CASE STUDY 1-2023

MONEYBALL MILITARY

An Affordable, Achievable, and Capable Alternative to Deter China

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The US national defense enterprise—the political-military-industrial complex responsible for generating military power—is systemically broken. Despite trillions of dollars spent over the past two decades, the United States has endured unsatisfactory results in most of the wars it has waged in this century. We have mounted an inadequate and untimely response to the military transformation of a rising peer competitor, the Chinese Communist Party, that seeks to displace the United States as the world's leading power. And we have become saddled with a defense industrial base that is struggling to generate both present military readiness and future military modernization. The specter of great-power conflict has not been higher since the last century.

Fortunately, a new consensus is emerging that we must make major changes. General Charles Q. Brown, likely the next chairman of the Joint Chiefs of Staff, has said: "If we don't change—if we fail to adapt—we risk losing . . . a high-end fight."[1] Similar thinking led congressional leaders in 2021 to create a bipartisan commission to consider reforms to the Department of Defense's Planning, Programming, Budgeting, and Execution (PPBE) system—the bureaucratic process created in the 1960s and used ever since to define what military capabilities the nation requires and how to validate, fund, and ultimately procure them. This commission reported out some modest preliminary findings in August 2023 and will issue its final report in March 2024.[2]

These are positive developments, but the problem in our defense enterprise goes far beyond a need to optimize the Pentagon's twentieth-century central planning process (important though that is). The deeper problem is how the very existence of the PPBE system itself has become an impediment to the generation of different kinds of military capabilities that are now central to deterring China—capabilities such as low-cost autonomous vehicles, AI-enabled weapons, and other commercially derived systems—which have demonstrated their value on the battlefields of Ukraine, and which have the opposite attributes of the large warships,

exquisite aircraft, and other expensive platforms that defined military power when the PPBE system was created.

We do not have much time left to solve this problem. US leaders are now warning that Chinese president Xi Jinping may seek to invade Taiwan by 2027, if not sooner.[3] No matter how much more the United States spends on defense in the next few years, it will not result in a meaningful increase in our traditional military capabilities within this "window of maximum danger," as Congressman Mike Gallagher has called it.[4] We literally cannot build enough in time to matter.

We must instead find a way to win the losing game we are now playing. Just as the Oakland A's managed to think differently, disrupt themselves, and field winning teams despite having the lowest payroll in Major League Baseball, the United States must rapidly field alternative defense capabilities that are achievable, affordable, and capable of winning—a "Moneyball Military."[5] This alternative force would not be composed, as our traditional force is, of small numbers of large, expensive, heavily manned, hard-to-produce things that are exceedingly difficult to transfer to our allies and partners. It would be composed instead of large numbers of smaller, lower-cost, autonomous systems that can be provided more easily to our allies and partners.

This insurgent approach, which many have advocated for years, has now become central to the emerging consensus in favor of large-scale change.[6] Deputy Secretary of Defense Kathleen Hicks put it most boldly in August 2023 when she launched a sweeping new initiative "to field attritable autonomous systems at scale of multiple thousands, in multiple domains, within the next 18-to-24 months."[7] Put simply, the debate is no longer about *whether* we need this alternative approach to deter China, but *how* to deliver it at massive scale and rapid speed.

The change we need will not come merely through a reform of the existing system. For a Moneyball Military, the PPBE system is a disease masquerading as the cure. Generating these alternative military forces instead requires a completely alternative defense process. We must look beyond the centralized, consolidated, uncompetitive, and overly statist PPBE system and establish an inverse, parallel pathway that is flexible, entrepreneurial, meritocratic, and properly disruptive. In short, we need an alternative defense system that looks less like communist China at its worst and more like capitalist America at its best. And we have no time to lose.

SOCIALISM WITH A MILITARY FACE

A fuller appreciation of the inadequacies of the PPBE system requires a deeper understanding of its origins and the motivations of its creators. As Eric Lofgren explains in *Programmed to Fail*, "The historical context of the economics profession in the middle part of the twentieth century is central to understanding the rise of the [PPBE system]. It focused on mathematical models, market failures, and administrative remedies."[8] The PPBE system's architects, such as Charles Hitch and Alain Enthoven, were educated in the German historical school of economics. They sought to eliminate the vicissitudes of capitalism in favor of a

centralized planning process in which technical experts in the state bureaucracy allocated resources based on scientific method.

The goal of the PPBE system, when Secretary of Defense Robert McNamara institutionalized it fully from 1961 to 1968, was not to optimize or better manage capitalism in matters of national defense. It was to transcend capitalism altogether. It was an attempt to graft an allegedly superior, explicitly Soviet-style institution onto the postwar American government, ironically for the purpose of competing more effectively against that Soviet adversary. As Lofgren writes, "It was not hyperbole when historian Charles Ries described military staff planning in 1964 to be 'almost socialist in its metaphysics.'" After all, "the economic expert and socialist alike believed that central planning could far outstrip the productive capability of uncoordinated markets."[9]

The PPBE system was also founded upon flawed assumptions about technological innovation. This zeitgeist was expressed by none other than Joseph Schumpeter, a supporter of free-market economics who nonetheless championed central planning: "Innovation itself is being reduced to a routine," he said. "Technological progress is increasingly becoming the business of teams of trained specialists who turn out what is required and make it work in predictable ways."[10]

McNamara held similar views. His motivating belief was that "a relative stability characterized weapons technology in the 1960s . . . that 'technological surprise' [was] not a threat to national security and that major breakthroughs [were] not to be expected."[11] The real challenge was how to produce quantifiable advantages in existing military capabilities, not qualitative advantages in new military capabilities. That was the problem that the PPBE system was designed to solve, and to the extent that innovation, disruption, "creative destruction," and other technological surprises were actually needed, it was believed that rational central planners could engineer that as well.

The core features of the PPBE system endure to this day, as do its socialist metaphysics. This process begins with defining and validating military "requirements" for the weapons and other capabilities that Pentagon planners believe will be needed for the future. A different group of planners then turns those requirements into defense programs and aligns budgets to them as part of the Future Years Defense Program, a five-year resource-allocation plan in the best communist traditions. This leads to defense acquisition planners who build strategies to procure the military capabilities that have been deemed required and appropriately programmed. Funding for those programs is then included in the Pentagon's annual budget request to Congress, where eight different groups of elected leaders spanning four committees in two legislative houses must separately authorize and appropriate the actual money needed to put some private entity on contract to build what was previously defined long ago as a requirement. Getting from one end of this process to the other has often become protracted to nearly a decade or longer.

The problem with this system is not the people involved: they are largely well-meaning, hard-working public servants doing their best to predict the future on unrealistic timelines. Nor is

the problem planning itself: all governments must plan to allocate present resources to get future military capabilities—especially for the kinds of big, expensive ships, aircraft, vehicles, and other industrial platforms that characterized military power when the PPBE system was created. The requirements for these systems are relatively stable. Their future versions largely resemble their current versions. They have no commercial applications. Their only buyer, the government, will only ever purchase a small quantity of them. And they can only be produced by a few prime defense contractors, which depend entirely upon government funding to develop and build them. These kinds of traditional military platforms will, to some extent, remain an enduring component of national defense, and some version of the PPBE system must also endure to manage them.

The deeper problem, however, is that the strategic predicament now confronting US defense is the one thing that the architects of the PPBE system believed was impossible, irrelevant, or at least negatable through central planning: the US military is being disrupted. We have been ambushed by the future. Remarkably, this has not been a strategic shock that hit us with little warning, like an earthquake. To the contrary, this disruption has been playing out for decades, and all of our powers of central planning failed to see it and respond in timely, effective ways.

Consensus on the need for change will not be sufficient to move forward as fast as necessary. The US defense enterprise now finds itself in the position of Blockbuster Video or Barnes & Noble amid the rise of Netflix, Amazon, and Apple. This defense disruption has three distinct features. Each is inextricably bound up in the competition with China. Each has been put into high relief by the war in Ukraine. And rather than abating or reversing, each is only accelerating.

THE ONGOING FUTURE OF WAR

The first feature of our present disruption is operational, and it has everything to do with China. For three decades, the Chinese Communist Party has relentlessly built up and modernized the People's Liberation Army, not just to mimic traditional US military advantages, but specifically to counter and negate them. China has understood that America's way of war is overly dependent upon small numbers of large, expensive platforms designed to project military power over long distances—exactly what the Pentagon's central planning process is optimized to generate. What's more, these platforms are further dependent upon a host of enabling capabilities, such as forward basing, logistics, space, information, command and control, and the electromagnetic spectrum. US forces have traditionally assumed that no adversary would be able to deny them access to its sources of military power, but that is exactly what China has been focused on doing.

When Chinese doctrine refers to "systems destruction warfare," this is what it means: the systematic denial of the United States' ability to generate understanding, make decisions, and take actions—what the US military refers to as "the kill chain."[12] Since the 1990s, China has poured resources into developing and fielding the kinds of advanced military capabilities required to conduct systems destruction warfare against the United States and its allies. This

includes multimodal sensor networks to identify and target US ships and aircraft; deep magazines of ballistic, cruise, and hypersonic missiles to strike US bases and warfighting platforms; antisatellite weapons and other space-denial capabilities to shut down US access to space; and cyber capabilities to attrit the US ability to project power, from the first mobilization of military forces at home to the eventual sustainment of those forces in combat.

China's operational disruption to the American way of war also reflects a deeper, more troubling trend for the US military: what defense analyst David Johnson has called "the ascendance of the defense as the stronger form of war."[13] The age-old competition for military advantage has always shifted over time between offense and defense based on technological, operational, and organizational innovations. At present, the proliferation of networked sensors and precision-strike weapons, once a monopoly of the United States and used to decisive offensive effect in recent decades, is now being wielded by China and other rivals to illuminate the battle space, increase the lethality of fires, and erode US military dominance. Against this kind of mature reconnaissance-strike complex, advantage shifts from hider to finder, attacker to defender, the projection of power to the countering of it. This challenge is especially acute for the United States, whose conception of conventional deterrence has, for decades, rested upon the ability to conduct decisive offensive operations by penetrating the physical and digital spaces of any opponent across the planet.

This appears to be an emerging lesson from the war in Ukraine. Though it is risky to draw clear conclusions while that war still rages, the fighting to date suggests that a motivated, well-trained defender armed with the ability to sense and shoot precisely can generate operational advantages over a quantitatively superior attacker. This is not to suggest that tanks, aircraft, and other legacy platforms are obsolete, or that militaries are incapable of employing them effectively to conduct offensive operations. But it is to suggest that the costs of projecting military power into the teeth of a modern precision-strike regime, or even just the cobbled-together version that the Ukrainians are utilizing, are deeply disruptive to America's traditional ways and means of war. Indeed, when those who argue that the conflict in Ukraine does not actually represent a major change to the character of war have to draw analogies to World War I to bolster their claims, this itself would seem to suggest that the near future of warfare will be far more discordant and disturbing than recent decades of US military experience and central planning have assumed.[14]

In the aftermath of Russia's catastrophic performance in Ukraine, it is worth examining why so much Western analysis so overestimated the Russian military. It was assumed, for example, that Russia's qualitative and quantitative military advantages would make quick work of a Ukrainian army that, it was further assumed, would be reluctant to fight. Perhaps more significantly, it was also not appreciated how years of systemic corruption and cultural rot within Russian institutions would so thoroughly erode its military's ability to fight with even basic tactical competence.

We should not let these mistakes lead to a newfound but similarly flawed underestimation of the Chinese military. We have seen the damage that Ukraine has been able to inflict with a

relatively modest amount of old weapons and more modern means to target them. We should ask ourselves how confident we actually are that we could avoid a similar fate against a Chinese military that is leaps and bounds more capable than Russia's ever was. Do we really think we will be able to keep all of our multibillion-dollar investments from becoming big, vulnerable targets for China's massive arsenal of multimillion-dollar weapons, many of which are more capable than our own?

THE CLOSING OF THE AMERICAN INDUSTRIAL BASE

If the first feature of our present disruption is operational, the second is industrial. Debates can be had about the relevance of traditional military platforms and weapon systems. What is less debatable, however, is the sheer inability of the US industrial base to build and replace those legacy systems at the scales and speeds required for a potential conflict with China that could be only years away, if recent warnings by US military and intelligence leaders prove correct.

This is also linked to China. Since the 1980s, the United States has deindustrialized while China has hyperindustrialized. This was not an accident or a surprise. It was the result of a conscious policy that assumed the beneficent forces of globalization would contribute to a new, symbiotic form of great-power peace with China as builder and America as buyer. When four decades of outsourcing strategic industries and components of US supply chains, primarily to China, is combined with the Pentagon's continued pursuit of a smaller, more exquisite, more expensive military, the consequences for America's traditional defense industrial base have been catastrophic.

Take one example: shipbuilding. The US Navy has reportedly estimated that China possesses 232 times more shipbuilding capacity than the United States.[15] Indeed, just one of China's largest shipyards has more capacity than all US shipyards combined, and that industrial base can build warships just as well as it can build cargo and cruise ships. China already has the world's largest navy, which is estimated to exceed four hundred ships in the next two years and 440 ships by 2030.[16] The US Navy, meanwhile, will remain below three hundred ships for this decade, and under any but the most unrealistic and unconstrained budget plans, the navy will never achieve its stated requirement of 355 ships over the next thirty years.[17] The inconvenient reality is that America literally cannot build the ships our navy says it needs on any kind of relevant timeline, and under no circumstance can we win a traditional shipbuilding race against China.

This problem is particularly acute in one domain where the United States still retains a decisive advantage: undersea. The US Navy says it requires sixty-six attack submarines, but at present it only has forty-nine. Since 2014, Congress has invested billions of dollars in the submarine industrial base to increase its production capacity and enhance the readiness of our current boats. The result is that the number of operationally ready attack submarines has steadily declined, and as the rate of their retirement outstrips the rate of their replacement, the US Navy will have three *fewer* submarines by 2030 than it has now.[18] The justification

for those many years of additional funding was to ramp up production to two to three boats annually, each with a special payload module that carries dozens of additional cruise missiles. A decade later, however, our industrial base is struggling to build slightly more than one attack submarine per year, with no special payload module. We have spent billions more and have less to show for it.

It is a similar story with many traditional US weapon systems. For example, despite increasing funding from 2017 to 2021 to enhance the readiness of the forty-nine types of combat aircraft in the US inventory, forty-seven of them at present are failing to achieve their "mission capable rates," the amount of time they can fly and perform at least one mission.[19] While China's air force grows, America's is literally shrinking. Here, too, we are retiring platforms faster than we are fielding new ones.[20] Indeed, it is estimated that as much as 70 percent of the spending on US defense acquisition programs is for sustainment, meaning that most of our defense funds go toward using and fixing old things, not buying new and better things.[21] Add to this the current recruitment and retention difficulties that most military services are experiencing, and it means that not only is the industrial base failing to generate sufficient military readiness, but the country is also failing to generate enough "ready" people who can operate the military we have. Again, despite years of growing spending on traditional forms of military power, more in yields less out.

The war in Ukraine has brought this problem, decades in the making, into high relief. For years, Pentagon central planners underresourced procurements of critical munitions, assuming that limited resources were better spent on larger military platforms that take longer to produce, rather than weapons production, which could be ramped up much faster in the event of a crisis. The folly of this thinking was laid bare when Ukrainian forces consumed a decade's worth of antitank and antiaircraft weapons production in just the first several months of combat, and it became clear that new production would not make it to the battlefield for two and a half years, even with the funding spigot completely open.[22] This problem pales in comparison to what the United States would face in a conflict with China, where years of war games suggest that the US military will run out of its most decisive weapons in just a few weeks of fighting.[23]

Put simply, much of our defense industrial base is stuck in a downward spiral. It must build new things while maintaining old things. As the Pentagon's planning process to generate new things has become elongated; as it has optimized our force to be smaller, more exquisite, and more expensive; and as the traditional defense industry has often failed to deliver on schedule and on budget, those new things have increasingly not shown up on time. That leads to higher utilization of old things to meet operational demands, causing more of them to break down more often. As the industrial base struggles to repair that growing backlog of old things, it further strains and delays the production of new things, thereby cannibalizing more of what remains of the force we have. This hollowing out of our defense industrial base has been decades in the making, and even with sufficient will and money, it would take just as long to ameliorate—time we do not have.

This is the ironic, albeit logical, conclusion of the PPBE system: a centralized process designed to eliminate the vagaries of free markets in matters of military planning and resource allocation has achieved exactly that. When it comes to national defense, capitalism is all but dead, and our traditional defense industrial base resembles a Soviet grocery store in the 1980s. Essential goods have only one or two suppliers, maybe three, and there is little dynamism, resilience, or surge capacity to respond to actual, let alone unforeseen, demands. The shelves are disturbingly bare.

TECHNOLOGY IS EATING THE WORLD

The final feature of the disruption working against our defense enterprise is technological. The hubristic belief of the PPBE's founders that technological innovation could be centrally controlled makes more sense considering that, in 1960, the Department of Defense accounted for 36 percent of all research and development spending in the entire world. Today, that figure is close to 1 percent of the global total.[24] The amount of money in US private-capital markets is orders of magnitude larger than our entire annual defense budget, and each of the biggest US technology firms, such as Microsoft or Amazon, regularly spends more on research and development than all of the largest US defense contractors put together. The results speak for themselves: it was twelve years ago that Marc Andreessen explained why "software is eating the world," and since then, software-centric startups have displaced hardware-centric incumbents in sector after sector of the US economy, from commerce to entertainment to transportation.[25]

This commercial technology disruption has not only left our defense enterprise struggling to catch up; it is also overturning its deepest assumptions about the character of military power. Most obvious is the persistence of technological innovation: rather than predicting or directing recent advances in big data, edge computing, artificial intelligence, robotics, and low-cost access to space, the Pentagon's central planning process largely missed them—indeed, it was often hostile to them. These technologies are not controlled monopolistically by a few governments, as stealth, nuclear weapons, or earlier sources of military advantage were. Nor do they require large quantities of people and money to operate them at scale. To the contrary, the broader impact of this technological disruption is ultimately about *autonomy*: the ability of large numbers of increasingly intelligent machines to perform tasks of growing complexity without traditional time, resource, and manpower constraints. This is a profound shift that could alter the nature of power in international relations, decoupling it from the size of a country's territory, population, and economy and enabling all manner of state and nonstate actors to punch above their weight.

This technological disruption also extends to advances in manufacturing. The overly slow, expensive, and manual production processes that characterize our defense industrial base would be unrecognizable to most manufacturers of modern commercial technologies. In 2022, for example, the US Air Force maxed out its budget request for the extended range variant of its Joint Air-to-Surface Standoff Missile (JASSM-ER), a critical munition that would be

expended in high volumes in a war with China, to enable production of 525 of these weapons per year at the average cost of $1.35 million apiece.[26] At the same time, however, one Tesla Gigafactory produces four thousand to five thousand electric vehicles *per week* at an average cost of $37,000 per car.[27] A JASSM-ER is a complex system, to be sure, but it is hard to argue that it is more complex than a Tesla and should cost thirty-six times more to produce. And if the United States does end up in a conflict with China, which is likely to be protracted, the number of weapons we will need is closer to the production figures for Tesla than to any defense program.

These technological trends have been on clear display in the ongoing fighting in the Middle East, the Nagorno-Karabakh conflict of 2021, and, of course, the war in Ukraine. Much of that war is a familiar contest of blood and iron, but it is also showcasing the value of the military applications of lower-cost commercial technologies, such as proliferated communications and surveillance satellites, weaponized air and maritime drones, and AI-enabled software systems for targeting. It is also demonstrating the enormous scales on which these systems must be fielded and replenished on future battlefields. Indeed, one recent report estimated that Ukraine may be losing as many as ten thousand drones per month in combat.[28] The complex picture on the battlefield in Ukraine belies the popular caricature that the future of war is exclusively about old weapons or new technologies. The reality is that revolutionary technological disruption always unfolds as more of an evolutionary interplay of old and new capabilities and in how militaries adapt operationally and organizationally to eke out an inevitably fleeting advantage.

The trend, however, is clear: the future of war is already here. An emerging lesson from the war in Ukraine is not that large-scale losses of tanks and aircraft are unique in history or that such systems are now obsolete; it is how many of those losses in Ukraine have been supported or directly inflicted by the weaponization of new, low-cost, commercially derived, software-centric, and AI-enabled technologies and autonomous systems. These kinds of capabilities have helped Ukraine to withstand Russia's quantitatively superior onslaught and erode more than half of its combat power in eighteen months, all with a level of US support amounting to roughly 5 percent of our annual defense budget.[29] This would have been impossible even five to ten years ago.

Here, too, the technological disruption of our defense enterprise ultimately leads back to China, which has also been studying recent conflicts and how new technologies will change warfare. Not only is China outproducing the United States in more traditional military platforms, but the Chinese Communist Party's ambition when it comes to advanced technologies is nothing short of world altering. It is investing historic amounts of resources and influence to expand the domestic industrial base, along with global supply chains, to become a world-leading builder of artificial intelligence, biotechnology, robotics, and other critical technologies, as well as their indispensable enabling industries, such as microelectronics, batteries, and critical minerals. If war with China does regrettably come, the United States will not only be confronting its large industrial maritime, air, and rocket forces, but also its own growing arsenal of autonomous systems, hypersonic weapons, targeting satellites, and other advanced military capabilities.

TOWARD A MONEYBALL MILITARY

These three forms of disruption—operational, industrial, and technological—have put the US defense enterprise in a strategic predicament. Our ability to generate and project military power is overly reliant upon small numbers of exquisite systems that our industrial base cannot build or replace at relevant scales and speeds, that China's military modernization is increasingly capable of holding at risk, and that the accelerating march of advanced technologies is rapidly disrupting. No matter how much additional money we spend on these traditional capabilities over the coming years, if the United States were to find itself in a conflict with China by 2027, our military would be fighting and seeking to support our allies with little more than what is in our inventory today, depleted as that has been through our critical support to Ukraine.

There is an alternative, and it would require a stark but necessary departure. We must harness the same forces of disruption that are upending our defense enterprise to generate an arsenal of alternative military capabilities that is more achievable, more affordable, and better able to help us shore up deterrence with China. This would be our Moneyball Military—a massive arsenal of smaller, lower-cost, autonomous systems that can be generated over the next few years, fielded rapidly and at scale to US forces, and transferred in large numbers to our allies and partners. This would also require the generation of an alternative industrial base to produce at scale what would essentially be commercially derived, consumable weapon systems and the digital means of connecting them into a military version of the Internet of Things.

National defense is not baseball, of course, but it is long overdue for a similar systemic change, and the operational advantages of a Moneyball Military would be compelling. It would return mass to the battlefield in America's favor and present Chinese planners with far different problems than those they have been assuming they would have to confront in a conflict with the United States. A Moneyball Military could overwhelm China's sensors and weapons with exponentially more targets than expected. And because each of those targets by itself would be less valuable to find and strike, it would impose the additional dilemma on China of how to allocate its limited military resources in the first place. Similarly, because Moneyball capabilities would be more affordable and transferable to frontline allies and partners, including Taiwan, China would have to contend with the prospect of far more formidable military powers along its periphery that are better ready to defend themselves as Ukraine has. This would be an inversion of the war that China has been planning for, and the resulting cognitive dissonance alone could serve to bolster deterrence and buy us more time. That is ultimately what winning looks like.

The good news is that US defense leaders are increasingly pushing for this kind of change. In March 2023, Secretary of the Air Force Frank Kendall previewed plans to develop one thousand to two thousand "collaborative combat aircraft," which are effectively low-cost autonomous fighter jets.[30] Months later, Deputy Secretary of Defense Kathleen Hicks announced the major initiative to field thousands of low-cost autonomous systems in eighteen to twenty-four months.[31] These announcements follow years of bipartisan legislation, agitation, and appropriation of resources from Congress to scale defense innovation. Most ambitiously,

the Defense Subcommittee of the House Appropriations Committee, led by Chairman Ken Calvert, has recently increased the budget of the Defense Innovation Unit to more than $1 billion and charged it with beginning to procure a "hedge portfolio" of many smaller, cheaper, smarter, more autonomous military systems.[32] This is a sea change: the main question in US defense circles is increasingly not whether this kind of alternative force is necessary, but how to deliver it on a rapid timeline.

It is fair to ask why these latest plans might fail to achieve their intended outcomes. After all, this is not the first time in recent decades that US leaders have backed transformational defense initiatives, most of which came up short for one main reason: the Pentagon's central planning process was engineered to be impervious to disruption, not to enable it. The problem is the entire PPBE system itself, from requirements to procurements, which has become elongated to a decade or more in many cases, forcing hardworking, well-intentioned public servants to try to predict the future in the 2030s and 2040s. This system will be more necessary for exquisite capabilities such as warships and fighter jets, where future variants will largely resemble their present versions. But for a Moneyball Military, unfortunately, the PPBE process is folly.

Generating this alternative force requires a completely alternative system to create incentives for innovation, surprise, and systemic disruption. This process would not be "socialist in its metaphysics." It would rest upon humbler, more capitalistic assumptions: that uncertainty and contingency define the human condition, that ambitious schemes launched by central committees often end in tragedy, and that a successful system is defined by its resilience and ability to adapt when things inevitably turn out differently than we once assumed. This is even more the case when threats and technologies are changing as much and as fast as they now are. In short, it would be a system based not on central planning but on facilitating market creation.

FROM MONOPSONY TO MARKET CREATION

Disruption occurs every day in the commercial economy because there are incentives for it. The competition is ruthless, and the rewards are real. If insurgents outperform incumbents, they win. If competitive pressure forces incumbents to transform themselves, they can survive and succeed. If they fail to adapt, they die. Either way, customers benefit (most of the time, anyway).

The defense sector will always be a monopsony. There will rarely be real markets for warships, tanks, fighter jets, and other exquisite military capabilities, so government will always require a PPBE-like system to manage performance and price in the absence of actual competition. It is possible, however, for government to use its monopsonist powers to foster the formation of real markets for Moneyball capabilities simply by being a better buyer of them.

In this regard, the metric of success would not be increases in government spending on defense research and development funding, but rather on procurement. If government

became a more reliable, larger-scale buyer of a Moneyball Military, it could create an alternative defense process with reverse polarity of the PPBE system. It would not involve the government funding long cycles of research and development, followed by limited procurement and decades of payments to operate and maintain the military systems it bought as they grow older and older. It would focus instead on buying new versions of Moneyball capabilities in larger and larger quantities every couple of years, thereby pushing more of the costs to develop these systems onto their private builders while eliminating more of their maintenance costs altogether.

This would create effective incentives that could lead to rapid, systemic disruption, but it needs to happen immediately. Indeed, if this alternative system is not established and delivering results at meaningful scale over the next two years, it may be too late. The only question is how to do it.

DEFINE THE MARKET

This starts with determining the bounds of this new defense market system by drawing a bright, shining line through the US military. On one side would be traditional platforms and weapon systems that would continue to be governed by some version of the PPBE process. On the other side would be the Moneyball Military, which would be generated through market creation.

This is doable, because these alternative forces are the military version of commercial vehicles, consumer electronics, and other replaceable goods. Their per-unit cost is relatively low, and they can be bought in larger volumes from many companies, with new and better versions becoming available more often. This criteria for Moneyball capabilities would apply to robotic vehicles of all sizes in all domains, constellations of small communications and intelligence satellites, and other commercially derived military systems. It would apply to the military applications of data management and analysis, artificial intelligence, networking, autonomy, cybersecurity, software applications, and other digital capabilities. It could even apply to many types of weapons, from low-cost cruise missiles to loitering munitions to electronic warfare systems, most of which are literally expendable. The purpose would be to stop treating these kinds of capabilities like capital assets and instead regard them more like consumable items for which a real defense market could be formed.

Beyond the conceptual framework, defining this market in reality requires the government to exercise its unique buying power backed by a major commitment of resources. Deputy Secretary Hicks's initiative to field thousands of "attritable autonomous systems" in two years, while encouraging, may only be resourced at a few hundred million dollars per year. The Air Force is closer to the mark with its plan to spend several billion dollars on "collaborative combat aircraft" over the next five years. The right target for rapidly generating a Moneyball Military, however, is likely closer to the tens of billions of dollars that the United States has spent over the past two years to help Ukraine defend itself against Russia—and even then, it is hard to imagine that deterring a war with China over Taiwan before 2027

may not cost even more. This larger figure would still represent only a single-digit percentage of America's total annual defense spending, but the Department of Defense should not be expected to take it out of hide. Defining a real market for these alternative capabilities will require increased defense budgets over the coming years.

EMPOWER CONSUMERS

The next step in this market-creation process would be to empower consumers. That means, just for these Moneyball capabilities, shifting the balance of buying power from the suppliers to the consumers of military capabilities—from the military services (the Departments of the Army, Navy, and Air Force) to the operational forces (the combatant commands). In the PPBE system, as modified by the Goldwater-Nichols reforms of 1986, military services generate forces and combatant commands operate them. The central planning process is supposed to match supply with demand, but the services possess a near monopoly on the authorities, resources, and personnel required to generate military power, while the combatant commands have little ability to act on their real demands. This fractures accountability and often leads to market failures.

Force generation is assumed to be a long-term responsibility that is incompatible with the short-term focus of operational commands. This is understandable when it comes to traditional military platforms, or the science and technology projects of defense laboratories, which often take a decade or more to deliver, if they ever do. These rules need not and should not apply, however, to military drones and other Moneyball capabilities that can be bought, used, and replaced with better versions all within a few years. Because the PPBE system treats these different classes of capability as essentially the same, it often leaves operational forces in the worst of all dilemmas: waiting for a future that never delivers on their watch, while Moneyball solutions that could offer immediate impact to their missions remain out of reach—undervalued, underfunded, and underdelivered by the institutional suppliers of military power. There is no consumer choice.

The dirty little secret is that no one actually knows the many different operational uses to which Moneyball forces could be put at present, let alone in the future. They are changing too rapidly. Rather than being paralyzed into inaction or retreating into a multiyear attempt to predict future requirements, we need to empower military consumers to start buying what they think they need now within the defined market for these alternative capabilities. The early results would likely be small-scale purchases of modest capabilities that may make only marginal operational contributions. That mostly reflects the limitations of what is available now and what their alternative industrial base can support. But as user demand grows and is rapidly met, more and better versions of these Moneyball capabilities would quickly emerge at greater scales that can meet the many new and different mission needs to which operational forces can think to put them. This, in turn, would generate more demand and growing supply to meet it. That is how markets form, and it is only possible if consumers have real purchasing power and, as importantly, choice—the ability to adopt alternative solutions when they are unsatisfied.

FORTIFY AN ALTERNATIVE PATHWAY

The change we need will not occur through the PPBE system. It requires the creation and empowerment of an alternative pathway that is not only free from the strictures, assumptions, and incentives of the existing system, but is also enabled and protected by senior leaders to work in different ways to meet the Moneyball demands of operational forces. These parallel institutions would be like personal shopping services for the consumers of military power. Some of those services, like their commercial analogues, would simply buy more of what already exists when military consumers already know what they need. Other services, however, would need to be more involved—for example, when military consumers do not know exactly what they want, when they require more of an iterative process to arrive at the right solutions, or when they are unprepared or simply too busy to do all of that work for themselves. All of those characteristics apply to US operational forces, which need real support to navigate a complex market.

This is not to suggest that military services have no role to play in this alternative process. To the contrary, their involvement is vital, especially for Moneyball capabilities on the higher end of the spectrum, such as autonomous fighter aircraft or longer-range missiles, that have more military-unique or service-specific attributes. These alternative capabilities within the services' portfolios should also be liberated from the PPBE system and procured under the many different authorities now available that enable rapid delivery to military consumers who intend to fully consume them in just several years. In time, each service could consolidate its Moneyball capabilities into its own single procurement office or budgetary portfolio to reinforce that these systems are different and must be treated differently from traditional military programs. The more urgent priority now, however, is to begin creating markets for Moneyball capabilities by procuring them at real scale.

At the same time, the services cannot monopolize the government's role in the supply of military power. More of that function must be shifted to alternative institutions that report to the Pentagon's top leaders, to whom they should be accountable for disrupting the status quo and supplying Moneyball capabilities directly to military consumers. Some of these kinds of institutions have been created in recent years, such as the Strategic Capabilities Office (SCO), the Space Development Agency (SDA), the Defense Innovation Unit (DIU), and the Chief Digital and Artificial Intelligence Office (CDAO). Their initial versions often faced the usual bureaucratic and political pressures to subordinate them to the existing system. However, the urgency of the China challenge is increasing momentum, especially within Congress, to empower these kinds of alternative institutions and strengthen their independence.

The Department of Defense does not need to create more such organizations at the moment; it needs to fortify the alternative organizations that it has already created to serve as alternative pathways to deliver a Moneyball Military at the scale and speeds required. DIU is perhaps best positioned to play this leading role, especially in executing the recent initiative to rapidly field thousands of autonomous military systems. DIU has been through multiple iterations and become more effective with each one. It has a broad remit that covers every kind of capability that operational forces want and need. It has experience using the many alternative acquisition authorities that Congress has recently provided to the Department

of Defense, especially the ability to get companies on contract and working quickly. What DIU needs now more than anything is money and the mandate to function less like a contracting support agency and more like what is known in the defense enterprise as a program office—an organization with sufficient authorities, resources, and the right kinds of people to buy military things and deliver military programs.

This is all the more important because the most relevant Moneyball capabilities will rarely be purely "off-the-shelf" or "dual-use" solutions that can serve both commercial and defense markets without any alteration. They will require some degree of militarization, weaponization, or customization to address the unique demands of military consumers and move rapidly through prototyping and into large-scale production. The goal, while controversial, is desperately needed and worth stating clearly: when it comes to Moneyball capabilities, DIU and institutions like it must be empowered to bypass the traditional suppliers of military power in the PPBE system (the military services) and deliver commercially derived but appropriately militarized solutions directly to operational forces—with the expectation not that those systems must be operated and maintained for decades, but rather that they will be consumed and quickly bought anew.

FOCUS ON PROBLEMS

This points to another critical attribute of market facilitation that is inconsistent with the PPBE process: it must focus on defining operational problems of actual military consumers, rather than detailing requirements for the envisioned solutions of central planners. This is how consumers typically enter a market—with problems they need to solve, not with their own rigid plans for how to solve them. Travelers, for example, want fast, safe, and affordable rides; they care less about whether taxis, Ubers, or something else provides them. Free markets create disruption because they are fundamentally problem-centric, which helps to check the all-too-human tendency to believe that future solutions will look like better versions of what exists at present.

Adopting a similar approach for Moneyball capabilities would require all the parts of the central planning process, now fractured across many different bureaucratic organizations, to be unified within a single alternative institution. Instead of a long, linear progression from requirements definition to program creation, to resource allocation, to acquisition strategy, the stewards of this alternative process would align themselves to specific operational customers and seek to clarify what problems they are actually trying to solve, which is often obscured by their own instances of path dependence, solution bias, or just ignorance of available alternatives. This is why the US assistance effort to Ukraine has been so responsive and adaptable: the war has surfaced a series of operational problems that must be solved and has clarified urgent demands for alternative capabilities that could solve those problems, from low-cost cruise missiles and explosive-laden drone boats to AI-enabled targeting software and reconfigurable space-based communications.

Adopting a truly problem-centric approach would require new and different metrics to accurately capture those problems and evaluate their potential solutions. This, too, runs counter to

the PPBE process, which largely values inputs over outcomes in the measurement of military power—dollars spent, platforms acquired, "readiness" levels, and the performance parameters of individual military things. Those traditional metrics are less relevant to Moneyball capabilities, which are more about the outcomes that large groups of military systems operating together can generate—the amount of sensor coverage provided over a given area for a given time, for example, or the aggregate cost for the volume of fires necessary to hold specific targets at risk.

This also requires a fundamental rethinking of how to value autonomous capabilities. The PPBE system separates the costs of buying, operating, and sustaining military things from the costs of the personnel needed to make those things operationally relevant—the well-trained pilots who drive them, the technicians who maintain them, and the many intelligence analysts who make sense of the information they collect. If all of those personnel costs of manned systems are not captured in their total cost of ownership, it is impossible to compare them fairly with more autonomous systems that perform the same missions with fewer personnel costs. It could even lead to the false conclusion that autonomous systems cost far more, and manned systems cost far less, than they actually do. We need a systematic effort to reconceive military metrics, akin to the analytical revolution that accompanied Moneyball thinking in baseball, to accurately characterize our operational problems and enable alternative solutions to emerge and compete in a freer market of ideas, especially when the future inevitably turns out different from what we assume.

CREATE REAL COMPETITION

Instilling alternative defense institutions with the kind of problem-centric, market-oriented focus and urgency that often characterize the US military in crisis is the only way to generate a sufficient quantity of the right kinds of Moneyball capabilities in time to actually matter. What is needed is real competition—not the contests on paper and PowerPoint that characterize force generation in the Pentagon's central planning process, but the kinds of ruthless, everyday struggles that define actual markets in the commercial world. This would be less complicated to establish than is often assumed. It just requires government to exercise its monopsonist powers and start buying Moneyball capabilities that are available now.

Government could facilitate the creation of a market simply by signaling its intent to spend a lot of money to buy some particular Moneyball capability. The competition to decide what to buy would be based, to the greatest extent possible, not on written proposals but real-world performance in front of actual military consumers, who would ultimately pick the winners. There would be none of the traditional pressure to make only one award for a prolonged period, which effectively enables the winner to continue to do the work regardless of its performance. Instead, government would do the opposite: provide large contracts to a small number of winners, give them a few years of guaranteed work, pit them ruthlessly against one another, and then signal the clear intent to run a new competition at the end of that period for an even larger procurement of this capability that would be open to anyone who can show up with real systems and compete.

This would be all about procurement. Government would not pay for prolonged research and development activities. It would instead procure the best versions of Moneyball capabilities currently available and then acquire the even better versions of those systems that could be specified and delivered with minor modifications and militarization during the span of one contract. Government would also not sign up to large and lengthy bills to operate and maintain the systems it bought. It would instead plan to consume those systems in a few years and then get rid of whatever of value is left—transferring them to the National Guard and Reserve, for example, or to foreign allies and partners. Government would definitely not try to play venture capitalist and invest in startups, but rather would provide what fast-growing companies actually need most from government—not capital, but customers. The focus would be on the constant procurement of new things in ever-larger numbers by those who can actually deliver them.

What's more, contrary to the PPBE system, this procurement should not occur as traditional cost-plus contracts, where government reimburses the cost and guarantees relatively modest profits to defense contractors for developing military systems (performance mostly aside). This, too, is a tool more suited to large, exquisite, technically risky platforms. For Moneyball capabilities, however, government can and should utilize firm, fixed-price contracts to buy each new lot of newly modified or weaponized systems. This would reduce technical risk to manageable levels and reward superior performance and lower costs with higher profits. The PPBE system has delivered far too many over-budget, over-schedule, poorly performing programs in its quest to remove capitalism from national defense. It is time to try the opposite: embrace fixed-price procurement with real profit motives to deliver the alternative capabilities we need on time.

If government approached procurement and competition this way for Moneyball capabilities, a shocking thing would happen over time in our capitalist society. Markets would begin to form. More companies would enter and compete, because an actual profit motive could be realized on business-relevant timelines—perhaps not the immediate, large-scale gratification of the best commercial software companies, but far more attractive than the glacial, small-margin returns of our socialist-inspired defense sector. Firms would have incentives to invest more of their own capital to develop new and better capabilities, because superior performance and price would actually lead to winning programs, growing revenue, and expanding market share. Capital markets would also respond for the same profit motives, investing in the best companies at many multiples greater than their revenue to enable them to develop new capabilities, hire more talent, and grow their businesses. In time, this would terraform a new defense industrial base.

BUILD STAKEHOLDERS IN THE FUTURE

Market creation of this kind would also provide a better way to manage the process of political and bureaucratic change associated with adopting new military capabilities and retiring old ones. Our central planning system all too often forces civilian leaders in the Department of Defense to present political leaders in Congress with an untenable approach to military change: retire all at once in one year some traditional capability for which there are strong stakeholders

both in and out of government, in order to fund the development of some replacement capability that is promised to be delivered many years into the future. Not surprisingly, members of Congress serving two-year terms and military officers who do not hold jobs for much longer are loath to give up proven military tools that they rely upon now for the hope of something better later, especially when those future capabilities have a bad habit of never showing up on time or at all.

A market-creation process for Moneyball capabilities would enable a more incremental approach to transformational change. While it would be possible to start buying new things right away, they would initially deliver smaller-scale, more modest disruption. But that would change with each new round of procurement, and as newer versions prove themselves to be more robust, effective, and trusted, military consumers would demand more of them, which would make them more inclined to incrementally let go of their older capabilities. The political blowback that often accompanies this kind of transition could be more manageable because traditional stakeholders who would stand to lose from the retirement of old things would be offset by the creation of new stakeholders who would stand to benefit from generation of a Moneyball Military. These stakeholders would include operational forces that want new capabilities, companies that want to build them, and states that want the jobs created by them. Bridging this gap between the present and the future would require a period of increased defense spending, but the evolutionary approach enabled by market creation might ensure that this critical transition actually happens.

CONCLUSION

Despite the many strategic disruptions working against the US defense enterprise, there are compelling reasons for optimism. The United States has all of the necessary raw materials to create in the coming years new and growing markets for a Moneyball Military that can get us out of the losing game we have been playing with China. We have talented people in and out of government. We still lead the world in many of the most important technologies. And we have plenty of money in our defense budget and private-capital markets to afford the kinds of changes that we urgently need to make. In short, Americans still definitively control our own destiny, and US leaders are finally speaking more honestly about the urgent need to solve these problems.

We must be equally honest with ourselves about some inconvenient realities. The United States is not going to regain the global military dominance that defined the past three decades—what looks, in retrospect, like a historical aberration between two periods of great-power rivalry. Just as we cannot go back to American primacy as we once enjoyed it, we cannot rapidly bring back the traditional defense industrial base that delivered it and make it equally decisive for our future. We have let it atrophy for too long, and no amount of money will alter that on any relevant timeline in light of growing warnings about the Chinese Communist Party's ambitions.

This should not lead us to despair. On the contrary, we should view it as liberating. It should free us from self-delusion and force us to focus on alternative solutions that are actually within our

grasp, and which we can and must implement on rapid timelines. If we are serious, it is possible for government to foster market-oriented incentives that can align America's many strategic advantages into a new arsenal for democracy, albeit one optimized to generate a Moneyball Military. And if we are successful, the country as a whole would reap multiple benefits, none greater than the benefits that would accrue to those who matter most: the men and women in uniform who are counting on their nation to ensure that they never have to face a fair fight.

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