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ABBREVIATIONS

ABM	antiballistic missile
ACDA	Arms Control and Disarmament Agency
AEC	Atomic Energy Commission
AID	Agency for International Development
ANMB	Army-Navy Munitions Board
ANSER	Analytical Services Inc.
ARPA	Advanced Research Projects Agency
AT&T	American Telephone and Telegraph
AWACS	airborne warning and control system
BCG	Boston Consulting Group
BRAC	base realignment and closure
CDI	Center for Defense Information
CENIS	Center for International Studies
CEO	chief executive officer
CIA	Central Intelligence Agency
CNS&E	College of Nanoscale Science and Engineering
CRESS	Center for Research in Social Sciences
DARPA	Defense Advanced Research Projects Agency
DOD	Department of Defense
DOE	Department of Energy
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
GAO	General Accountability Office
GDP	gross domestic product

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GNP	gross national product
GPS	Global Positioning System
HUMRRO	Human Resources Research Office
IBM	International Business Machines
ICAF	Industrial College of the Armed Forces
ICBM	intercontinental ballistic missile
ICT	information and communications technology
IDA	Institute for Defense Analyses
IMF	International Monetary Fund
IRBM	intermediate-range ballistic missile
JCS	Joint Chiefs of Staff
MB	Munitions Board
MBA	master of business administration
MIC	military-industrial complex
MIRV	multiple independently targeted reentry vehicle
MIT	Massachusetts Institute of Technology
MPRI	Military Professional Resources Inc.
MSUG	Michigan State University Group
NACA	National Advisory Committee for Aeronautics
NASA	National Aeronautics and Space Administration
NASDAQ	National Association of Securities Dealers Automated Quotations
NATO	North Atlantic Treaty Organization
NDRC	National Defense Research Committee
NEBM	new economic business model
NIH	National Institutes of Health
NSC	National Security Council
NSF	National Science Foundation
NSRB	National Security Resources Board
NSS	National Security Strategy of the United States
<i>NYRB</i>	<i>New York Review of Books</i>
OASW	Office of the Assistant Secretary of War
ODM	Office of Defense Mobilization
OEBM	old economic business model

OECD	Organization for Economic Cooperation and Development
ONR	Office of Naval Research
OPEC	Organization of Petroleum Exporting Countries
OSRD	Office of Scientific Research and Development
OSS	Office of Strategic Services
OST	Office of the Special Assistant to the President for Science and Technology
PD	Presidential Directive
POW	prisoner of war
PSAC	President's Science Advisory Committee
RAC	Research Analysis Corporation
RAM	random-access memory
R&D	research and development
RCA	Radio Corporation of America
SAC	Strategic Air Command
SAIS	School of Advanced International Studies
SALT	Strategic Arms Limitation Treaty
SDC	System Development Corporation
SDI	Strategic Defense Initiative
SEATO	Southeast Asia Treaty Organization
SIOP	single integrated operational plan
SLBM	sea-launched ballistic missile
SORO	Special Operations Research Organization
START	Strategic Arms Reduction Treaty
TRW	Thompson-Ramo-Wooldridge Inc.
UAW	United Automobile Workers
UMT	universal military training
UN	United Nations
WIB	War Industries Board
WMD	weapons of mass destruction
WPB	War Production Board
WPR	War Powers Resolution



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INTRODUCTION

This volume is the last in a five-volume study of the political economy of American warfare—the means the nation has employed to mobilize its economic resources for defense and hostilities. It begins in 1945 and extends virtually to the present day—the Cold War and post–Cold War years. The preceding volumes (all published by the University Press of Kansas), are as follows: volume 1, *Beating Plowshares into Swords: The Political Economy of American Warfare, 1606–1865* (1996), covers the colonial period through the Civil War; volume 2, *Mobilizing for Modern War: The Political Economy of American Warfare, 1865–1919* (1997), focuses on the Gilded Age, the Progressive Era, and World War I; volume 3, *Planning War, Pursuing Peace: The Political Economy of American Warfare, 1920–1939* (1998), deals with the interwar years; and volume 4, *Arsenal of World War II: The Political Economy of American Warfare, 1940–1945* (2004), examines economic mobilization for World War II. The goal of my multivolume project is to provide scholars and other readers with what was previously unavailable: a comprehensive, analytical, and interdisciplinary study of the economics of America’s wars from the colonial period to today. In doing so, I demonstrate how the political economy of warfare impacts domestic life and foreign policy and what economic mobilization for defense and war reveals about the nature and operations of power within society. I also seek to expand on the study of military history by examining in depth and in breadth an aspect of warfare that is often ignored or treated in a perfunctory manner. This different perspective leads to different insights and conclusions about civilians, soldiers and sailors, and warfare. If I raise as many questions as I answer, I will have accomplished my purpose.

Analyzing how America has mobilized its economic resources for war and defense is important for a number of reasons. Logistics are basic to warfare and depend on the nation’s ability to marshal effectively its economic might. Over the centuries, economic mobilization has followed a discernible evolutionary pattern that illuminates the study of warfare and the military. Furthermore,

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how the United States has mobilized its economy reveals a great deal about institutional and power structures. Indeed, the stress and demands of warfare make manifest social patterns that are less evident or are obscured during years of peace.

The political economy of warfare involves the interrelationships of political, economic, and military institutions in devising the means to mobilize resources for defense and to conduct war. In each war, the magnitude and duration of the fighting have dictated *what* the nation had to do to harness its economic power, but prewar trends have largely determined *how* this mobilization took place. Four types of factors are essential in determining the method of mobilization: (1) economic, or the level of maturity of the economy; (2) political, or the size, strength, and scope of the federal government; (3) military, or the character and structure of the military services and the relationship between them and civilian society and authority; and (4) the state of military technology.

Patterns of economic mobilization for war have passed through three major stages over the course of American history. The Revolutionary War, the Civil War, and twentieth-century warfare best characterize these stages, which I have labeled preindustrial, transitional, and industrial. Altering the four factors—economic, political, military, and technological—modifies each stage of mobilization. The factors have seldom changed at the same time or pace, but over time, each has had to adjust to the others so that viable patterns of economic mobilization could be maintained.

The preindustrial stage of economic mobilization for war extended from the colonial period to approximately 1815 and included the Revolutionary War and the War of 1812. During the American Revolution, economic, governmental, and military institutions were in an embryonic state and were not clearly distinguished from one another. Military technology was rather primitive and varied little from production in the peacetime economy. Hence, economic mobilization involved increasing civilian output and diverting products from civilian to military use in order to supply the armed forces without converting the economy. Nonetheless, to maximize output, comprehensive regulation of the emerging nation's economic life became essential. Yet the undeveloped nature of economic, political, and military institutions not only prevented such regulation from working well but also resulted in the inextricable intertwining of private and public functions and civil and military activities. Merchants served simultaneously as public officials and military officers while they continued to conduct their private affairs.

The effects of harnessing the economy for war carried over into the years of peace. By highlighting the weaknesses of the Articles of Confederation, economic mobilization helped create the momentum for the ideas underlying the

Constitution. And, during the early national period, intense conflict grew between the factions that became the Federalist and Republican parties over the strength and policies of the national government under the new charter. This strife weakened the federal government and stunted the growth of the armed services, which was a major source of dispute. Consequently, although the economy was much stronger in 1812 than in 1776 and military technology had changed little during that period, economic mobilization for the War of 1812 did not improve measurably over that for the Revolutionary War.

The second, or transitional, economic mobilization stage extended from 1816 to 1865. During this period, the economy developed enormous productive capacity; it became diversified and quite industrialized, and specialized functions emerged in manufacturing, marketing, banking, and the like, although the size of firms remained comparatively small. The federal government was limited in size, scope, and activity, but it was capable of expanding to handle economic mobilization effectively and efficiently. Both the army and the navy had professionalized to the point where they had definable structures and missions. But military technology still had experienced no dramatic change. Since weaponry remained basic, economic mobilization required only expanding and diverting civilian production, not economic conversion.

Harnessing the economy for war was more readily accomplished in the transitional stage than in those stages that preceded and followed it. The pattern was evident in the Mexican War but was best demonstrated by the Union during the Civil War. Operating under the direction of the president, the War, Navy, and Treasury departments acted as the principal mobilization agencies. They relied on market forces in a strong competitive economy, not on the elaborate regulation of the preindustrial and industrial stages, to maintain economic stability while meeting the enormous demands of war. Moreover, institutional barriers were not breached. In the economic realm, little mixing of activities or personnel occurred among private and public, civilian and military affairs. The major exception involved the railroads, which had begun to organize as modern corporations before the hostilities started. The telegraph system followed a similar trend.

Union success contrasted sharply with the Confederacy's failure. The South was closer to the preindustrial than to the transitional stage. Like the colonies and states during the revolutionary years, the Confederacy experimented with comprehensive economic regulation, without much success. Weak economic and political systems consistently undermined the Confederacy's economic mobilization effort and played an important role in the South's defeat.

Modern warfare in the twentieth century represents the third, or industrial, economic mobilization stage. By 1900 the United States had become a mature

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industrialized nation with a modified capitalist system. Although market forces remained significant in the production and distribution of goods, the administered decisions of several hundred modern corporations exercised a strong, at times dominant, influence over the economy's direction. To make concentrated and consolidated economic power more responsible to the public and to stabilize an enormously complex economy, the federal government started to act as economic regulator. The growth of huge bureaucracies in the corporate and governmental spheres began to blur the institutional lines between them. Businessmen often staffed the government's regulatory agencies, and, as they had during the preindustrial stage, the affairs of government and business touched or merged at many points. A government-business regulatory alliance began to emerge during the Progressive Era.

For a time during the late nineteenth century, the military services entered a period of relative isolation as the nation became absorbed in industrialization, the threat of war receded, and the army and navy became intensely involved in professionalizing their functions. A technological revolution in weaponry in the later years of the nineteenth century, however, drew the civilian and military worlds back together. The consequences of this revolution were first manifest with the navy. In order to build a new fleet of steel, armor, steam, and modern ordnance, a production team consisting of political leaders, naval officers, and businessmen was formed. Although this team's composition, responsibilities, and operation have varied over the years, it has continued to exist. The army was slower to feel the impact of technology, but it eventually experienced the same needs and developed a relationship with industry and civil authorities similar to the navy's.

By the eve of World War I, therefore, the federal government, the industrial community, and the military services had developed complex, modern, and professionalized structures, each dependent on the others in terms of national defense. Economic mobilization for World War I (unlike the brief and limited Spanish-American War) forcefully demonstrated this institutional interdependence. The quantity and sophistication of military demand meant that increasing and diverting civilian production were no longer adequate; market forces could not be relied on. Production had to be maximized, and industries had to be converted to manufacture the often specialized military hardware that war required. Priority, allocation, price, and other controls had to be introduced. Existing governmental departments and agencies were unequal to the task. New mobilization bodies had to be created, the most important being the War Industries Board (WIB). Through the board, centralized control over a planned economy was established and carried out by representatives of the government, the business community, and the military. The process obscured institutional

lines. Civilian and military, private and public activities combined. For very different reasons and with quite different results, the first and the third mobilization stages are strikingly similar.

World War I mobilization left an indelible imprint on national life. During the interwar years, direct and indirect economic planning patterned after the WIB was tried. Congress and other governmental bodies repeatedly investigated the methods and consequences of harnessing the World War I economy in order to understand better what had taken place, to prevent future mobilization abuses, and to head off the perceived threats of modern warfare. Moreover, close ties among the civil and military sectors of the government, the industrial community, and other new and old interest groups were maintained to design, produce, and procure specialized munitions and to plan for industrial mobilization. During World War II, a modified form of the World War I model was used to mobilize the economy to meet the astronomical and often highly specialized demands of the armed forces and America's allies. With the Cold War following World War II, the nation—for the first time in years of peace—supported a massive military establishment, one that became inordinately expensive because of its size and because of the continuing transformation of weaponry through scientific and technological advancement. As a result, a defense and war “complex” included and affected most private and public institutions in American life.

Economic mobilization has been carried out largely by political, economic, and, ultimately, military elites. Economic and political elites are closely related and constitute the nation's upper classes. In the late eighteenth and early nineteenth centuries they included merchants, planters and large landowners, and professional elements. As the economy matured, those involved with banks, railroads, and manufacturing gained in importance, and twentieth-century economic elites were based primarily in the vast corporate and financial communities. Military elites as a distinct group did not work in close association with economic and political elites until the industrial stage. In the preindustrial period, no clear line separated the military from the civilian world. During the transitional stage, both the army and the navy distanced themselves from civilians as they began to professionalize and acquire separate identities. But in the industrial stage, military leaders had to join their political and economic counterparts out of necessity to mobilize the economy for war.

Elites shaped economic mobilization in a number of ways. The federal executive—or what approximated it during the Revolution—devised and implemented methods to harness the economy for war. Throughout American history, the highest appointed officials in the executive branch have been drawn predominantly from the wealthy or those associated with them. Moreover, the

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federal government has turned to the nation's business leaders to assist in economic mobilization. They have acted as temporary or permanent advisers to government mobilizers, served in established or newly created federal agencies with or without pay, or engaged in some combination of these activities.

Harnessing the economy for war has generated a great deal of political controversy in America. Much of the conflict grows from the fact that economic mobilization highlights the nation's most basic contradiction: an elitist reality in the context of a democratic ideology. During years of peace, that dynamic contradiction tends to be obscured; during years of war, it is magnified by elitist economic mobilization patterns. Excluded interest groups and classes inevitably challenge the legitimacy of mobilization systems run by the few, claiming that they are unrepresentative and fail to protect larger public interests. This resentment is exaggerated by the widespread aversion to and fear of government at the national level. Moreover, economic mobilization for war elevates the armed services to a position of central importance, which intensifies the strong antimilitary strains in American thought. Opposition to war among nonelites often leads to critiques of economic mobilization policies. There is a close correlation between antiwar and antielite attitudes.

Controversy over the political economy of warfare was greatest in the preindustrial and industrial stages. Because they require a form of planning, both underdeveloped and highly developed economies make elites quite visible. Market economies do not have such an exaggerated effect because mobilization agencies that combine political and economic elites are unnecessary. Consequently, economic mobilization caused less political turmoil in the transitional stage.

Throughout the course of American history, the role of political, economic, and military elites in economic mobilization for defense and war can be fully understood only within the four-factor, three-stage paradigm. If the preindustrial stage is dated from 1765 to 1815 (instead of including the entire colonial era), it lasted only about fifty years, approximately the same duration as the transitional stage. Accelerated physical and economic growth quickly modified institutions and power operations and, in the process, altered the stages of economic mobilization. Rapid industrialization after the Civil War ushered in the last mobilization stage, one with a permanence of sorts. Since the late nineteenth century, political, economic, and military elites have been absorbed in creating and refining planning structures to cope with the ongoing weapons revolution, a revolution that has comprehensively affected how America prepares for and conducts warfare.

This volume, like the first one in the series, is based primarily on secondary sources. From the early post-World War II period to the present day, publica-

tions relevant to the political economy of warfare have appeared at a steady rate, constituting a nearly overwhelming collection. They amply met the reference requirements for this book, without further research in primary documents.

My principal goal in this volume is to analyze the political economy of American warfare from 1945 to the present from a broad perspective. To meet the international challenges of the Cold War and post-Cold War world, the United States, for the first time in its history, has maintained large military structures during years of relative peace. Moreover, the army, navy, air force, and related services have been armed and supplied principally by a formidable, privately owned defense industry, including some of the nation's largest corporations as well as a host of other firms. Large-scale private arsenals are also historically unprecedented in America; their significance is multiplied many-fold by exceptionally sophisticated weaponry centered around nuclear armaments and aerospace and electronic advancements that require extensive research and development by scientists, engineers, and technicians. These developments have led to enormous defense budgets that reach as high as 14 percent of the gross domestic product and 70 percent of annual government spending, and they seldom fall below 5 and 20 percent, respectively. During a period of more than six decades, multiple trillions of dollars have been expended on national security.

Together, a massive Cold War military and a powerful private defense industry have accumulated vast influence and power that directly or indirectly affects practically every area of foreign and domestic life. Their growth and operation so alarmed President Dwight D. Eisenhower that, in his 1961 farewell address to the nation, he warned Americans about the dangers of a "military-industrial complex" and a "scientific-technological elite."

The so-called military-industrial complex (MIC) did not create itself. It grew out of clashing goals for reconstructing and restructuring war-shattered Europe and Japan and weakened or collapsing colonial empires in the Middle East, Africa, and Asia. America's drive for an "open-door" world of democratic capitalism faced the real or perceived ambition of communist-led expansion on the part of the Soviet Union. Drawing on past policies and practices, the United States at the outset intended to shape the world in its own image through the use of its unequalled industrial-financial strength, backed by a modest military.

By 1949–1950, with American plans for stabilizing western Europe stalled, Russia detonating an atomic weapon, China falling under communist control, and war breaking out in Korea, the nation felt compelled to militarize its foreign policies. Thereafter, a bipolar world emerged in stages, with the United States and the Union of Soviet Socialist Republics participating in a potentially

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catastrophic nuclear arms race, Europe becoming an armed camp, and the two major powers competing for power and position throughout the developing world. The virtual collapse of the Soviet Union between 1989 and 1991 ended what had become a dangerous and destructive running confrontation between two imperial systems.

Although it developed as a result of the militarized Cold War, the MIC eventually began to grow beyond the control of responsible authorities. It has attempted to block or resist efforts to reduce defense budgets or reject favored weapon systems, to control or halt the arms race, to improve relations with the Soviet Union and other adversaries, and to adopt more enlightened policies toward the developing world. Nearly twenty years after the Soviet Union fell apart, defense budgets (excluding the costs of the wars in Iraq and Afghanistan) are higher today than at any time during the Cold War.

My four-factor paradigm for analyzing the political economy of warfare is useful for briefly analyzing the principal characteristics of the MIC and the Cold War that created it. The overwhelming industrial and financial might of the American economy—the first factor—stood practically alone among damaged and destroyed economies in the war-ravaged world. Both before and after its militarizing Cold War foreign policies, the United States depended heavily on the nation's economic prowess for pursuing its international goals. Paradoxically, the corporate community in the post-World War II years began to shift its emphasis away from production in a fashion that weakened the nation's economic strength by the 1970s.

The federal government in general, and the executive in particular—the second factor—was at the pinnacle of its historical powers during the Cold War and after. With foreign policy commanding national attention, the president's authority and reach grew at an accelerated rate as the principal architect of international relations. A vastly expanded State Department, a powerful Department of Defense, and an influential National Security Council, along with a host of intelligence agencies, all added to the executive's clout. Military intervention and wars abroad repeatedly took place either without Congress's consent or with only its implied consent. The legislative branch could and did influence foreign and national security policies, but it was never a match for the executive branch.

Civil-military relations—the third factor—changed dramatically during the post-World War II years. The large U.S. military spent billions of dollars annually, operated facilities throughout the nation and abroad, and relied heavily on nuclear weaponry. As a result of these conditions, the armed services accumulated unprecedented power and influence over the formulation and implementation of national security and foreign policy.

The armed forces' power and influence have been further enhanced by the fourth factor—the sophistication of weaponry. Growing out of economic mobilization for World War II, the privately owned defense industry acted as a valuable partner, ally, and advocate of the armed services. Ultimately, the military-industrial team at the center of the MIC became as much a liability as an asset. Pushing weapons to and beyond the point of technological feasibility often results in systems that are badly flawed and prone to failure. Their escalating costs, moreover, drain Defense Department budgets, resulting in fewer weapons and reduced budgets for their maintenance and repair.

All four factors shaping the political economy of warfare during the Cold War and beyond are significant. Consistent with the industrial stage in general, the federal executive—the second factor—remains the most important. The overall length of American engagement, however, has been as consequential as the various factors shaping the post-World War II political economy of warfare. After more than six decades of modified economic mobilization for purposes of dominating and stabilizing a turbulent world community, it has become nearly habitual, a critical characteristic of the American way of life. Eisenhower's military-industrial complex of half a century ago has become part of an even larger warfare or national security state.

Since national security has affected nearly all aspects of American life, this volume takes a broad, rather than a closely focused, approach in analyzing the MIC. The first chapter deals with the presidency and the shaping of post-World War II foreign and defense policies and, to a lesser extent, civil-military relations. Congress's impact on both foreign relations and national security are the subject of chapter 2. Chapters 3 and 4 focus on the armed services and the defense industry, respectively, and the interaction between the two. Scientists and engineers, who were central to the transformation of weaponry that began during World II and continues today, are discussed in chapter 5. Chapter 6 examines think tanks and similar civilian institutions, many of which were university based or affiliated and were intended to facilitate the formulation and execution of Cold War policies. The transformation of weaponry stemming from jet engines, nuclear advances, and solid-state electronics is covered in chapter 7. Chapter 8 analyzes the consequences of large and sustained defense budgets on the operation of the American economy; it does so within the context of the nation's economic decline since the late 1960s to the present day. Chapter 9 constitutes the conclusion, where the salient themes of the previous chapters are summarized and a number of analytical points are made.