

## Navigating the Third Offset Strategy

---

Damon V. Coletta

©2018 Damon V. Coletta

**ABSTRACT:** This article suggests adding a “craftsman” at lower ranks to steer private-sector projects through the Third Offset Strategy. This strategy was established by experienced leadership at the Pentagon to increase military acquisitions of automation and artificial intelligence technology.

When President Barack Obama’s administration implemented its transition of executive authority, there was an extra measure of drama: What would happen, after the change election of 2016, to Defense Secretary Ashton Carter’s legacy on defense innovation, namely, his signature Third Offset initiative? The vision had been to reorient American defense policy toward filling the ends-means gap created by two ill-fated wars in the Middle East, the global financial crisis of 2008, and congressionally mandated defense budget cuts known as the Sequester.

To defend the country’s extended interests, while containing operational burdens on American servicemembers, the secretary reached for, but ultimately failed to grasp, the triumphal legacy of two formative events in twentieth-century defense policy: the advent of nuclear weapons and the revolution in military affairs (RMA). Drawing upon technologies for automation and artificial intelligence (AI), the Third Offset was supposed to raise the capability of smaller units in stabilization and counterinsurgency operations, while driving advances in conventional forces to deter regional competitors and while maintaining politically feasible budget targets.<sup>1</sup>

Sixty years earlier, facing long conventional odds in Europe, nuclear weapons had evened the game.<sup>2</sup> The nuclear arsenal, capable of destroying first tens then hundreds of cities in the Soviet Union within hours, compensated, or offset, NATO’s conventional deficit in the Fulda Gap for defending Western Europe against the Red Army.<sup>3</sup> Once the Soviets invested in their own arsenal, however, the effectiveness of the First Offset was called into question: Why would the United States launch nuclear weapons against the Soviet army in Germany when Moscow

Dr. Damon V. Coletta, a professor of political science at the United States Air Force Academy, edits the Eisenhower Center peer-reviewed journal, *Space & Defense*, and recently completed *Courting Science: Securing the Foundation for a Second American Century* (Stanford University Press, 2016). He holds a PhD in political science from Duke University.

---

1 Theodore R. Johnson, “Will the Department of Defense Invest in People or Technology?,” *Atlantic*, November 29, 2016.

2 The classic treatment from political psychology is Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989). For an analysis along the lines of constructivism, at the nexus of ideas and foreign policy, see Campbell Craig, *Glimmer of a New Leviathan: Total War in the Realism of Niebuhr, Morgenthau, and Waltz* (New York: Columbia University Press, 2007).

3 Robert R. Bowie and Richard H. Immerman, *Waging Peace: How Eisenhower Shaped an Enduring Cold War Strategy* (New York: Oxford University Press, 1998); and Neil Sheehan, *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon* (New York: Random House, 2009).

could respond with a massive nuclear attack against the United States?<sup>4</sup> To provide the American president with better options, the Pentagon, beginning during Jimmy Carter’s administration, initiated what would become the Second Offset—a digital revolution in military affairs.

The Second Offset exploited advances in computer processing and aerospace technology to build a nonnuclear counterpunch against a Soviet invasion of Europe—for example, in the early years before precision-guided munitions were fully developed, the US Army formulated AirLand Battle doctrine, which aimed to cripple a Soviet-armored offensive by reaching over the front lines and pummeling Russian forces at their staging areas.<sup>5</sup> Within a decade, this scheme leveraged novel technologies for precision-guided munitions, standoff weapons, electronic countermeasures, and remote sensing for intelligence, surveillance, and reconnaissance. The Cold War ended before it was necessary to employ the Second Offset in a major war, but Iraqi dictator Saddam Hussein was likely surprised at how efficiently post-RMA allied forces destroyed his regular army and elite Republican Guard, built around massive buys of Soviet equipment.<sup>6</sup>

Success of the Second Offset, designed as it was for dismembering industrial-age conventional armies, did not bring about the end of history. Rather, it inspired US adversaries to devise ways around the RMA, to plan operations such as the terrorist attacks on September 11, 2001, or unorthodox campaigns like the Iraqi insurgency of 2005–06 that would damage US interests without providing a convenient target set for modern air power. While the Pentagon and the Army have adapted in many ways to complexity after 9/11, violent nonstate actors are still evolving.<sup>7</sup> The Islamic State presented a multidimensional threat in Iraq and Syria, with terrorist tentacles lashing out at societies in the United States and Europe. Moreover, major powers such as Russia, China, and Iran have demonstrated ingenuity in shaping so-called gray-zone conflicts according to their strategic interest.

Shortly after ascending to the Obama cabinet, with barely two years remaining to transform defense policy, Secretary Carter put his imprimatur, and precious political capital, behind the Third Offset. There was likely no one better suited for this challenge. During his graduate days, Carter studied physics under Stanford’s Sidney D. Drell, who introduced Carter to the technical and public policy challenges of nuclear arms control. One of the future secretary’s earliest contributions, a report for Congress’s Office of Technology Assessment, discussed the perils of transformative missile defense, betting a significant chunk of

4 Lawrence Freedman, *The Evolution of Nuclear Strategy* (London: Macmillan, 1981), 313–24; and Bruce M. Russett, “The Calculus of Deterrence,” *Journal of Conflict Resolution* 7, no. 2 (June 1963): 97–109, doi:10.1177/002200276300700201.

5 Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, NJ: Princeton University Press, 2004); James W. Pardew Jr., “The Iraqi Army’s Defeat in Kuwait,” *Parameters* 21, no. 4 (Winter 1991–92): 17–23; and John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973–1982* (Fort Monroe, VA: US Army Training and Doctrine Command, 1984).

6 Daryl G. Press, “The Myth of Air Power in the Persian Gulf War and the Future of Warfare,” *International Security* 26, no. 2 (Fall 2001): 5–44, doi:10.1162/016228801753191123; Stephen Biddle, “Victory Misunderstood: What the Gulf War Tells Us about the Future of Conflict,” *International Security* 21, no. 2 (Fall 1996): 139–79, doi:10.1162/isec.21.2.139; and Pardew, “Iraqi Army’s Defeat.”

7 Fred M. Kaplan, *The Insurgents: David Petraeus and the Plot to Change the American Way of War* (New York: Simon & Schuster, 2013); and Greg Jaffe and David Cloud, *The Fourth Star: Four Generals and the Epic Struggle for the Future of the United States Army* (New York: Crown Publishers, 2009).

the defense budget on a grand scheme to knock Soviet missiles out of the sky before they could reach the United States.

Further along his path to cabinet rank, Carter researched cooperative defense at Harvard's Kennedy School and subsequently served as the Pentagon's "chief technology officer," the undersecretary for Acquisition, Technology, and Logistics (AT&L). During the short hiatus between his service as deputy secretary of defense (Pentagon Number Two) and his appointment to succeed Secretary Chuck Hagel, Carter published an article in *Foreign Affairs* entitled "Running the Pentagon Right."<sup>8</sup> The article laid out his vision for rapid defense acquisition to meet urgent and fluid survival requirements of American service personnel, now struggling on unconventional battlefields across the globe.

Despite this extraordinary level of preparation, plus empathy in the bureaucracy and Congress for the enormity of the innovation-challenge at the Pentagon, several signs soon spelled trouble for military automation and the AI-based Third Offset. Under ordinary bureaucratic conditions, any gravity defying, rapid offset would need impressive success stories to survive the opposition's control in Congress and the loss of the White House. For the Third Offset, superior performance in defense acquisition did not materialize before the 2016 election. Republicans on the House and Senate Armed Services Committees fretted over relatively miniscule investments, well under \$100 million, in Defense Innovation Unit-Experimental (DIUx) initiatives. This progress occurred despite the secretary of defense personally christening the first office in the Silicon Valley, far from the Washington lobby but at the epicenter of transformational innovation nurtured in small- and medium-sized enterprises.<sup>9</sup>

Before its first annual review, DIUx was under new management, and Congress probed modest requests to multiply similar defense innovation hubs in Boston, MA; Austin, TX; and beyond even as it criticized the geographical tether to Silicon Valley.<sup>10</sup> The National Defense Authorization Act (NDAA) for Fiscal Year 2017, at one point in the mark-up stage, denied DIUx 20 percent of its authorization (75 percent of its research and development funds) until Carter detailed results from initial taxpayer contributions and a long-term plan for the organization.<sup>11</sup> In addition, Congress coupled the power of the purse with its authority to reorganize the Defense Department. Within two years, NDAA 2017 abolished the undersecretary position for Acquisition, Technology, and Logistics, vesting defense technology development duties, to the dismay of the incumbent undersecretary, in a new, coordinate office for Research and Engineering.<sup>12</sup>

---

8 Ashton B. Carter, "Running the Pentagon Right," *Foreign Affairs* 93, no. 1 (January/February 2014): 101–12.

9 Aaron Mehta, "Leadership, Structural Changes for DoD Silicon Valley Office," *Defense News*, May 11, 2016; and Patrick Tucker, "As Pentagon Dawdles, Silicon Valley Sells Its Newest Tech Abroad," *Defense One*, April 22, 2016.

10 Sydney J. Freedberg Jr. and Colin Clark, "DIUx: Will Carter's Innovation Unit Survive Trump?," *Breaking Defense*, November 16, 2016.

11 Fred Kaplan, "The Pentagon's Innovation Experiment," *MIT Technology Review* (January/February 2017); and Scott Maucione, "Lawmakers Demand Answers on DIUx Plan," *Federal News Radio*, December 6, 2016.

12 Sydney J. Freedberg Jr., "Pentagon Wrestles with How to Break Up ATL," *Breaking Defense*, April 18, 2017.

Lacking a single, fixed adversary, over the long haul, the US defense establishment has little choice but to conceive the Third Offset, beyond any suite of technologies, as a transformation in the *process* of harnessing innovation to meet new enemies wherever and whenever they arise. Unlike previous initiatives, success of the Third Offset cannot be scheduled in clear milestones for adopting specific equipment such as nuclear-tipped missiles, precision navigation, stealth, or today's automation. The Third Offset, then, diverges from its two historical precedents.

For the historical cases, acquisition success can be attributed to a deft, top-down approach in which efforts of thousands of talented specialists were orchestrated from on high by legendary defense establishment figures such as Leslie Richard Groves, during the Manhattan Project, and William J. Perry during the RMA. By contrast, the present offset calls for less of a virtuoso conductor—not a singular fleet admiral directing from the flagship—and greater cultivation of a rough-and-ready network of riverboat captains. In order to see why this is so, it helps to understand the nature of each of the prior offset challenges and why top-down strategy worked as well as it did as recently as rapid acquisition of mine-resistant, ambush-protected (MRAP) vehicles at the end of the Iraq War.

Somewhere between fielding MRAPs and initiating DIUs, the nature of the technology acquisition challenge confronting the Pentagon changed. From directors perched at the Pentagon to intrepid couriers who can navigate labyrinthine byways connecting innovation at commercial enterprises with future military operations—the agent, or agents, who will deliver solutions over the next epoch changed as well. While the type of small and medium-sized suppliers needed are coming into view, it may, unfortunately, be a while before a new breed of riverboat pilots for the Pentagon take to their craft. Beyond patent skepticism in Congress, bureaucratic inertia, another political concern, poses the biggest obstacle to technological advance via the Third Offset.

### **Top-Down Success: Riding the Post-World War II Model**

The top-down approach to the Third Offset is difficult to reform in part because it can claim major success during America's superpower days in the last half of the twentieth century. Careful orchestration from national leadership and judicious use of bureaucratic states of exception attracted talented American technologists. Elite laboratories, or skunk works, supplied novel ideas and experimentation at moments when nuclear warheads, ballistic missiles, and space-enabled communication and control networks were needed to revolutionize US defense capabilities against a relatively well-described adversary.

The approach actually dated from America's desperate attempt to catch Germany after entering into World War II late and following Japan's abject demonstration of US unpreparedness at Pearl Harbor. Vannevar Bush, with no government experience—indeed, a certain disdain for New Deal bureaucracy and regular order—shot through the underbrush of Washington offices to convince first President Franklin D. Roosevelt, and eventually key Congressional committees, to fund the fabled Office of Scientific Research and Development. Assembling the right talent from universities and tech-savvy industries skirted agency

red tape and delivered novel wartime solutions—improvements in radar and proximity fuses—before the enemy could respond, clearly saving American lives.<sup>13</sup>

Ironically, the electrical engineer Vannevar Bush did not immediately sense the world-altering potential of the Manhattan Project. He feared that the sprawling constellation of atomic labs was scaling too quickly and that the physicists would not deliver a practical weapon. The Manhattan Project, though, turned out to be the leading edge of an historic phenomenon that, while remaining culturally consistent with the American way of war, sharply altered the relationship between science and global power. For a number of critical technologies—nuclear, aerospace, and computing—the time lag between scientific discovery and military application essentially collapsed.<sup>14</sup> Although the ascendancy of Bush was short-lived, the central message of his famous essay *Science: The Endless Frontier* endured.<sup>15</sup>

Following its mobilization and outright defeat of the Axis powers in World War II, the US government would commit unprecedented public investment toward advancing—and steering—science and engineering. For the nuclear and space age, this support would elevate and shape the role of physicists in national security. J. Robert Oppenheimer, Hans Bethe, Herbert York, and Edward Teller among other eminent names linked the country's first rank physics departments with strategic challenges of the day. The younger range of this intriguing list included Sidney Drell, who in the 1980s directed Stanford's Linear Accelerator Center (SLAC) and the university's Center for International Security and Arms Control. This combination of interests and responsibilities, made prevalent by the First Offset, placed Drell in a position to engage fellow physicist and Russian hero-dissident Andrey Sakharov in what became riveting public correspondence on the consequences of nuclear war and the potential for stalled arms control negotiations in the early 1980s.<sup>16</sup>

Drell personifies a link between the First Offset and today's offset strategy. At Stanford, Drell introduced the future secretary of defense, as a young physics postdoctoral student, to questions of nuclear strategy that inherently combined scientific and political considerations. From the press record and Ash Carter's writings over three decades later, it is still difficult to gauge how much the psychological foundation set at Stanford matters for leadership decisions after so many years. Secretary Carter was effusive with praise and gratitude nearly everywhere he visited, including Stanford and Silicon Valley.<sup>17</sup>

---

13 G. Pascal Zachary, *Endless Frontier: Vannevar Bush, Engineer of the American Century* (Cambridge, MA: MIT Press, 1999).

14 This was Robert Gilpin's premise in *France in the Age of the Scientific State* (Princeton, NJ: Princeton University Press, 1968).

15 Vannevar Bush, *Science: The Endless Frontier* (Washington, DC: Office of Scientific Research and Development, July 1945).

16 Herbert F. York, *Arms Control: Readings from Scientific American* (San Francisco, CA: W. H. Freeman, 1973); and Philip Taubman, "The Friendships of Sid Drell," *Stanford Magazine* (March/April 2017), 40–41.

17 Jessi Hempel, "DOD Head Ashton Carter Enlists Silicon Valley to Transform the Military," *Wired*, November 18, 2015; and Ashton Carter, "Rewiring the Pentagon: Charting a New Path on Innovation and Cybersecurity" (speech, Drell Lecture, Stanford University, Palo Alto, CA, April 23, 2015), <https://www.defense.gov/News/Speeches/Speech-View/Article/606666/drell-lecture-rewiring-the-pentagon-charting-a-new-path-on-innovation-and-cyber/>.

Nevertheless, the literature on presidential personality types and the oft-studied connection between formative experiences and subsequent big decisions make it reasonable to guess that some of the context and feel of the nuclear offset—including its repercussions through the 1980s—passed to the current strategy.<sup>18</sup> Such conveyance would have been accomplished in part according to an extraordinary history of how the original community of national security physicists recruited the next generation.

Biographers and researchers weighing psychological factors behind the Third Offset have a second critical juncture to study. Professor Carter entered the executive branch for the first time in 1993 as assistant secretary of defense for international security policy. He soon had the opportunity to work for, and develop a close relationship with, William Perry, another mentor with Stanford ties, when Perry, who had been deputy secretary of defense, became President Bill Clinton's second secretary of defense (1994–97). Perry's background was closer to the old Vannevar Bush mold—in engineering and technology management. As undersecretary of defense for research and engineering during Jimmy Carter's administration, Perry had been at the forefront, implementing Secretary Harold Brown's initial commitment to the second, conventional, offset in response to nuclear stalemate in Europe.<sup>19</sup>

Returning to government, now at the very highest levels of the Pentagon, Perry wanted to ensure that technological accomplishments of the revolution in military affairs—remote sensing, precision guidance, space communications, and stealth, among others—would continue to advance after the Cold War. The American people and their representatives in Congress demanded a peace dividend—indeed, defense spending as a percentage of gross domestic product dipped, at one point, below pre-Pearl Harbor levels—but in the vacuum created by the collapse of Soviet power, pockets of chaos marked by ethnic slaughter and economic misery set off alarm bells and redoubled calls for American engagement.<sup>20</sup>

The Pentagon's solution for escaping this strategic vice—dwindling budgetary support and domestic political will coupled with rising global demand for lethal operations “other than war”—was twofold: buy time by crafting military advice for the president that, in its totality of public and private channels, dampened White House enthusiasm for using the RMA to burnish US hegemony and pacify emerging hotspots around the world. Second, for those missions entering the Pentagon lists—and they were several covering Somalia, Haiti, Bosnia, Kosovo, Afghanistan, and Iraq—apply the RMA to limit costs, especially in terms of the number of troops deployed and the number of casualties taken.<sup>21</sup>

---

18 James David Barber, *The Presidential Character: Predicting Performance in the White House* (Englewood Cliffs, NJ: Prentice Hall, 1972); and Fred I. Greenstein, *The Presidential Difference: Leadership Style from FDR to Clinton* (NY: Free Press, 2000).

19 William J. Perry, *My Journey at the Nuclear Brink* (Stanford, CA: Stanford University Press, 2015), 33–44; and Andrew F. Krepinevich, “Cavalry to Computer: The Pattern of Military Revolutions,” *National Interest*, no. 37 (Fall 1994): 30–42.

20 Robert D. Kaplan, “The Coming Anarchy,” *Atlantic* (February 1994), captured the early 1990s Zeitgeist. For the Clinton administration's management of the strategic conundrum, see Derek Chollet and James Goldgeier, *America between the Wars: From 11/9 to 9/11* (New York: Public Affairs, 2008).

21 Gideon Rose, “The Exit Strategy Delusion,” *Foreign Affairs* 77, no. 1 (January/February 1998): 56–67.

In order to deliver the Second Offset, it was less a question of unmasking nature or prodding the leap from physics breakthrough to weaponization and more a challenge of adapting existing technology for defense functions. This meant getting the most out of defense contractors to reduce cost overruns and program delays, even as the programs themselves became exponentially more complex and market competition at the prime contractor level less meaningful.<sup>22</sup> Precious few organizations—Boeing or Lockheed at the end of industry consolidation—understood how to integrate subsystems successfully and profitably under government regulations for accountability. The armed services, putative customers for these behemoth high-tech programs, needed to prepare themselves, and they had to keep political leadership at the Pentagon on board. Support for each major platform incorporating smart technology was negotiated with Congress over several budget cycles. At the same time, weapons and their platforms, old and new, required a wave of upgrades, sensors, and computers that had never before been acquired.

During the Second Offset, the armed forces learned by doing, as they took day-to-day responsibility for holding the primes and the nest of subcontractors accountable for ambitious promises, without causing too much disruption that would bankrupt corporations now too large or too specialized to fail. Finally, revolutionary characteristics of these systems meant the services would not be able to employ them or to reduce the costs of force projection without devising new training, tactics, and procedures, implying a novel, intricate, and more enduring relationship between military operators and civilian defense contractors.<sup>23</sup>

The second Pentagon offset that William Perry at one point led and Ash Carter, during his inaugural service in high office, had the opportunity to study had its own version of top-down orchestration. All the moving pieces among the defense contractors had to fit together through system integration, and the systems themselves had to align with the special operational test beds prepared for them in the armed services. In order to bring this plan to fruition, leaders at the Pentagon needed to develop a sixth sense, knowing which instruments in the grand enterprise were out of tune—knowing when and how deeply to intervene in the process—and finally, once at the nub of the problem, knowing how radically to accept risk and impose states of exception upon meticulously designed bureaucratic protocols before the overarching symphony would get back on track.

Second Offset leadership shared essentials with Eliot Cohen's *Supreme Command*: prudential, probing, curious, and, it must be said, brahshly hierarchical.<sup>24</sup> As evidenced in Cohen's Anglo-American case studies of wartime leadership, Lincoln and Churchill, the ones most

---

22 David S. Sorenson, *The Politics of Strategic Aircraft Modernization* (Westport, CT: Praeger, 1995), 157–210.

23 Steven J. Zamparelli, "Contractors on the Battlefield; What Have We Signed Up For?" (research report, Air War College, Air University, Maxwell Air Force Base, AL, March 1999). This was precursor to general expansion of contractor services coincident with U.S. military operations in Iraq and Afghanistan. Deborah D. Avant, *The Market for Force: The Consequences of Privatizing Security* (Cambridge: Cambridge University Press, 2005); and Eugene Gholz and Harvey M. Sapolsky, "Restructuring the U.S. Defense Industry," *International Security* 24, no. 3 (Winter 1999/2000): 5–51, doi:10.1162/016228899560220.

24 Eliot A. Cohen, *Supreme Command: Soldiers, Statesmen, and Leadership in Wartime* (New York: Free Press, 2002).

familiar to his readers, it was fine, even auspicious, if tension, tinged with frustration and fear, reared up among military professionals toward civilian authority. Truly constructive “unequal dialogue” could not occur without friction, and unambiguous civilian control was critical to transforming the military organization, so it could adapt and survive against an evolving threat.<sup>25</sup>

Interpreted in light of civilian leadership developments over two historic offsets, Secretary Carter’s prime empirical example for demonstrating how to run the Pentagon right takes on starkly contrasting significance from what he intended. The tale of how the Defense Department acquired and fielded the mine-resistant, ambush-protected vehicle to save American lives from improvised explosive devices in the latter stages of the Iraq War was presented in *Foreign Affairs* as if it were proof of concept for other urgently needed technologies. During Secretary Carter’s subsequent tenure, even if it were truncated to a mere twenty-four months, the Third Offset was supposed to succeed along lines laid by the MRAP program to guide the Pentagon from the top. It turns out, however, that the MRAP life cycle, rather than the dawn of a new acquisition strategy for automation and AI, should be viewed as a reiteration of technique perfected during the Second Offset.

True, the core challenge with MRAP was not about digital hardware, software development, or systems integration as had so often arisen during the RMA. The trouble was how to build a functional solution and get it out to the battlefield in time. Yet, just how the civilian Office of the Secretary of Defense accomplished the feat of speed recalled the orchestral (albeit drawn out) masterpieces of Second-Offset productions—RMA technologies that enabled AirLand Battle, net-centric warfare, even prompt global strike.

Now, unlike much of the Second Offset, the beating heart of the MRAP gambit was, at least at first, a relatively small defense contractor, Force Protection International (FPI), which was independent from the great defense mergers of the 1990s. FPI was just large enough, in other words, to produce an armored vehicle that would thrive in a combat environment but small and agile enough to react instinctively toward raw, informal demand signals issued from the very top levels of the Pentagon. Being sufficiently small, FPI did well to profit and to innovate without scaling so fast to capture rapidly expanding demand. This success, in turn, attracted competing suppliers toward entering the market. Only a few years after the first contract for Cougar MRAPs, defense mergers and regular orders rapidly caught up to FPI.<sup>26</sup>

Carter’s top-down account of the MRAP success described how undersecretaries for acquisition across two administrations exercised supreme command over the bureaucracy. In the mold of the Second Offset—with authoritative urgency, insight at the nexus between political balancing and military organization, and uncanny judgment—they

---

25 Indeed, one way of comprehending the offsets is a peacetime version of Cohen’s supreme command: civilian directed states of exception to whip a hidebound military into condition, so it may respond and defeat an emergent challenge.

26 Seth T. Blakeman, Anthony R. Gibbs, and Jeyanthan Jeyasingam, “Study of the Mine Resistant Ambush Protected (MRAP) Vehicle Program as a Model for Rapid Defense Acquisitions” (master of business administration professional report, Naval Postgraduate School, Monterey, CA, December 2008), 6–11.

reached past ordinary checks-and-balances to pave the way for MRAP's rapid construction and fielding. In doing so, they dramatically accelerated the pace of acquisition in order to save lives in Iraq. Pentagon leadership also accepted calculated risk that relatively high level government officials could allocate sufficient time and accumulate program-specific expertise in order to hold FPI and other MRAP contractors accountable.

Finally, the locus of defense acquisition for the high-priority, fast-track MRAP vehicle shifted from the armed services to the civilian Office of the Secretary of Defense. Accordingly, like an experimental drug for terminal patients, MRAPs entered the battlefield without standard testing and laborious training, tactics, and procedures. Over the long run cropped up certain inefficiencies. As operations evolved, employing MRAPs presented a steep learning curve for each new unit, and rather quickly—in terms of the life cycle of a major defense program—service demand for fast-track MRAPs fell off, raising a question about Secretary Carter's inaugural message: Was MRAP so clearly a positive model for rapid acquisition during the imminent automation and AI offset?<sup>27</sup>

### The Pentagon's Missing Cadre

Interpreted through the lens of the Second Offset, the MRAP case qualifies as a success story of applying top-down modes for rapid acquisition the way the secretary of defense's office directed digital integration to revolutionize military operations during the 1980s and 1990s; however, Secretary Carter's exemplar has not borne fruitful lessons for the contemporary offset. Unlike the first two quantum leaps in defense acquisition—nuclear weapons and the RMA—this Third Offset is less about obtaining specific AI technology and more about the architecture by which technological innovation is cultivated, harvested, and sustained for the services, who now face rapidly evolving “pacing competitors” and unconventional foes.<sup>28</sup>

Initial speeches by the Pentagon's “big three”—Secretary Carter, Deputy Secretary Robert O. Work, and Undersecretary for Acquisition, Technology, and Logistics Frank Kendall—along with Carter's high profile visit to Stanford in April 2015, amplified a bold vision from top civilian leadership: today, much relevant innovation for cutting-edge military operations happens in the private sector, at small and medium-sized companies steeped in the start-up culture made famous by Silicon Valley.<sup>29</sup>

---

27 Jen Judson, “30 Years: MRAP—Rapid Acquisition Success,” *Defense News*, October 25, 2016; Richard H. Van Atta, R. Royce Kneeece Jr., and Michael J. Lippitz, *Assessment of Accelerated Acquisition of Defense Programs*, P-8161 (Alexandria, VA: Institute for Defense Analyses, September 2016), 18–25; and Alex Rogers, “The MRAP: Brilliant Buy, or Billions Wasted?,” *Time*, October 2, 2012.

28 Cheryl Pellerin, “Deputy Secretary: Third Offset Strategy Bolsters America's Military Deterrence,” U.S. Department of Defense, October 31, 2016, <https://www.defense.gov/News/Article/Article/991434/deputy-secretary-third-offset-strategy-bolsters-americas-military-deterrence/>.

29 Ashton Carter, “Remarks by Secretary Carter at the Drell Lecture, Cemex Auditorium, Stanford Graduate School of Business, Stanford, California,” U.S. Department of Defense, April 23, 2015, <https://www.defense.gov/News/Transcripts/Transcript-View/Article/607043/remarks-by-secretary-carter-at-the-drell-lecture-cemex-auditorium-stanford-grad/>. For Beltway analysis and reaction to this claim, see “Implementing Innovation Series: Defense Innovation in a Change-Resistant Ecosystem,” Center for Strategic and International Studies (CSIS), webcast of a discussion on Jeffrey P. Bialos, Christine E. Fisher, and Stuart L. Koehl, *Against the Odds: Driving Defense Innovation in a Change-Resistant Ecosystem* (Washington, DC: Center for Transatlantic Relations, 2017), held on May 19, 2017, <https://www.csis.org/events/implementing-innovation-series-defense-innovation-change-resistant-ecosystem>.

This culture, specifically its propensity for innovation, has been, despite repeated attempts around the globe, devilishly difficult to replicate, especially in the private sector.<sup>30</sup> Given extraordinary performance requirements, enmeshed in a thicket of regulations characteristic of the monopsony of military procurement, transplanting Silicon Valley's ingenuity into government programs is more challenging. For defense officials to raise investment unicorns in the military sector, they have to work like successful venture capitalists who somehow manage to read subtle indicators of both future supply and consumer demand.<sup>31</sup> Which obscure suppliers are on the cusp of introducing novel capability at an affordable price? Which capabilities solve an emergent problem for the military client? Which innovations match a complex and rapidly evolving demand signal?

The triumph of neoliberalism and global capital over planned economies at the end of the twentieth century reinforced the expectation, especially in America's leading innovation economy, that governments are poor judges of up-and-coming suppliers. Conventional wisdom, in business literature as well as political economy, waves officials off the temptation to pick industry winners and instead advises governments to less obtrusively, or transparently, set the conditions for productive innovation.<sup>32</sup> Part of the reason central authority has such trouble picking winners is that it has no way of replicating the complex demand signals of the free market. Even if a supplier's technology works, customer demand is not guaranteed.

Shifting, as Secretary Carter attempted, from free-market expansion to regulated, often classified, production for military use adds another layer of complexity to the problem of replicating natural innovation. Senior officials at the Pentagon are not well-positioned to camp out in the private sector, and when they have the opportunity, they find themselves tongue-tied by a classification apparatus designed to prevent information on American vulnerabilities from seeping into the hands of potential adversaries.

Without a serviceable problem definition, innovative businesses, especially recently arrived start-ups, cannot move forward with novel design or production.<sup>33</sup> Innovator-suppliers who persist through the military's large-scale procurement system begin to think and act less like swaggering Valley start-ups and more like the stereotypical, button-down suspects—fastidiously preserving their reputed competency within a Byzantine defense acquisition processes counter to the freewheeling innovation coveted by the Third Offset.

30 Mark Zachary Taylor, *The Politics of Innovation: Why Some Countries Are Better than Others at Science and Technology* (Oxford: Oxford University Press, 2016); and Josh Lerner, *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed and What to Do About It* (Princeton, NJ: Princeton University Press, 2009).

31 Here, "unicorn" refers to the rare start-up that achieves a high valuation very early, before compiling a sales record. The Third Offset wants to adopt unicorns from outside the regular process of defense acquisition. Unfortunately, the defense establishment has nothing in the organization to find unicorns before America's agile competitors, such as nonstate actors.

32 Taylor, *Politics of Innovation*; William Easterly, *The Tyranny of Experts: Economists, Dictators, and the Forgotten Rights of the Poor* (New York: Basic Books, 2013); Peter Evans, *Embedded Autonomy: States and Industrial Transformation* (Princeton, NJ: Princeton University Press, 1995); and Michael E. Porter, *The Competitive Advantage of Nations* (New York: Free Press, 1990).

33 CSIS, webcast; Brian Fung, "The Huge Issue That's Keeping Silicon Valley and the Pentagon Apart," *Washington Post*, June 10, 2016; and Tucker, "Pentagon Dawdles."

Governments without deep pockets who wish to emulate US productivity in the private sector have tackled communication gaps between novel suppliers and fluid demand with custom networks. In the case of Mexico's federal system, for example, an alphabet soup of centralized government-sponsored organizations cooperates with local governments, linking small suppliers to large foreign and domestic corporations, universities, and investors in a loosely coordinated effort to cultivate Mexican expansion into the innovative aerospace sector.<sup>34</sup>

The most salient success story in Josh Lerner's *Boulevard of Broken Dreams* comes from Israel, which following the US-led digital revolution in consumer electronics and military affairs, transformed its economy and its defense industry into an accomplished small-cap exporter of high-tech goods and services. Lerner attributed Israel's startling success to government sponsored networks knitting civilian and military sectors together, translating demand signals from the grassroots, and buffering Israeli ministries from direct investments.<sup>35</sup>

In the much larger United States, could the Pentagon scale Israeli-style networks between government agencies and venture capitalists, investors and entrepreneurs, as well as emergent suppliers and customers in the armed services? The story of defense- and private-sector synergy while building the internet indicates it should be possible.<sup>36</sup> According to Linda Weiss in *America Inc.?*, the US military was present at the creation to provide demand and initial funding for specialized computer networks. At a later stage, smaller companies, who closely resemble agile suppliers sought in today's Third Offset, saw applications for the novel defense infrastructure. These companies led second-stage innovation, investing for commercial sales, and creating off-the-shelf applications, which during the Second Offset, "spun back around" to an innovative military for purchase and adaptation.

Universities, as part of the Vannevar Bush legacy after World War II, funded applied research during the Cold War in part through federal defense contracts.<sup>37</sup> By the 1980s, many of the same tier I research institutions in higher education were also taking up the slack in basic research occasioned by sharp reductions in private sector support. At the birth of the internet, then, university activities attracted the interest of both defense offices and industry clusters for development, testing, and technology acquisition. Academic research groups built working relationships on both sides of the military-civilian divide, forming the substrate through which the technology "spin-around" proceeded.

Simply replicating such change, however, will not reduce the obstacles bedeviling the Third Offset. Spin-around may have functioned well in the case of the internet during the Second Offset, and there is reason to believe that spin-around in such areas as robotics, artificial

---

34 Mónica Casalet, "Meeting Growth Challenges of Mexico Aerospace: The Querétaro Cluster," *Space & Defense* 9, no. 1 (Spring 2016): 39–53. For more on the role of social networks in science and technology innovation, see Taylor, "How Nations Succeed—Networks, Clusters, and Standards," chap. 6 in *Politics of Innovation*.

35 Lerner, *Boulevard of Broken Dreams*, 155–57.

36 Spin-around and the development of the Internet are recounted in Linda Weiss, *America Inc.? Innovation and Enterprise in the National Security State* (Ithaca, NY: Cornell University Press, 2014).

37 Jonathan Cole, *The Great American University: Its Rise to Preeminence; Its Indispensable National Role; Why It Must Be Protected* (New York: PublicAffairs, 2009).

intelligence, and neuro warfare could *eventually* enhance America's position. Unfortunately, Secretary Carter's vision made clear that macrolevel innovation over generations will not suffice for equipping US servicemen and servicewomen at the fraying edges of the American-led liberal order.<sup>38</sup>

Though it may be crucial over the long haul, spin-around does not happen quickly enough to address fluid challenges under globalization: adversaries demonstrate a knack for quickly devising asymmetric responses to conventional US task forces, blunting their effectiveness without provoking the United States into full mobilization. If Third Offset technology is to keep pace, Pentagon reformers will have to find a way to accelerate *spin-on*, the current process by which the armed services obtain relevant innovation from small to midsize firms in the private sector and deliver it to forces in the field.

A new system—what Acquisition Undersecretary Kendall called a new architecture—for discovering and extracting ideas circulating in the venture capital world will have to fill the gap between military operators' specialized needs and equally complex consumers' demands. To succeed at rapidly delivering private sector innovation, which today includes global innovation, Third Offset architecture requires a unique cadre, a human link, still missing from the organization Secretary Carter prepared for the transition to a new administration.

National commitment to a Third Offset fueled by the private sector creates an unprecedented call for a type of acquisition officer at lower levels of the hierarchy, the intrepid riverboat captain. This metaphor is apt in the sense that nineteenth-century pilots understood themselves to be part of a larger profession: they acquired expertise in principles of navigation and system management; they recognized themselves as part of a corporate body infused with a certain *esprit*; and they accepted a burden of social responsibility.<sup>39</sup> Without their quasi profession delivering staples and occasional luxuries along the young country's riverine circulatory system, disparate regions of the sprawling democracy would not have flourished as one nation.

In Samuel Huntington's treatise on the soldier and the state, professionalism was handmaiden to *autonomy* for the officer corps, allowing consummate professionals to apply their skill on behalf of civilian authorities who inevitably viewed the world from a contrasting perspective. Indeed, certain independence of action was crucial to the effectiveness of river pilots in serving the successful political economy of patrons living not on the highway but at both ends of their journey. River pilots were the human link communicating supply with demand, the medium of exchange that permitted mutually beneficial trade across disparate cultures.

Unlike Huntington's archetype, though, the best riverboat captains, as much as scientific managers, were also craftsmen.<sup>40</sup> Huntington shied away from this metaphor. After all, craftsmen were inscrutable, their successes unaccountable. The source of their genius could not be

---

38 Gideon Rose, "Out of Order? What's Inside," *Foreign Affairs* 96, no. 1 (January/February 2017).

39 Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, MA: Belknap Press of Harvard University Press, 1957).

40 Huntington, *Soldier and the State*, 28.

intellectualized or codified in any text. No formal school could hone their talent. Most important, the fruits of their labor could not be harvested efficiently under imposition of far-reaching agencies from a highly-organized state. Bureaucracies enabled professionals but trapped, and eventually suffocated, artisans.

Even so, without an administrative bureaucracy to enforce standard procedure on the river, the boat captain substituted flexible, customizable guidance of professionalism, and where this could not apply, he indulged freewheeling characteristics of the craftsman. The river offers a rich metaphor for policy in the era of the Third Offset as a symbol for freedom, adventure, and enterprise. The byways of contemporary innovation hide obstacles to the uninitiated, but the flow of ideas nevertheless binds great cities of contrasting cultures. Intrepid pilots who know the river travel between civilizations. Cultural barriers to communication that regularly stymie professionals or virtuosos in other walks of life become permeable before the unique skill set and life experiences of riverboat captains.

A similar communication among cultures and economies is critical to success of the Pentagon's Third Offset, which is reliant upon continuous delivery of relevant, private-sector innovation the armed services can adopt. A fatal flaw in the last administration's defense policy, which undercut acquisition reforms on a scale unseen since the Goldwater-Nichols Department of Defense Reorganization Act of 1986, is the missing cadre. The Third Offset is, tragically, a technology supply policy through terra incognita for the Pentagon. As of this writing, none of several organizations within the executive branch or mandated by Congress to supplement defense acquisitions can play the crucial mediating role in rapidly delivering science and technology from the private sector to the services' entrepôts in such a manner that the innovations can be manufactured for battlefield advantage.

Individuals and specialized organizations within the Department of Defense have been chartered to explore, mine, and bring home novel solutions wherever they may find them. The undersecretary of defense for Acquisition, Technology, and Logistics taps semi-independent, direct reporting agencies such as the Defense Advanced Research Projects Agency and the Rapid Innovation Fund (that cooperates with small business innovators). Below the undersecretary, an assistant secretary of defense for Research and Engineering controls a phalanx of offices for attracting, finding, and testing promising projects. When the identified technology has the potential to reduce risk or to save defense dollars on a high priority mission, the assistant secretary may form bureaucratic alliances with the rest of AT&L. The Defense Threat Reduction Agency, for example, focuses on matters related to weapons of mass destruction, and belongs to a neighboring assistant secretary within AT&L. In fact, with a research and development budget of \$25 billion, research and engineering under AT&L wields sufficient convening power to forge cooperation across the Department of Defense, federal departments such as Homeland Security, and at least in principle, research departments in private industry.<sup>41</sup>

---

41 See also Alan Shaffer, "Communities of Interest: Collaborating on Technology Challenges," *Defense AT&L* 44, no. 2 (March–April 2015): 32–37.

The trouble with all these organizational fixes is, despite the flow of ideas, the topmost level of Pentagon bureaucracy tightly steers the rudder. The results of such programs consistently align with Secretary Carter’s essay on “Running the Pentagon Right.” If the secretary of defense wants something for troops in the field, organizational reform at the tactical level provides remarkable facility for reaching down and across agencies to find the right prototype technology. As long as the solution is already knocking around the acquisition system—similarly to the MRAP at a nondescript, small-scale contractor—senior leaders can pull hard, through (or around) regular development and testing phases, to make an express delivery. These emergency overrides, though, despite the commanding, virtuoso performance from top civilians, cannot anoint a technical solution conceived outside the beltway family; the prototypes far upriver remain out of sight, and out of reach, no matter how sophisticated or lavish the offices in Washington.

The missing element of the Third Offset strategy is a midlevel cadre that can navigate the currents and lock through the dams that exist between innovative science and technology, sprouting in garages, makeshift offices, and university campuses far from the nation’s capital, and the military acquisition system. Unfortunately, bureaucratic slack that would grant autonomy for such middle managers can barely be located in the current budget environment. When dollars are tight and stakes are high, senior decision makers instinctively grasp for greater control. Centralizing authority and consolidating lines of communication create narrow channels for the sake of efficiency.<sup>42</sup> In the case of the Third Offset, this natural inclination to institutionalize the revolution, or manufacture a constant state of exception, is misguided: while top-down virtuosity reliably rallies bureaucracy around the leader’s priorities, it simultaneously stifles creativity and improvisation among midlevel agents who must respond and conform to the leader’s call.<sup>43</sup> The Pentagon’s highly structured efforts at community-building maintain accountability at the price of groupthink, establish the lockage priority, and ultimately limit the flow of private-sector innovations that are vital to success of the Third Offset.

When thick institutions must accommodate multiple cultures and process a steady influx of novel information from divergent professions, the most productive principal to agent relations often balance competing considerations.<sup>44</sup> The military agents of science and technology, our riverboat captains, work best if they enjoy unusually high autonomy. Freed from a suffocating web of monitoring and punishment—classic instruments of fine control from a distant principal—the pilots venture into the hinterland. They navigate time and space to acquire the language of local innovators so that the Third Offset finally has a way to translate

---

42 Alex Mintz and Karl DeRouen, *Understanding Foreign Policy Decision Making* (Cambridge: Cambridge University Press, 2010), 25–30.

43 Aaron Mehta, “Pentagon Budget Maintains Support for Tech Innovation,” *Defense News*, May 25, 2017; Freedberg and Clark, “DIUx”; Aaron Mehta, “DIUx Offers \$36 Million in FY16 Contracts,” *Defense News*, October 14, 2016; and Sydney J. Freedberg Jr., “DIUx Lite: Carter Announces New Innovation Unit in Austin,” *Breaking Defense*, September 14, 2016.

44 Huntington, *Soldier and the State*; Peter D. Feaver, *Armed Servants: Agency, Oversight, and Civil-Military Relations* (Cambridge, MA: Harvard University Press, 2003); and Damon Coletta, “Principal-Agent Theory in Complex Operations,” *Small Wars & Insurgencies* 24, no. 2 (2013): 306–21, doi:10.1080/09592318.2013.778016.

its unique, mostly classified demand signal into a problem definition that is intelligible and actionable for private-sector business models.

Riverboat captains, even if captains by courtesy, are simultaneously recognized in the admirals' navy. When they return to home port with exotic cargo—innovative designs that could disrupt routines in Washington—they easily move through the Pentagon and relate to the services' highest ranks. Due to the captains' high professionalism in the Huntingtonian sense—mission critical expertise, widely recognized *esprit de corps*, and deep-seated commitment to social responsibility—four-star combatant commanders and civilian mandarins at the Pentagon may welcome their reports without dreading their own bureaucratic future, for there is little threat that the crew of a Third Offset venture would stage a mutiny.<sup>45</sup>

Balanced principal-agent relations, recommended persuasively by Huntington for military advice to civilian government during the height of Cold War tensions, could now be replicated within the defense bureaucracy to address a contemporary crisis in the Pentagon's Third Offset strategy.<sup>46</sup> Conceding customary leverage—access, monitoring, rewards, and punishments—to grant autonomy at lower ranks does leave defense policy at the principal's level open to being led by the nose. For a similar reason, Huntington dedicated tracts of his great work to redefining military professionalism for American statecraft, so experts, such as those discovering and delivering commercial science and technology, could ply their trade without substituting personal preferences for democratically sanctioned authority.

Much authority now rests with civilian and military admirals in charge of the leviathan that is the defense acquisition process. They run the Pentagon right for many years and ascend the ranks by administrating a tight ship. They hold their directorates accountable, embracing their crew tightly and submitting them to the discipline of regular order. When they do, though, they crowd out any possibility for Huntington's brilliant insight into these situations. As a result, the cadre is almost entirely beached, caught in unending command churn of furnishing capabilities, requirements, and resources. In the dominant ethos of defense acquisition, mere captains do not judge risk; they *avoid* it. Highly constrained agents of today's Third Offset weed first-time innovators out of technology development contracts. Our captains dare not venture. They never invite start-up entrepreneurs on commercially competitive terms, in the very language that nurtures much of twenty-first century innovation, nor do they provide navigational guidance to ferry revolutionary commerce from the hinterland of small and medium-sized enterprises to the mooring ring of Pentagon acquisition.<sup>47</sup>

---

45 Kaplan, *Insurgents*.

46 Huntington, *Soldier and the State*.

47 DIUx and the Pentagon responded to the shortfall by recruiting reservists as new riverboat captains. It remains to be seen whether short-term, temporary duty is sufficient to bridge the culture gap between the military services and tech start-ups producing innovation relevant to the Third Offset. The reservists, to reach outside customary bureaucracy, may need assistance from active duty science and technology cadres or directorates combining requisite *autonomy* and *access* to commands that influence regular order in defense acquisition. Compare reporting by Mehta, "DIUx Offers \$36 Million"; Scott Maucione, "DIUx Still Chugging Along in the Trump Administration," Federal News Radio, April 20, 2017; Freedberg, "DIUx Lite"; and Aaron Mehta, "DIUx Expects to Transition Programs in Next Two Months," *Defense News*, April 25, 2017.

The range of challenges facing American servicemembers continues to expand, becoming more complex as acquisition budgets flatline. Running the Pentagon to make the latest offset right will require judicious, rather than directed, relations with trusted agents of those anxious chiefs in Washington. Many intrepid riverboat captains, endowed with hard-won skills and freedom to navigate frontiers where modern innovation thrives, are needed.