Maintaining American Military Power 
In an Age of Uncertainty

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Introduction

2011 is a critical year for the American military. With President Obama’s original July 2011 deadline for assessing American progress in Afghanistan rapidly approaching, it makes sense to take a step back and think about the next steps for the American military. Sharp disagreements exist between those who believe that the United States should optimize its military for future counterinsurgency (COIN) campaigns like Afghanistan and Iran, and those who believe the United States should focus instead on its conventional capabilities. The decisions the United States makes now will influence its defense posture and military capabilities for the next generation.

This dialogue is taking place under the shadow of growing national debt and a lagging American economy, which will make the decisions taken over the next few years all the more important. Yet at the same time, the future is extremely difficult to predict. Predictions about the future of warfare are much more likely to end up in the dustbin of history than to accurately inform policy makers and planners.

One way to think about how the United States can position itself in future security environments and maintain operational flexibility involves understanding the financial and organizational requirements for adopting new military innovations, an approach called adoption capacity

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theory.\(^2\) In combination with the security environment, the adoption capacity constraints associated with potential changes in the character of warfare shape the costs and benefits of different response strategies for both state and non-state actors. We can predict the choices states make in response to a new innovation and the likely implications for the international security environment by focusing on the capacity of states to successfully meet the resource mobilization challenges and the organizational changes required to adopt a new innovation. Organizationally disruptive innovations, such as blitzkrieg or carrier warfare, tend to have the most significant implications for the balance of power and outcomes on the battlefield. Just as established businesses often fail in the face of large-scale industry transitions, so might a military that has built up a particular kind of human capital have difficulty transitioning to fight another type of war.

This is not just relevant for great powers facing “traditional” military powers. For example, the organizational emphasis on firepower and the failure to institutionalize counterinsurgency capabilities following the Vietnam War is arguably one reason why the United States military struggled in the last decade when learning how to effectively conduct some types of counter insurgency operations. Understanding the adoption capacity constraints facing military organizations is also helpful for predicting and interpreting the behavior of terrorist groups, which have to deal with financial and organizational challenges as well.

Investing to make sure that the United States remains the world’s leading military power over the next generation doesn’t just mean building more fighters, tanks, and carriers. Instead, given fundamental uncertainty about the future character of war, the United States needs to ensure it maintains a high level of organizational capital and retain its capacity to rapidly adapt when likely future scenarios become clearer.\(^3\) Practically, this means spending more money on basic research and development, training service members, encouraging experimentation, and focusing on small buys of new generations of weapons instead of on full buys of incremental improvements over existing capabilities. It is hard, if not impossible, to predict the future. More humility about the future of war will be necessary to ensure that the United States maintains its military edge into the second half of the twenty-first century, no matter whether the future of conflict lies in a series of global counterinsurgency campaigns, an air war in the Pacific, or a ground war in North Korea.

**What is Adoption Capacity?**

If military power is based on the ability to adopt the key military methods of a period, then military innovations and their disparate impacts on different states throughout the system are the mechanism by which large-scale shifts in the relative military balance of power occur. The introduction and spread of new means of generating military power have played a critical role throughout history in determining the global balance of power and the timing and intensity of


wars. The infamous Mongol armies, with their mastery of the composite bow and a new form of cavalry strikes, toppled nations from China to Eastern Europe because of their tactical leap ahead. Hundreds of years later, the German debut of blitzkrieg warfare at the outbreak of World War II helped rout French forces and consolidate control over Western Europe. Yet despite their importance as key factors driving change in international politics, the processes that govern the spread of innovations and their effects are little understood.

Actors have a number of possible strategic choices in the face of military innovations. These include adoption of part or all of the innovation, offsetting or countering, forming alliances, and shifting towards neutrality. For those states potentially interested in an innovation, one factor that plays an important role in its decision is the adoption requirements for the innovation whether the state has the capability to meet those requirements. As the cost-per-unit of the technological components of a military innovation increases and fewer commercial applications exist, the level of financial intensity required to adopt the innovation increases. The rate of adoption decreases and alternatives like forming alliances become more attractive. Similarly, if an innovation involves large-scale organizational changes in recruitment, training, and warfighting doctrine, the innovation requires a high level of organizational capital for adoption and fewer actors are likely to adopt.

Business scholars such as Clayton Christensen and Rebecca Henderson highlight the way differences in the adoption requirements for innovations in the business world influence the probability of firm success and failure. Christensen, for example, differentiates between sustaining innovations, or those that improve current business practices, and disruptive innovations, those that make following prior business practices likely to lead to firm failure instead of success. Christensen examines the disk drive industry and its transition through several different stages of innovations. He finds that in every case of a sustaining innovation, like thin-film disks and heads, established firms like IBM led the way. However, disruptive changes frequently caused major transitions in the industry. By the time the new technology became clearly more efficient than the old technology and generated new markets of sufficient size for big firms to become interested, it was too late for them to enter. Leading firms failed when confronted with innovations that required a new way of doing business, but succeeded when confronted with innovations that enhanced the way they did business. Applied to nation-states and non-state actors, understanding the adoption requirements for key military methods in a given period can help us explain changes in the ability of states to effectively deploy and use military force. It may also help policy makers account for and mitigate cultural resistance to new forms of military power or technological advances.

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5 The financial and engineering capacity to build production facilities would be another barrier to entry. For example, while the Taliban might be able to afford to purchase UAVs, they lack the capacity to produce them. Clayton M. Christensen, The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail (Boston, MA: Harvard Business School Press, 1997), xiv-xv. These ideas build on some of the concepts contained in Joseph A. Schumpeter, Capitalism, Socialism, and Democracy (New York,: Harper & Brothers, 1942).

More broadly, adoption capacity theory explains both why shifts in relative power occur and how. However, rather than seeing decline for powerful states like the United States as inevitable, shifts in power and their timing are better understood as a function of the adoption requirements of the key military innovations of a period. Not all innovations will benefit rising powers and hurt established powers. An international configuration that might seem ripe for change could hang on for decades or longer because the dominant form of military force favors existing powers. This is why developing the capacity to respond effectively to changes in the character of warfare is a critical element of national security strategy.

Going back to the idea of financial and organizational requirements for adopting innovations, we can therefore think about who is likely to benefit from different types of innovations. For example, new military innovations requiring a great deal of financial investment but not much in the way of organizational change are the types of innovations that are likely to help the rich get richer, so to speak. If a state can just build or buy relevant technologies and plug them into their militaries, it will not offer much in the way of opportunities for new actors to disrupt the balance of power.

In contrast, innovations requiring high levels of organizational capital to adopt can be especially challenging to wealthy and powerful states for the same reasons that established firms often struggle in the face of disruptive innovations in the business world. In Rebecca Henderson’s study of a subset of the semiconductor industry, she finds that the types of innovations that caused the most industry turnover were technologically incremental but organizationally radical. The failure of firms like Parker-Elmer when faced with organizationally radical changes highlights the primacy of organizational change as a causal variable. Organizational inertia made the efforts of leading firms less effective than those of new market entrants.

Henderson and Christensen’s research on firms suggests that the ability to heavily and successfully invest in the military capabilities that enhance combat effectiveness during one period may handicap the capacity of a military organization to transform to deal with the next era. The firms they study flounder for reasons very similar to those described by political scientist Robert Jervis when assessing how decision-makers integrate new information. Jervis explains how pre-existing beliefs shape the way decision makers integrate new information. Their worldviews, which have served them well in the past, can blind them to changing circumstances, since they view things through the lens of their past experiences and beliefs. Essentially, organizational culture and prior success can lead people to view even necessary change as wrong. Domestic politics can also play a role by shaping the options on the table. It may be harder, for example, for democracies to pursue some types of strategies due to popular constraints.

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9 Ibid.: 261-262.

In the military context, since these types of innovations will require doing business differently, rather than doing it better, research and development segments of leading military organizations are more likely to dismiss early signs of the innovation as irrelevant to core competencies, placing them at a tacit knowledge disadvantage if they attempt to catch up later. Many argue that the shift from attrition to maneuver warfare, often called blitzkrieg, falls into this category. Ernest May and others have pointed out that other armies of Europe possessed equal or even greater numbers of radios, airplanes, tanks, and motorized vehicles as Germany. It was the way Germany put together those technologies into maneuverable, deep-strike packages, which was inventive.\(^\text{11}\) The German departure from the French strategy of static defenses and trench warfare required a significant shift in training and operations, making maneuver warfare very difficult to adopt for many militaries.\(^\text{12}\) France, in contrast, represented a military with a low level of organizational capital due to its high organizational age – their victory in World War I locked in flawed lessons about the likely course of future wars that prevented them from grasping the potential of maneuver warfare.\(^\text{13}\)

**America’s Military Future**

What does this theory about the financial and organizational challenges associated with adopting new military innovations have to do with the strategic situation the United States faces today? After several years of war in Afghanistan and Iraq and hard-fought lessons learned about counterinsurgency warfare in both of those locations, the United States Army and the other services have to decide what to take from the experiences in the War on Terrorism. Some may try to turn the clock back to 2001 in terms of military strategy, while others assume that future wars will be similar to Afghanistan and Iraq.

The problem with this formulation of conventional war versus counterinsurgency is that it ignores the way the information age has already shaped and will continue to shape the future of warfare. To be clear, this is not a return to techno-centric “Revolution in Military Affairs” thinking. Believing that the information age will impact future warfare does not mean excluding the human element or skill on the battlefield. It simply means we must explore how the information age, like industrialization before it, will influence how countries organize and use their militaries.

The debate about whether future wars will be conventional land wars fought within what Stephen Biddle terms the modern system or insurgency wars sometimes obfuscates the way the information age is likely to produce shifts in the financial and organizational requirements for warfare in any potential future world. It is possible, for example, that the most likely wars of the future are irregular campaigns featuring land forces, but that there are also important possible contingencies involving the heavy use of naval and air forces. The impact of the information age on each of these might be different, just as it might be different for states and non-state actors.\(^\text{14}\)

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\(^{11}\) Ernest R. May, *Strange Victory: Hitler's Conquest of France* (New York: Hill and Wang, 2000), 476-480. To be fair, of course, only a fraction of the German Army was actually trained and equipped for blitzkrieg.


\(^{13}\) May, *Strange Victory*, 449-450. Other factors certainly mattered as well, of course.

\(^{14}\) Critics of network centric warfare like Frederick Kagan and scholars like Eugene Gholz and Peter Dombrowski, are certainly right, however, that the information revolution will not necessarily lead to one particular optimal force
Information age technologies, from precision munitions to cyber attack capabilities to unmanned aircraft, will continue to develop over the next generation. Potential tipping points for these technologies and their integration into military organizations could be extremely disruptive for the American military. For example, what if the expensive platforms currently used to launch precision munitions are no longer necessary? If a cargo plane or ship becomes almost as capable as a B-2 bomber, but at a fraction of the cost, it would be organizationally disruptive to the United States but make those capabilities more financially plausible for others. Another potential tipping point could come when UAVs become so sophisticated that they could potentially replace manned fighters or bombers. The biggest challenge for the United States military is making sure it does not rest on its laurels in more “traditional” areas of warfare. The American military has to think hard about how to organize itself to best take advantage of potential developments.

Just as it was foolish to believe that America’s “conventional” military edge would naturally make it effective at counter insurgency warfare, it is foolish to take America’s overall military superiority for granted. Frank Hoffman argues that the future of warfare will be increasingly blurred or “hybrid” in character, demonstrating facets across the spectrum of war (and criminal behavior) in an operating environment characterized by urbanization and the information age.\textsuperscript{15} While historical memory tends to define wars like World War II as “conventional” and wars like Vietnam as “irregular”, nearly all wars contain multiple segments fought at different levels of intensity and with different optimal strategies.\textsuperscript{16}

However, making sure the American military effectively adapts to the challenges of the information age is not just a challenge relevant for future contingencies in the Pacific. The increasing production of high-end information technology components abroad, especially in the developing world, will speed the global diffusion of dual-use information technologies. Information technology in general is more like the development of the railroad than the rifle in that there are large commercial incentives for investment independent of military needs. While more powerful computers make tasks like hacking easier, even relatively simple commercially available computers can serve as hubs to launch cyber attacks.\textsuperscript{17}

Information-based advances have been far from irrelevant for Western forces conducting counterinsurgency operations in Iraq and Afghanistan. UAVs are used to provide real-time intelligence to small unit patrols and engage in strikes on individual targets.\textsuperscript{18} Real-time communications, such as Blue Force Tracker, have improved the situational awareness of American units in the field, though patrolling a city block involves different sorts of information challenges than targeting a group of enemy tanks. Special operations forces linked to stand-off weapons many miles away can help national military forces simultaneously understand local

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\textsuperscript{15} Hoffman, Conflict in the 21st Century: The Rise of Hybrid Wars.

\textsuperscript{16} Ibid.


context and retain the ability to deliver devastating attacks when necessary.\textsuperscript{19} Data fusion, ground robots, and biometrics are other obvious technological applications that the present conflict has accelerated into use.

These developments are also not just relevant for major powers. It is possible that the information age will continue empowering non-state actors. The skillful exploitation of the Internet by radical Jihadis, ranging from Al Qaeda message boards to Iraqi Sunni web pages, shows how information technology can substitute for physical meeting space for non-state actors.\textsuperscript{20} Additionally, both Hamas and Hezbollah have used commercial sources as innocuous as Google Earth to search for targets in Israel and then aim their rockets.\textsuperscript{21} This is especially effective when the targeted installations are not official or hidden military sites. If cyber attacks become increasingly effective as a means of disrupting military organizations, the Internet could provide a major relative edge to non-state actors engaged in asymmetrical operations. The Internet could function as a virtual leveler that cuts into the ability of nation-states to maintain a monopoly on organized violence in their territories and helps insurgent and terrorist groups survive.\textsuperscript{22} Cyber attacks by terrorist groups could be even harder to track than physical attacks by those groups, making them potentially popular as a means of challenging a country such as the United States. Adoption capacity theory predicts that younger terrorist groups less wedded to traditional brick-and-mortar forms of organizing and carrying out attacks will find it easier to transition to a more complete online presence than more established groups.

**Conclusion**

The introduction and diffusion of military innovations play a critical role shaping the balance of power and international politics. States and actors with the financial and organizational capability to adopt the key military innovations of a period are likely to do better than those who lack the necessary resources. While fighting wars in Afghanistan and Iraq may be the top priority currently for the US military, it should not neglect budgeting and planning for the future. What can the United States do to make sure that its military remains the best in the world as the information age continues to shape societies, economies, and militaries? One idea is investing more in basic research and development. History suggests that explicitly cultivating the organizational capacity for change is one path to overcome the hubris that can set in when you are the best. Given uncertainty about future warfare environments, it makes sense to invest in an array of potential future capabilities, both technological and organizational. Extending this thinking to the procurement process suggests the need for smaller purchases of new technologies, rather than larger purchases of incremental platforms. Such a strategy has the additional advantage of attempting to infuse the services with more adaptability in general.

Another thing the American military can do, especially for those parts of the force not immediately deploying to Afghanistan and/or Iraq, is encourage greater debate about the most


\textsuperscript{20} Groups can already form and coordinate over the web and use draft messages at ever-changing free email addresses to communicate in an attempt to evade electronic surveillance of phones and physical territory. Steve Coll and Susan B. Glasser, "Terrorist Turn to the Web as Base of Operations," *The Washington Post*, August 7 2005.


likely and most dangerous future conflict scenarios. Especially given that each of the services will increasingly be optimized for different sorts of conflict scenarios, recognizing uncertainty about the future could make it easier for junior officers or others with innovative ideas to be heard or for experimentation by a particular service or specialty to prosper.

The United States military, like the United States itself, has an enormous number of assets at its disposal. Avoiding the false choice of COIN versus conventional war by institutionalizing greater adaptability can help ensure that the United States military enters the new decade the way it began the last— as the most powerful military in the world.