NATO Procurement and Modernisation

Towards an Innovative Alliance with Much More Deployable Combat Capability
The GLOBSEC NATO Adaptation Initiative, led by General (Retd) John R. Allen, is GLOBSEC’s foremost contribution to debates about the future of the Alliance. Given the substantial changes within the global security environment, GLOBSEC has undertaken a year-long project, following its annual Spring conference and the July NATO Summit in Warsaw, to explore challenges faced by the Alliance in adapting to a very different strategic environment than that of any time since the end of the Cold War. The Initiative envisages a series of policy papers which will address the nature of NATO adaptation and the challenges it must overcome if it is to remain a viable and credible alliance for the peace and stability in the transatlantic area. The policy papers published within the GLOBSEC NATO Adaptation Initiative are authored by the Initiative’s Steering Committee members: General (Retd) John R. Allen, Admiral (Retd) Giampaolo di Paola, General (Retd) Wolf Langheld, Professor Julian Lindley-French, Ambassador Tomáš Valášek, Ambassador Alexander Vershbow and other acclaimed authorities from the field of global security and strategy. The aim of the involvement of such a wide array of experts is to reinforce the unique partnership between policy-makers, military leaders and leading academics and commentators. These policy papers will prelude and result with the publication of the Initiative’s Steering Committee Recommendation Two Pager and the Main Report to be launched in November 2017. The Interim Report will be released during the GLOBSEC 2017 Bratislava Forum.

These outputs will be augmented by shorter policy papers (on cybersecurity, A2/AD capability, intelligence, and threats emanating from the South) prepared by the GLOBSEC Policy Institute between January and October 2017.
NATO Procurement and Modernisation: Towards an Innovative Alliance with Much More Deployable Combat Capability

Supporting Paper of the GLOBSEC NATO Adaptation Initiative

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NATO Procurement and Modernisation: 
Towards an Innovative Alliance with Much More Deployable Combat Capability

The NATO alliance is made up of 29 nation-state members with combined military spending of some $850 billion USD in 2016 (or about 700 billion Euros). This is an extraordinarily large amount of money. Yet we know that in some ways it is not enough. As of 2016, NATO’s European countries average spending less than 1.4% of GDP on military activities, well below the famous 2% goal that NATO has officially adopted and that President Donald Trump, with considerable justification, constantly reminds the allies to respect. Fortunately there is recent movement on that front, some of it preceding Mr. Trump’s inauguration and some following thereafter. Even more significant, perhaps, than the amount of money NATO spends is how the alliance’s members spend it. Most European militaries are still highly inefficient, and get far less bang for the buck than they should. Most of all, they wield far less deployable combat capability than they should be able to generate, even at current resourcing levels.

This paper takes a somewhat different tack than many critiques of European military efficiency. Among other things, I argue that, as they add up to $100 billion in annual aggregate military spending in coming years, European NATO nations can roughly double their power-projection capabilities from today’s aggregate total of perhaps 60,000 troops (a generous estimate) to something approach 125,000—if, and only if, they focus adequately on logistics, transport, and enablers in their resource allocation decisions. Doing so might require that they devote an additional $10 billion to $20 billion a year, over several years, to such purposes. This approach would not only make NATO burden sharing in the abstract more equitable. It would, more importantly, shore up western defence posture and capability at a time of growing global security challenges from Russia to China to North Korea to the Middle East, as well as within Europe and North America themselves.

The standard critique of NATO efficiency—and it is a valid one, to be sure—focuses on the multitude of production lines for major types of combat equipment that are maintained, despite declining defence budgets, by a number of national governments that wish to keep defence production at home and sustain what are often seen as national technology and manufacturing jewels. They also generally see defence industry as an important symbol of state sovereignty. Since almost all NATO manufacturing is done by individual member states, not the alliance organization itself (which has a combined annual budget of less than $3 billion for alliance-wide activities and investments), this problem is endemic and hard to fix. One hears talk of how Europe still produces five main battle tanks, for example, despite having a combined defence budget less than half that of the United States (which produces just one now, and which has less than half the number of shipbuilding sites as does Europe). This line of critique should continue. Europe’s defence manufacturing inefficiency has been estimated to squander $20 billion to $30 billion a year, essentially propping up an industrial base that is too large and diffuse for the amount of procurement it is asked to carry out. This is true without even trying to argue that transatlantic defence trade should expand dramatically, with more European countries buying equipment more often from the efficient and large American defence industrial base. Indeed, transatlantic defence trade today is

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relatively modest; for example, of America’s top 15 buyers of weapons, only 4 are in Europe, with a combined total of 14 percent of the U.S. export market or about $3.5 billion in 2015. A related question, though separate, is whether it simply has too many independent defence companies. Europe has 25 of the western world’s top 100 defence companies, about the same fraction of its aggregate defence spending relative to the western world’s total, so the case for mergers and acquisitions can probably be argued both ways. What is harder to argue both ways, though, is that the plethora of production lines for main combat equipment is necessary or justifiable or in any way advantageous.

NATO has good processes in place, including its official NATO Defence Planning Process, as well as its Allied Command Transformation in Norfolk, Virginia, to establish guidelines for member states to equip and modernize their forces (after receiving broad guidance from the North Atlantic Council). But it is still those member states that individually make their budget decisions, and these often fall short of a solid standard.

Moreover, whatever the theoretical quality of the NDPP process, one might question how well it performs in practice. Take the 2011 Libya operation. NATO Europe proved famously short in enablers, including tanker aircraft and reconnaissance assets, as well as advanced munitions, for an operation against a mid-sized country very near its coast. One could claim that the operation came as a surprise but, in war, surprise is normal and, moreover, an airpower-oriented campaign against an aggressor state had long been the norm following Kosovo in 1999 and Afghanistan in 2001. NATO should have been much more ready. One can also claim that 2011 was the peak of the Afghanistan operation, making it harder to find forces for the Libya operation. But the Afghanistan mission employed a much different mix of forces, emphasizing ground-combat power, so the two should not have been mutually exclusive. The issue is not simply that European NATO allies needed a lot of American help. Rather, what is truly noteworthy is that almost everyone (including leaders in Washington) seemed surprised by how much American help was needed. This suggests that NATO was unaware of its own capabilities and its own shortfalls and limitations. The alliance was not thinking particularly cogently or rigorously about the demands of modern war prior to the operation. This observation in turn casts doubt not just on the quality of defence-budget and resource-allocation decisions by individual member states, but also on the effectiveness of the planning mechanisms used to determine realistic force requirements.

All that said, my main emphases here are, as noted, somewhat different, though very much related. Specifically:

- By propping up too large of an industrial base, the alliance tends to underinvest in logistics support, transport, tankers, reconnaissance assets, and other enablers that are crucial for preparing for the most pressing and difficult contingencies, such as a possible Russian threat to the Baltic states. It is the lack of such support that would hamstring NATO, even more than inefficient production of main combat equipment, in such a scenario.

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defence-budgets-and-excess-capacity-have-put-europe’s-military-equipment-makers.
securities-studies/pdfs/CSSAnalyse181EN.pdf.
• Thus, NATO’s European members are not just 10 to 15 percent inefficient, relative to a hypothetically more streamlined standard, they are perhaps 50 percent inefficient. That is, they maintain a deployable military power that is only half as large as what they should be able to field, given how much they collectively spend on their armed forces.

• Put differently, and for somewhat dramatic effect, NATO Europe is collectively about the equivalent of the U.S. Marine Corps in its power projection capabilities. The U.S. Marine Corps budget, even if one accounts for the amphibious shipping provided by a separate service, the Navy, is in the low tens of billions of dollars a year—certainly less than $50 billion. Yet purely for the sake of illustration, imagine a hypothetical combat simulation, the U.S. Marine Corps against Europe on a third continent, with each side given two to three months to deploy forces before a simulated combat exercise were conducted. By my calculations, the Marine Corps forces that had reached this mock battlefield would by then be able to defeat all forces gathered by all NATO European member states. (As a subsidiary conclusion, I am also arguing that the U.S. Marine Corps is more efficient in generating quickly projectable power than other American military services, because it focuses somewhat less on current high-technology weaponry and is more expeditionary in mindset— a good model for many European countries to emulate.) The British and French militaries, with their traditions of power projection, are also relatively good at maximizing deployable combat forces per pound or Euro spent, though they are not as efficient as the U.S. Marine Corps.

• By worrying so much about propping up a large and inefficient industrial base with waning resources, NATO’s European members tend to underinvest in research and development and remain underprepared for new trends in warfare.

• By keeping an overly large industrial base on life support through difficult times, any increase in available military resources—such as may now be coming, due to the Russian threat and NATO’s greater seriousness about the 2% target—tends to be gravitationally sucked towards legacy systems, viewed as a lifeline for otherwise dying or threatened industries rather than as an opportunity for a major rededication to the twin goals of increasing deployability and innovation. Both of the latter priorities are much more important than producing more tanks or fighters or destroyers, in the view of this author.

• By spending a grand total of $100 billion, spread over five to ten years, European NATO nations can roughly double their power-projection capabilities from today’s aggregate total of perhaps 60,000 troops (a generous estimate) to something approach 125,000.

To develop my argument, I proceed as follows in this paper. First, I attempt to assess the state of current European/non-U.S. military efficiency within NATO, by briefly summarizing some of the work already done on the subject and then offering my own assessment of how inadequate attention to transport and logistics assets constrain the capabilities of key member states. I compare what NATO presently fields, in terms of power projection capabilities, with what an organization boasting considerably more than $200 billion in annual military spending by its European member states should arguably be capable of supporting. This then leads me to anticipate what non-U.S. NATO allies might attempt to achieve as their combined spending possibly approaches $300 billion annually, over the coming decade. While ultimately reiterating the importance of consolidation of defence production capacity, as many others have also done, I also highlight the need for roll-on/roll-off shipping, tank transporters, fuel tankers, mobile depots and field hospitals, bridging equipment, and other often mundane and relatively low-technology capabilities. These are essential for effectively deploying and sustaining combat power far away from national territory (and not necessarily in Asia or Africa—even the Baltics are fairly far away for most NATO countries). I then finish by
returning to the realms of research, development, and military innovation, offering some suggestions for how NATO nations can better carry out these functions in the future as well.

**European Power Projection Capacity Today**

As noted above, various estimates have been done over the years to estimate how much the inefficiencies in European defence manufacturing squander resources. One prominent estimate from 2013 put the annual waste at some 26 billion euros, or some $30 billion. To be sure, those estimates require complex methodologies about how much less it might cost to produce the same military capability if equipment were more clearly standardized and if production lines were rightsized; they are not exact numbers. But the figures do nonetheless suggest that Europeans may be getting 10 to 15 percent less for their money than they should, due to the parochial/national politics of propping up too many industries and factories when a much smaller number could suffice. That is certainly one dimension of the European military inefficiency dilemma.\(^8\) For example, Europe produces three main fighter aircraft (admittedly one being Swedish, outside of NATO), but it has 11 different armoured vehicle programs and shipyards in most of its nations.\(^9\) In making this observation, I leave aside the inefficiencies from having multiple production lines for smaller and more mundane types of equipment (for everything from uniforms to trucks), which also contribute to the problem but are perhaps not as serious concerns given the amounts of money at issue.

Beyond such matters of redundant production lines for major combat equipment, there is, as noted above, an even more serious problem. Europe does not really build military force with the goal of power projection centrally in mind—at least not adequately so. With most European spending occurring in Western Europe, and most of the threats to the continent rising in the east, this tendency represents an even more serious problem than that of excessive defence industrial capacity. To be blunt, Europe is collectively not taking seriously the imperative of deterring possible Russian aggression against an eastern member state.\(^10\)

Prevailing paradigms for European defence planning have thus not yet caught up to the realities of today's world. Indeed, some of the defence analytical literature that one might expect to help explain and highlight this problem actually does the opposite. Some prominent work, for example, has argued that many European militaries have better "tooth-to-tail" ratios than does the United States, suggesting that they have more efficiently designed military organizations.\(^11\) That is, they have more trigger pullers and fewer support forces. But my point is that those support forces are often precisely the ones needed to make forces rapidly deployable and sustainable in combat. Thus, a tooth-to-tail construct that downplays the importance of support forces does a disservice. Trucks; mobile equipment repair depots; bridging equipment; construction units; transport aircraft, ships, and tankers; and reconnaissance and support aircraft are not collectively wasted "tail." They are integral to any use of military force beyond national territory. If European militaries maintain a higher fraction of troops who carry guns because they depend on their own nations’ internal logistical systems to support those troops, that does NATO little good. It is to some extent a vestige of the Cold War. When a number of NATO states were rightly and principally worried about a Russian attack on their own territory, a major alliance-wide forward defence of West Germany, with pre-stationed forces, reduced the logistics challenge somewhat. But times have changed. Today, what matters is deployable combat capability.

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In challenging these comparative studies of the relative military efficiencies of European and American militaries, I do not mean to argue that the latter is truly efficient—far from it, in fact. Rather, I am attempting to assert that putting substantial personnel and money into logistics and transport capabilities is a major virtue of the U.S. armed forces, not a weakness.

Although NATO is now officially committed to developing greater power projection capabilities, as reflected in the 2016 Warsaw Summit Communiqué and other official policies, it has a very long way to go in this regard. Its present ambitions include creating a division-sized high readiness capability—a rather modest aspiration for the greatest military alliance in history. And its goal of having many more member states devote at least 20 percent of their military budgets to acquisition (only ten meet that NATO standard today), even if achieved, will not guarantee any solution to its power projection problem if added funds are dedicated largely to the wrong priorities.\textsuperscript{12}

Today NATO Europe has more than 1.8 million active-duty troops, more than the United States. Earlier this decade the figure was closer to 2.0 million, with a combined budget of about $270 billion. That was this century’s moment of peak European military effort, exemplified by the Afghanistan surge of 2010-2011. At that time, European NATO militaries, in aggregate, deployed about 40,000 troops to Afghanistan and nearly another 20,000 or so in peacekeeping missions around the world, probably constituting Europe’s maximal plausible capacity.\textsuperscript{13} The peacekeeping missions were sometimes in less stressful environments but, for the sake of generosity, if we take 60,000 troops as the maximum deployed total for NATO Europe, that equates to an efficiency of 3 percent of total active-duty force structure. That figure equals the 1999 Helsinki Headline Goal that was established for EU member states—a goal that was never reached—so my 60,000 figure is generous.\textsuperscript{14} NATO’s more recent proposals for very high readiness joint task forces and the like have, in fact, aimed for only a few thousand additional troops to be quickly capable of power projection.

In any event, take that figure of 60,000 deployable forces. Relative to defence budgets, this can be thought of as $4.5 million in defence spending per deployed troop. Compare that with the United States armed forces and their military budget, in recent years ranging roughly between $600 billion and $750 billion annually. The U.S. military is often described as excessively pricey, with a high premium on expensive weaponry and an unfavourable “tooth-to-tail ratio” (that supposedly reflects a modest number of actual trigger pullers relative to the size of the force). Again, without contesting all of this narrative, it is worth noting that the U.S. military, with its rough commitment to a two regional war standard, is built to sustain a deployment of well over 500,000 troops for a year. Operation Desert Storm in 1991 involved more than 500,000 U.S. military personnel on its own, the Iraq invasion of 2003 some 200,000 in and near Iraq.\textsuperscript{15} Some of these troops would, to be sure, come from the reserve component, just as might be the case with certain European militaries. But for consistency, if one uses the same algorithm to calculate efficiency, 500,000 American troops would represent an efficiency standard of 30 percent (dividing deployable force by total active-duty force structure). By this admittedly somewhat contrived and imperfect metric, that would reflect an efficiency standard ten times that of Europe, on average. It would also equate to $1.2 million to $1.5 million in annual spending per deployable troop, three times better than the European equivalent.


Even if one takes a much more conservative approach to estimating sustainable and deployable U.S. military capacity, the contrast between Europe and the United States is stark. If one adds the nearly 200,000 total troops that the United States sustained in and near Iraq and Afghanistan in the late 2000s to the 50,000 or so deployed personnel at sea and in parts of East Asia, the American total is about 250,000, roughly four times that of Europe. The United States by that estimate would still have 15 percent of its total force structure deployable—some five times the European average. It would be estimated as spending $2.5 million to $3 million per deployable trooper, at least a third less than is the case among NATO’s European militaries.

Moreover, the emphasis on innovation and high-tech capability within the U.S. armed forces means that the American military has a burden to innovate that is not equally shared in Europe—in realms such as space capabilities, stealth, long-range strike assets, and missile defence. Indeed, the United States outspends Europe on defence research and development by a ratio of roughly $70 billion to $10 billion, just to give one indicator. In other words, not all of America’s greater emphasis on high technology is bad, and some of it reflects preparation for missions that Europeans do not tend to prioritize equally (though in fact they should prioritize such innovation more than they do, including in areas such as cyber and artificial intelligence). Thus, America’s armed forces could be expected to be less efficient, in terms of being able to deploy and sustain a given number of troops—yet in fact, it is much more efficient.

Conservatively speaking, and averaging across all the above estimates, it is hard to escape the conclusion that the U.S. armed forces, for all their excesses and imperfections, are perhaps twice as efficient by any measure in translating financial resources into projectable power.

What this means is that NATO Europe today should be able to project at least 100,000 troops to a distant battlefield within weeks or at most a couple months, and then sustain them in combat, without depending on logistics provided by the economy of the country to where they have deployed, for a year or more. At present, measured against this standard of real physical deployability (and not just declared deployability, based on which troops and units are intended and legally authorized for operations abroad, which is a much lower standard), Europe is roughly half as efficient as it should be.

**An Investment Agenda for the Future**

Looking forward, NATO may soon create a moment of great promise that it would be very unfortunate to squander.

If NATO European countries in coming years collectively approach the 2% of GDP standard, thus adding roughly $100 billion to their aggregate annual military spending from today’s figure of some $230 billion, and reach a level of roughly $325 to $350 billion a year, they should be able to use the added funds to redress many current gaps. The coming defence budget upturn, which in fact is now already underway, should be seen as a great opportunity to repair current weaknesses and shortcomings. In principle, once they have attained that budget range, NATO European nations as a group should be able to catch up to the American armed forces in efficiency. With roughly half as many defence resources as the United States, collectively, they should be able to deploy roughly half as much power as the United States beyond their borders.

Some would say that this is too ambitious a goal, given that the United States has the inherent advantage of building its military through a single Department of Defence (and that its geography necessitates that it make most of its military deployable). However, it might again

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be noted that the United States has nearly $100 billion in annual base-budget defence expenditures that Europeans do not need to worry about matching—largely in nuclear forces, missile defences, advanced military research and development, and related capabilities. Thus, it does not seem unfair to aspire to a combined NATO Europe capacity that could approach half that of the United States by the middle of the 2020s, when in principle most European countries could have reached the NATO goal of spending 2% of GDP on their armed forces. By that point, NATO’s European member states should be able to aim for a goal of roughly 125,000 truly deployable forces—and they should certainly be able to field 100,000.

How much would it cost to create the power projection capabilities that I propose? My overall estimate, based on previous studies at the Congressional Budget Office about providing organic logistics to mobile units, as well as standard costs for transportation assets (using C-17s and LMSRs as proxies, even if European nations would likely buy other capabilities), is about $100 billion in 2017 dollars. That would be, to be clear, a one-time investment that could be spread over five to ten years, meaning an average annual cost of $10 billion to $20 billion—a very modest and affordable fraction of the $100 billion in annual increases that a Europe spending $325 billion to $350 billion each year on military capabilities, rather than today’s $230 billion or so, would have available. In other words, this initiative would typically require only 10 to 20 percent of the added funds that will be available if NATO nations meet their 2 percent standard. Roughly half the added costs would be in strategic transport, roughly half in tactical/theatre logistics assets—mobile hospitals, trucks and equipment transporters, ammunition handling and storage units, mobile depots, more combat engineers and construction crews, transport helicopters, and so forth.17

**Conclusion: Towards a New NATO**

The above analysis focuses mainly on making NATO more efficient for today’s kind of warfare. But things are changing, and to dramatize the point, I include as an appendix an article written with a colleague that discusses Artificial Intelligence as well as General John Allen and Amir Husain’s concept of “hyperwar.” This concept moves us beyond the buzz-words and paradigms of recent decades—such as the revolution in military affairs, net-centric warfare, full-spectrum warfare, shock and awe, Air-Sea Battle, and the third offset. It takes us to a new world for which NATO must be ready, in no small part because its potential adversaries will take advantage of these new technologies and associated warfighting operational innovations. Indeed, Vladimir Putin made a statement in September of 2017 that might be read as one part prognostication and one part challenge—asserting that whoever achieves breakthroughs in artificial intelligence will likely control the world.18

There are a number of challenges associated with preparing for an era of “hyperwar.” Already, we see the harbingers of these challenges in an age when high-tempo operations require rapid and real-time connectivity between many sensors and shooters on the battlefield. Thus, modern sensor and communications systems absolutely must be interoperable—they must be able to share data quickly and electronically.19

But NATO has had the luxury of conducting mostly lower-technology, geographically segmented and dividable operations in the 1990s and this century. As such, while airplanes needed to avoid shooting at each other and some data needed to be shared in some cases, such as in Kosovo or Afghanistan, operations against the Taliban for example did not typically place a high premium on real-time comprehensive data sharing.

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That situation is changing fast—partly because Russia is again a credible challenger that must be deterred with real military capability, partly because trends in warfare will require even more rapid, often automated, and geographically integrated sharing of information across many different platforms from numerous nations. The plethora of armies participating in Operation Atlantic Resolve in the Baltic states and Poland underscore the point already—if these multinational units actually had to fight, their limited abilities to work together in a fast-paced battlefield could risk disaster.20

As such, I will conclude with several brief ideas that NATO could consider, not just to make production lines more efficient, not just to make forces more deployable, but to innovate in ways the 21st century will surely require:

- Consider raising the 20 percent standard, according to which NATO members are supposed to devote at least one-fifth of their defence budgets to acquisition-related expenses, to 25 percent (the U.S. figure, for procurement plus research, development, testing and evaluation together historically ranges from about 30 to 35 percent).
- Within that 25 percent figure, commit to spending 7 percent of total military spending to research, development, testing and evaluation (the current figure is below 5 percent, and likely to drop further if defence budgets grow without greater emphasis on innovation; the U.S. figure as a fraction of the base defence budget is more than 10 percent now)
- Consider creation of a NATO version of DARPA, the Defence Advanced Research Projects Agency, that would be based in Europe (not in Norfolk, Virginia) and, in the model of the “Defence Innovation Unit—Experimental,” or DIU(x), initiative of former Secretary of Defence Ash Carter, have a presence in at least several of Europe’s major universities and/or research centers. Although NATO has a Science and Technology Organization now,21 that is not the same thing as having a critical mass of scientists with grant-making authority to commission research and development or even the actual acquisition of some cutting-edge systems.22
- Create a NATO Centre of Excellence in Artificial Intelligence, to spur innovation and to help prepare NATO states intellectually, technologically, and doctrinally for the coming realities of “hyperwar.”
- Consider creation of a standing task force of roughly brigade size that would be an experimental unit designed to prototype, field, test, and exercise with new equipment and weaponry as it becomes available. Findings would be fed into both the Defence Planning Process and Allied Command Transformation to facilitate the writing of new doctrine and the alliance-wide acquisition of technologies that are interoperable and state of the art.

There is no better way to conclude this paper than with the admonition that finishes the May 2017 report of the Steering Committee of the NATO Adaptation Initiative: “Some past ages forgave mediocrity. This is no such age.”

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21 On NATO’s Science and Technology Organization, see https://www.sto.nato.int/Pages/organization.aspx.

22 DARPA has some 220 employees overseeing 250 projects aimed at major innovation. See https://www.darpa.mil/about-us/about-darpa.
Appendix

“America Can’t Afford to Lose the Artificial Intelligence War”,
by Robert Karlen and Michael O’Hanlon, nationalinterest.org, August 21, 2017

Today, the question of artificial intelligence (AI) and its role in future warfare is becoming far more salient and dramatic than ever before. Rapid progress in driverless cars in the civilian economy has helped us all see what may become possible in the realm of conflict. All of a sudden, it seems, terminators are no longer the stuff of exotic and entertaining science-fiction movies, but a real possibility in the minds of some. Innovator Elon Musk warns that we need to start thinking about how to regulate AI before it destroys most human jobs andraises the risk of war.

It is good that we start to think this way. Policy schools need to start making AI a central part of their curriculums; ethicists and others need to debate the pros and cons of various hypothetical inventions before the hypothetical becomes real; military establishments need to develop innovation strategies that wrestle with the subject. However, we do not believe that AI can or should be stopped dead in its tracks now; for the next stage of progress, at least, the United States must rededicate itself to being the first in this field.

First, a bit of perspective. AI is of course not entirely new. Remotely piloted vehicles may not really qualify—after all, they are humanly, if remotely, piloted. But cruise missiles already fly to an aimpoint and detonate their warheads automatically. So would nuclear warheads on ballistic missiles, if God forbid nuclear-tipped ICBMs or SLBMs were ever launched in combat. Semi-autonomous systems are already in use on the battlefield, like the U.S. Navy Phalanx Close-In Weapons System, which is “capable of autonomously performing its own search, detect, evaluation, track, engage, and kill assessment functions,” according to the official Defence Department description, along with various other fire-and-forget missile systems.

But what is coming are technologies that can learn on the job—not simply follow prepared plans or detailed algorithms for detecting targets, but develop their own information and their own guidelines for action based on conditions they encounter that were not initially foreseeable in specific.

A case in point is what our colleague at Brookings, retired Gen. John Allen, calls “hyperwar.” He develops the idea in a new article in the journal Proceedings, co-authored with Amir Husain. They imagine swarms of self-propelled munitions that, in attacking a given target, deduce patterns of behavior of the target’s defences and find ways to circumvent them, aware all along of the capabilities and coordinates of their teammates in the attack (the other self-propelled munitions). This is indeed about the place where the word “robotics” seems no longer to do justice to what is happening, since that term implies a largely prescripted process or series of actions. What happens in hyperwar is not only fundamentally adaptive, but also so fast that it far supercedes what could be accomplished by any weapons system with humans in the loop. Other authors, such as former Brookings scholar Peter Singer, have written about related technologies, in a partly fictional sense. Now, Allen and Husain are not just seeing into the future, but laying out a near-term agenda for defence innovation.

The United States needs to move expeditiously down this path. People have reasons to fear fully autonomous weaponry, but if a Terminator-like entity is what they are thinking of, their worries are premature. That software technology is still decades away, at the earliest, along with the required hardware. However, what will be available sooner is technology that will be able to decide what or who is a target—based on the specific rules laid out by the programmer of the software, which could be highly conservative and restrictive—and fire upon that target without any human input.
To see why outright bans on AI activities would not make sense, consider a simple analogy. Despite many states having signed the Non-Proliferation Treaty, a ban on the use and further development of nuclear weapons, the treaty has not prevented North Korea from building a nuclear arsenal. But at least we have our own nuclear arsenal with which we can attempt to deter other such countries, a tactic that has been generally successful to date. A preemptive ban on AI development would not be in the United States’ best interest because non-state actors and noncompliant states could still develop it, leaving the United States and its allies behind. The ban would not be verifiable and it could therefore amount to unilateral disarmament. If Western countries decided to ban fully autonomous weaponry and a North Korea fielded it in battle, it would create a highly fraught and dangerous situation.

To be sure, we need the debate about AI’s longer-term future, and we need it now. But we also need the next generation of autonomous systems—and America has a strong interest in getting them first.

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