

## **Military-Industrial Complexes and Their Variations**

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### **Summary**

Few Presidential addresses have exercised a more lasting impact on the popular consciousness than Dwight David Eisenhower's farewell address. In his most memorable passage, he warned Americans that "In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex." In this sentence, President Eisenhower, with help from speechwriter Malcolm Moos, coined an phrase to describe the challenge that states have faced since the industrial revolution. The industrial revolution catalysed a fundamental transformation in the relationship between armaments, warfare and the state. Suddenly, differences in rapidly developing weapons technologies meant the difference between defeat and victory in major wars. With armaments more important than ever, the firms that produced them became more politically influential than ever before.

Scholars and policymakers have since the First World War sought to make sense of these dynamics. They have, to this end, developed a succession of analytic models, amongst the most prominent of which are those of the—merchants of death, garrison state, military-industrial complex and iron triangle—to explain precisely how arms industries impact democracy and international relations. Many of the worst fears embodied in the earlier theories have not been borne out by subsequent events. Defence firms did not "cause" wars as per the merchants of death hypothesis and democracy did not give way in states where it already existed to the authoritarian rule of "specialists of violence." Nonetheless, the core insight of the military industrial complex and iron triangle schools of thought—that defence industries and their allies in the military and politics will act as an interest group to promote procurement projects—has proven robust. The particular way that these dynamics occur, however, varies from state to state as a function of their institutions.

Even though the production of armaments by defence firms headquartered in one's state exercises a distorting effect on national politics and military procurement, few states can escape this dynamic. The national security advantages of greater supply security and enhanced military adaptation, combined with the fear that once abandoned, defence-industrial capabilities cannot be quickly reconstituted, compels most states that can produce armaments to do so. A military-industrial complex, of some form, is thus a fatality for the modern state.

**Keywords:** military-industrial complex, garrison state, defence-industrial base, merchants of death, supply security, military adaptation, Dwight D. Eisenhower, varieties of capitalism, arms production, defence firms

## Introduction

Few Presidential addresses have exercised a more lasting impact on the popular consciousness than Dwight David Eisenhower's farewell address. In his most memorable passage, he warned Americans that "In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex." In this sentence, President Eisenhower, with help from speechwriter Malcolm Moos, coined an apropos phrase to describe the challenge that states have faced since the industrial revolution. Eisenhower's concept of the military-industrial complex thus constitutes a key waypoint in a century-and-a-half of reflection on the relationship between arms producing firms and the state.

This chapter will consequently trace thinking about defense industries' roles in society that have evolved from the late-19<sup>th</sup> century to present. Dramatic developments in engineering and production techniques during the 19<sup>th</sup> century conferred upon armaments and the factories that produce them an importance in warfare that they had never hitherto possessed. The experience of wide-spread industrial mobilization during the First World War and the investigation that followed it then led certain experts to hypothesize that privately-owned defense firms were "merchants of death" that fuel war scares while others argued that industrial-age warfare was insidiously transforming democracies into "garrison states."

Eisenhower's concept of the military-industrial complex—that defense firms and the armed forces collude to exaggerate threats in order to boost defense spending—builds on these prior understandings, but is less pessimistic in its outlook and views the military-industrial complex's main downside as excessive defense spending. Although Eisenhower's term of "military industrial complex" remains the most evoked, Gordon Adams' argument

that American defense-industrial decisions are actually driven by an “iron triangle” of defense firms, military personnel and legislators has overtaken Eisenhower’s original formulation in popularity amongst scholars of American defense procurement.

Although evoked by scholars around the world, the military-industrial complex and iron triangle concepts were both developed inductively in the United States by policy makers and scholars most familiar with the American case. This, in turn, raises questions about these concepts’ utility as an analytic lens for analyzing other states and about whether small and medium states might be better off eschewing the domestic production of weaponry altogether so as to avoid the political ramifications inherent in possessing a military-industrial complex.

I argue that differences in states’ constitutional systems and political economies fundamentally shape dynamics within national military-industrial complexes. In some states defense firms are state-owned, whereas American ones are privately owned. Military procurement is, meanwhile, overseen by civil servants in some states, depriving military personnel of the role they possess in the United States. Meanwhile, political systems differ significantly as well, with few states possessing the combination of single-member electoral districts and a powerful legislature that gives Congress its prominent role in Adams’ iron triangle. Nonetheless, in virtually any arms producing state defense firms will lobby to secure government contracts, military services will seek to protect their preferred projects and certain political groups will see an interest in advocating for higher levels of military spending. In other words, the military-industrial complex should be viewed as a flexible concept whose expression will differ from state to state, rather than a monolithic one that generates identical outcomes across states.

If the military-industrial complex is such a problematic concept, then should not most states forgo producing weapons domestically and instead import them? In principle,

eschewing domestic defense industries would preclude the “unwarranted influence” over policymaking inherent to most conceptualizations of the military-industrial complex. Regrettably, however, even modest defense industries significantly enhance states’ military power. They do this by both supplying weaponry when foreign producers will not and by helping armed forces adapt to unanticipated battlefield realities. It therefore behooves most states that face security threats and are sufficiently wealthy to cultivate some form of domestic defense industry.

In sum, possessing some form of military-industrial complex or iron triangle is a necessary evil for many states. Defense firms and their allies in the military and politics will use the tools at their disposal to lobby for higher defense procurement budgets than absolutely necessary. Their behavior, however, is no different from that of many other special interest groups, ranging from farmers to pharmaceutical companies. Pluralism and transparency, as in these other cases, provides the best remedy to the diminished democracy that the military-industrial complex threatens.

## **Weapons and War**

Weapons technologies did not play a major role in determining great power wars’ outcomes throughout most of history. For example, the muskets used by French and British soldiers at Waterloo in 1815 were only marginally better than those used by those same two states’ militaries at Blenheim in 1704. Likewise, the British, French and Spanish warships that collided off Cape Trafalgar in 1805 were larger and faster, yet still only incrementally improved upon the ship-of-the-line *Sovereign of the Seas*, built in 1637 (Winfield 2010). With armaments technology evolving glacially, states could not achieve major battlefield advantages by fielding better weapons systems.

While the development of military technology played little role in determining which side won major wars, so too was the ability to produce larger volumes of weaponry of marginal utility. The challenges of moving cannons and their ammunition with horses alone meant that armies could deploy fewer cannons than they could afford. France's revolutionaries discovered this when they enjoined patriotic citizens to melt down church bells and personal possessions so as to forge cannons, and ordered France's foundries to work punishing hours. This drive, however, generated so many cannons—nearly 13,000 per year—that they had to suspend their further manufacture after two years because France's armies could not absorb all of the cannons that had already been produced (Sokolov 2003, 143-44). What holds true for cannons applies equally to warships since states' reliance on mobilizing their merchant marine sailors to man their navies in wartime meant there was a finite number of ships that they could crew.

If the development and production of superior weaponry hitherto had little impact on wars' outcomes, the industrial revolution transformed this state-of-affairs. Rapidly evolving engineering skills, improved machine tools and mass production suddenly enabled armed forces to achieve military advantages by fielding better weapons (Ailleret 1950). The Crimean War arguably constitutes the first conflict where this became apparent when British and French rifles outshot Russian troops' muskets and when their ironclad floating batteries demolished Russian fortifications in the Baltic (Bradley 1990, 49-51). Following upon the Crimean War's heels, the American Civil War confirmed its lessons with respect to armaments, with the Union's superior production of ironclad warships, rifled cannons and repeating rifles helping it secure victory (Bilby 2006). New weapons likewise shaped the outcomes of subsequent wars, with steel cannons and their precocious mastery of railways permitting Germany to prevail in the three wars of German unification.

Part and parcel to weapons' growing importance was the emergence of a new form of actor; the privately-owned defense firm. States had hitherto built their largest weapons systems in state-owned arsenals, many of which existed hundreds of years prior to the industrial revolution. These arsenals, however, were specialized in the routinized production of designs that changed only slowly over time. New private sector firms consequently provided the impetus for the new industrial-age weapons. Entrepreneurs such as Frederik Krupp, William Armstrong and the Vickers brothers drew on developments in cutting-edge civilian technologies, such as metallurgy, chemical engineering and hydraulics to build ever more capable arms (Manchester 1964; Trebilcock 1977). Brisk sales, meanwhile, drove these firms to expand such that the largest numbered tens of thousands of employees prior to World War I (Stevenson 1996).

While these new private sector defense firms produced a distinctive type of product—weaponry—initially no norms or regulations prevented them from pursuing profit in the same way as any other private sector firm. Firms consequently behaved in ways inimical to the national interest of the states in which they were headquartered. Krupp, for example, displayed its revolutionary steel cannons at London's Crystal Palace Exhibition of 1851 and unsuccessfully attempted to sell them to France's Emperor Napoleon III before finally producing them for his native Prussia (Manchester 1964, 67-71). Decades later, Armstrong developed and sold high speed and heavily-armed cruisers that could outrun contemporary battleships and outfight smaller warships to states such as Chile (Bastable 2004, 71-100). Such dedicated commerce raiders worried the British Navy's leadership, which reluctantly bought new cruisers from Armstrong to protect British commerce from the ships that Armstrong had exported to foreign clients.

The industrial revolution thus witnessed a new development; armaments became more important to military performance. While states needed access to high-quality weaponry

more than ever before, they had less control of the process, which lay in the hands of private sector firms that were, as yet, only minimally regulated.

### **Merchants of Death and the Garrison State**

The First World War marked a sea change in how scholars, policymakers and the public at large view defense industries. The war settled into a stalemate in the autumn of 1914 once all of the Great Powers' war plans had failed to produce decisive victories. Prevailing technologies—machine guns, barbed wire, rapid fire artillery and magazine rifles—rendered it difficult for either side to achieve victory. Factories and design teams became crucial to winning or, indeed, surviving under such circumstances.

Attritional warfare demanded ever greater quantities of artillery, munitions and gas. German commanders dubbed this new reality a *Materialschacht* or battle of material. Providing these to frontline soldiers required the thorough reorganization of national economies by the state. In France, factory workers from crucial industries who had been mobilized and sent to the front in August 1914 were then returned to their factories in late-1914, where their presence was considered more valuable. All of the belligerents imposed rationing, enrolled women into the workforce and established government bodies to allocate scarce inputs, such as skilled labor and valuable materials.

Ultimately, the Entente managed this process of industrial mobilization more adroitly than the Central Powers. Germany's industrial mobilization faltered because of the excessive role accorded diverse military bureaucracies, which oftentimes lacked relevant industrial expertise, while federalism hindered Austro-Hungarian efforts at central planning (Chickering 1998, 35-40, 76-82). Although improvised at the time, France's and Britain's industrial mobilizations were overseen by centralized civilian-run bureaucracies that

managed the extraordinary demands of industrialized warfare more efficiently. Ultimately, this resulted in the Central Powers being outproduced in key equipment categories, which eventually translated into battlefield losses (Porte 2005). Germany, for example, only managed to build 48,000 aircraft during the war and ultimately accumulated a motor pool of 40,000 trucks and cars, while France and Britain produced 107,000 aircraft and France alone developed a motor pool of 80,000 trucks.

An unforeseen consequence of the growing importance of factories in the rear to fighting at the front was to render civilian works and the cities in which they live a target. German commanders were the first to seek to demoralize their opponents' home fronts with direct attacks (de Syon 2002, 71-106). To this end, they began striking London with Zeppelin raids in 1915 and launched a sustained nocturnal bombing campaign in 1917. Bomber and ultra-long-range artillery attacks against Paris, meanwhile, were employed against Paris in 1918 to attempt to coerce France into quitting the war.

The First World War's aftermath brought increased attention to armaments firms and their role within the state. The fact that defense firms had earned enormous profits during a war that bankrupted states and maimed or killed millions dismayed the public. The greed of "war profiteers" consequently came to be juxtaposed with the self-sacrifice of the rest of society. Certain revelations added to the perception that defense firms were uniquely odious. Germany's Krupp, for example, sued Britain after the war for unpaid royalties for Krupp-designed artillery shells, the license for which Britain had purchased prior to the war. Whatever the legal merits of the case, the spectacle of Germans learning that their soldiers had been killed with German-designed shells and that of Britons paying a German defense firm royalties for the weapons used in what was seen as a war provoked by Germany left a bitter taste in the mouths of all concerned (Manchester 1964, 340-343). A similar case revealed that German, American and British defense firms had colluded prior to World War I

to share their patents for armored plate and charged their governments higher prices than would have been the case in a competitive market (Weir 1992).

Arms industries' behaviors led to allegations that they themselves were responsible for provoking wars. The epithet that came to encapsulate this skepticism as to defense firms' morality was that of "merchants of death." The term was originally coined by journalist Xavier Hauteclouque in his 1932 article on Basil Zaharoff, a notorious sales agent for the defense firm Vickers. Journalists H.C. Engelbrecht and F.C. Hanighen then popularized the term in their 1934 book, *Merchants of Death*. In this exposé, Engelbrecht and Hanighen argued that defense firms' pursuit of profit was in itself a cause of war. In their own words, "the arms maker has risen and grown powerful, until today his is one of the most dangerous factors in world affairs" (Engelbrecht & Hanighen 1934, 9). Claims such as these spurred the U.S. Senate to form a committee under North Dakota Senator Gerald Nye—the Nye Committee—to investigate whether defense firms had pushed the United States into World War I.

The Nye Committee's hearings captured the public imagination, but failed to come to definitive conclusions or recommendations. The Senate as a whole nevertheless declared that "the influence of the commercial motive is... one of the inevitable factors often believed to stimulate and sustain wars" (Ledbetter 2011, 24). The Nye Committee also suggested that the government nationalize defense firms—transforming them into state-owned enterprises—which would resolve this problem by "taking the profit motive out of war." In the United Kingdom a special Royal Commission investigated and ultimately rejected the notion that defense firms provoke wars. In France, however, the country's Popular Front government came to opposite conclusions and nationalized private sector defense firms in 1936.

Parallel to the Merchants of Death hypothesis, another series of postulates emerged about the negative effects of industrialized warfare. This school of thought became known by the term “garrison state,” which Harold Lasswell gave it in 1941. Lasswell (1941) and likeminded thinkers argued that since the arms and munitions produced in factories converted from peacetime tasks were critical to victory, technocrats specialized in warfare would necessarily play an increasing role in managing the economy in peacetime and wartime alike.

The centrality of productive activity to the rear, however, incentivized states to use their burgeoning air forces to attack one another’s home fronts (Lasswell 1941, 459). Maintaining production in the face of such attacks thus became critical to war-making. Only an increasingly intrusive government could likely achieve this through such measures as intensive propaganda and draconian punishments for absenteeism. The particular repertoire of police-state tactics envisaged by Lasswell (1941, 460-462), included compulsory full employment, government controlled wages and the use of behavior modifying drugs to bolster home front morale.

In Lasswell’s (1941, 453) final formulation, the specter of modern warfare could thus lead to democracy’s being supplanted by authoritarian governance by a technocracy of “specialists on violence.” Although Lasswell’s term “garrison state” has achieved notoriety, which he coined in 1941 and is still evoked today, his work was inspired by contemporary writings. Lasswell himself had authored a book on First World War propaganda and was personally appalled by the 1937-45 Sino-Japanese War and Japan’s “terror-bombing” of the Chinese government’s provisional capital, Chungking, in an effort to break the population’s morale.

Amongst the writings that foreshadowed Lasswell’s garrison state include those of General Eric Ludendorff, who argued after the First World War that the primary peacetime

task of states should be to prepare for future wars, which would necessarily be total in character. Another author, Kai Sheng Chen (1940), argued that governments must steer their economies' development in peacetime to facilitate the most efficient conversion to wartime production. Perhaps nowhere did considerations such as these influence public policy more than in the Soviet Union, where Premier Joseph Stalin's five year plans, from 1928 onwards, rapidly built massive defense industries and also ensured that civilian factories were designed from the outset to be seamlessly converted to war production in wartime (Stoeker 1998).

The merchants of death and garrison state hypotheses thus represent two distinct visions from the post-World War I period about arms manufacturing's deleterious impact on society. Both theories captured some important truths. Unregulated arms manufacturers had behaved in ways inimical to national interest prior to World War I and the Second World War was ultimately won by the states—Britain, the Soviet Union and the United States—that went furthest, fastest in converting their economies for war (Overy 1995; Grant 2007). Both however also fundamentally misjudged how events would ultimately resolve themselves. Arms manufacturers have never been demonstrated to have independently provoked a significant war and mature democracies did not degenerate into garrison states under the pressure of arms races and wars.

### **The Military-Industrial Complex**

Although humanity might have avoided the twin dangers represented by the merchants of death and garrison state hypotheses, that does not suggest that the production of armaments should be regarded as a “normal” industry. The Cold War, indeed, provided ample reasons to reexamine the relationship. In the United States and other Western

democracies, the question quickly emerged as to how much was enough when it came to defense expenditures.

The United States, for example, had ratcheted up its defense expenditures to 14 percent of gross domestic product during the early 1950s after the Soviet Union had blockaded Berlin and North Korea had invaded South Korea. After succeeding Harry Truman as president of the United States in 1953, Dwight David Eisenhower sought to reduce American defense expenditures to a sustainable level. Having served as NATO's inaugural Supreme Allied Commander—Europe (SACEUR), he understood the military challenges facing the United States and its allies, yet also feared lest excessive expenditures generate crippling debts and crowd out social spending.

Eisenhower consequently sought to impose a more economical defense posture premised on a sufficient nuclear arsenal deterring enemy adventurism, which he dubbed the “New Look.” Defense firms lobbied Congress to continue funding their projects while military officers publicized pessimistic intelligence assessments suggesting that the United States was falling behind the Soviet Union in key military capabilities. Eisenhower's difficulties in reducing defense spending culminated in the political controversies known as the “bomber gap” of 1955-56 and the “missile gap” of 1958-60. Eisenhower was obliged to maintain defense expenditures at levels in each of these cases after the Air Force and defense firms convinced Congress and journalists that the Soviets had achieved superiority in bombers and then missiles. Eisenhower possessed proof debunking these claims in the form of photographs taken by the CIA's top secret U-2 reconnaissance aircraft, but could not release that proof for fear of compromising the CIA's aerial surveillance program (Nelson 2016, 117-160).

Frustrated at having been thwarted at further limiting defense spending, Eisenhower and his advisors pondered the dynamics that were leading to excessive weapons acquisitions. Eisenhower himself wanted to use his position as President to warn the American public about the dangers of an expansive military establishment and their associated defense industries. He initially invoked the rhetoric of the garrison state, opining at a press conference in 1953 that “We don’t want to become a garrison state. We want to remain free. Our plans and programs have to conform to a free people, which means essentially a free economy” (Ledbetter 2011, 40).

Eisenhower’s aides later couched the problem in terms of “merchants of death.” In a 1960 memorandum, Navy Captain Ralph Williams, who worked with the President’s speechwriters, suggested that Eisenhower publicly address “The problem of militarism—for the first time in its history, the United States has a permanent war-based industry.... Not only that but flag and general officers retiring at an early age take positions in the war based industrial complex, shaping its decisions and guiding the direction of its tremendous thrust.... We must be very careful to insure that the ‘merchants of death do not come to dictate national policy” (Ledbetter 2011, 110-111).

Eisenhower, however, found these preexisting formulations of the problem inadequate. The danger in his eyes was neither that the needs for war preparedness nor that defense firms would cause wars. Rather, he feared that rational self-interest would drive the military and defense industries to collude to impose an injurious level of defense expenditures. He fully articulated this vision in his farewell address,

We have been compelled to create a permanent armaments industry of vast proportions. Added to this, three and a half million men and women are directly engaged in the defense establishment... Now this conjunction of an immense military establishment and a large arms industry is new in the American experience. The total influence—economic, political, even spiritual—is felt in every city, in every statehouse, every office of government.

We recognized the imperative of this development. Yet, we must not fail to comprehend its grave implications... In the councils of government we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist. We must never let the weight of this combination endanger our liberties or democratic processes... We cannot mortgage the material assets of our grandchildren without risking the loss also of their political and spiritual heritage. We want democracy to survive for all generations to come, not to become the insolvent phantom of tomorrow.

Eisenhower thus set forth a new vision of how the need to produce armaments threatened democracy. Rather than either the creeping authoritarianism of the garrison state or the unnecessary wars of the merchants of death, Eisenhower warned against the military colluding with defense firms to impose a ruinous level of defense expenditures.

### **Bringing Politics Back In**

Eisenhower's concept of the military-industrial complex marked both the collective consciousness of his era and those since. Eisenhower's term military-industrial complex, however, gradually took on connotations far removed from his original meaning, which was limited to the military and defense firms imposing excessive defense budgets. The "New Left" of the 1960s rather began conceptualizing the "military-industrial complex" as a shadowy cabal of corporate and military elites seeking to suborn democracy for their own ends. Noam Chomsky, for example, argues that the military-industrial complex is symptomatic of a broader predatory political economy, whereby elites seek to frighten the public into consenting to expenditures that redistribute resources from ordinary citizens to the governing elite. According to Chomsky (2004), "Eisenhower's military-industrial complex is not quite what is generally interpreted. In part, yes, it's military. But a main function of the

military... is to provide some device to socialize costs, get the public to pay the costs, to take the risks. Ultimately, if anything comes out, you put it into private pockets.”

Oliver Stone’s 1991 film on the assassination of President John Kennedy makes this argument in an even more trenchant fashion, repeatedly using the term “military-industrial complex” in its indictment of the American political system. According to Stone, defense firms and the military collaborated to kill Kennedy in 1963 because they eagerly anticipated the huge profits and promotion opportunities that the Vietnam War would generate, and feared lest Kennedy disengage the United States from Vietnam. Stone’s protagonist, District Attorney James Garrison, argues in the film,

I submit to you that what took place on November 22, 1963 was a coup d'etat. Its most direct and tragic result was a reversal of President Kennedy's commitment to withdraw from Vietnam. War is the biggest business in America worth \$80 billion a year. The President was murdered by a conspiracy planned in advance at the highest levels of the United States government and carried out by fanatical and disciplined Cold Warriors in the Pentagon and CIA's covert operations apparatus.

The left wing’s interpretation of the military-industrial complex concept thus became increasingly expansive and far more sinister than in Eisenhower’s original formulation.

Even as the military-industrial complex concept was stretched in this way by the political left, more moderate scholars and policymakers questioned whether Eisenhower’s formulation of the problem fully captured its reality. The most glaring shortcoming in Eisenhower’s public formulation was the omission of any mention of politicians. Eisenhower and his counsellors themselves recognized the enabling role of self-interested politicians in sustaining defense spending at excessive levels and protecting weapons projects that ought to be cancelled. During the bomber gap and missile gap controversies that crystallized Eisenhower’s thinking about the military-industrial complex, it had ultimately been politicians—Democrats seeking to criticize a Republican president’s national security policy

and individual members of Congress seeking to protect defense firms in their districts—that frustrated his efforts to constrain defense spending.

Therefore, according to Eisenhower biographer Geoffrey Perret, Eisenhower originally intended to term the phenomenon he was warning against, the “military-industrial-congressional complex” (Ledbetter 2011, 107). Eisenhower apparently subsequently changed his mind, omitting Congress from his critique, because he fears that otherwise his argument’s impact would be marred by allegations of engaging in partisan politics. Congress’ role, however, was such that later scholars and policymakers sought to incorporate the legislature into their analyses. Gordon Adams did this most effectively in his 1981 book where he characterized the dynamics that produced unnecessarily high defense expenditures and protected ill-conceived weapons projects from cancellation as those of an “iron triangle.”

For Adams (1991) it was the interactions between self-interested military officers, defense firms and members of Congress whose districts depended on defense procurement that collectively led to excessive defense expenditures. Financial inter-connections between these groups, such as the tendency of defense firms to hire high-ranking military personnel into lucrative post-retirement positions and that of defense firms to contribute to the reelection campaigns of members of Congress that support them, buttress their tendency to coordinate.

Adams’ revision of Eisenhower’s concept resonates with most observers of American defense policymaking. Indeed, subsequent scholars have further refined scholars’ understanding of how Congressional factions interact with defense firms and the armed services to shape defense policies in ways anathema to the Executive Branch. In one study, Barry Rundquist and Thomas Carsey (2002) demonstrate that defense firms ensure that disproportionate amounts of defense manufacturing occur in the districts and states

represented by members of the House and Senate Armed Services Committees. Another study by Christopher Jones and Kevin Marsh (2011) suggests that primary authority for protecting a weapons project shifts over the project's course from the armed services during the developmental phase to Congressional committees once the project approaches the production phase.

The ultimate impact of Congress' role on American defense procurement policies remains uncertain, however. Eisenhower's original fear that defense firms' interactions with Congress and the military would unnecessarily boost defense spending, for example, has been contested. While economists such as Seymore Melman (1970) argue that military-industrial complex dynamics generate waste and inefficiencies, Aaron Friedberg (2000) claims that America's prevailing anti-statist ideology has led to countervailing pressures that have constrained defense expenditures to reasonable levels. Furthermore, other authors, such as Jacques Gansler (2011) and Anne Markusen (1991), allege that military-industrial complex dynamics negatively impact the United States' military innovativeness by excluding non-traditional domestic arms firms from the market and concentrating defense procurement in a "gunbelt" of states.

Thus, while Congress' role alongside the armed services and defense firms is uncontested amongst scholars today, the nature and scope of their influence remains contested.

### **Internationalizing the Military-Industrial Complex**

The military-industrial complex and iron triangle debates largely evolved in a self-referential American context. In fact, there are powerful reasons for anticipating that the particular dynamics associated with the iron triangle would not occur in most other

democracies. American legislators, for example, have a concentrated interest in protecting defense firms located in “their” districts because of the United States’ combination of single-member districts and a first-past-the-post electoral system. Likewise, American legislators can only act on their desire to support local defense firms because of the powerful independent role that the United States’ Constitution Accords Congress in this domain as a co-equal branch of government. Most democracies depend on very different institutional arrangements, with stronger executives and, in certain cases, legislatures selected by proportional representation.

The institutional differences distinguishing the United States from other states extend beyond the political system. Primary responsibility for the management of weapons acquisition projects in some states, such as Japan and France, lies with civilian technocrats rather than the uniformed armed services, as in the case of the United States. Defense firms in many great powers—including Russia, China, Italy and France—are largely state owned, rather than autonomous private sector actors.

What then are the implications of these substantial institutional differences on how states’ military-industrial complexes function? A burgeoning literature suggests that the ways that defense firms, military officers and politicians pursue their interests through the procurement process differs substantially from state to state as a function of their institutions. In other words, from a global perspective it is more appropriate to speak of varieties of military-industrial complexes rather than a single monolithic reality that replicates itself across states.

The role of Congressional representatives in perpetuating inefficient outcomes in the United States’ case led some observers to hypothesize that totalitarian states, such as the Soviet Union, would procure weaponry more efficiently. Post-Cold War revelations suggest,

however, that defense procurement, if anything, is far less efficient in the absence of democratic accountability. In the Soviet case, the close interconnections between design bureaus, factories, party leaders and the program managers at relevant ministries—an ensemble known as the *oboronka*—perpetuated wasteful projects on a scale unimaginable in advanced industrial democracies (Sewell 1998).

Bureaucratic politics frequently allowed design bureaus and factories to push into production weapons that were either inadequately tested or known to be fundamentally flawed (Albrecht 2003). The series production of such weapons as the barely-operational vertical take-off Yak-38 fighter and the thin-skinned BMD infantry combat vehicle testify to this. In other cases, design bureaus lobbied to produce redundant designs that offered no concrete advantages over those that other design bureaus had already launched into production. In one particularly egregious instance, the Soviet Union ended up simultaneously producing three tanks—the T-64UB, T-72 and T-80—that were virtually identical in terms of their military capabilities, yet entirely distinct in engineering and components. The aggregate impact of the Soviet tendency to produce flawed and redundant weapons was the squandering of the state's resources.

Other research, meanwhile, suggests that defence procurement in advanced industrial democracies differs fundamentally according to the natures of their domestic political economies (DeVore & Weiss 2014; DeVore 2015; Calcara 2017). Such is the case even if, as Todd Sandler and Keith Hartley (1995, 113-199) suggest, defence firms will seek to capture the public policymaking process wherever they exist. Statist and corporatist states, within this context, tend to subordinate defence procurement to broader industrial policies—developing important technologies through defence projects that they will then spin off into the civilian economy—while liberal market economies (LMEs) tend to treat arms acquisition projects as arms-length transactions whose broader economic implications are neglected.

Likewise, states that ideologically embrace neo-liberalism will tend to outsource larger numbers of defence services to the private sector—expanding the defence-industrial base’s scope—than their corporatist and statist counterparts (DeVore 2019b).

In addition, who holds the power differs between states as a function of their institutions. Defence firms and military services, for example, have less scope to circumvent the executive branch’s decisions in states where the legislature plays less of a role. A comparison between American, British and Canadian defence procurement illustrates this reality, as defence firms and military services have little scope to overturn decisions they consider unfavourable in the so-called Westminster Systems of Britain and Canada, while they have considerable scope for doing so in the United States’ system of co-equal branches of government (Plamondon 2010). Likewise, defence firms have less scope to lobby procurement agencies in ways contrary to executive preferences in states where the acquisition process is an arms-length process of contracting than in those where defence firms and procurement agencies are inter-connected via ties of ownership, as is the case with state-owned firms, or personnel transfers, as occurs when civil servants are parachuted into management positions (Faure et al. 2019a; Faure et al. 2019b).

None of this suggests that any given system can be considered optimal, but rather that the reasons for militarily suboptimal outcomes differ from one advanced industrial democracy to another. In Japan, for example, it is the Ministry of International Trade and Industry’s efforts to foster dual-use technologies that have led to a succession of weapons whose unitary costs far exceed foreign counterparts (Samuels 1994). In France, meanwhile, it was aircraft manufacturer Dassault that lobbied the procurement agency, the DGA, to build national aircraft and to withdraw from successive attempts to collaborate on European aircraft (DeVore 2014a; see also, Genieys, Michel, 2005; Faure, 2016). Finally, in the United States it is frequently Congressional committees that preserve weapons projects that the executive

branch would rather cancel (Sorenson 2009, 87-105). The reality of defence firms collaborating with other governmental actors to achieve outcomes favourable to themselves is thus a universal phenomenon, but the precise mechanisms differ from state to state as a function of their institutions.

### **Arms Industries' Value**

Defence industries' ability to capture states' defence procurement processes raise questions as to whether any states aside from the largest should produce their own weaponry. In principle, choosing to import, rather than produce weaponry, enables states to choose amongst the best products on the world market and to negotiate more advantageous contracts by forcing producers to compete against one another. Public choice economists make the argument that dispensing with domestic arms industries renders it impossible for firms to capture the policymaking process for their own ends. Theoretically, at least, arms importers operating in a perfect market can therefore acquire superior products at a lower price than arms producers. Three powerful incentives exist—supply security, military adaptation advantages and the perishability of key industrial skills—for those states capable of producing weaponry to do so rather than relying on imports.

The most often cited motivation for states to produce their own weapons is that of supply security. Arms exporters can curtail supplies to an importer for a variety of reasons. In certain cases, they do so because they need the weapons themselves. Britain, for this reason, impounded battleships that British companies were building for the Ottoman Empire in 1914 so as to incorporate them into Britain's Royal Navy. Likewise, the United States froze sales of combat aircraft to neutral states, such as Sweden, in 1941 in order to better supply its own Air Force and those of its allies (Andersson 1989, 9-35). At times states

embargo arms exports to states in order to show their displeasure with their foreign and security policies. The Soviet Union, for example, ceased transferring arms to China in 1960 because of Soviet Premier Nikita Khrushchev's anger at China's rhetorically criticizing his "deviations" from Marxist-Leninism (Cheung 2009, 22-51). Similarly, France embargoed the export of arms to Israel to protest Israel's preventative war in 1967 against neighbouring Arab states.

Arms embargos of this variety have a significant and negative effect on the embargoed state's military effectiveness. In many cases, the weapons that are embargoed have already been paid for, which means that the state subjected to the embargo is denied weapons and cannot in the near future draw on the money already expended upon weapons. Moreover, even if the embargoed state finds alternative suppliers to sell it equivalent weapons, its armed forces will nonetheless suffer because of their inability to purchase spare parts and maintenance services for the weapons systems they already possess. Iran faced precisely this problem during the Iran-Iraq War (1980-88) when its inability to procure spare parts for the cutting-edge American aircraft that Iran's government had imported in the 1970s ultimately grounded much of the Iranian air force (Cooper & Bishop 2000).

The leverage that arms exporters possess by virtue of their ability to curtail supplies to importing states has led international relations scholars to consider arms producers as occupying a hierarchically superior position in the international state system to importers. This, in turn, incentivizes states to develop domestic defence industries, which alone can guarantee them secure supplies of armaments. Not coincidentally, many non-Great Powers—such as Iran, Israel, South Africa, Switzerland and Sweden—began investing heavily in domestic defence industries once they had found themselves embargoed by their primary arms suppliers (DeVore 2013). While the increasing cost and complexity of major weapons systems has led many experts to question whether such states' pursuit of supply security is

still rational, recent history is rife with cases of small and medium states that have staved off the impact of a supply cut off through their ability to upgrade their existing weapons systems.

While supply security provides one motive for states to retain domestic defence industries, military adaptation provides a second (DeVore 2019a). Warfare's unpredictability leads to states often encountering unforeseen challenges when they go to war. Victories are consequentially won by whichever side adapts faster to unexpected battlefield realities. Even small defence industries can, within these circumstances, boost states' adaptation capacity thanks to their communities of technologists specialized at cooperating with militaries to solve tactical problems (Raska 2016). Governments thus invest in defence firms because they enhance their capacity for military adaptation, which contributes to battlefield success.

Domestic defence firms, for their part, play a central role in cultivating the close cooperation between warfighters and technologists that is so essential to battlefield adaptation. Cooperation with their states' militaries are one of domestic defence firms' core competences (Dombrowski & Gholz 2006). Domestic defence firms therefore nurture extensive interpersonal ties with commanders, often through retired officers on their payrolls, and develop expertise at navigating acquisition procedures. Domestic defence firms also routinely attach corporate personnel to military units when new equipment is deployed. Such interactions between armament engineers and military professionals foster organizational habits of jointly adapting to new challenges.

The wartime records of Israel and Serbia, for example, provide ample examples of domestic defence industries enabling each state to adapt to unexpected battlefield conditions (DeVore 2017). Israeli firms assisted the armed forces in adapting to the threats posed by insurgents' rockets and anti-tank missiles by developing the Iron Dome anti-rocket system and by converting tanks into heavily armoured infantry carriers. Serbia's defence industries,

meanwhile, modified air-to-air missiles to be fired from ground launchers, developed cheap decoys and pioneered a robust command-and-control infrastructure between 1995 and 1999 for frustrating NATO's anticipated air offensive. Many of both the Israeli and Serbian defence industries' concrete contributions to adaptation, meanwhile, centred around modifying existing equipment for new missions and assisting the armed forces in assessing threats.

A third major factor motivating states' decisions to retain domestic defence industries lies in the difficulty of reconstituting defence industrial capabilities once these have decayed. Many of the components that comprise major weapons systems are dual-use and have both military and non-military functions. Nonetheless, the ability to develop and produce full-fledged major weapons systems frequently depends on specialized technological skills that can only be acquired gradually and through considerable effort. Jonathan Caverley (2007) demonstrates that systems integration—the skills needed to integrate innumerable components into sophisticated weapons and to manage complex supply-chains—constitutes one such bottleneck capability. Andrea and Mauro Gilli (2016), meanwhile, argue that other types of difficult-to-acquire “tacit knowledge” are essential to major weapons projects.

Whether one speaks about systems integration or tacit knowledge, however, these critical competences are universally regarded as perishable. In other words, states that at one point allow such skills to lapse through an absence of follow-on projects will frequently find themselves unable to reconstitute them when necessary. India, for example, developed a sophisticated jet fighter—the HM-24 Marut—in the 1960s with assistance from West German aerospace engineers. Although developing the Marut was difficult, the project had imparted to Indian aerospace engineers and managers the skills needed to manage large-scale aircraft projects (Singh 2011, 95-164).

Unfortunately, India's government changed its preference from domestic development to purchasing foreign designed aircraft in the late-1960s and throughout the 1970s (DeVore 2016a). India's aerospace engineers were thus out-of-practice and had missed out on a generation of technological developments when Indian political leaders once again decided to launch a domestic combat aircraft project in the 1980s. India consequently struggled to develop this new aircraft—the Tejas—which is technologically uncompetitive and still not fully operational after three decades of development efforts (Cohen & Dasgupta 2010, 71-96). Other examples abound—such as Russia's current travails with warship development and France's problems building an aircraft carrier after a thirty-year hiatus—of states that have struggled to build certain categories of weapons after overly-long gaps.

Since states can never be certain as to how the international system will develop, many governments seek to retain defence-industrial skills that may be unnecessary at present, yet essential to the state's future security. South Africa and Sweden, indeed, both codified the retention of systems integration and tactic skills as a priority of their post-Cold War defence-industrial strategies (DeVore 2016b). Various techniques, ranging from the liberalization of export policies to building of technological prototypes and forging transnational equity partnerships, can be used to preserve such defence-industrial skills at a lesser cost to the national budget. Moreover, both governments and their defence industries at times recognize their inability to continue developing major weapons systems on a purely domestic basis and consequently promote international armaments collaboration as an alternative (Hoeffler 2012; DeVore 2014b). Nonetheless, the desire to preserve perishable defence-industrial skills will invariably drive many states to continue investing in their domestic defence industries.

In short, neo-liberal and public choice economists advance intellectually parsimonious arguments for why states should import weaponry rather than produce it themselves.

Theoretically, importers should be able to obtain better weapons, at lower prices, and with less risk of their political processes being captured by self-interested defence firms. In practice, however, three major motivations—supply security, battlefield adaptation and the perishability of critical defence-industrial skills—drive a wide variety of states to invest in domestic defence industries. As a result, approximately 60 states today possess some form of defence industry, even if many of these produce only a narrow range of products (Bermann & Leff 2008).

## **Conclusion**

The industrial revolution catalysed a fundamental transformation in the relationship between armaments, warfare and the state. Suddenly, differences in rapidly developing weapons technologies meant the difference between defeat and victory in major wars. With armaments more important than ever, the firms that produced them became more politically influential than ever before. Almost invariably, these firms sought to maximize their profits by “capturing” the policymaking processes through public relations campaigns, lobbying and contributions to politicians’ election campaigns. Meanwhile, the challenges of mobilizing and converting peacetime industries and science for wartime purposes posed new administrative challenges to the state.

Scholars and policymakers have since the First World War sought to make sense of these dynamics. They have, to this end, developed a succession of analytic models, amongst the most prominent of which are those of the—merchants of death, garrison state, military-industrial complex and iron triangle—to explain precisely how arms industries impact democracy and international relations. Many of the worst fears embodied in the earlier theories have not been borne out by subsequent events. Defence firms did not “cause” wars

as per the merchants of death hypothesis and democracy did not give way in states where it already existed to the authoritarian rule of “specialists of violence.” Nonetheless, the core insight of the military industrial complex and iron triangle schools of thought—that defence industries and their allies in the military and politics will act as an interest group to promote procurement projects—has proven robust. The particular way that these dynamics occur, however, varies from state to state as a function of their institutions.

Even though the production of armaments by defence firms headquartered in one’s state exercises a distorting effect on national politics and military procurement, few states can escape this dynamic. The national security advantages of greater supply security and enhanced military adaptation, combined with the fear that once abandoned, defence-industrial capabilities cannot be quickly reconstituted, compels most states that can produce armaments to do so. A military-industrial complex, of some form, is thus a fatality for the modern state. The real question that policymakers most ask, within this context, is how to mitigate the negative externalities military-industrial complexes generate, while the most pertinent line of inquiry for future scholars is to examine how different institutional structures shape military industrial dynamics across states.

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