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America Needs a New Dreadnought Strategy

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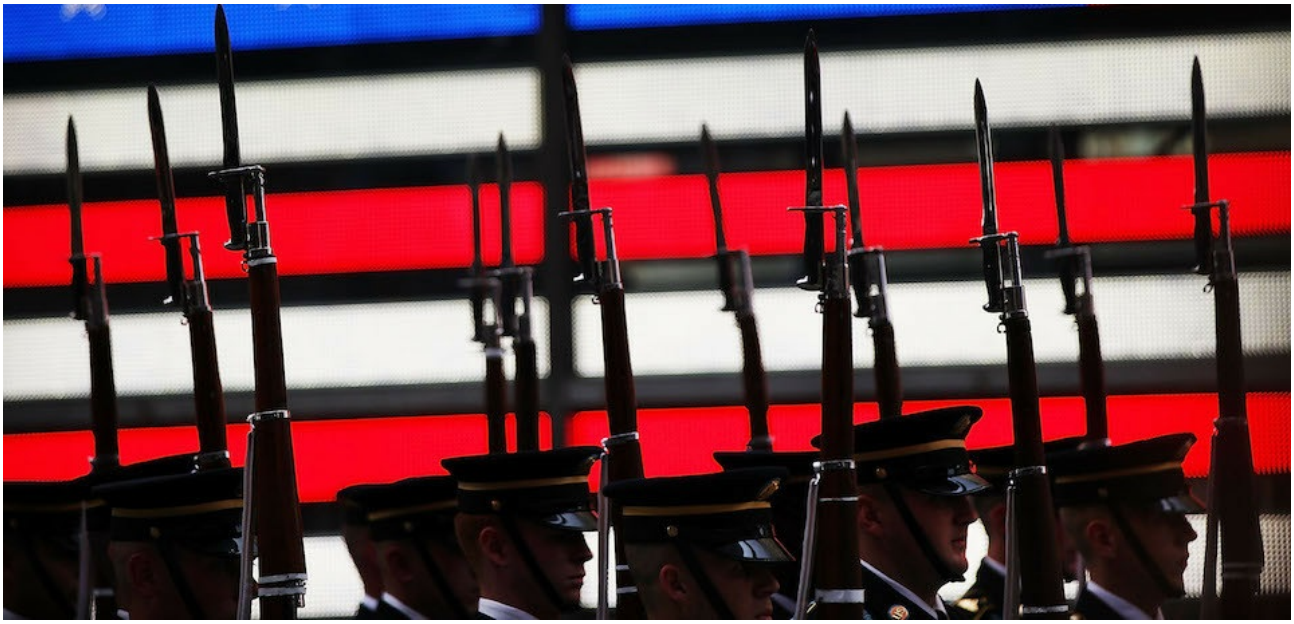
Argument

Why slow-rolling technology R&D can help the U.S. military prevent the rise of dangerous rivals.



NEW YORK, NY - JUNE 12: Members of the U.S. Army Drill Team perform in Times Square in New York City in honor of the Army's 240th birthday on June 12, 2015 in New York City. Soldiers from the 3rd U.S. Infantry Regiment, the U.S. Army Old Guard Fife and Drum Corps, Soldier-musicians from The U.S. Army Band "Pershing's Own" Downrange, and the U.S. Military Academy West Point Band entertained and gave demonstrations to the crowds in the historic center of Manhattan. (Photo by Spencer Platt/Getty Images)

At the end of the Cold War, China did not appear poised to threaten America’s unipolar moment. The country was a nuclear power but largely impoverished. It had a large military; its forces were ill-equipped and not prepared for a major war. The People’s Liberation Army’s main battle tank was a first-generation T-55, first produced in 1949, and the army possessed almost no mechanized forces. Even as late as 2000, the entire Chinese helicopter force consisted of a mere 24 Mi-17s amid a mix of light- to medium-duty transport aircraft.

Fast-forward to present day. Beijing is a force to be reckoned with. Its anti-access and area-denial capabilities, operations in cyberspace, and its missile force keep defense leaders from Tokyo to Washington up at night. And as China’s military becomes ever more powerful, it looks as if the United States has made poor choices in how it has equipped its own military.

But this is not just about missiles and ships. Over the past 10 years, Chinese government investment has included everything from Alibaba to Uber. This strategy has helped it test military-grade capabilities in the commercial market. As a result, Chinese military technologies often exhibit shorter times to market than comparable American defense programs. Beijing also capitalizes on these investments in ways that are missed opportunities for the American defense industrial base.

It is time for the United States to consider the creation of a "comprehensive technology deployment strategy" because — quite frankly — it doesn't have one. This strategy considers the opportunities of and threats to American research technology, weighs the context of the strategic threat environment, and evaluates whether it is prudent to develop or delay official release of a technology in the face of adversaries eager to incorporate these advances into their own defense systems.

As the world's leader in technologies that shape the security environment, Americans need to think hard about what they can do to maintain their increasingly fragile lead in technology. What would such a strategy look like? It sounds counterintuitive, but in an era of rapid technological advances, sometimes it pays big dividends to actually slow the pace of development.

Take the example of 19th-century British naval technology. Could the United States take a page from the Victorian navy's playbook and gain by shielding its technology advances until a time of its choosing?

In the second half of the 19th century, Great Britain was still themaster of the seas. This was crucial, as Britain was an island nation that needed to maintain a global empire and its powerful navy was key to its security. Maintaining a lead in naval mastery was a tricky business, however, in the decades preceding World War I. In the span of roughly 50 years, ships had gone from wooden-hulled sailing vessels with muzzle-loading, smooth-bored cannons that fired solid shot for a few hundred yards to massive turbine-driven hulks with steel, compartmentalized hulls, armed with breech-loading rifled guns that could hurl explosive shells for miles. Technology was changing so rapidly in this era that British Prime Minister William Gladstone complained that battleship design changed as quickly as the "[fashion] of ladies' hats." Given that it sought to maintain naval supremacy over its rivals while technology was rapidly changing, Britain needed to think about creating a strategy for its management of technology. In other words, carefully choosing what technologies to develop, implement, discourage, or withhold in light of how and when those technologies might diffuse to rivals.

Britain was a leader in researching and understanding the technologies surrounding submarines, mines, and torpedoes throughout the 19th century, but given the fact that the diffusion of such technologies would allow other nations to cheaply counter the Brits' own surface fleet (and specifically its ability to conduct naval blockades) they conducted a decades-long strategy to discourage the implementation and diffusion of such technologies. Navy Controller Sir Arthur Wilson revealed the essence of a comprehensive technology management strategy in a 1901 internal memorandum, and it is worth quoting at length:

We cannot stop invention in this direction [submarine warfare], but we can avoid doing anything to encourage it. [We successfully] delayed the introduction of submarine mines for half a century … [and the] question of submarine boats is taking a very similar course. A very well thought design for a submarine boat was brought to my notice … about 1879.… Experiments were carried out which proved the practibility … [and then] the inventor was given no further encouragement. A very similar course has been adopted with all the various submarine boats that have been brought forward since. Each design has been carefully examined and … then it has been quietly dropped with the result of delaying the development of the submarine boat for about 20 years.

In other words, the British were aware that they could achieve short-term gains out of developing and fielding new technologies but in doing so would also shorten the time in which such technologies would diffuse to rivals. The key takeaway of the British case is that it makes sense to "push the envelope" in technology when competition is intense, but it also makes sense to withhold or discourage the development of technology when such conditions are lacking. Britain's policy matched such logic. The policy of retardation of submarine technology ended right after the beginning of the Anglo-German naval race (marked by the German Naval Laws of 1898 and 1900). In 1901, Admiralty Secretary H.O. Arnold-Forster signaled this change:

I concur with the Naval Lords that the Controllers policy [of stifling submarine technology] was certainly the right one.… [But] that is no longer possible … [and we should] abandon our policy of discouragement and … adopt one of unostentatious progress.

In fact, by the beginning of World War I, Britain had a larger submarine fleet than Germany. This fact is surprising to many, given the central role that submarines played in Germany's strategy during the war, but it shows that Britain was not inherently opposed to submarine technologies. Rather, the British hindered or accelerated the development of such technologies with strategic acumen. Given their leadership role in driving naval technology, it is not unreasonable to assume that they faced cruder German subs in 1914 than they would have if they had not slow-rolled submarine technology for decades.

We can compare the British case of carefully considered technology deployment to the case of current fifth-generation U.S. aircraft: the F-22 Raptor and the multirole F-35 Lightning. These programs were developed during the 1990s (the F-22 program began in 1986 and the F-35 program in 1994), a period during which China was completely flabbergasted by the U.S. performance in the Gulf War and Russia was a mess. These programs pushed the envelope on fighter technology to a huge degree (incorporating stealth, advanced sensors and avionics, supersonic cruise), and in that time no one dared to challenge American air-superiority capabilities. But they also cost a fortune. The F-35 is fantastically over budget, beset by myriad problems that have delayed deployment, and "will be the most expensive weapons system in world history." Only a handful of the projected F-22s will actually be produced (due to fiscal constraints), and the F-35 (years behind schedule) is still not fully operational (and, due to its "jack of all trades" design, may not be as capable as Cold War-era aircraft).

What the United States has done, however, is allow rivals to quickly achieve near-peer status in fifth-generation aircraft. The Chinese J-31, for example, is likely based on stolen F-22 and F-35 technology, and while the Chinese plane is marginally inferior, the prototypes are capable enough to offer a serious counter to American air power in East Asia. Further, the Chinese have shown the capacity to acquire emerging technologies and get them into the field faster. Once again, this does not bode well for the technology leader that pays the painful research and development costs. In the private sector, this practice is well studied. Business courses now use the term "fast follower" for someone who benefits from others' technology investments; Thorstein Veblen was writing about it as far back as 1915. Despite this, American military planners seem to be oblivious to how one should leverage such a technological lead.

Can this pathology be remedied? It will be challenging for several reasons. First, in contrast to the "easy" questions such as air-superiority aircraft, other emerging technologies are threatening to create strategic impacts that are very poorly understood. Artificial intelligence, biotechnology, and additive manufacturing represent only a handful of vibrant technology fields that may have unforeseen impacts on the national security environment of tomorrow. Second, the cutting edge of such technology fields are occurring outside the control of the state. The Victorian navy could largely control the output of the royal shipyards, and Lockheed Martin and Northrop Grumman remain very cozy partners with the U.S. Defense Department. Yet the start-ups and innovators of the emerging tech markets are the Wild West; it will be significantly harder to influence, and challenging to control, what comes out of these ventures.

The third and most serious challenge are nation-state competitors such as China that are working hard to more closely integrate their foreign investment with their defense industrial base in order to expedite the "time to deployment" of their research technologies. This was highlighted by a recent Defense Innovation Unit Experimental report and associated *New York Times* reporting on focused Chinese investment in American advanced technology start-ups. Two more industrial examples are China Electronics Technology Group Corporation (CETC) and Beijing Teamsun Technology. CETC is a state-owned, R&D-focused organization pushing China's emphasis on dual-use electronics and civil-military integration. It conducts much of its work through the 55 semiautonomous research institutes that it oversees. CETC subsidiaries have entered into joint ventures with companies like IBM, Sun, HP, Oracle, and Cisco and partnered with the U.S. defense contractor Harris Corp., which, according to its website, provides tactical communications, intelligence, and satellite services to the U.S. military, National Security Agency, and National Geospatial-Intelligence Agency. According to a Defense Group Inc. report, Teamsun runs IT networks and information security for large companies and government organizations. It's a registered end-use supplier to China's military, "offering computer, software, network, communication, and satellite application products" to the Second Artillery Equipment Academy, the People's Armed Police Force, and the Ministry of Public Security.

So what can be done? First, the United States can start by adopting strategic pragmatism in picking its areas of technology deployment. Military acquisition authorities need to think harder about second- and third-order diffusion effects (like armed Islamic State drones in Mosul). Of

course, technology will inexorably evolve, and no one is going to be able to stop bad guys from buying a drone on Amazon or something worse, but the degree to which the national security apparatus can shape such evolution, it should do so with purpose. The days of dreaming about "full-spectrum dominance" (overmatching opponents across the board in all operational settings) are long over — today's American national security apparatus needs to be smarter than that. The United States can't and shouldn't stop advancing technology, but it must do so with a plan in mind and stop doing all the heavy lifting on R&D for rivals and enemies. Put simply: Invest in mission-critical technology but implement it in a way that imposes fixed research costs on rivals that they cannot recover.

Second, the United States should partner with industry to better understand a fast-changing global supply chain and the industrial base that supports it. Bolstering coordination between private-sector investment and defense-industrial base objectives is especially important. The Committee on Foreign Investment in the United States is a good starting point to level the playing field by focusing on its review process for acquisitions of U.S. firms by foreign ones. However, this committee can only examine national security issues involved in an acquisition. While the vast majority of the more than 100 transactions reviewed annually proceed, the new administration will have to take a serious look at the committee process and the enabling legislation and consider what combination of carrots and sticks would accelerate the opening of China's markets. One example would be to include an amendment to foreign-investment legislation that limits acquisitions by state enterprises from countries with which the United States does not have a bilateral investment treaty. This could force countries like China to alter their investment practices and increase the openness of their markets out of fear for their access elsewhere. Getting China to open up its protected markets is high on the policy agenda of the United States and other major economies. The United States has been negotiating with China over a bilateral investment treaty that would be based on a small negative list; that is, there would be a small number of agreed sectors that remain closed on each side, but otherwise investment would be open in both directions.

Finally, the Pentagon needs to rethink the "valley of death" —the gap between technology innovation and implementation. Many lament this gap, arguing that too many technologies make it through the basic R&D phase but don't survive the acquisition/integration process. We propose turning this model on its head and advocate more selectively developing cutting-edge research, and then choosing to deploy the results strategically, versus simply being driven by inertia or the vagaries of bureaucracy. Just as the British mapped emerging technology to maintaining control of strategic sea lanes for the purpose of managing a global empire, Washington needs to take a minute (or two) to finally plot a grand strategy. After doing so, the shape and tenor of a comprehensive technology deployment strategy should become apparent. By simply taking into consideration what the United States wants to achieve, what the threat environment looks like, and what technologies would be needed to succeed in such a scenario — recognizing that today's American "widget" will end up in rivals' hands tomorrow — will go a long way in taming the technological revolutions we face.

Photo credit: Spencer Platt/Getty Images

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