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Sustaining Military Capabilities in the 21st Century: Rethinking the Utility of the Principles of War

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The Department of Defense officially recognizes nine principles of war[1] to guide the thinking of today's military leaders. These principles have guided the planning of military campaigns from the American Civil War to the conflict in Iraq. The Department's Office of Force Transformation convened this conference to assess the application of the principles to future warfare. The principles, however, contain a fatal flaw that makes them particularly ill suited to guiding military decision-making in the 21st century.

Forging, deploying, and maintaining fighting forces have been—and remain—the lifeblood of war. Yet remarkably, the principles of war do not reflect the imperative of creating and maintaining military power, particularly the role of the private sector. The lack of attention that the principles confer on retaining preponderance in power makes their application to 21st century wars particularly problematic. Many of the most potentially disruptive and dramatic changes in future conflicts may be driven not by how battles are fought, but in how the instruments of power are marshaled by states and non-state actors. This is further proof, perhaps, that the principles should be considered a historical relic, best left in the past. If there was ever an age when critical thinking about war could be reduced to a simple set of maxims, it is long over.

Spheres of Conflict

The purpose of the principles of war is to encourage commanders to channel and focus combat power on

Talking Points

- Many of the most potentially disruptive and dramatic changes in future conflicts may be driven not by how battles are fought, but in how the instruments of power are marshaled by states and non-state actors.
- The factors with the most dramatic impact on the future conduct of war may have more to do with the ways and means by which national combat power is generated by both state and non-state actors.
- These factors include emerging technologies, the increasing capacity of the private sector to perform traditional military missions, and the decreasing ability of developed states to allocate productive resources to warfighting tasks.
- War in the 21st century will be neither a private-or a public matter, but a civil activity that spans both worlds, with each realm having a substantial amount of autonomy and influence.

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the decisive points of battle.[2] However, modern wars are not won or lost only on the battlefield. In the modern age, virtually all the growth in nation-states occurs in the private sector. Tapping the manpower, wealth, innovation, and expertise of the private sector is a prerequisite for war. Here the principles are of little help.

Revamping the principles of war to encompass all the elements of war, both public and private, will be a daunting task. The factors that most dramatically affect the future conduct of war may have more to do with the ways and means by which national combat power is generated by both state and non-state actors. These factors include emerging technologies, the increasing capacity of the private sector to perform traditional military missions, and the decreasing ability of developed states to allocate productive resources to warfighting tasks. Together, these could significantly diminish the capacity of states to shape how the instruments of war are employed and severely limit the ability of commanders to determine their own destiny in battle.

War and Disruptive Technologies

Technology has always been a factor in shaping the future of war, but its impact is far from deterministic. Much contemporary discussion about military history and the impact of technology on military transformation misses the mark. Technology does not define future ways of war. As Williamson Murray and MacGregor Knox concluded in an anthology of the dynamics of military revolution, scientific development and new weapons systems may stimulate change, but the conduct of warfare is shaped by larger economic, political, and geo-strategic factors.[3]

The impact of future technologies will likely be the same. They might unleash or accelerate social and cultural changes that reshape the nature of war, but it is unlikely they will simplify or define how combat is conducted. Technology will always be a "wild card" in war's future. Future technological change, however, will diverge in character from the experiences of the last century. Since World War II, militaries have largely pioneered the technologies that were the most critical to military competition. In the United States, for example, from jet aircraft and nuclear weapons to stealth technologies and precision-guided weapons, the Pentagon largely set the course of investments in science and technology, shaped research and development programs, and determined how disruptive new technologies would be applied to battle. The impact of the public sector defense research and effort was pervasive and dramatic.[4] The 21st century will be different.

In the future, the private sector—not the government—will likely make the largest investments in the basic research and product development that create the technologies with the greatest capacity to change the nature of combat. In turn, how the private sector chooses to develop these technologies, apart from the guidance or prohibitions established by governments, may determine how future conflicts are fought.

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1. The nine principles of war provide general guidance for the conduct of war at the strategic, operational, and tactical levels. They are: 1) *Objective*—Direct every military operation toward a clearly defined, decisive, and attainable objective; 2) *Offensive*—Seize, retain, and exploit the initiative; 3) *Mass*—Mass the effects of overwhelming combat power at the decisive place and time; 4) *Economy of Force*—Employ all combat power available in the most effective way possible; allocate minimum essential combat power to secondary efforts; 5) *Maneuver*—Place the enemy in a position of disadvantage through the flexible application of combat power; 6) *Unity of Command*—For every objective, seek unity of command and unity of effort; 7) *Security*—Never permit the enemy to acquire unexpected advantage; 8) *Surprise*—Strike the enemy at a time or place or in a manner for which he is unprepared; and 9) *Simplicity*—Prepare clear, uncomplicated plans and concise orders to ensure thorough understanding.
2. Paul Murdock, "Principles of War on the Network-Centric Battlefield: Mass and Economy of Force," *Parameters*, Spring 2002, p. 86.
3. Williamson Murray and MacGregor Knox, "The Future Behind Us," *The Dynamics of Military Revolution, 1300–2050* (Cambridge: Cambridge University Press, 2001), pp. 177–178.
4. Mark L. Montroll, "Maintaining the Technological Lead," in Hans Binnendijk, ed., *Transforming America's Military* (Washington, D.C.: National Defense University Press, 2002), pp. 349–350.

Trends in information technology development offer a clear example. During the Cold War, the government financed much of the cutting-edge research on computers and related electronics that resulted in new combat capabilities. Today, the government is virtually dependent on the private sector for advances in information technology. One of the emerging operational concepts of 21st century warfare is often called "network-centric" operations Network-centric operations generate increased operational effectiveness by networking sensors, decision makers, and forces to achieve shared awareness, increased speed of command, higher tempo of operations, greater efficiency, and a higher degree of self-synchronization. Network-centric capabilities, however, are being assembled with systems integration technologies, many of which are already widely commercially available, including technologies that facilitate passing high volumes of secure digital data, creating ad hoc networks, integrating disparate data bases, and linking various communication systems over cable, fiber-optic, wireless, and satellite networks. In effect, many of the concepts for network-centric warfare and how it is being implemented are significantly influenced by how the private sector has evolved in a 21st century knowledge economy.

The growing dependence of modern militaries on commercial information technologies illustrates one way in which 21st century warfare will be different. Emerging technologies with the greatest potential to change the nature of military competition are being spearheaded not by defense departments and ministries, but by individual entrepreneurs, multi-national conglomerates, start-up companies, investors, stockholders, and Wal-Mart shoppers. Militaries are already grappling with understanding and harnessing information technologies and the prospects for cyber-warfare, but these challenges may represent merely the dawn of an age in which military competition is defined by commercial research and development and consumer choice.

Several candidate technologies have already emerged that may shape the character of war beyond the capacity of the public sphere to control or even influence. One is biotechnology. Biotechnology is one of the fastest growing commercial sectors in the world. The number of biotechnology companies in the United States alone has tripled since 1992. These firms are research intensive, bringing new methods and products onto the marketplace every day. Many of the benefits of this effort are largely dual-use, increasing the possibility that knowledge, skills, and equipment could be adopted to a biological agent program. Rapid advances in biotechnology are being accelerated by commensurate advances in information technologies known as bioinformatics.[5]

As the global biotechnology industry expands, nonproliferation efforts will have a difficult time keeping pace with the opportunities available to field a bioweapon.[6] And weapons are not the only potential contribution of this sector to new ways of war. Biotechnology may reshape medical practices

5. Bioinformatics is the use of databases and analytical tools for genome analysis and innovations in molecular biology. The potentially dramatic impact of bioinformatics is illustrated by a forecast from *The Economist* that holds that the market for products-derived computer biology is expected to be worth $40 billion in three years. One study holds that bioinformatics can reduce the cost of drug development by 18 percent and cut one year off developmental timelines. "The Race to Computerize Biology," December 12, 2002, at *economist.com/Story_ID=1476685*. Among its many applications to bio-warfare, bioinformatics can facilitate the identification of pathogens. See, for example, Statement of D.A. Henderson, Director, Office of Public Health Preparedness, Department of Health and Human Services, December 5, 2001, at *www.house.gov/science/full/dec05/henderson.htm*. Bioinformatics also holds great promise in developing therapeutic responses to a bio-attack. For example, studies show that variations in individual responses to therapeutic drugs are affected by genetic polymorphisms (variants in enzymes caused by slightly different amino acid sequences). Pharmacogenetics employs bioinformatics to assist in decoding and mapping millions of polymorphisms across the human genome, which can provide insights into the links between disease-causing genes and drug-response genes, facilitating the development of new therapeutic strategies. Michael M. Shi, "Diagnostics Meets Therapeutics: The Impact of Pharmacogenetics," *Drug Discovery Today,* Vol. 7, Issue 23 (December 2002), pp. 1161–1162.

(on and off the battlefield) and human performance, allowing for unprecedented levels of individual achievement and endurance.

Rather than driving the biotechnology revolution, the federal government is a fairly minor customer for this multi-billion-dollar transnational industry. Project Bioshield, a post-9/11 homeland security initiative to develop new vaccines and other prophylaxis and therapeutics against bioterrorist attacks offers one example. Funded for more than $6 billion over five years, one of the sharpest criticisms of the program is that the dollar amount is too small to attract the attention of major commercial research and development efforts. Nor is the United States alone on the cutting edge in biotechnology developments. In fact, many developing nations, such as Cuba and India, have very sophisticated research and production programs.

Private Sector, Public Wars

As in the past, technology will likely not be the only factor that drives military competition. The evolving character of the private sector could be another aspect of 21st century global change that dramatically affects the nature of conflict. The global free market has become a reality, and commensurate with this economic condition is the emergence of an unprecedented capacity for the private sector to expand, innovate, and adapt to market needs—including an ability to provide what once were considered military services offered solely by national powers.

The trend for militaries to increasingly outsource logistical and support functions is well established. Added to that, however, is the emerging use of private sector companies to provide traditional combat services, ranging from training soldiers to patrolling streets.[7]

The increasing importance of privatized military services was particularly apparent during post-conflict operations in Iraq. Among the many tasks that the private sector can perform, security assistance is the most essential. Establishing security is a precondition for conducting post-conflict operations. In particular, establishing effective domestic security forces must be the highest priority. Private sector firms have a demonstrated capacity to provide essential services including administrative support, training, equipping, and mentoring, as well as to augment indigenous police and military units. In Iraq, these services were essential for both standing-up the Iraqi security forces and augmenting the security provided by U.S. military troops. Private sector assets can assist in providing an important bridging capability during the period when American military forces withdraw and domestic forces take over.[8]

A reliance on private sector assets in war is likely irreversible. Unlike the public sector, the private sector is bred for efficiency. Left to its own devices it will always find the means to provide services faster, cheaper, and more efficiently than governments. In addition, as governments lose their monopolies over the technologies and means to generate combat power, their capacity to retain military prowess as a public activity will also be lost.

As long as free markets proliferate, the reemergence of the private sphere of war is inevitable. Nations that seek to hold back against this trend and limit the participation of the private sector will be left behind because they will lack the capacity to keep up with states that can harness the power of the marketplace.

On the other hand, there is good reason for liberal, developed states not to fear the reemergence of a prominent role for the private sector in war. There is little likelihood that the private sector's

6. Jonathan B. Tucker, "Putting Teeth in the Biological Weapons Convention," *Issues in Science and Technology* Spring 2002, p. 71–77.
7. Described in P.W. Singer, *Corporate Warriors: The Rise of the Privatized Military Industry* (Ithaca: Cornell University Press, 2003).
8. James Jay Carafano, "The Pentagon and Postwar Contractor Support: Rethinking the Future," Heritage Foundation *Executive Memorandum* No. 958, February 1, 2005, at *www.heritage.org/Research/NationalSecurity/em958.cfm.*

place in war will attend the rise of a new "Middle Ages" with sovereigns losing their capacity to manage violence. "Capitalism," as Fareed Zakaria cogently argues, is not "something that exists in opposition to the state….[A] legitimate, well-functioning state can create the rules and laws that make capitalism work."[9] Unlike medieval kings, modern nations can use the instruments of good governance to bind the role of the private sector in military competition.

The example of the United States illustrates the means that modern, liberal states have to both enable and harness the commercial capabilities of warfare that may remain partially, or even entirely, in the private sphere. The means available to moderate interaction between the public and the private sphere include the following:

- A well-established judicial system;
- An activist legislative branch with its own investigatory instruments (such as the Government Accountability Office);
- The "60 Minutes" factor—an independent press;
- Public interest group proliferation, which provides a wealth of independent oversight and analysis; and
- An enabled citizenry with ready access to a vast amount of public information.

These assets offer unprecedented means to balance the public and private spheres—not just to constrain government conduct, but also to limit the excesses of the commercial sector.[10] In fact, these capabilities might argue that in the long term, liberal, free market democracies will prove far more effective at mastering the capacity of the private sector in the 21st century than authoritarian states with managed economies.

That said, however, the role of the private sector in war raises innumerable legal, ethical, and practical issues that must be dealt with.[11] Marrying the private sector's capacity to innovate and respond rapidly to changing demands with the government's need to be responsible and accountable for the conduct of operations is not an easy task. It will require militaries to think differently about how best to integrate the private sector into public wars. Nor can generals do this thinking in isolation. Modern military operations are an inter-agency activity that requires the support of many elements of executive power. The judicial and legislative branches of government have important roles to play as well. Indeed, many of the most important instruments for constraining the role of the private sector in war lay in their hands.

Checkbook War

The state of public financing is a third factor that may govern the conduct of conflict far more dramatically than how a general implements the principles of war. In the decades ahead, developed nations could find that the nature of mature economies and demographics significantly constrain the amount of resources that they can dedicate to military campaigns.[12]

Government in the developed world has expanded substantially during the past century. The United States stands at the apex of this trend. One of the best measures of the burden that the federal government, as a whole, imposes on the national economy through its spending policies is the percentage of gross domestic product (GDP) taken up by outlays. During America's first 140 years, the federal government rarely consumed more than 1 or 2 percent of GDP. In accordance with the U.S. Constitution, Washington focused on

9. Fareed Zakaria, *The Future of Freedom: Illiberal Democracy at Home and Abroad* (New York: Norton, 2003), p. 76.
10. The list was adopted from James Jay Carafano and Paul Rosenzweig, *Winning the Long War: Lessons from the Cold War for Defeating Terrorism and Preserving Freedom* (Washington D.C.: The Heritage Foundation, 2005), pp. 88–89.
11. See, for example, T. Christian Miller, "Where Guarding a Life Hinders Doing the Job," *The Los Angeles Times*, March 25, 2005, p. A1.
12. The section on "checkbook war" was adopted from Carafano and Rosenzweig, *Winning The Long War*, pp. 138–140. The author would like to recognize the work of Baker Spring, F.M. Kirby Research Fellow at The Heritage Foundation, who substantially contributed to this research.

defense and certain public goods while leaving most other functions to the states or the people themselves. That changed in the 20th century. Between 1962 and 2000, defense spending plummeted from 9.3 percent of GDP to 3.0 percent. Nearly all of funding shifted from defense spending went into mandatory spending (mostly entitlement programs), which jumped from 6.1 percent of GDP to 12.1 percent during that same period.

This importance of this evolution cannot be understated. For most of the nation's history, the federal government's chief budgetary function was funding defense. The two-thirds decline in defense spending since 1962 has substantially altered the make-up and structure of the U.S. national defense.

Today, spending on defense and homeland security in the United States stands at about 4.0 percent of GDP, the highest level of investment since the end of the Cold War. However, this represents, on average, less than *half* what the nation spent before the fall of the Berlin Wall. And, unlike the Cold War period, post-Cold War defense spending is faced with unprecedented competition for federal dollars with mandatory government spending on entitlement programs.

Mandatory outlays for programs such as Social Security, Medicare, and Medicaid are consuming, and will continue to consume, ever-larger percentages of federal spending and total GDP. As a result, they will apply increasing pressure to crowd out the resources available to the government's traditional primary mission—providing security to the nation. And that will likely change how future wars are fought.

Nor is the United States unique in facing this dilemma. European nations, which already spend on average less than 2 percent of their GDP on defense, and spend much more of their national budgets on social services and entitlements, face similar predicaments. As potential economic and military powerhouses like China and India move from the ranks of the developing to the developed they will also confront the same kinds of challenges. In fact, India and China may encounter even more pressure to rein in defense spending since they will have much larger populations demanding higher levels of social services.

Conflict and the Demographic Dilemma

Demographic changes could well exacerbate the strain on developed economies to undertake military competition. As historian John Chambers summarized in his history of conscription in the United States, militaries are shaped as much by "trends in society as by the nature of war itself."[13] As nations develop, their population growth slows and the average age of the population increases, as does the cost of manpower. The result is an increasingly shrinking population available to run with the dogs of war.

In the future, the changes caused by the dynamics of demographics will accelerate, altering the character of modern military forces and their attributes as an instrument of battle. Although the rate of population increases in developed countries will slow, the total size of the population will continue to grow—and less of the national polity will be suitable for military service. The cost of military manpower will also increase as armed forces find themselves competing with the private sector for talented young people. The total size of militaries in relation to the nation as a whole will likely continue to decrease in the years to come. At the same time, as populations age, militaries will likely diversify those they seek to bring into the ranks to compensate for the shrinking pool of traditional military-age males. Thus, national forces might include more women, individuals with disabilities, non-citizens, and older persons—as well as a much higher percentage of reserve component personnel. Some analysts also argue that as the military comes to reflect an ever-smaller portion of the nation, a gap will develop that could threaten the nature of civil–military relations.[14]

At the same time, the use of conscription as a form of military service could well decline. With a trend toward fielding forces armed with more technology and more sophisticated skills, short-

13. John Whiteclay Chambers III, *To Raise on Army: The Draft Comes to Modern America* (New York: The Free Press, 1987), p. 276.

service conscription will be seen increasingly as inadequate, not allowing sufficient time to train forces and requiring excessive costs to frequently retrain new recruits. Likewise, with militaries becoming smaller in developed nations, conscription will be seen increasingly as socially divisive because it will be difficult to equitably draw on the available eligible pool of recruits. In all likelihood, military drafts will be viewed as inefficient and ineffective means for mobilizing manpower in developed, liberal democracies.

Finally, the impact of economic and demographic trends on the developed world could exacerbate the gap between how nations and non-state actors wage war in the 21st century. The span between the military capabilities of undeveloped, failing (and failed) states, developing nations, and the developed world will only grow in the decades ahead. As a result, the 21st century could well see a witch's brew of countries and non-state actors, such as transnational terrorist groups, fighting with very different means, employed in a polyglot of ways, toward a dizzying array of divergent ends. Thus, economic, cultural, and social trends could produce wars with an unprecedented level of asymmetrical engagements[15]—a further burden on the poor principles of war in adjusting to the challenges of the 21st century.

The Principles and the Future of War

The future "ain't" what it used to be. Most futurist projections envision tomorrow as an extension of current trends. The past, however, is not always prologue. The character of war in the 21st century could be significantly divergent from the inevitable march toward modern conflict that stretches from the Middle Ages to the present. War in the 21st century will be neither a private-or a public matter, but a civil activity that spans both worlds, with each realm having a substantial amount of autonomy and influence. Indeed, the main argument presented here is that the private sphere of warfare is on the ascendancy, destroying the nation-state's monopoly on the management of violence. As a result, consideration of military matters cannot be confined to the traditional place of battle. Frameworks—such as the principles of war—will be increasingly seen as anachronistic and counterproductive. Only military thinkers that understand how factors beyond the battle shape the conduct of conflict will earn the moniker of "genius for war."

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14. Lindsay Cohn, "The Evolution of the Civil-Military 'Gap' Debate," paper prepared for the Project on the Gap Between the Military and American Society, Triangle Institute for Security Studies, 1999, at *www.poli.duke.edu/civmil/cohn_literature_review.pdf*.
15. See, for example, Stephen Blank, *Rethinking Asymmetric Threats*, (Carlisle Barracks, Pa.: Strategic Studies Institute, Army War College, September 2003).