

MONOPOLY CAPITAL, MILITARISM, AND ENVIRONMENTAL DEGRADATION

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ABSTRACT

Research within the natural and social sciences increasingly concludes that *business as usual*—economic growth—is leading to significant ecological disruption. Additionally, scholars have identified militaries as a significant driver of environmental degradation. Typically, these two social institutions are understood as being separate, but operating in relation, to each other. In this article, we focus on the interrelation and integration of the military and the economy through the rise of the military-industrial complex in order to illuminate the underlying logic that amplifies the environmental impacts of these institutions. More specifically, we assess how monopoly capital’s dynamics influence the development of military weapons systems, leading to increased environmental change. Our analysis highlights the growing significance of private contractors in developing weapons systems and how this has institutionalized capitalist market dynamics and creative destruction within weapons systems innovation. As a result, planned obsolescence has become a central component increasing the demands on the environment and the overall production of social and ecological waste in relation to the military-industrial complex.

TABLE OF CONTENTS

INTRODUCTION	794
I. TREADMILLS OF PRODUCTION AND DESTRUCTION	796
II. THE SECOND WORLD WAR AND THE RISE OF THE PERMANENT WAR ECONOMY	798
III. MONOPOLY CAPITAL’S INFLUENCE ON THE DEVELOPMENT OF THE MILITARY.....	803
A. <i>Profit Capture</i>	805
B. <i>Production for Capitalist Use Values: Innovation and Obsolescence</i>	808
IV. THE TOXIC LEGACY OF THE MILITARY: MILITARY WASTE AND DEPLETED URANIUM	813
V. THE MARRIAGE OF MONOPOLY CAPITAL AND THE MILITARY: COALESCING STRANDS OF EXTERMINISM.....	814

INTRODUCTION

Copious research has found that *business as usual*, generally recognized as meaning economic growth, is driving severe climate and ecological change and must be fundamentally addressed.¹ The most recent assessment report (AR6) of the Intergovernmental Panel on Climate Change, which is not known for its radical statements, emphasized the need for wide-scale, systemic, socio-economic change.² In particular, the leaked drafts of the *Summary for Policymakers* for Working Group III called for a radical restructuring, revolutionary-level transformation of society to mitigate the impending climate catastrophe.³ Scientists warn that the climatological conditions for most life will be undermined if massive macro-structural change is not implemented soon. Climate scientists Kevin Anderson and Alice Bows elucidate the challenge of mitigating excess carbon emissions by focusing on the political tensions of climate solutions.⁴ As countries continue to develop economically, their carbon emissions rise—although at variable rates.⁵ Sociological literature strongly establishes the positive statistical relationship between economic growth and environmental change—climate change specifically.⁶ Even if policymakers have often avoided questions addressing economic growth, economic issues have always been a primary focus.⁷

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1. See Tom Dietz, Rachael L. Shwom, & Cameron T. Whitley, *Climate Change and Society*, 46 ANN. REV. SOC'Y 135, 139 (2020); Andrew K. Jorgenson & Brett Clark, *Are the Economy and the Environment Decoupling? A Comparative International Study, 1960–2005*, 118 AM. J. SOCIO. 1, 2 (2012); Ryan P. Thombs & Xiaorui Huang, *Uneven Decoupling: The Economic Growth–CO₂ Emissions Relationship in the Global North, 1870 to 2014*, 5 SOCIO. DEV. 410, 410–11 (2019); Richard York, Eugene A. Rosa, & Thomas Dietz, *Footprints on the Earth: The Environmental Consequences of Modernity*, 68 AM. SOCIO. REV. 279, 279 (2003). The impact of economic growth on carbon dioxide emissions is historically variable and influenced by a country's position within a broader world-system. See *id.* at 283–90.

2. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022: MITIGATION OF CLIMATE CHANGE: WORKING GROUP III CONTRIBUTION TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 17–39 (2022), <https://report.ipcc.ch>.

3. John Bellamy Foster & Brett Clark, *Socialism and Ecological Survival: An Introduction*, MONTHLY REV., July–Aug. 2022, at 1, 18; see also INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS: WORKING GROUP I CONTRIBUTION TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (2021), <https://www.ipcc.ch>. In this report the IPCC provided five scenarios for climate mitigation. *Id.* at 52. In their “best-case scenario” (SSP1-1.9), which requires the radical restructuring of production and consumption globally, average global temperatures will exceed the 1.5° C threshold set by climate scientists. *Id.* at 54. Transgressing beyond this may lead to irreversible, in any meaningful human time-scale, effects of climate change. *Id.* at 21.

4. Kevin Anderson & Alice Bows, *Beyond ‘Dangerous’ Climate Change: Emission Scenarios for a New World*, 369 PHIL. TRANSACTIONS ROYAL SOC'Y A 20, 37–38 (2011).

5. *Id.* at 21.

6. Andrew K. Jorgenson, Brett Clark, Ryan P. Thombs, Jeffrey Kentor, Jennifer E. Givens, Xiaorui Huang, Hassan El Tinay, Daniel Auerbach, & Matthew C. Mahutga, *Guns Versus Climate: How Militarization Amplifies the Effect of Economic Growth on Carbon Emissions*, 88 AM. SOCIO. REV. 418, 419 (2023); Jorgenson & Clark, *supra* note 1, at 2; York, Rosa, & Dietz, *supra* note 1, at 279–80.

7. JASON HICKEL, LESS IS MORE: HOW DEGROWTH WILL SAVE THE WORLD 117–118 (2020).

Yet, another specter haunts all discussions regarding climate change: militarism. This problem manifests itself in two ways: (1) militarism drives carbon emissions and other forms of environmental degradation, and (2) military spending potentially limits the ability of states to adapt to and mitigate the present climate catastrophe.⁸ The title of a letter published in *Science* best sums this up in the context of the U.S. military: simply, it “is not sustainable.”⁹ Over the last two decades, articles and reports have presented considerable empirical evidence that substantiate this bold claim.¹⁰ The fundamental operation of militaries, both during times of active warfare and not, manifests in significant environmental degradation. From the more visible scorched earth practices,¹¹ such as nuclear weapons testing,¹² to the less visible long-term impacts of depleted uranium on the health of the land and people,¹³ militarism maintains a destructive legacy.¹⁴ Recent reports estimate that, in 2017, global militaries accounted for approximately 5% of total global greenhouse gas emissions.¹⁵ The U.S. military is a voracious consumer of fossil fuels. In 2017, it is estimated that the U.S. military purchased 269,230 barrels of oil, emitting over 25,000 kilotons of carbon dioxide.¹⁶ This ranks the U.S. military as the forty-fifth largest emitter of carbon dioxide in the world, placing it between the countries of Bangladesh and Romania.¹⁷ With the largest fleet of high-tech military vehicles and equipment in the world, the Pentagon is likely the “leading consumer of petroleum.”¹⁸ Despite militaries’ significant influence on fossil fuel consumption and carbon emissions, their contributions, for the most part, are not actively counted in global models.¹⁹

At this historic climate juncture, it is necessary to address both militarism and capitalist economic growth as well as the relationship between the two. The connection between militarism, especially military spending, and economic growth is widely debated. Militaries and economies are

8. MARK AKKERMAN, DEBORAH BURTON, NICK BUXTON, HO-CHIH LIN, MUHAMMED AL-KASHEF, & WENDELA DE VRIES, CLIMATE COLLATERAL: HOW MILITARY SPENDING ACCELERATES CLIMATE BREAKDOWN 4, 9–10, 17 (Nick Buxton ed., 2022).

9. Oliver Belcher, Benjamin Neimark, & Patrick Bigger, *The U.S. Military Is Not Sustainable*, 367 SCI. 989, 989 (2020).

10. See AKKERMAN, BURTON, BUXTON, LIN, AL-KASHEF, & VRIES, *supra* note 8, at 2.

11. R. Scott Frey, *Agent Orange and America at War in Vietnam and Southeast Asia*, 20 HUM. ECOLOGY REV. 1, 1–2 (2013).

12. BARRY COMMONER, THE CLOSING CIRCLE: NATURE, MAN, AND TECHNOLOGY 49–53 (1971).

13. ROB NIXON, SLOW VIOLENCE AND THE ENVIRONMENTALISM OF THE POOR 200–01 (2011).

14. Brett Clark & Andrew K. Jorgenson, *The Treadmill of Destruction and the Environmental Impacts of Militaries*, 6 SOCIO. COMPASS 557, 558 (2012); J. David Singer & Jeffrey Keating, *Military Preparedness, Weapon Systems and the Biosphere: A Preliminary Impact Statement*, 21 NEW POL. SCI. 325, 343 (1999).

15. AKKERMAN, BURTON, BUXTON, LIN, AL-KASHEF, & VRIES, *supra* note 8, at 9.

16. Oliver Belcher, Patrick Bigger, Ben Neimark, & Cara Kennelly, *Hidden Carbon Costs of the “Everywhere War”: Logistics, Geopolitical Ecology, and the Carbon Footprint of the US Military*, 45 TRANSACTIONS INST. BRIT. GEOGRAPHERS 65, 72 (2020).

17. *Id.* at 74.

18. Michael T. Klare, *The Pentagon v. Peak Oil*, TOMDISPATCH (June 14, 2007), <https://tomdispatch.com/michael-klare-the-pentagon-as-global-gas-guzzler/>.

19. *Id.*

unique social institutions with distinctive operating logics.²⁰ Additionally, there is much debate regarding whether military spending has a multiplier effect on economic growth, given that it involves an extensive network of industries and other businesses with state contracts.²¹ While we appreciate the contrasting positions and debates, we recognize that these relationships are historical. There are periods when militaristic and economic growth are more closely integrated and times when they are not.

In the following analysis, we illuminate the ways that the operations of monopoly capital have influenced the development of militarism.²² We focus on the role of planned obsolescence and capitalist-use value as means to increase profits. Under these conditions, monopoly capital and militarism are constantly interacting and reinforcing each other. Together, as part of the imperial-capital system, they reinforce and solidify *business as usual*, resulting in widespread waste and environmental degradation, which is culminating in an ecological crisis that threatens survival.

I. TREADMILLS OF PRODUCTION AND DESTRUCTION

The treadmill of production and the treadmill of destruction have been used to analyze both political-economic and militaristic drivers of environmental change. Within the treadmill of destruction literature, scholars have focused on how militarization, as a process, and militaries, as social institutions, influence the environment both in and out of times of active warfare.²³ National security and geopolitical concerns drive militarization. For hegemonic nations that are in conflict with other nation-states to achieve their interests, their militaries tend to support developing more advanced technologies to maintain their geopolitical position.²⁴ In the United States, these new technologies—such as weapons, transportation, and communications systems—help maintain a vast

20. Gregory Hooks & Chad L. Smith, *The Treadmill of Destruction: National Sacrifice Areas and Native Americans*, 69 AM. SOCIO. REV. 558, 559–60 (2004).

21. See Jorgenson, Clark, Thombs, Kentor, Givens, Huang, Tinay, Auerbach, & Mahutga, *supra* note 6, at 423.

22. Monopoly capital is a theoretical tradition originating in the eponymously titled book written by Paul A. Baran and Paul Sweezy. PAUL A. BARAN & PAUL M. SWEEZY, *MONOPOLY CAPITAL: AN ESSAY ON THE AMERICAN ECONOMIC AND SOCIAL ORDER* (1966). Baran and Sweezy sought to bring Karl Marx's political-economic analysis of capital into the contemporary context of the 1960s, especially in regard to the United States. *Id.* at 6–7. They argued that in this period the laws of motion of capitalist accumulation were distinct from Marx's time, necessitating new understandings of the accumulation process. *Id.* at 4. The ongoing rise of large corporations that enacted monopoly power to reduce costs and enhance profits was key to this period. *Id.* at 25–26. Under conditions of monopoly capital, the economy as a whole experienced a challenge with absorbing surplus accumulation. *Id.* at 108–09. In other words, the capital system produced more surplus than could be absorbed, constituting economic waste, that required newer actors to absorb. *Id.* The state, in particular, the military, was one of the largest consumers of this surplus. *Id.* at 178–79.

23. Hooks & Smith, *supra* note 20, at 561; see also Daniel Auerbach, *Militarization, Risk, and the Environment: Agent Orange As a Distinct Risk*, 10 SOCIO. DEV. 91, 94 (2024); Jorgenson, Clark, Thombs, Kentor, Givens, Huang, Tinay, Auerbach, & Mahutga, *supra* note 6, at 419.

24. Jorgenson, Clark, Thombs, Kentor, Givens, Huang, Tinay, Auerbach, & Mahutga, *supra* note 6, at 422; Hooks & Smith, *supra* note 20, at 561–62; see also Gregory Hooks & Chad L. Smith, *Treadmills of Production and Destruction: Threats to the Environment Posed by Militarism*, 18 ORG. & ENV'T. 19, 21–23 (2005).

infrastructure of military bases and installations around the world.²⁵ Significant amounts of natural resources are utilized to transport, maintain, staff, and power these operations in support of militarization's expansionary tendencies.²⁶ Each of these activities results in increased carbon dioxide emissions.²⁷ The scale of environmental impact is also influenced by the capital-intensive (versus labor-intensive) characteristics of the armed forces in question.²⁸ Sociological analysis has consistently demonstrated that capital-intensiveness, as well as military size, is positively related to environmental additions and withdrawals as well as qualitatively distinct forms of environmental degradation.²⁹ Although the military is linked to the economy, the treadmill of destruction literature articulates the military and economy as separate social institutions with distinct operational logics,³⁰ in part to illuminate unique characteristics in each realm.

Political-economic approaches, including the treadmill of production, reveal how the expansionary tendencies that are associated with the capital system's growth imperative generate negative environmental outcomes. Capitalism is fundamentally a growth dependent system. In general, profits are reinvested to enlarge and intensify the production of commodities to facilitate faster accumulation of capital.³¹ This dynamic continually increases the consumption of matter and energy, as well as the production of pollution and other waste, often violating the conditions necessary to maintain the regenerative capacity of ecosystems.³² Different actors, including the state and industry, make up a growth coalition that prioritizes economic growth.³³ Ecological efficiency due to technological advancements is often undermined or moderated through increases in production overall, resulting in additional energy and material usage.³⁴ As it

25. See Jorgenson, Clark, Thombs, Kentor, Givens, Huang, Tinay, Auerbach, & Mahutga, *supra* note 6, at 419–20.

26. See Hooks & Smith, *supra* note 24, at 20–25.

27. Andrew K. Jorgenson & Brett Clark, *The Temporal Stability and Developmental Differences in the Environmental Impacts of Militarism: The Treadmill of Destruction and Consumption-Based Carbon Emissions*, 11 SUSTAINABILITY SCI. 505, 512 (2016).

28. Capital-intensive militaries tend to employ more technologically advanced weapons, transportation, and communication systems. Labor-intensive militaries tend to rely less on advanced technologies and more on “man power” to achieve military goals.

29. Andrew K. Jorgenson, Brett Clark, & Jeffrey Kentor, *Militarization and the Environment: A Panel Study of Carbon Dioxide Emissions and the Ecological Footprint of Nations, 1970–2000*, 10 GLOB. ENV'T. POL. 7, 10 (2010).

30. Andrew K. Jorgenson & Brett Clark, *The Economy, Military, and Ecologically Unequal Exchange Relationships in Comparative Perspective: A Panel Study of the Ecological Footprints of Nations, 1975–2000*, 56 SOC. PROBS. 621, 625 (2009).

31. KARL MARX, CAPITAL: VOLUME ONE 247–49 (Ben Fowkes trans., Vintage Books 1977) (1867).

32. ALLAN SCHNAIBERG, THE ENVIRONMENT: FROM SURPLUS TO SCARCITY 166–67 (1980).

33. KENNETH A. GOULD, DAVID N. PELLOW, & ALLAN SCHNAIBERG, THE TREADMILL OF PRODUCTION: INJUSTICE AND UNSUSTAINABILITY IN THE GLOBAL ECONOMY 11–12 (2008).

34. Lazarus Adua, Brett Clark, & Richard York, *The Ineffectiveness of Efficiency: The Paradoxical Effects of State Policy on Energy Consumption in the United States*, 71 ENERGY RSCH. & SOC. SCI. 1, 2, 6 (2021); Daniel Auerbach, Brett Clark, & Lazarus Adua, *The Jevons Paradox*, in ELGAR ENCYCLOPEDIA OF ENV'T SOCIO. 387, 387 (Christine Overdevest ed., 2024); Richard York & Julius Alexander McGee, *Understanding the Jevons Paradox*, 2 ENV'T. SOCIO. 1, 1–2 (2015).

is developed within the literature, the economy operates in a distinct fashion from the military.³⁵ It is important to note the unique aspects of these social drivers, yet, as we argue below, the relationship between militarization and the economy is a historical question with distinct periods that influence the integration of economic development with militaristic development.

II. THE SECOND WORLD WAR AND THE RISE OF THE PERMANENT WAR ECONOMY

It is necessary to see economic operations and pursuits as part of a larger social nexus where political processes—such as warfare and militarism—are important determinants of the allocation of resources and technological development.³⁶ The relationship between the military and the economy is complex. C. Wright Mills noted that following the Second World War, there was a significant shift in the military's position in U.S. society.³⁷ Military leaders, who were senior officers, members of the Joint Chief of Staff, or both, were progressively incorporated into the power elite of the United States, positioning them to play a larger role in making major decisions with both national and international consequences.³⁸ The ascendancy of the military was in part driven by: the creation and use of atomic/nuclear bombs that presented a grave threat to humanity; the perception that war was a normal state of foreign affairs; the increase in geopolitical competition; the ongoing pursuit of high-tech military weaponry and equipment; and an expanding military budget.³⁹ As a result, military elites were increasingly placed on a level similar to political and economic elites, otherwise known as those who were part of the political directorate and the chief executives of the largest corporations.⁴⁰ In fact, a revolving door emerged between the military, state, and corporate elites. For example, former military leaders became lobbyists for the corporate sector.⁴¹ Further synthesis of the interests of the economy and the military facilitated by the power elite's relationships took place by increasing the military budget, advising on the research and development of military technology, and securing government contracts.⁴² These conditions helped create greater structural integration between the military and the economy, establishing a multitude of ways that economic and military development influenced each other. The federal government played a central role in providing necessary monetary funds for advancing research and development

35. Jorgenson & Clark, *supra* note 30, at 625.

36. HARRY MAGDOFF, *IMPERIALISM: FROM THE COLONIAL AGE TO THE PRESENT* 198 (1978); ADEM YAVUZ ELVEREN, *THE ECONOMICS OF MILITARY SPENDING: A MARXIST PERSPECTIVE* 8 (2019).

37. C. WRIGHT MILLS, *THE POWER ELITE* 198 (Oxford Univ. Press 2000) (1956).

38. *Id.* at 198–99.

39. *Id.* at 206, 212, 216.

40. *Id.* at 202, 204–05.

41. *Id.* at 212–14, 220.

42. *Id.* at 216–17.

(weaponry, transportation, communications), which benefitted both monopoly capital and the military.⁴³

The significance of federal support and coordination increased throughout the latter twentieth century as the United States imposed itself as the global hegemonic power. Following the Second World War, the U.S. military began expanding its large infrastructure as part of the Cold War.⁴⁴ During the 1960s, the U.S. military had 375 major military bases and 3,000 minor military facilities throughout the world.⁴⁵ By 2020, the United States had at least 800 established military bases in eighty-five foreign countries/territories, as well as numerous secretive “lily-pad bases” throughout the world.⁴⁶ To maintain this massive infrastructure, the U.S. military depended upon corporations’ organizational, productive, and financial resources.⁴⁷ Additionally, David Vine estimated that approximately \$100 billion is now spent each year to support and operate U.S. military bases overseas, with most of this money going directly to companies such as Halliburton and KBR that have military contracts.⁴⁸

Not only was the military dependent upon private corporations to maintain its vast and growing technostucture, but the economy also grew more dependent upon the military due to its contradictions. Following the Second World War, monopolistic firms were producing at astounding rates, and the United States experienced abnormally high levels of profits, production, and employment, which were associated with creating an expansive interstate system within the country, experiencing the housing boom, gaining access to former European colonies, becoming a global hegemonic nation, and helping rebuild European nations and Japan.⁴⁹ This brief period was followed by stagnation. Corporations were plagued by overproduction and the economy was affected by overaccumulation, resulting in significant amounts of waste.⁵⁰ Paul Baran and Paul Sweezy demonstrated that, in the monopoly capital stage, corporations tend to generate more surplus without a concomitant rise in consumption and investment outlets.⁵¹ In other words, corporations produce more surplus than what can be absorbed in existing markets, leading to a state of stagnation. Baran and Sweezy highlighted how nonproductive realms (such as the sales effort, which includes marketing) were employed to absorb this

43. BARAN & SWEETZ, *supra* note 22, at 207–08.

44. DAVID VINE, *BASE NATION: HOW U.S. MILITARY BASES ABROAD HARM AMERICA AND THE WORLD* 2–3 (2015).

45. *Id.* at 40.

46. *Id.* at 6, 45.

47. JOHN KENNETH GALBRAITH, *THE NEW INDUSTRIAL STATE* 334–35 (Signet Books 1968) (1967); PETER W. SINGER, *CORPORATE WARRIORS: THE RISE OF THE PRIVATIZED MILITARY INDUSTRY* 8–9 (updated ed. 2008).

48. VINE, *supra* note 44, at 211, 216–21.

49. BARAN & SWEETZ, *supra* note 22, at 219–20, 244–46.

50. THORSTEIN VEBLÉN, *ABSENTEE OWNERSHIP AND BUSINESS ENTERPRISE IN RECENT TIMES* 218–20 (1964).

51. BARAN & SWEETZ, *supra* note 22, at 76.

surplus.⁵² Additionally, the government quickly became an arena in which excess capacity was absorbed, helping curb some of the potential crises of the political-economic system.⁵³

This issue is particularly important, given the tremendous productive potential of monopoly capital. These industries tend to operate below their productive capacity.⁵⁴ In other words, industrial operations working at full productive capacity will produce vastly more commodities than can be purchased, which results in the failure to realize the surplus that has been created.⁵⁵ To minimize this problem, significant portions of labor and productive capacity go underutilized.⁵⁶ With so much idle capacity, monopoly capital tends toward stagnation and economic crisis.⁵⁷ To help address this issue, the state acts as a solitary consumer with enough effective demand to consume large amounts of surplus.⁵⁸

Under these conditions, one of the tendencies of monopoly capital is that oligopolistic corporations tend to invest less money in research and development that would expand their overall productive capacity than other activities such as marketing.⁵⁹ In various ways, the state has become more involved in supporting and advancing research and development, while the economic benefits are privatized.⁶⁰ Sidney Lens, quoting from Senator William Proxmire's Subcommittee on Economy in Government Congressional Record, captured this dynamic: in regard to patents on technology, the federal government provides funds for research and development, while it "permits contractors to obtain exclusive patent rights, free of charge, on inventions produced in the performance of government contracts."⁶¹ Lens explains, "The Pentagon spares no effort—or money—to make its industrial suppliers happy. While [industrial suppliers] are still fabricating the weapons, contractors may receive substantial 'progress' payments, which in effect are interest-free loans."⁶²

This represents a "distinctive U.S. institutional configuration," where the government stepped in to alleviate stagnation, essentially using public funds to prop up private actors.⁶³ As the state assumed a greater role in the economy through military spending, there was a corresponding growth in

52. *Id.* at 111, 114–16.

53. *Id.* at 142–45.

54. *Id.* at 108.

55. *Id.*

56. *Id.*

57. *Id.*

58. *Id.* at 142–45.

59. *Id.* at 91–95.

60. NICK TURSE, *THE COMPLEX: HOW THE MILITARY INVADES OUR EVERYDAY LIVES* 3 (2009).

61. SIDNEY LENS, *THE MILITARY-INDUSTRIAL COMPLEX* 6 (1970).

62. *Id.*

63. James M. Cypher, *The Political Economy of Systemic U.S. Militarism*, *MONTHLY REV.*, Apr. 2022, at 23, 25.

contracts with private companies.⁶⁴ In addition to demonstrating a historically specific institutional configuration between the state and private companies, the rise of the military-industrial complex significantly altered the industrial aspects of militarism. Before the term *military-industrial complex* was coined, Lewis Mumford noted that “the army is the ideal consumer, in that it tends to reduce toward zero the gap in time between the profitable original production and profitable replacement.”⁶⁵ Militaries have always been dependent upon an arms industry to provide the munitions and weapons necessary for military engagement and war requirements.⁶⁶ Under this system, during times of conflict, the industrial sector would shift from the production of consumer goods to needed military supplies.

However, following the Second World War, the military-industrial complex’s development introduced a new dynamic into the arms industries as the production of munitions and weapons continued despite the end of the war. As Mills indicated, the military “became enlarged and decisive to the shape of the entire economic structure,” and as a result “the econom[y] and the military have become structurally and deeply interrelated, as the economy has become a seemingly permanent war economy”⁶⁷ *Military Keynesianism*, whereby government spending on the military is undertaken to boost economic growth, helped expand research and industrial capacity, guaranteeing profits for large corporate firms.⁶⁸ Through the rise in government contracts with private companies, the arms industry was increasingly geared towards the dictates of the capitalist market with profit-oriented production. As James O’Connor observed, private military producers positioned themselves at the tap of government spending, increasing their overall interest in advancing the arms race and militarism.⁶⁹ This marks a historically specific shift where market-needs and military-interests influence what technologies are produced.⁷⁰

Private military contractors are one of the industrial interests that steer militaristic technological development’s larger operation. As military spending becomes oriented to enrich private contractors, technological development increasingly trends towards wasteful production. Mumford pointed out that the military actually plays a dual role as a “pure consumer” and a “negative producer.”⁷¹ While the military absorbs economic waste, it is also an institution that “produces illth . . . instead of wealth—misery, mutilation, physical destruction, terror, starvation and death characterize

64. See James M. Cypher, *From Military Keynesianism to Global-Neoliberal Militarism*, MONTHLY REV., June 2007, at 37, 44–45.

65. LEWIS MUMFORD, TECHNICS AND CIVILIZATION 93 (1934).

66. *Id.* at 92–93.

67. MILLS, *supra* note 37, at 215.

68. ISMAEL HOSSEIN-ZADEH, THE POLITICAL ECONOMY OF U.S. MILITARISM 204–05, 211, 226 (1st ed. 2006).

69. JAMES O’CONNOR, THE FISCAL CRISIS OF THE STATE 154 (1973).

70. HOSSEIN-ZADEH, *supra* note 68, at 211.

71. MUMFORD, *supra* note 65, at 93.

the process of war and form a principal part of th[at] product.”⁷² That is to say, monopoly capital creates a surplus, which is in part absorbed by the military; in turn, the weapons systems partially funded by the surplus generate distinct forms of waste, negatively impacting the environment.⁷³ Increasingly, the accumulation process dictates decisions over what types of technologies are developed and utilized.⁷⁴

Waste, broadly conceived, is embedded at the core of this relationship, and it manifests in numerous ways. For example, this productive arrangement leads to technological “innovations” that are not able to fulfill their promises.⁷⁵ Lens, relying on the Proxmire hearings, noted that weapons produced by private contractors often arrive late and do not meet requirements.⁷⁶ Quoting the hearings, Lens stated “of 13 major aircraft and missile programs with sophisticated electronic systems built for the Air Force and Navy since 1955 at a cost of \$40 billion, only four, costing \$5 billion, could be relied on to reach a performance level of 75 percent or above of their specifications.”⁷⁷ Furthermore, other taxpayer-funded aircrafts had to be cancelled due to low reliability.⁷⁸ Lack of functionality was not limited to aircrafts, as weapons systems were also susceptible to unacceptability.⁷⁹ Pentagon Officials noted that some of this spending could be eliminated from the military budget without affecting military capabilities.⁸⁰ However, the main beneficiaries of these private contracts are the contractors who handsomely profit off this excess production. These corporations are positioned to keep the tap open to direct public funds into their coffers. As a result, social surplus is directed toward a system of destruction instead of enhancing public well-being. Waste is built into this system, and this dynamic has only intensified in recent years.

While production involves creating less usable technologies, there is also a noticeable shift to more technologically “advanced” machinery and weaponry that is bigger and faster. These machines are more energy-intensive as far as their overall resource consumption.⁸¹ With the historic shift to private industries fulfilling military contracts as part of the permanent war economy, military production is geared towards expanding private capital’s profits. This shift to the private industry fulfilling military

72. *Id.*

73. DOUGLAS DOWD, *THE WASTE OF NATIONS: DYSFUNCTION IN THE WORLD ECONOMY* 73 (1989); Jorgenson & Clark, *supra* note 27, at 505.

74. Cypher, *supra* note 63, at 25.

75. LENS, *supra* note 61, at 6–7.

76. *Id.* at 6.

77. *Id.*

78. *Id.*

79. *Id.* at 7.

80. *Id.*

81. Andrew K. Jorgenson, Brett Clark, & Jennifer E. Givens, *The Environmental Impacts of Militarization in Comparative Perspective: An Overlooked Relationship*, 7 *NATURE & CULTURE* 314, 317–18 (2012).

contracts leads to dynamics within military production and consumption that match the capitalist economy's wastefulness.

One of these dynamics is obsolescence: the embedding of creative destruction within the industrial production of military equipment guaranteed by contracts.⁸² As a means of achieving capital accumulation, military contractors have a vested interest in selling the newest, most innovative technologies to the military. This, in turn, leads to a treadmill where technologies, as noted above, are less-than-useful, or are discarded before their end of life.⁸³ This constant cycle of innovation, overproduction, and underperformance leads to the obsolescence of military technologies, consumes vast amounts of matter and energy, and produces pollution. Additionally, given the specialized nature of some of the weaponry and technologies, this cycle of innovation, overproduction, and underperformance generates qualitatively distinct forms of waste that further impact the environment in long-lasting, negative ways. The remainder of this Article provides illustrative examples that present how monopoly capital has influenced the development of militarism, including its technological development, resource intensiveness, production of waste, and scope of ecological destruction.

III. MONOPOLY CAPITAL'S INFLUENCE ON THE DEVELOPMENT OF THE MILITARY

Environmental sociologist Kenneth Gould noted that militarization "is the single most ecologically destructive human endeavor."⁸⁴ Yet, military spending is generally not a focal point in international climate discussions. Omitting the military from international climate discussions is unfortunate, as "[e]very dollar spent on the military not only increases greenhouse gas emissions, but also diverts financial resources, skills and attention away from tackling one of the greatest existential threats humanity has ever experienced."⁸⁵ The gravity of this situation is worsening, as global military expenditures have been increasing since the 1990s, hitting at least \$2 trillion in 2021.⁸⁶ The richest nations spend thirty times as much on their militaries than they do on providing financial support for the developing nations.⁸⁷ It is critically important to understand how the historical development of the military, especially in its relationship with monopoly capital and its underlying dynamics, has amplified the scope and scale of its environmental consequences. Together, monopoly capital and militarism are driving the ecological crisis.

82. DOWD, *supra* note 73, at 74; see JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM, AND DEMOCRACY* 81–86 (1942).

83. Cypher, *supra* note 63, at 30–31.

84. Kenneth A. Gould, *The Ecological Costs of Militarization*, 19 *PEACE REV.* 331, 331 (2007).

85. AKKERMAN, BURTON, BUXTON, LIN, AL-KASHEF, & VRIES, *supra* note 8, at 1.

86. *Id.* at 10.

87. *Id.* at 1.

Government spending on the military, especially in the United States, helps expand industrial productive capacity, generate guaranteed profits for industry, and create specialized goods beyond the civilian sector.⁸⁸ Military spending can have a strong multiplier effect on the economy as a whole.⁸⁹ Within the context of monopoly capital, this generates a “vast constellation of contractors” and other vested interests who actively support “higher levels of military spending.”⁹⁰ Martin Shaw notes that one of the consequences of the higher level of spending is the shift towards more capital-intensive production and organization.⁹¹ This has multiple manifestations, including: machines progressively replace humans, consistent technological innovation enhances creative destructive dynamics, and military goods increasingly need specialized material for production.⁹² Significant social science research has demonstrated that the U.S. military has shifted towards being a more capital-intensive institution, exemplified by the emergence of more advanced weapons and transportation systems that tend to increase the material and energy demands associated with their production and use.⁹³

Capital-intensive production has spurred the development of weapons systems that consume more energy and significantly contribute to global greenhouse gas emissions.⁹⁴ For example, advanced fighter planes use up to 1,700 gallons of fuel per hour, and non-nuclear aircraft carriers can burn nearly 6,000 gallons per hour.⁹⁵ Moreover, these advanced, capital-intensive weapons systems lead to the production of distinct forms of waste and environmental degradation, such as Agent Orange and depleted uranium.⁹⁶ While there are efforts among some military officials to reduce environmental impacts, a contradiction exists between the military’s growth dynamics, including capital-intensive technology and ecological

88. Fred Block, *Economic Instability and Military Strength: The Paradoxes of the 1950 Rearmament Decision*, 10 POL. & SOC’Y. 35, 52–53 (1980); Casey Borch & Michael Wallace, *Military Spending and Economic Well-Being in the American States: The Post-Vietnam Era*, 88 SOC. FORCES 1727, 1729 (2010); James M. Cypher, *Military Spending, Technical Change, and Economic Growth: A Disguised Form of Industrial Policy?*, 21 J. ECON. ISSUES 33, 43–44 (1987); see also GALBRAITH, *supra* note 47, at 237–39.

89. Enrico Moretti, Claudia Steinwender, & John Van Reenen, *The Intellectual Spoils of War? Defense R&D, Productivity and International Spillovers* 1, 3 (Nat’l Bureau of Econ. Rsch., Working Paper No. 26483, 2019).

90. Cypher, *supra* note 64, at 44.

91. MARTIN SHAW, *DIALECTICS OF WAR: AN ESSAY IN THE SOCIAL THEORY OF TOTAL WAR AND PEACE* 42 (1988).

92. *Id.* at 40–43.

93. See generally MICHAEL R. LENGFELD, GREGORY HOOKS, & CHAD L. SMITH, *War and the Environment*, in HANDBOOK OF ENVIRONMENTAL SOCIOLOGY 381, 381–82, 384–85, 389 (Beth Schaefer Caniglia, Andrew Jorgenson, Stephanie A. Malin, Lori Peek, David N. Pellow, & Xiaorui Huang eds., 2021).

94. NETA C. CRAWFORD, *THE PENTAGON, CLIMATE CHANGE, AND WAR: CHARTING THE RISE AND FALL OF U.S. MILITARY EMISSIONS* 138–140 (2022).

95. BARRY SANDERS, *THE GREEN ZONE: THE ENVIRONMENTAL COSTS OF MILITARISM* 61 (2009).

96. Auerbach, *supra* note 23, at 91; Singer & Keating, *supra* note 14, at 335.

efficiency.⁹⁷ However, given that monopoly capitalistic firms are a core part of the military-industrial complex, the military is additionally influenced by the interests of corporations who vie for contracts to provide military equipment and to pursue specialized technological development.⁹⁸

The rise of private contractors in the military-industrial complex as part of the permanent war economy plays a major role in shaping militarization and its productive relationships, creation of waste, and ecological consequences. Ismael Hossein-Zadeh emphasizes the importance of recognizing this historical shift in the relation between militarism and the economy.⁹⁹ Generally, according to Hossein-Zadeh, wars stimulated the arms industry before the Second World War.¹⁰⁰ However, with the historical shift toward the permanent war economy, monopoly capital firms became an integral component in influencing the technological development of militaries while securing a means to expand their profits.¹⁰¹ In other words, the production of military technologies—such as weapons, communication, and transportation systems—is increasingly placed under the monopoly capitalistic dynamics. One of the consequences is the tremendous production of waste in various forms, such as militaristic, economic, and ecological.

A. Profit Capture

The structure of monopoly capital differs from previous, more competitive stages of the capital system. As Baran and Sweezy explained, one of the key distinctions is that under conditions of monopoly capital, giant corporations are “price makers,” not “price takers.”¹⁰² Within this system, corporations have undue influence over determining what to charge for their products due to the lack of competition among large firms.¹⁰³ In other words, the distinctiveness of the monopoly capitalist system is that it does not operate based on a rudimentary process of supply and demand. Rather, when suppliers are few, they have outsized influence on what is produced and at what cost.

Following the Second World War, as noted above, there was a shift in the operation of all agencies in the military. Starting with the Air Force and then quickly followed by other arms of the military, a significant portion of military activities were doled out to private contractors.¹⁰⁴ As H. L. Nieburg eloquently wrote, “[t]he Air Force’s success . . . established the magic formula that all federal agencies soon imitated. It set in motion a rush to contract out practically everything that was not nailed to the floor

97. MICHAEL T. KLARE, *ALL HELL BREAKING LOOSE: THE PENTAGON’S PERSPECTIVE ON CLIMATE CHANGE* 2, 5 (2019).

98. GALBRAITH, *supra* note 47, at 306–07.

99. *See* HOSSEIN-ZADEH, *supra* note 68, at 27–28.

100. *Id.* at 39.

101. *See id.* at 65–66.

102. BARAN & SWEEZY, *supra* note 22, at 53–54.

103. *Id.* at 57.

104. H. L. NIEBURG, *IN THE NAME OF SCIENCE* 189 (1966).

and, in the process, it decimated the government's in-house management, engineering, and R&D capability"¹⁰⁵ As the military-industrial complex altered the constellation of broad social institutions, it created a dependency of the armed forces on private contractors in the form of large, oligopolistic firms.¹⁰⁶ Here, we present the monopolistic structure of the military-contractor nexus and how it leads to built-in profits at a rate that far exceeds the norm. A lack of competitive bidding and the large monopolistic firms' presence both create a path dependency in which monopoly capital and the military become increasingly dependent upon one another and begin to converge in their outputs and goals.

From the Second World War to the present, civilian contractors have become tightly integrated into the militarization process and make up larger portions of everyday productive and reproductive activities. While present in all aspects of militarization, arms and weapons systems production and procurement is an illustrative case. However, while it is important to note that there is an increasing intermingling of private contractors and public institutions, the relationship's structure better elucidates the impact that monopoly capital has on the production and procurement of weapons systems. Since the 1960s, critics, congressional representatives, and government bureaucrats have recognized that the weapons systems production industry is monopolistic and leads to significant profits and control.¹⁰⁷ Most famously, Dwight D. Eisenhower, in his 1961 farewell speech, warned the citizens of the United States about the dangers of the military-industrial complex.¹⁰⁸ Eight years later, Senator William Proxmire of Wisconsin led congressional efforts to detail the significant amounts of waste in military spending.¹⁰⁹ In an impassioned speech given in the halls of Congress, based on a Joint Economic Committee report, Senator Proxmire stated, "The problem of defense spending is out of control. The system is top heavy. The military-industrial complex now writes its own budgetary ticket."¹¹⁰

The market influencing weapons systems procurement and development echoes the dynamics of monopoly capital. Instead of being a highly competitive system, where multiple businesses vie for contracts, only a few private contractors dominate the defense acquisition process and receive the bulk of the contracts. These contractors, with the support of lobbyists recruited from both the corporate and military sectors, mobilize political pressure to increase military spending and secure additional contracts. In 2011, J. Ronald Fox, a former assistant secretary of the Army and Professor of Business Administration at Harvard University,

105. *Id.*

106. GALBRAITH, *supra* note 47, at 306–07.

107. *See* LENS, *supra* note 61, at 77.

108. *President Dwight D. Eisenhower's Farewell Address (1961)*, NAT'L ARCHIVES, <https://www.archives.gov/milestone-documents/president-dwight-d-eisenhowers-farewell-address> (last visited on Mar. 22, 2024).

109. 115 CONG. REC. 5699 (1969) (statement of Senator William Proxmire).

110. *Id.* at 5700.

published a report entitled, *Defense Acquisition Reform 1960-2009: An Elusive Goal*.¹¹¹ Fox's well-researched report, which scoured decades worth of government accounting reports on military spending, identified the monopolistic nature of the contractor-defense relationship.¹¹² Instead of being defined by a free-market system dictated by supply and demand, the government-industry nexus involves one major consumer and only a few producers.¹¹³ Significantly, this changes any incentive conditions in the acquisition structure. This monopolistic dynamic works in two ways: contractors are dependent upon one single customer, the Department of Defense, while the Department of Defense is reliant on a handful of contractors to fulfill its basic operational and maintenance needs.¹¹⁴ Ostensibly, this leads to a convergence in national defense goals. However, these monopolistic firms are focused on extracting surplus value through the production process, which, in turn, shapes the production and acquisition process.

As Fox notes, the Department of Defense “does not develop or produce its weapon systems in-house; rather the development and production work is contracted through prime contractors.”¹¹⁵ Further in the report, Fox teases out the implications of this dependent relationship, characterized by an “inverted” reward system.¹¹⁶ Due to the structural relationship of the military to monopoly capitalistic enterprises, private contractors consistently get away with higher costs than what was initially agreed upon in contracts, more support for overhead costs, and, ultimately, higher profit margins.¹¹⁷ This is not a recent problem, as the report was based on a pattern that has been established for decades. It is a persistent, structural feature of the military-industrial complex. In a *New York Times* article published in 1985, Charles Mohr made a similar statement, noting that “the way the Defense Department customarily does business is based on an inverted system of rewards and punishment.”¹¹⁸ Quoting A. Ernest Fitzgerald, a former Air Force servicemember who was summarily dismissed for identifying the economic waste of the C-5A cargo plane, Mohr aptly describes the situation: “We are not buying airplanes; we are buying the contractor’s costs.”¹¹⁹ Rather than being the product of a free-market, competitive capitalism, the move towards private contractors satisfying the production, research, and development needs of the military under monopoly capital conditions represents another example of publicly subsidized,

111. See generally J. RONALD FOX, *DEFENSE ACQUISITION REFORM 1960-2009: AN ELUSIVE GOAL* (2011).

112. *Id.* at 13.

113. *Id.*

114. *Id.* at 194-96.

115. *Id.* at 194.

116. *Id.* at 204.

117. *Id.*

118. Charles Mohr, *Critics See Key Flaws in Arms Cost Control*, N.Y. TIMES, May 18, 1985, at 1001.

119. *Id.*

for-profit entities.¹²⁰ According to the Department of Defense, in fiscal year 1968, the percentage of “competitive” military contracts was 11.5%.¹²¹ This situation persists given the position and influence of monopoly capital, which works to secure taxpayer monies for these operations.

What, specifically, are the rates of profit and how do they occur? Senator William Proxmire also detailed the overrun costs in the production of weapons systems during his speech on the Senate floor.¹²² Proxmire quoted a former bureaucrat in the office of the Assistant Secretary of Defense, Robert S. Benson, who noted, “[A]bout 90 percent of the major weapons systems that the Defense Department procures end up costing at least twice as much as was originally estimated.”¹²³ Proxmire continued identifying example after example of cost overages.¹²⁴ The C-5 plane that A. Ernest Fitzgerald blew the whistle about eventually cost \$5 billion when it was originally contracted for \$3 billion.¹²⁵ Three years later, the Comptroller General of the United States issued a report titled *Acquisitions of Major Weapon Systems*, which noted that this problem of final costs far exceeding initially agreed upon costs was endemic to the weapons systems procurement process.¹²⁶ From analyzing sixty-one weapons systems that had complete data available, the report found that final costs increased \$33.4 billion from initial estimates.¹²⁷ Another report, published in 1992, highlighted how procurement, research, development, testing, and evaluation averaged nearly 38% of the Department of Defense Budget and ranged from 30% to almost 45% from 1956 to 1991, accounting for significant increases in the military budget.¹²⁸ More recently, in a contract evaluation from 2000 to 2015, James Cypher identified that net rates of profit for prime contracts and subcontractors was 14.3% and 14.6%, respectively.¹²⁹ As Cypher notes, this is nearly double the net profit of civilian manufacturing, providing a bonanza to the major contractors.¹³⁰

B. Production for Capitalist Use Values: Innovation and Obsolescence

Another element of this drive for profit maximization is the distortion of use value at the expense of exchange value.¹³¹ Under the general

120. NIEBURG, *supra* note 104, at 189.

121. 115 CONG. REC. 5703 (1969).

122. *Id.* at 5700.

123. *Id.*

124. *See generally id.*

125. *Id.*

126. DEP’T OF DEF., ACQUISITION OF MAJOR WEAPON SYSTEMS 2 (1971), <https://www.gao.gov/assets/b-163058-095688.pdf>.

127. *Id.*

128. DEP’T OF DEF., WEAPONS ACQUISITION: A RARE OPPORTUNITY FOR LASTING CHANGE 9 (1992), <https://www.gao.gov/assets/nsiad-93-15.pdf>.

129. Cypher, *supra* note 63, at 32–33.

130. *Id.* at 33.

131. Marx noted that use value refers to the utility of an object that satisfies a human need. Exchange value often takes the form of the monetary or quantitative equivalence between two or more objects. *See* MARX, *supra* note 31, at 126.

formula for capital, capitalistic production is increasingly oriented to advance the realization of exchange values as the usefulness of products tends to recede into the background. Monopolistic firms direct production and technological innovation towards quantitative increases—the realization of surplus value.¹³² As products are transformed into commodities, greater amounts of economic and ecological waste tend to be introduced into the production process.¹³³ The commodities that are created do not necessarily represent the consumer’s use value needs, but rather the producer’s capital accumulation needs. Efforts to enhance this accumulation treadmill foster a tendency towards built-in, or planned, obsolescence, influencing the types of technological innovations purchased by the consumer.¹³⁴ Planned obsolescence, then, facilitates the accelerating circulation of commodities that contribute to the realization of surplus value.

In regard to use values, this type of production is seen as waste. Under a monopoly capital system, use value is replaced with *capitalist use value*. Whether a commodity is useful or not is merely incidental. Rather, concerns regarding what and how much is produced are oriented towards a commodity’s usefulness in generating capital accumulation.¹³⁵ In other words, production under monopoly capital conditions tends to be influenced by how much economic surplus can be realized through the production process.¹³⁶ However, from the producer’s perspective, a consumer’s lack of utility can lead to new orders, outdated additional contracts, and ineffective technologies that constantly need to be replaced. In other words, constant innovation serves as a basis for expanding creative destruction within monopoly capital and its production of military equipment, thus increasing resource demands to expand profits.

Importantly, Baran and Sweezy identify other parts of the production process geared towards accumulation at the expense of use.¹³⁷ Using the example of the automobile in the 1950s, they highlight how more than 25% of an automobile’s price was associated with unnecessary model changes where little functional and operational differences existed between the various models.¹³⁸ They also identify how additional costs existed in vehicle maintenance and repair costs of obsolescent car parts.¹³⁹ Under monopoly capital, waste is built into the system’s operation. It is this logic that overrides the private contract organization associated with weapons systems manufacturing. The irrationality and wastefulness of this type of production is central to the production process itself, constituting a system of “organized waste” that places an enormous burden on the

132. JOHN BELLAMY FOSTER, *CAPITALISM IN THE ANTHROPOCENE* 382–87 (2022).

133. See generally ISTVÁN MÉSZÁROS, *MARX’S THEORY OF ALIENATION* (5th ed., Merlin Press 2005) (1970).

134. BARAN & SWEEZY, *supra* note 22, at 130–31.

135. FOSTER, *supra* note 132, at 62–65.

136. JOHN BELLAMY FOSTER, *THE THEORY OF MONOPOLY CAPITALISM* 39 (new ed. 2014).

137. FOSTER, *supra* note 132, at 382–83.

138. *Id.* at 383–84.

139. BARAN & SWEEZY, *supra* note 22, at 136–39.

environment, in terms of both the resources utilized for production and the pollution generated, especially given the increasing scale of its operations.¹⁴⁰

Weapons systems production demonstrates the significance of realizing capitalist use value in the production process. Far from being anomalous, waste is a structural feature of the military-industrial complex. This waste is achieved in ways that mirror the wasteful production featured in Baran and Sweezy's original analysis and in updated examinations of the relationship between monopoly capital and ecological degradation.¹⁴¹ Obsolescence and wasteful production are built into the military-industrial complex's operation.¹⁴² Senator William Proxmire highlighted the contradiction that is present in production under monopoly capitalism: "Not only are we paying too much for what we buy, but often we do not get what we pay for."¹⁴³ A Comptroller General report echoed these sentiments over twenty-three years later: "The technology that has made high-performance weapons possible has also introduced new challenges to weapon system designers to make these weapons suitable for field operations. To be operationally suitable, weapons must, among other things, be able to be effectively operated, maintained, and supported by the military forces."¹⁴⁴ However, the report emphasized:

Our reviews have disclosed that design considerations such as reliability, maintainability, and logistics support have been compromised or otherwise not adequately considered during the acquisition process Performance and schedule requirements tend to take precedence over operational suitability concerns, particularly when funding shortfalls force trade-offs. The result has often been very high maintenance and support costs and lower-than-expected availability for operations.¹⁴⁵

In a 2011 report, Fox suggested that, despite recognition of these problems, the problems persist into the twenty-first century.¹⁴⁶ In general terms, while high rates of unsuitable weapons systems seem like a failure, these weapons systems represent a success within monopoly capital as these commodities are continuously purchased or commissioned despite their faults.

140. JOHN BELLAMY FOSTER & BRETT CLARK, *THE ROBBERY OF NATURE: CAPITALISM AND THE ECOLOGICAL RIFT* 252 (2020).

141. FOSTER, *supra* note 132, at 382–87.

142. *Id.* at 383–85.

143. 115 CONG. REC. 5701 (1969).

144. DEP'T OF DEF., *supra* note 128, at 32.

145. *Id.*

146. FOX, *supra* note 111, at 191.

To substantiate these claims, Proxmire refers to a report titled *Improving the Acquisition Process for High Risk Electronics Systems*, written by Richard A. Stubbings, a Budget Bureau analyst.¹⁴⁷ Reportedly,

Of 11 major weapons systems begun during the 1960's, only two of the 11 electronic components of them performed up to standard. One performed at a 75-percent level and two at a 50-percent level. But six—a majority of them—of the 11 performed at a level 25 percent or less than the standards and specifications set for them all.¹⁴⁸

Not only were the components completed below U.S. military standards, but they were also delivered two years late and cost nearly 300% more than the original Pentagon estimate.¹⁴⁹ Proxmire then identifies eight other high-tech, capital-intensive weapons systems that would potentially make existing weapons systems obsolete.¹⁵⁰ Waste and obsolescence problems persisted into the 1980s, where advanced weapons systems such as the Apache helicopter, Advanced Medium Range Air-to-Air missile, and other electronic systems were either used without proper testing or, due to design issues, required modifications to be useful.¹⁵¹ Each of these advanced weapons systems was designed to render the previous systems obsolete or to be used alongside existing systems.¹⁵²

Obsolescence and performance issues, as part of enhancing capitalist use values, persist today across all elements of the U.S. military. Mandy Smithberger and Pierre Sprey, a journalist and systems analyst, respectively, focus on Littoral Combat Ships (LCSs)—a class of ships designed to be used near shores—to further illuminate the failed promises and corresponding waste of weapons systems.¹⁵³ In 2003, the contractor-designed LCS weapons system was presented to the U.S. Navy as a “transformative technology . . . incorporating radically new characteristics that would totally change naval warfare.”¹⁵⁴ However, what was promised was not delivered.¹⁵⁵ The contractor scaled back on the initial LCS specifications, drastically impacting performance capability.¹⁵⁶

For example, the LCS weapons system was assured to be versatile and capable of engaging in multiple types of missions, including surface warfare, anti-submarine warfare, and mine countermeasures.¹⁵⁷ However,

147. RICHARD A. STUBBING, *IMPROVING THE ACQUISITION PROCESS FOR HIGH-RISK MILITARY ELECTRONIC SYSTEMS* (1968).

148. 115 CONG. REC. 5701 (1969).

149. *Id.*

150. *See generally id.* at 5708.

151. DEP'T OF DEF., *supra* note 128, at 34.

152. *Id.* at 38–39.

153. Mandy Smithberger & Pierre Sprey, *Overhaul of Littoral Combat Ship Program Likely to Increase Risks and Costs*, PROJECT ON GOV'T OVERSIGHT (Dec. 13, 2016), <https://www.pogo.org/investigations/overhaul-of-littoral-combat-ship-program-likely-to-increase-risks-and-costs>.

154. *Id.*

155. *Id.*

156. *Id.*

157. *Id.*

each delivered LCS was designed for executing only one permanent mission.¹⁵⁸ Modification of the ship for a different mission required fifteen to thirty days of work to get it ready.¹⁵⁹ Further complicating matters, this work involved advanced technological knowledge and training that proved to be too problematic for immediate use.¹⁶⁰ Thus, the ship proved to be unsuitable for military purposes, especially in regard to the specification for “multi-mission swapping.”¹⁶¹ Additionally, the LCS was billed to be faster and travel farther than standard frigates and destroyers.¹⁶² The achieved speeds and endurance, however, were less than suggested, making the LCS unfit for escort missions.¹⁶³ The LCS was so inadequate that, in 2011, the Pentagon’s Director of Operational Test and Evaluation wrote, “LCS is not expected to be survivable in a hostile combat environment.”¹⁶⁴ Moreover, due to defects, the LCS that was delivered experienced “over 80 equipment failures” that “placed the crew of the ship in undue danger.”¹⁶⁵ The Navy purchased thirty-two of these ships at a cost of nearly three times their original price.¹⁶⁶ The Navy expected these ships to last thirty to forty years, as previous vessels did.¹⁶⁷ However, in 2021, it abandoned eight of the twenty ships it had received after “less than four years at sea” due to water leakages and mechanical problems.¹⁶⁸ Despite this failure, private contractors such as Lockheed Martin and General Dynamics profited handsomely from this arrangement.¹⁶⁹ This is just one example of how the environmentally destructive system of organized waste thrives under conditions where weapons systems are subject to the monopoly capital’s interests.

These examples demonstrate that, for over seventy years, military contractors have provided, in some instances, less than satisfactory products to the U.S. military, leading to product obsolescence and waste. At least, that is from the military’s perspective.¹⁷⁰ From the perspective of the private contractors, constant innovations in military equipment and technological advancements, in general, serve as the basis for creative destruction, where product obsolescence plays a crucial role in creating capitalist use value.¹⁷¹ Through creative destruction and product obsolescence, surplus in the form of federal spending is funneled to monopoly capital to produce the means for destruction, instead of being used for social spending to enhance the public’s well-being through health care, education, and

158. *Id.*

159. *Id.*

160. *Id.*

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

167. Cypher, *supra* note 63, at 30.

168. *Id.*

169. *Id.*

170. *Id.* at 23.

171. *Id.* at 25–26.

environmental protection. The operations of this system, predicated on constant growth and expansion, produce an increasing amount of waste, thereby driving environmental degradation and increased carbon emissions.

IV. THE TOXIC LEGACY OF THE MILITARY: MILITARY WASTE AND DEPLETED URANIUM

Militaries create significant environmental degradation well beyond the constant generation of waste associated with the production and obsolescence of weapons systems. Warfare provides numerous examples: scorched earth practices, including defoliation resulting from Agent Orange; atomic and nuclear bomb testing, which spread radioactive fallout containing Strontium-90 and Iodine-131 throughout the Earth System¹⁷²; and the pursuit of advanced planes, ships, tanks, and other vehicles that require massive consumption of fossil fuels.¹⁷³ Additionally, a military's structure and basic operations influence resource demands. The network of U.S. military bases around the world must be continuously supplied with personnel, equipment, and energy. The above examples illustrate the U.S. military's role as a major consumer of fossil fuels, a significant contributor of carbon emissions, and the "single largest polluter on earth."¹⁷⁴ As J. David Singer and Jeffrey Keating explained, "*all* aspects of military activity defile our environment in some way," including "depleting resources, eroding the physical environment, destroying natural flora and fauna, or leaving behind a vast array of toxins and radioactive elements."¹⁷⁵

The creation of depleted uranium munitions demonstrates a distinct toxic legacy of military waste. Both nuclear testing and nuclear power create depleted uranium as a byproduct.¹⁷⁶ In the decades following the Second World War, the Department of Defense stockpiled over a million pounds of nuclear waste from nuclear development.¹⁷⁷ While German scientists in the 1940s explored the potential for depleted uranium's use in military operations, it was the United States that produced conventional weapons, such as bombs and bullets, with integrated depleted uranium.¹⁷⁸

Rob Nixon explained that this situation resulted in a unique opportunity whereby "weapons manufacturers magically cut their production costs while the Defense Department magically rids itself of a five-alarm waste product . . ."¹⁷⁹ Depleted uranium enhances the "penetrative

172. COMMONER, *supra* note 12, at 49–53; Auerbach, *supra* note 23, at 100–01; Clark & Jorgenson, *supra* note 14, at 563–64.

173. Cypher, *supra* note 63, at 27–28.

174. Michael Renner, *Assessing the Military's War on the Environment*, in STATE OF THE WORLD 132, 132 (1991); CRAWFORD, *supra* note 94, at 138–39.

175. Singer & Keating, *supra* note 14, at 326.

176. *Id.* at 330–31.

177. *Id.* at 337–38.

178. *Id.* at 332–33.

179. NIXON, *supra* note 13, at 212.

capacity” of munitions, increasing the “kill range.”¹⁸⁰ It contains the radioactive isotope uranium-236 that has a half-life of 23.420 million years.¹⁸¹ When hitting targets, the depleted uranium in the munitions combusts, creating particles that can be inhaled and are deposited across the landscape.¹⁸² Additionally, the depleted uranium can seep into groundwater and persist in the environment, creating a toxic landscape.¹⁸³ Due to these characteristics, the United Nations Commission on Human Rights has designated depleted uranium as among the “weapons of indiscriminate effect.”¹⁸⁴

The United States, during the 1991 Gulf War, used weapons that contained over three hundred tons of depleted uranium.¹⁸⁵ Environmental exposure to depleted uranium is associated with leukemia, renal problems, Gulf War syndrome, and other ailments.¹⁸⁶ Following the Gulf War, the United States and U.S. arms dealers sold depleted uranium munitions to at least seventeen nations.¹⁸⁷ These weapons have been used in numerous armed conflicts, including in Afghanistan, Bosnia, Iraq, Kosovo, and Serbia, further globalizing this type of ecological destruction due to militarism.¹⁸⁸

V. THE MARRIAGE OF MONOPOLY CAPITAL AND THE MILITARY: COALESCING STRANDS OF EXTERMINISM

In 1982, Marxist historian E. P. Thompson published the book *Beyond the Cold War*.¹⁸⁹ Contained within this volume is an essay entitled, *Notes on Exterminism, The Last Stage of Civilization*.¹⁹⁰ Within this prescient chapter, Thompson argued that certain characteristics present in society at that time could lead to contemporary civilization’s dissolution through means of mass eradication—in other words, exterminism.¹⁹¹ Writing at the height of the Cold War, Thompson focused on the threat of nuclear annihilation and the irrationality of the buildup of nuclear weapons.¹⁹² The “Bomb,” as he referred to nuclear weapons, was simultaneously a distinct menace and a weapons system supported by a particular social system.¹⁹³ Weapons systems, in other words, existed within a

180. *Id.* at 213.

181. Nixon overestimated the half-life of depleted uranium at 4.51 billion years. *Id.* at 201. New estimates calculate the half-life of uranium-236 at 23.420 million years. *Uranium 236*, U.S. ENV’T PROT. AGENCY, <https://comptox.epa.gov/dashboard/chemical/actor/DTXSID60891774> (last visited July 20, 2024).

182. *Id.* at 213.

183. *Id.* at 204–05.

184. *Id.*

185. *Id.* at 200–01.

186. *Id.*

187. *Depleted Uranium*, CAMPAIGN FOR NUCLEAR DISARMAMENT, <https://cnduk.org/resources/depleted-uranium/> (last visited May 26, 2024).

188. *Id.*

189. E. P. THOMPSON, *BEYOND THE COLD WAR* (Pantheon Books 1982).

190. *Id.* at 41–80.

191. *Id.* at 45.

192. *Id.* at 46–49.

193. *Id.* at 45–49.

“distinct organisation of labour, research and operation, with distinctive hierarchies of command, rules of secrecy, prior access to resources and skills, and high levels of policing and discipline.”¹⁹⁴ This specific social system enacted a logic of escalation that made exterminism’s likelihood more likely. Imperialistic societies—driven to protect and expand the capital system, which contributes to the arms race and geopolitical competition—ramp up their production of destructive weapons systems, further entrenching the logic of exterminism into the functioning of the social world. Significant societal resources are directed toward building up weapons systems.¹⁹⁵ The ultimate irony, though, is that exterminist society’s operation undermines the Earth System on which human survival depends.

John Bellamy Foster, noting the historical specificity of Thompson’s analysis, provides an update regarding the forces driving exterminism in the current moment.¹⁹⁶ Foster explains that contemporary political-economic factors, such as those associated with monopoly capital, are creating climate change and the general ecological crisis.¹⁹⁷ Here, the capital system itself exists in relation to and in tension with the militaristic foundations of exterminism, expanding the scope of destruction.¹⁹⁸ Thus, Foster cautions the public not to view the logic of exterminism within the military as operating distinctly from the political-economic drivers.¹⁹⁹ While this point goes against the specificity present throughout Thompson’s argument, it helps us better understand the historically unique ways these institutions intersect and interact with each other. Further, it reveals the logic of exterminism and irrationalism present in the world generally, especially among leaders in the United States as they pursue nuclear primacy and fail to take serious action to address climate change.²⁰⁰ Only by comprehending the present period’s unique constellation of institutions can we devise ways to counteract and dismantle our society’s exterminist logic.

What we presented in this Article serves as a starting point towards better understanding the emergence and entrenchment of exterminism with the rise of the military-industrial complex. Following the Second World War, U.S. society’s power elite increasingly incorporated the military.²⁰¹ During this period, the economy and the military were also increasingly integrated, leading to a historical dynamic whereby these two institutions significantly impacted each other. The operating logics of these

194. *Id.* at 45.

195. Michael Lengefeld, *Nuclear Weapons and the Treadmill of Destruction in the Making of the Anthropocene*, 26 J. WORLD-SYS. RSCH. 203, 206 (2020).

196. John Bellamy Foster, “Notes on Exterminism” for the *Twenty-First-Century Ecology and Peace Movements*, MONTHLY REV., May 2022, at 1, 1.

197. Examples of ecological crisis include species extinction, ocean acidification, loss of biodiversity, land use change, and the production of novel entities.

198. Foster, *supra* note 196, at 3–5.

199. John Bellamy Foster, *The U.S. Quest for Nuclear Primacy: The Counterforce Doctrine and the Ideology of Moral Asymmetry*, MONTHLY REV., Feb. 2024, at 1, 18.

200. Foster, *supra* note 196, at 1–4, 14–15; Foster, *supra* note 199, at 16–17.

201. MILLS, *supra* note 37, at 212–14, 220.

institutions, predicated on maintaining, protecting, and expanding the endless accumulation of capital within the imperial capitalist system, lead in distinct ways towards exterminism.

Our analysis will help establish a more full understanding of the impact of monopoly capital on the development of weapons systems and how that, in turn, has impacted environmental degradation. The integration of the military and the economy resulted in the institutionalization of capitalist market dynamics and needs into military production, elevating and expanding environmental demands. As the military increasingly relied on private contractors for its general operations, these operations were governed and characterized by monopoly capital's interests. Weapons systems production provided the means for contractors to capture tremendous profits at rates far exceeding those in the civilian economy. Moreover, private contractors sought the realization of capitalist use values at the expense of use value generally. With an insatiable thirst for profit, private contractors were compelled to constantly develop new, more "advanced" weapons systems to sell to the military, displacing "outdated" ones. These new high-tech, capital-intensive weapons systems tended to be more resource-intensive, as demonstrated by the Pentagon's role as one of the world's largest consumers of fossil fuels.²⁰² Additionally, these new weapons systems created distinct, devastating forms of ecological disruption. Furthermore, in the drive to expand profits, monopoly capital enhanced creative destruction and obsolescence tendencies in relation to the contract goods produced, leading to a persistent feature of weapons systems that did not meet mission specifications of the military. Ultimately, monopoly capital's integration and the imperialistic tendencies of U.S. militarism created more waste, both social and ecological, further exacerbating the logic of exterminism. Thus, addressing the ecological crisis requires a revolutionary transformation of society and an end to the imperial capitalist system.

202. Neta C. Crawford, *Pentagon Fuel Use, Climate Change, and the Costs of War*, WATSON INST. INT'L & PUB. AFFS. 2, 4–5 (2019), <https://watson.brown.edu/costsofwar/papers/ClimateChange-andCostofWar>.