturally entrenched issues that have developed over time and because of actions taken to

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[27] Nathan Bennett and Jacob Parks, "Struggling to Innovate? Examine Your Structure, Systems, and Culture," *Business Horizons* 58 (July 1, 2015), https://doi.org/10.1016/j.bushor.2015.05.009.

[28] Bennett and Parks.

[29] Bennett and Parks.

[30] Bennett and Parks.

[31] United States Marine Corps, *Marine Corps Doctrinal Publication 1* (Quantico, VA: Department of the Navy, Headquarters United States Marine Corps, 1997).

[32] United States Marine Corps.

[33] United States Marine Corps.

[34] Bennett and Parks, "Struggling to Innovate?"

support Cold War strategy.[35] As General Berger notes in his address to the force, you must constantly reevaluate your position. This applies in the business of warfare as well as in the business of innovation. "A national cognitive style is one element of the cultural mosaic that shapes a state's strategic behavior and constitutes ideational foundation of its military innovation."[36] As such, the DOD has an obligation to reevaluate its position and address issues of culture and structure. Plainly stated, we cannot buy our way of this problem. Instead, we must leverage de-centralized thinking up from the ranks to drive a greater more cohesive organizational response.

Title 15 U.S. Code Section 3710c, Distribution of Royalties Received by Federal Agencies serves as an example of existing legislation that the DOD fails to maximize use of. As a result, the DOD is failing to tap into critical innovation space within its ranks. By leveraging existing law, the DOD stands benefit across multiple fronts. Section 3710c serves as a recruiting and retention tool, an innovation ecosystem stimulant, and a weapon in innovation warfare that provides significant value at the strategic level.

C. THE LAW

Title 15 U.S. Code Section 3710c, Distribution of Royalties Received by Federal Agencies, describes the rights of DOD employees with respect to intellectual property and outlines the limited reimbursement available to uniformed personnel and civilians alike.[37] More specifically the law states:

> (1)Except as provided in paragraphs (2) and (4), any royalties or other payments received by a Federal agency from the licensing and assignment of inventions under agreements entered into by Federal laboratories under section 3710a of this title, and from the licensing of inventions of Federal laboratories under section 207 of title 35 or under any other provision of

[35] United States Marine Corps, *Marine Corps Doctrinal Publication 1*; Bennett and Parks, "Struggling to Innovate?"

[36] Dima Adamsky, *The Culture of Military Innovation: The Impact of Cultural Factors on the Revolution in Military Affairs in Russia, the U.S., and Israel* (Redwood City, CA: Stanford University Press, 2010), ProQuest.

[37] Distribution of Royalties Received By Federal Agencies.

> law, shall be retained by the laboratory which produced the invention and shall be disposed of as follows:[38]
>
> (i)The head of the agency or laboratory, or such individual's designee, shall pay each year the first $2,000, and thereafter at least 15 percent, of the royalties or other payments, other than payments of patent costs as delineated by a license or assignment agreement, to the inventor or coinventors, if the inventor's or coinventor's rights are assigned to the United States.[39]

Particularly important to this law and a critical element of the tool that is this legislation, is the incentive that it provides to the force. In clause (ii) we find where it is the agencies responsibility to advertise to the force the incentives to achieve royalties or payments for the innovation.

> (ii)An agency or laboratory may provide appropriate incentives, from royalties, or other payments, to laboratory employees who are not an inventor of such inventions but who substantially increased the technical value of such inventions.[40]
>
> (iii)The agency or laboratory shall retain the royalties and other payments received from an invention until the agency or laboratory makes payments to employees of a laboratory under clause (i) or (ii).[41]

Further, the return on investment has a compounding effect on the agency or laboratory. By investing in its personnel, the agency or laboratory is investing in itself and will be rewarded monetarily by the labor of its work force. Sub-paragraph (B) details the monetary value due to the agency for the pursuits of its force. If used more effectively, this tool could have compounding effects on the growth of laboratories and agencies unlike anything previously seen in the DOD.

> (B)The balance of the royalties or other payments shall be transferred by the agency to its laboratories, with the majority share of the royalties or other payments from any invention going to the laboratory where the invention occurred. The royalties or other payments so transferred to any

[38] Distribution of Royalties Received By Federal Agencies.

[39] Distribution of Royalties Received By Federal Agencies.

[40] Distribution of Royalties Received By Federal Agencies.

[41] Distribution of Royalties Received By Federal Agencies.

> laboratory may be used or obligated by that laboratory during the fiscal year in which they are received or during the 2 succeeding fiscal years—[42]
>
> (i)to reward scientific, engineering, and technical employees of the laboratory, including developers of sensitive or classified technology, regardless of whether the technology has commercial applications;[43]
>
> (ii)to further scientific exchange among the laboratories of the agency;[44]
>
> (iii)for education and training of employees consistent with the research and development missions and objectives of the agency or laboratory, and for other activities that increase the potential for transfer of the technology of the laboratories of the agency;[45]
>
> (iv)for payment of expenses incidental to the administration and licensing of intellectual property by the agency or laboratory with respect to inventions made at that laboratory, including the fees or other costs for the services of other agencies, persons, or organizations for intellectual property management and licensing services; or[46]
>
> (v)for scientific research and development consistent with the research and development missions and objectives of the laboratory.[47]

Not only does this law develop the innovation ecosystem within the DOD, the technology development and technology transfer (T2) help to offset the DOD budget. Paragraph 2 details the extent to which royalties earned from T2 are paid to the United States Treasury.

> (2) If, after payments to inventors under paragraph (1), the royalties or other payments received by an agency in any fiscal year exceed 5 percent of the budget of the agency for that year, 75 percent of such excess shall be paid to the Treasury of the United States and the remaining 25 percent may be used or obligated under paragraph (1)(B). Any funds not so used or obligated shall be paid into the Treasury of the United States.[48]

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[42] Distribution of Royalties Received By Federal Agencies.

[43] Distribution of Royalties Received By Federal Agencies.

[44] Distribution of Royalties Received By Federal Agencies.

[45] Distribution of Royalties Received By Federal Agencies.

[46] Distribution of Royalties Received By Federal Agencies.

[47] Distribution of Royalties Received By Federal Agencies.

[48] Distribution of Royalties Received By Federal Agencies.

There is no data available to draw definitive conclusions on how many DOD employees, civilian or uniformed, leave service in pursuit of patentable technology however, conclusions can be drawn by the lack of availability of education on the contents of this legislations. Thus, it is essential to ensure education and advertisement of such royalties to the force. The statistics associated with startups show that approximately 90% fail. By offering employees the opportunity to pursue such ventures while remaining employed by the DOD, the nation capitalizes on the talents of its people two-fold. 1) the monetary value of the individuals venture, 2) the retention of talent. The DOD employee also wins as they are able to pursue excellence in a space where experimentation is protected with income and healthcare coverage for standard duties.

> (3) Any payment made to an employee under this section shall be in addition to the regular pay of the employee and to any other awards made to the employee and shall not affect the entitlement of the employee to any regular pay, annuity, or award to which he is otherwise entitled or for which he is otherwise eligible or limit the amount thereof. Any payment made to an inventor as such shall continue after the inventor leaves the laboratory or agency. Payments made under this section shall not exceed $150,000 per year to any one person, unless the President approves a larger award (with the excess over $150,000 being treated as a Presidential award under section 4504 of title 5).[49]

This ultimately translates, through DOD Instruction (DODI)5535.8 (1999), into a maximum of 20% and or $150,000 per year in perpetuity for the DOD to sell the intellectual property of a service member or civilian.[50] Furthermore, the remaining 80% of all monies earned is returned to and invested in the innovation ecosystem from which it came.[51] This money serves as cash surplus beyond that of the agency or laboratory's annual budget and is designed to foster further innovation from within the unit.[52]

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[49] Distribution of Royalties Received By Federal Agencies.

[50] Department of Defense, *DOD Technology Transfer (T2) Program*.

[51] Ove Granstranda, Marcus Holgersson, "Innovation Ecosystems_ A Conceptual Review and a New Definition" (University of Cambridge, 2019), https://doi.org/10.1016/j.technovation.2019.102098.

[52] Department of Defense, *DOD Technology Transfer (T2) Program*.

D. PROPOSAL

DOD Instruction 5535.8 is a necessary protection and a powerful motivator, but it is not a sufficient in the development understanding across the force.[53] In fact, an initial inquiry into this tool finds it is largely underutilized outside of defense universities and laboratories and- more importantly -under advertised. An examination of the Naval Postgraduate School Academic Policy Manual, Student Handbook, and Faculty Handbook, reveals no single mention of intellectual property.[54] Even as a student in the Naval Postgraduate School, individuals are not made aware of the legal protections available to them under U.S. Code. The Office of General Counsel for the Naval Postgraduate School states that "Government employees submit their invention disclosures to NPS Associate Counsel/Patents," clarifying a routing process that takes an individual from their home department through the Security Manager and eventually to school leadership.[55]

The Naval Postgraduate School was selected due to its science, technology, engineering, and mathematics (STEM) focus and location next to the heart of American innovation – Silicon Valley. According to a report on the Top 50 U.S. Patent Assignees from 2017 alone, eight of the top companies reside in California and were awarded a monumental 13,570 patents.[56] At the time, Huawei Technologies, a CCP-run tech juggernaut, was 20 out of 50. Fast forward to the 2021 rankings, and Huawei is now ranked fifth overall with 2,770 patents. Out of the previous eight California companies, only Canon has more patents than Huawei from that year's data. The rest have fallen off dramatically.[57]

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53 Department of Defense.

54 Naval Postgraduate School, *Faculty Handbook* (Monterey, CA: Naval Postgraduate School, 2016), https://calhoun.nps.edu/handle/10945/51422; Naval Postgraduate School, *Naval Postgraduate School Student Handbook* (Monterey, CA: Naval Postgraduate School), https://nps.edu/documents/106463126/0/NPS-Student-Handbook-WEB+%282%29.pdf/93bd6c05-daa6-353e-423d-e5ae448e6047?t=1653326009857.

55 "Patent Guidelines," Naval Postgraduate School Office of Counsel, accessed September 6, 2022, https://nps.edu/group/office-of-counsel/patents.

56 "2017 Top 50 U.S. Patent Assignees," IFI Claims Patent Service, https://www.ificlaims.com/rankings/rankings-top-50-2017.htm.

57 "2021 Top 50 U.S. Patent Assignees,"IFI Claims Patent Service, accessed September 6, 2022, https://www.ificlaims.com/rankings-top-50-2021.htm.

It is important to note that this adjustment is not because Americans are not inventing, or that American students are less creative than their international counterparts. The reality, according to a recent report from The National Inventors Hall of Fame, is that "it is not enough to simply teach students how to code, design and invent; *they must also learn how to protect what they create* (emphasis added)."[58]

To this end, this author proposes the development of a program, reinforced by legislative action and the development of law, to support the development of patentable inventions and knowledge of intellectual property best practices at PME institutions, fleet and force concentration areas, and our national laboratories. Too often is innovative thought within the ranks stifled by a total absence of knowledge of possible rewards by service members and their civilian counterparts. By implementing a program designed to advertise and educate the force, DOD can effectively communicate to the force their right to compensation under Title 15 U.S. Code Section 3710.

Through the legislative affairs processes, the DOD should recommend to Congress that the 2023 National Defense Authorization Act modify the existing Title 15 U.S. Code Section 3710c written in 1986 to account for inflation and the demands for creative and innovative thought that supports strategic competition. Specifically, the law should be amended to state that each DOD employee, civilian or uniformed, be entitled to 20% of the royalties earned from the sale of their intellectual property, in perpetuity, and that those royalties be capped at $500,000.00 vice $150,000.00. Further there should be no limit on the number of patents a service member can hold. All other royalties earned shall be dispensed in manner supportive of the innovation ecosystem and support the development of future technologies with a prioritization of defense universities.

Following the approval of such a program in the National Defense Authorization Act, the DOD would expand education and advertisement available to uniformed service

[58] National Inventors Hall of Fame, *Why Intellectual Property Is Essential to STEM Education White Paper* (Alexandria, VA: National Inventors Hall of Fame, 2020).

members and their civilian counterparts, who are working in the production and development of inventions that are patentable under Title 35, U.S.C.[59]

An essential function of such a program is the development of a marketing strategy for outreach to civilian personnel and service members to develop awareness of legal rights under Title 15 U.S.C. 3710c.[60] Further patent-related training and education to include legal support and other necessary assistance for civilian personnel uniformed service members developing inventions.[61] For example, such patent related training should be available to covered personnel online and in legal resource centers on base A directed social media campaign is also recommend to support this endeavor. The Stevenson Wydler Technology Innovation Act of 1980 directs the Secretary of Commerce to establish and maintain an Office of Industrial Technology to improve the economic, environmental, and social well-being of the United States by promoting technological development.[62] The above proposal captures the intent of this Act but falls short of making revolutionary change within the DOD. Missing from the equation is an intellectual property strategy. The absence of such a strategy prevents the DOD from tapping into significant resources such as Title 15 U.S. Code Section 3710c and ultimately the DOD's failure to use its own personnel as a resource for innovative thought and adaptive capacity. Though such a strategy is not captured in the initial proposal, the following chapter will discuss the absolute necessity of its implementation.

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[59] Licensing Federally Owned Inventions, 35 U.S. Code § 209 (1980), https://www.law.cornell.edu/uscode/text/35/209.

[60] Distribution of Royalties Received By Federal Agencies.

[61] Licensing Federally Owned Inventions.

[62] Stevenson Wydler Technology Innovation Act of 1980, S.1250 - 96th Congress (1979-1980), (1980), https://www.congress.gov/bill/96th-congress/senate-bill/1250#:~:text=Stevenson%2DWydler%20Technology%20Innovation%20Act,States%20by%20promoting%20technological%20development.

III. AN INTELLECTUAL PROPERTY STRATEGY

A. BACKGROUND

At the close of World War II, the United States began an endeavor to compete on the strategic stage. Through brilliant legislation and government direction, the world would bear witness to one of the greatest periods of technological evolution in history.[63] The development of NASA and the U.S. space program, the internet at the hands of Advanced Research Projects Agency (ARPA), and countless other endeavors that served to support whole of government strategy to out innovate competitors. In the process, the U.S. would also realize Dwight D. Eisenhower's visionary warning of the defense industrial complex.[64] An interconnected and bloated institution of corporations tied to the DOD through ever compounding legal structures and lobby. Though this institution assured victory in the Cold War–era it has become stagnant and is in danger at the rise of a second Cold War. Resting on its laurels and plagued by the Global War on Terror, the United States has allowed rising nations to advance at the cost of its own international standing and as a result must endeavor to design a system of legislation that can compete in the modern era.

Military leadership is bound by both the standing intellectual property law and their responsibility to the service members subject to its regulation and should seek to use the tools available to support the growth of the innovation ecosystem within its ranks.[65] The application of tools recommended in the previous chapter are just one example how these ends might be achieved. The DOD should, through the National Defense Authorization Act (NDAA), seek to enhance aspects of standing law to further broaden what can be accomplished in the realm of strategic competition. At the microscopic level in particular,

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63 Suchodolski, Harrison, and Heiden, "Innovation Warfare"; Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (Crown Publishers, 2012).

64 History.com, "President Eisenhower Warns of Military-Industrial Complex," January 15, 2020, https://www.history.com/this-day-in-history/eisenhower-warns-of-military-industrial-complex.

65 United States Congress, "10 USC: Front Matter" (1956), https://uscode.house.gov/view.xhtml?req=(title:10%20edition:prelim)&f=treesort&edition=prelim.

the DOD requires leaders who can leverage law to the benefit of the same end. At the macroscopic level, the DOD requires an integrated intellectual property strategy that supports the *National Defense Strategy* (NDS), *National Security Strategy* (NSS) and ensures the end users have the tools necessary to compete with adversaries like Russia and China. Such a strategy is necessary to developing a strategic advantage in combating adversaries such as China and Russia.

The RAND Corporation conducted a study on Section 809, 813, and 875 of the 2016 (NDAA) to determine "where opportunities to improve policy on technical data and data rights associated with operating and sustaining Air Force major weapons systems."[66] The results of this study showed failures across original equipment manufacturers, lack of Air Force access requirements to technical data to determine competitiveness, and the need for intellectual property specialists.[67] Similarly, RAND conducted a study of the role that intellectual property plays in U.S. Depart of Homeland Security (DHS). While not a DOD entity, RAND discovered that intellectual property initiatives could support multiple various opportunities for operational improvement. "Specific to their finding was that DHS underutilizes intellectual property as a strategic asset that can reveal new strengths and weakness in department programming, help actively manage mission risks, and help position the department as an innovative agency that both creates and deploys intellectual property and technology more broadly in service to the United States."[68]

A February 2022 DOD report titled "State of Competition within the Defense Industrial Base" written by the Office of the Secretary of Defense for Acquisition and Sustainment outlines much of what Senior DOD officials are doing to create policy but falls short of recommending such items be written into law. Importantly, it captures the necessity of intellectual property and notes that: "Intellectual property, as a return-on-investment model, both encourages and restricts competition. From a technology

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[66] Frank Camm et al., "Managing Intellectual Property Relevant to Operating and Sustaining Major U.S. Air Force Weapon Systems" (RAND Corporation, September 14, 2021), https://www.rand.org/pubs/research_reports/RR4252.html.

[67] Camm et al.

[68] Geoffrey McGovern et al., "The Role of Intellectual Property in U.S. Homeland Security" (RAND Corporation, September 19, 2019), https://www.rand.org/pubs/research_reports/RR3039.html.

standpoint, the IP statutory and regulatory framework drives competition to create innovative technology as a prerequisite to qualify for intellectual property protection. From a business standpoint, the resulting intellectual property protection itself establishes a form of limited monopoly to commercialize that new technology, creating tension with competition."[69]

B. PROPOSAL

There is an old anecdote where a woman stops her philosophy professor in the middle of a lecture and exclaims to the class that "the world rests on a turtle's back."[70] Puzzled by the remark, the professor asks the woman what then does the turtle rest on?" The woman fires back and states, "It's turtles all the way down!."[71]

This anecdote is meant to serves as a metaphor for the problem of infinite regression or the struggle to find the root of the problem.[72] This is the problem with innovation in the DOD today. "It's turtles all the way down," and all concerned, to include this author, have an opinion about what the bottom turtles.[73] Perhaps a more appropriate approach to the problem set is to ask, what action will produce definitive results and does so without acting inside pillars of influence, but effects change across the system of systems.

Steve Blank is an entrepreneur and innovator that is recognized the globally for his contributions to the world of business. His success in this space resulted in recognition by the Harvard Business School as a Master Innovator. He has been involved in everything from Pixar (Animation Film Company) to SuperMac (A defense innovation and technology

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[69] Office of the Under Secretary of Defense for Acquisitions and Sustainment, *State-of-Competition-Within-the-Defense-Industrial-Base* (Washington, DC: Office of the Under Secretary of Defense for Acquisitions and Sustainment, 2022).

[70] Daniel Feldman et al., *Solving the Bottom Turtle — a SPIFFE Way to Establish Trust in Your Infrastructure via Universal Identity* (2020), 194.

[71] Feldman et al.

[72] Feldman et al.

[73] Feldman et al.

company).[74] His depth of expertise has few equals. When asked to analyze the defense innovation ecosystem he stated the following:

> the result is that our systems, organizations, headcount, and budget – designed for 20th century weapons procurements and warfighting tactics on a predictable basis – can't scale to meet all these simultaneous and unpredictable challenges. Today, our DOD and national security agencies are running as hard as they can just to stay in place, but our adversaries are continually innovating faster than our traditional systems can respond. They have gotten inside our OODA loop (Observe, Orient, Decide and Act).[75]

This Author believes that an element of solving for the bottom turtle in the case of the defense innovation ecosystem is to effect change in a broad sweeping manner at the heart of the institution, the National Defense Authorization Act (NDAA). Through a legislative process senior DOD leaders should, submit to Congress the necessity of an intellectual property strategy.

This author recommends that general officers and senior leaders of the DOD propose the following to congress: This author proposes that \the Secretary of Defense in coordination with the Under Secretary for Research and Engineering and in conjunction with the Under Secretary of Defense for Industrial Policy provide for Congress an outline for the implementation of an Intellectual Property Strategy. In keeping with the intent of this proposal said outline would determine how, through the NDAA and Appropriations Bill, the strategy would support the NSS and the NDS. More specifically, this author proposes that the bill:

- "Articulate intellectual property and innovation priorities, goals, and investments of the DOD."[76]
- Making recommendations on the future of intellectual property and its purpose and benefits within the defense research and engineering

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[74] Blank, "Steve Blank The Red Queen Problem."

[75] Blank.

[76] Suchodolski, Harrison, and Heiden, "Innovation Warfare"; National Defense Science and Technology Strategy, 10 U.S. Code § 118c (1956), https://www.law.cornell.edu/uscode/text/10/118c.

enterprise and within present-day strategic competition, including integrated deterrence.[77]

- Promoting a robust innovation ecosystem.
- Outlining concepts and actionable steps to overcome the technological "Valley of Death" that prevents a product from moving from inception to operational; and[78]
- Encouraging innovation, solutions that scale, and patents thereof across the Joint Force by establishing an integrated, cross-service approach to the identification, prioritization, development, and fielding of emerging capabilities and technologies.[79]
- Ensuring DOD implementation of protective measures against adversary intellectual property appropriation through both legal and illegal means.[80]
- Per Jeanne Suchodolski's Innovation Warfare concept, the Secretary of Defense may consider the following elements to support the development of an intellectual property strategy.[81] Identify the utilization of intellectual property in areas that enhance the innovation capabilities of the DOD to neutralize the impact of the competitor's strategy;[82]
- Cost Imposition—increase the cost of pursing adversarial behavior against the U.S. defense intellectual property base through implementation of protective measures and enforcing intellectual property rights;[83]

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[77] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[78] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[79] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[80] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[81] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[82] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[83] Suchodolski, Harrison, and Heiden, "Innovation Warfare."

- Co-opting competitor's strategy—conduct consistent evaluation of malign activity against the DOD's innovation and intellectual property base and consider counterstrategies.[84]

Consider a counter strategy to adversarial innovation warfare tactics that would seek to—

- Further develop the technological base and create the IP security tools needed to outpace our adversaries and deny technological overmatch.[85]
- Develop machine learning and other tools and analysis techniques to identify the possible technological futures and devise approaches to drive towards those preferred futures.[86]
- Optimize and scope federal research and development spending to spur innovation towards desired technological futures.[87]
- Secure technology control positions that would deploy and protect intellectual property as a critical component of the *National Defense Strategy*.[88]
- And identity and develop cross-functional capabilities and inter-organizational coordinating where feasible.[89]

Provide guidance for the development of an Intellectual Property Strategy aligned to the *National Defense Strategy* and DOD strategic science and technology. Ensure the priorities, goals, and investments of intellectual property link rights with needed critical enablers to specific programs, including but not limited to:

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[84] Suchodolski, Harrison, and Heiden.

[85] Suchodolski, Harrison, and Heiden.

[86] Suchodolski, Harrison, and Heiden.

[87] Suchodolski, Harrison, and Heiden.

[88] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[89] Suchodolski, Harrison, and Heiden, "Innovation Warfare."

- Relationships with academia, the acquisition community, the operational community, the defense industry, and the commercial sector to create scalable solutions protected through intellectual property rights.[90]

- Fund investments in personnel, facilities, and relationships with other departments and agencies of the Federal Government outside the DOD without which defense capabilities would be severely degraded.[91]

- Support the coordination of acquisition priorities, programs, and timelines of the Department with the activities of the defense research and engineering enterprise.[92]

- Include recommendations for changes in authorities, regulations, policies, or any other relevant areas, that would support the achievement of the goals set forth in the strategy.[93]

- Identify processes to inform senior leaders and policy makers on the potential impacts of an intellectual property strategy for the purpose of shaping the development of policies and regulations guiding strategic competition.[94]

- Support the efficient integration of intellectual property rights to near-term, mid-term, and long-term capability gaps, with an emphasis on spurring innovation and overcoming the technological valley of death.[95]

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[90] Office of the Under Secretary of Defense for Acquisitions and Sustainment, "State-of-Competition-Within-the-Defense-Industrial-Base," 30.

[91] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[92] National Defense Science and Technology Strategy.

[93] GPRA Modernization Act Of 2010, Pub. L. No. 111-352 (2010), https://www.govinfo.gov/content/pkg/PLAW-111publ352/html/PLAW-111publ352.htm.

[94] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[95] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

- Support the development of appropriate investments in intellectual property rights within the DOD and any supporting entities that the SecDef determines necessary.[96]

- Identify and direct solutions that can be tested, implemented, and reviewed to bridge the "Technological Valley of Death" that enables a product to move from inception to operational.[97]

- Assess the potential supporting roles of our nation's war colleges, Professional Military Education institutions, and Science and Technology Reinvention Laboratories in supporting an intellectual property strategy execution to include spawning innovation, intellectual property rights awareness, and the conceptualization, development, testing, and operationalization of innovative solutions; and [98]

- Identify mechanisms to educate service members on the development of patents enabling services to maximize innovative invest in innovative technologies to build and broaden the capabilities of the Armed Forces.[99]

There are significant concerns about the inability of the DOD to appropriately secure Intellectual Property in manner necessary to meet the needs of the warfighter. While the DOD made efforts to modify policy in a manner that supports the desired end state, a more robust Intellectual Property Strategy is necessary to address the "valley of death" and support the development of technology beyond the defense industrial base. Legislation already supports the concepts but is a factor in adopting new and meaningful change as interdependent risk increases with the number of people involved in the process.

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[96] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[97] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[98] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

[99] National Defense Science and Technology Strategy; Harrison, and Heiden, "Innovation Warfare."

IV. ETHICS MATTER

A. BACKGROUND

How does a Nation State impose cost in the age of nuclear warfare? Nation states such as China have mastered the practice through information, economic control, and intellectual property theft and have done so without significant outward threat of force. China's competition with the United States started some 30 years ago, formed, and reinforced over the years through their consistent strategic engagement on the economic, information, and intellectual property front.[100] China's form of unrestricted warfare allowed for steady advancement in innovation, finance, trade, and social manipulation.[101] All of which leverage the U.S. innovation ecosystem and are supported or enabled by U.S. law. By targeting a nation state's legal, economic, and informational space, a paralyzing blow can be dealt by an adversary such as China. The One Belt One Road (OBOR) campaign has exemplified this across the world. Innovation theft reengineered, debt management, illegal trade action, and the control of the social structure both through federal legislation and cultural manipulation have all served as targets in China's unrestricted warfare campaign.

These practices however are not new. The industrial revolution marked a turn in the global economy and the practice of patenting technology served as a marker for the success and failures of nation states. How intellectual property was established and controlled literally impacted the rise and fall of national economies. Those nation states with corrupt governing bodies stifled intellectual prosperity and in turn developed less capital to reinvest. However, those that impowered the people equally generated far more intellectual property and in turn significant capital. In essence the generation of great global power is realized by fostering the intellectual and economic growth of the individual.[102]

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[100] Holstein, *The New Art of War*.

[101] Liang and Xiangsui, *Unrestricted Warfare*.

[102] Acemoglu and Robinson, *Why Nations Fail*, 2012.

The English Parliament realized this through the enactment of the Statute of Monopolies of 1623.[103] The statute of monopolies in essence prevented the King from granting exclusive patent rights to individuals of his choosing thus allowing the rise the individual citizen into business and revenue streams that had previously been reserved for those in positions of power.[104]

A clear examination of the privileges enjoyed by large defense contracting primes is necessary. Current acquisition law largely limits the rise of small corporations and privately owned business to levels necessary to compete with the defense industrial base. In turn the long-standing relationships the U.S. Government has enjoyed with such corporations is working against the rise of and implementation of technologies that may prove necessary in strategic competition. Moreover, it is the ethical responsibility of the U.S. Government to impower its citizens and foster innovation ecosystems necessary to compete on the global stage. The generation of jobs, revenue, and the advancement of innovation supports the growth of nations through an increased ability to raise taxes in support of basic government services.[105]The ethical base and empowerment of people ensures victory over more tyrannical states.

B. SUPPORTING THE INFORMATION NARRATIVE

Ethics and morality play a role in global conflict by shaping the information narrative that supports earning the will of the people and the writing of law that supports U.S. interests abroad and at home. In writing Nuclear Taboo, Nina Tannenwald refers to it as recasting of moral talk whenever possible into the language of interest and cost-benefit analysis.[106] Laws are the process by which we institutionalize our morals and values. What we enforce and the standards we keep determine what we will accept as a society. Winning

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103 "Statute of Monopolies 1623," Text (Statute Law Database), accessed August 17, 2022, https://www.legislation.gov.uk/aep/Ja1/21/3/section/I.

104 Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (New York: Crown Publishers, 2012).

105 Acemoglu and Robinson.

106 Nina Tannenwald, "The Nuclear Taboo," in *Handbook of Nuclear Proliferation*, ed. Harsh V. Pant, 1st ed. (Routledge, 2012), 62–74, https://doi.org/10.4324/9780203840849-6.

is all that matters, and morality and ethics have and will continue to be used to shape law and military engagement in conflict. Using legislation to the advantage of the American people is a moral and ethical must and shapes how the United States can and should enact law that allows the nation to out innovate and out adopt its adversaries on a global scale.

C. NPS AND LEGISLATIVE PROPOSALS

Per the NPS policy and the policies of the offices for legislative affairs, students at NPS are limited in their ability to achieve real change in the form of policy and legislation. As it stands, a student may inform policy makers and legislative bodies on the nature of their research but cannot recommend or directly propose. Such an action must be taken through the and official process with policy makers and or legislative affairs.[107]

As such, this author recommends the establishment of formalized relationships with both Policy and Legislative Affair to achieve and maximize results of research. Upon development of a research topic, any student would be able to socialize their research through designated lines of communication. Where interests are highlighted and aligned in these spaces, NPS students could achieve sponsorship and direction from senior leaders. The possibilities are limitless and support a committed relationship by the education institution back to the warfighter and thus supporting the mission of the Naval Postgraduate School.

D. CONCLUSION

General Berger's call to innovate should be heard throughout the Marine Corps but should resonate across the DOD. Maintaining a strategic advantage is only achieved through our willingness to adapt and overcome. Every uniformed service member and every DOD civilian plays an important role in accomplishing this and each should endeavor to rise to the challenge. And yet, it seems that, it isn't the lack of willingness to rise to the occasion but the barriers that remain in place that prevent such action.

[107] Naval Postgraduate School Office of Counsel, "Patent Guidelines,"; Naval Postgraduate School, "Student Handbook"; Naval Postgraduate School, "Faculty Handbook."

The United States Department of Defensive is a large and bureaucratic organization but when tasked to do so can turn on a dime. This is in part due to the legislation that is in place an supports such rapid action. However, the institution has remained stagnant for far too long and requires disruptive innovation to spur action amongst the ranks.[108] The proposals in the body of this work aim to serve that end and answer the Commandant of Marines Corps call to innovate and adopt solutions to problem sets not outlined in the antiquated framework from which the DOD operates.[109]

The DOD exists to serve the will of the people. To that end, and because the nation's framework relies on law to drive desired outcomes, it is this author's humble opinion, that legislation serves as the bottom turtle or the foundation for which this warfighting body rests. It is thus the responsibility of the institution to carefully consider the reinforcement of its foundation as it moves forward to meet the call of the nation.

[108] Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Harvard Business Review Press, 2015).

[109] Berger, "A Message to the Force."

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