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Introduction **by Stephen A. Bourque**

Keith L. Shimko. ***The Iraq Wars and America's Military Revolution.*** New York: Cambridge University Press 2010. ISBN: 9780521111515 (hardback, $93.00); 9780521128841 (paperback, $28.99).

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Introduction by Stephen A. Bourque, U.S. Army Command and General Staff College

In January 1955, Michael Roberts, a Professor of early modern Swedish history, approached the podium at Queen's University, Belfast, Northern Ireland. A veteran of the Second World War and post-war government service in Stockholm, he had been at the university for a year. Roberts was working on a biography of the warrior-king Gustavus Adolphus, and was exploring the reasons for his phenomenal success during the Thirty Year's War. In this lecture, Roberts argued, tactical changes developed by the Dutch leader Maurice of Orange, during his war with Spain, not only changed the conduct of military affairs but exerted a profound effect on European and world history. Rather than simply narrating events, as was the standard method for most historians, Roberts sought to explain why these changes took place, what they meant in the immediate period, and what their long-term effects were. [1] It is doubtful Roberts realized the effect of this lecture, as it became a paradigm for understanding the nature of war and its effect on society.

Historians of early modern Europe were the first to expand on Roberts ideas. Was it a military revolution, or simply military evolution? Were there other military revolutions that changed the course of history?[2] Later, Soviet military theorists, seeking to explain American military developments in the post-Vietnam era, acknowledged—and feared—the beginnings of a ""military-technical" revolution" that threatened their own construct of war.[3] If it was a military revolution, what changes would affect world, and Soviet, society? The apparent American success in the 1991 war with Iraq seemed to confirm the Soviets' fears. Can we ascribe, in part, the end of the Russian empire to its failure to adapt to society's changes brought on by the profound changes in American military? Andrew Marshall and other Pentagon thinkers continued to explore ideas that indicated the United States could maintain world military dominance by *transforming* from a Cold–War-based military to a twenty-first century force.[4] President George W. Bush and his Secretary of Defence, Donald H. Rumsfeld, were determined to remake America's military smaller, more technologically advanced, and more lethal. Rumsfeld, embracing the concept of military revolutions and striving to transform the American military,from a Cold War to a twenty-

[1] Michael Roberts, "The Military Revolution, 1560-1660," in *The Military Revolution Debate*, ed. Clifford J. Rogers (Boulder, CO: Westview Press, 1956), 13-35.

[2] Roberts, "The Military Revolution, 1560-1660," in *The Military Revolution Debate*, ed. Clifford J. Rogers (Boulder, CO: Westview Press, 1956). Geoffrey Parker, "The 'Military Revolution, 1560-1660'--A Myth?," in *The Military Revolution Debate*, ed. Clifford J. Rogers (Boulder, CO: Westview Press, 1979).

[3] MacGregor Knox and Williamson Murray, *The Dynamics of Military Revolution: 1300-2050* (New York: Cambridge University Press, 2001), 3.

[4] MacGregor Knox and Williamson Murray, *The Dynamics of Military Revolution: 1300-2050* (New York: Cambridge University Press, 2001), 1-5. This is, perhaps, the best one-volume analysis of this debate.

first century force, led the movement as the administration embarked on the post-September 11 conflicts in Afghanistan and Iraq.[5]

Now, with the two American wars in Iraq apparently at an end, Keith L. Shimko, seeks to consider the issues of military revolution and transformation within the context of twenty years of warfare against Saddam Hussein's dictatorship. Were American military victories the result of overwhelming technological dominance or, as Stephen Biddle has argued, the result of Iraqi errors that helped the American cause and, without which, "the outcome would have been far different in spite of the Coalition's technology, and Coalition casualties would likely have reached or exceeded pre-war expectations."[6] Furthermore, if technological dominance exists, what does it mean to American military performance in the future? Does this period, as in the seventeenth century described by Roberts, herald fundamental revolutionary changes in war and society? Or do these changes simply confirm the results of accelerated technological evolution? The three members of this roundtable address these issues.

Jasen J. Castillo writes that Shimko has provided a coherent understanding of the background and nature of revolutions in military affairs. He praises the author for explaining the relationship between superior reconnaissance technologies and the ability to use precision weapons to engage enemy forces with minimal cost and devastating effect. However, he believes that Shimko has left three unresloved issues on the scholarly table: What is the scope of the revolutionary change? How wide-spread is this revolutionary change? Finally, how will these wars shape future American military techniques? Castillo, therefore, sees *The Iraq Wars* as the beginning of the discussion, rather than the end.

Forrest E. Morgan also praises Shimko for his analysis of the Revolution in Military Affairs (RMA) debate. Morgan notes that the author raises an important question: Did these technological capabilities raise unrealistic expectations as to the military's ability to deliver, cheaply and quickly, victory? An expert in the role of space in military operations, Morgan is concerned that the author gives only a superficial treatment to the role of space capabilities in transformation. American military dominance, he argues, is only sustainable so long as the Pentagon is supreme in regards to "spacepower."

Paul K. MacDonald, praises Shimko's clear writing style and comprehensive approach to evaluating the problem of Revolutions in Military Affairs. However, MacDonald is concerned that the author's "evenhandedness borders on equivocation." Was the 1991 Gulf War an element of the Revolution in Military Affairs, or not? He also argues that Shimko is not sufficiently precise as to the ways in which one evaluates case studies. What are the standards for determining if an event supports evidence of a RMA? Heis also concerned

[5] Michael R. Gordon and Bernard E. Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 5-10.

[6] Stephen Biddle, "Victory Misunderstood: What the Gulf War Tells Us about the Future of Conflict," *International Security 21*, no. 2 (Fall) 1996: 140.

that the author does not spend enough time defining the problem's scope, especially in relation to war's multiple levels (strategy, operations, tactics) and domains (land, sea, air, space). Finally, MacDonald expresses concern that Shimko's discussion of the implications of this Revolution in Military Affairs with regards to conventional and counter-insurgent conflicts. Referring back to his earlier comment on equivocation, he questions Shimko's position on this dilemma of modern war, and wonders what does means for future American military development?

All members of the roundtable agree that Professor Shimko has produced a readable and coherent analysis of the nature of modern military relations and how they apply to the post-Iraq American military. As the comments below indicate, *The Iraqi Wars and America's Military Revolution* will be a central resource in exploring this issue, as well as the debate unleashed by Michael Roberts over fifty-seven years ago. However, this debate in academic and military circles shows no sign of dissipating. Is the issue one of military revolution or military evolution, and why does it matter?

Participants:

Keith Shimko earned his Ph.D. from Indiana University and is Associate Professor of Political Science at Purdue University. In addition to *The Iraq Wars and America's Military Revolution*, he is the author of *Images and Arms Control: Perceptions of the Soviet Union in the Reagan Administration* (Michigan) and four editions of *International Relations: Perspectives and Controversies* (Cengage). He currently writing a book examining debates among American conservatives about the Iraq War entitled *Bush and Burke in Baghdad: American Conservatism and the Iraq War***.**

Stephen A. Bourque (Ph.D., Georgia State University) is a professor of history at the School of Advanced Military Studies, U.S. Army Command and General Staff College, where he teaches subjects related to the theory, history, and practice of the operational art of war. He retired in 1992 after twenty years enlisted and commissioned service, earning a bronze star for his service on Operation DESERT STORM. He is the author of several books and numerous articles including *Jayhawk! The VII Corps in the 1991 Persian Gulf War* (2002), *The Road to Safwan* (2007), and *Soldiers' Lives: The Post Cold War Era* (2008). He is a member of the editorial board of the *Journal of Military and Strategic Studies* (University of Calgary), and an active member of the Society of Military History. Currently, he is working on a history of the Allied bombing of France during the Normandy Campaign.

Jasen J. Castillo is an Assistant Professor at the George H.W. Bush School of Government and Public Service, where he is also the Scowcroft Institute for International Affair's Director of Research. He came to the Bush School after serving on the staff of the Policy Planning Office in the U.S. Department of Defense. Before then, he worked at the RAND Corporation. He holds a Ph.D. in political science from the University of Chicago. His publications include, *Flexible Response Revisited: Assessing Pakistan's Potential Nuclear Strategies*, PM-2383 (Santa Monica, CA: The Rand Corporation, October 2007); *Striking First: Preemptive and Preventive Attack in U.S. National "Security Policy*, Santa Monica, CA: The Rand Corporation, October 2004); "Nuclear Terrorism: Why Deterrence Still Matters,"

Current History, Vol. 2, No. 668 (December 2003), 3*Economic Growth and Military Expenditures*, MR-112-A, (Santa Monica, CA: The Rand Corporation, October 2002). He is currently working on a book manuscript entitled, "The Will to Fight: The Societal Ties That Explain Military Cohesion."

Paul K. MacDonald is an Assistant Professor of Political Science at Wellesley College. He has previously held positions at Williams College, the American Academy of Arts and Sciences, the Belfer Center for Science and International Affairs, the Olin Institute for Strategic Studies, and the Center for International Security and Cooperation. He has published articles in the *American Political Science Review, International Security, Review of International Studies, Security Studies, Daedalus,* and *Foreign Affairs.*

Forrest E. Morgan (PhD in policy studies, University of Maryland) is a senior political scientist at the RAND Corporation. His research at RAND has addressed a variety of military strategy and doctrine issues regarding such topics as deterrence and escalation management, crisis stability, information operations, America's dependence on space, and assessing the U.S. Army's performance in the 2010 Haiti relief operation. He is the author and co-author of several books, including: *Deterrence and First-Strike Stability in Space: A Preliminary Assessment* (RAND, 2010)*, Dangerous Thresholds: Managing Escalation in the 21st Century* (RAND, 2008), and *Compellence and the Strategic Culture of Imperial Japan: Implications for Coercive Diplomacy in the 21st Century* (Praeger, 2003). Morgan's current research examines approaches for managing escalation risks in conventional conflicts with nuclear-armed regional adversaries.

Review by Jasen J. Castillo, George H.W. Bush School of Government and Public Service, Texas A&M University

What do two lopsided American victories against the Iraqi armed forces mean for the future of warfare? According to Keith Shimko, they signal a transformation of what determines success and failure in modern war. *The Iraq War and America's Military Revolution* advances the debate over the existence and scope of this transformation by giving defense planners and scholars a framework by which to judge the evidence from these recent conflicts on their own. Shimko outlines the key features of this Revolution in Military Affairs (RMA), and speculates on what they mean for the low-intensity conflicts of today and how they might shape the high-intensity conflicts of the future.

Advocates as well as skeptics of a transformation in warfare will find the book valuable because it presents the most coherent statement to date in support of the RMA. Shimko identifies an appropriate set of cases to demonstrate the plausibility of an American Revolution in Warfare. By focusing on U.S. military operations since the end of the Cold War he outlines what he sees as the radical developments that have emerged in modern warfare. Shimko writes clearly and his volume is easy to read.

The subject should interest general readers of military affairs, policy-makers, and scholars of international security. Teachers could assign the volume to upper-level undergraduates but it will certainly end up on the syllabi of a graduate introductory course on security studies. I teach it in my survey course of the modern American military. Moreover, it joins Stephen Biddle's *Military Power* and Tom Mahnken's *Technology and the American Way of War Since 1945* as scholarlys work that could help defense planners think about future military operations.[1]

The volume makes two important contributions to the debate over the existence of a Revolution in Military Affairs. First, the book organizes the large, unwieldy literature on the RMA in order to define the Revolution's core features. Given the cumbersome and obtuse terminology that supporters often use to describe the changed nature of warfare, this is no easy task. Shimko traces the long intellectual pedigree of the RMA, starting with its Cold War origins and culminating with the emergence of its chief advocates in the triumphant afterglow of the first Gulf War. Among RMA's proponents, he details both areas of dispute as well as consensus. Although a variety of views exist on what constitutes this Revolution, Shimko outlines what most sympathetic analysts see as its essential elements: the precision strike and superior surveillance technology.
The book's second contribution to our understanding of the revolution in warfare comes from its detailed discussion of recent U.S. campaigns. Shimko uses post-Cold War conflicts to illustrate how the combination of precision strikes and superior reconnaissance technologies allowed the U.S. to dominate the conventional battlefield. Because of the RMA,

[1] Stephen Biddle's *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton: Princeton University Press, 2004); Thomas G. Mahnken, *Technology and the American Way of War Since 1945* (New York: Columbia University Press, 2008).

the United States could rely on fewer forces than in previous wars. This observation becomes most apparent in the assessment of Operation Iraqi Freedom, where the U.S. and its allies deployed a significantly smaller force in 2003 than they had done during the First Iraq War 1991. Not only did the RMA permit decisive victory with less mass (a reference to fewer personnel and platforms), but the U.S. could also conduct high-intensity operations simultaneously across the Iraqi theater of war. Precision-strike capabilities magnified the effects of firepower, and reconnaissance technology reduced the fog of war, revealing information about enemy dispositions and intentions. Wisely, Shimko also describes why this Revolution applies only to high-intensity military operations conducted by national armies. This Revolution covers neither the counter-insurgency nor the stabilization challenges the U.S. faced after major combat operations in Iraq and Afghanistan.

Despite these important contributions, the book leaves defense planners and scholars with three sets of unanswered questions as they try to understand the future operational environment. First, how revolutionary is the change described in Shimko's book? Does he describe a revolution or merely a collection of lopsided victories? In all of the cases examined in the book, the U.S. and its coalition partners possessed advantages in some, if not all, of the following factors: wealth, strategic decision-making, battlefield skill, and military cohesion.

Consider, for instance, the 1990-1991 U.S. campaign in the Persian Gulf. In this war the Iraqi military posed the greatest military challenge to the United States. Of considerable size, armed with third-generation Soviet weapons, and seasoned in an eight-year war with Iran, the Iraqi Armed Forces should have posed a greater obstacle to the U.S. and its allies. For this reason, many American analysts at the time predicted the U.S.-led coalition would find it extremely difficult to eject Saddam Hussein's formidable army from Kuwait. The coalition assembled by President George H.W. Bush might win, they declared, but not easily.[2] As Shinko demonstrates, most of these analysts came to the wrong conclusion and Saddam's army crumbled quickly.

There are a number of reasons why Iraqi forces suffered a terrible loss, despite their impressive size and hardware. Shimko, like most RMA proponents, attributes the trouncing to superior U.S. precision-strike and reconnaissance capabilities. However, the explanation for the outcome seems over-determined by other factors. Coalition forces came from countries whose combined economic might dwarfed Iraq's gross national product. By Shimko's own account, the allies chose the right strategy to inflict a decisive victory.[3] In

[2] For representative views see, Edward N Luttwak, "Iraq Will Be Tough to Dislodge," *The New York Times*, January 13, 1990; Joshua M. Epstein, "War with Iraq: What Price Victory?" Briefing Paper, Brookings Institution, December 1990; and, Anthony Lewis, "Abroad at Home; The Argument For War," *The New York Times*, December 14, 1990. A dissenting view came from John J. Mearsheimer, "A War the U.S. Can Win - Decisively," *Chicago Tribune*, January 15, 1991.Summarizing this debate is Joel Achenbach, "The Experts, In Retreat; After-the-Fact Explanations For the Gloomy Predictions," *The Washington Post*, February 28, 1991.

[3] On the role of strategy in determining decisive victories see John J. Mearsheimer, *Conventional Deterrence* (Ithaca: Cornell University Press, 1983).

addition, Iraqi soldiers could not match the training of U.S. forces.[4] A sizeable literature explains how and why a lack of military skill can lead to poor performance on the battlefield.[5] Finally, Iraqi forces showed varying degrees of military cohesion, with some units fighting and other breaking when attacked. The capacity of national militaries to fight with determination under different strategic circumstances also determines success or failure in war.[6]

The problem for RMA advocates like Shimko is that these other advantages were nearly always present for the U.S. in subsequent wars. In Bosnia, Kosovo, Afghanistan, and, again, Iraq, the Armed Forces of the United States went into battle with superior wealth, often making better strategic choices, displaying greater skill, and often exhibiting more military cohesion than their opponents. As a result, it becomes nearly impossible to isolate precision strikes and surveillance technologies, which are the core of the RMA, as the reason for these decisive U.S. victories. These problems ultimately leave the reader wondering whether these conflicts represent a good test of the RMA or whether they merely show what happens when a great power, choosing wisely, goes to war against materially weak, inept, and undetermined adversaries. I am not sure Shimko resolves this on-going debate with these set of cases in his book.

Second, how widespread is this Revolution? What is the scope of the RMA? Shimko acknowledges that the U.S. holds a monopoly, but defense planners will want to know for how long they can depend on it. They will also want to know if adversaries will eventually innovate and adopt the technologies necessary to join this Revolution. How readily

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[4] Daryl G. Press, "Lessons from Ground Combat in the Gulf: the Impact of Training and Technology," *International Security*, Vol. 22, No. 2 (Fall 1997), pp. 137-146; Stephen Biddle, "The Gulf War Debate Redux: Why Skill and Technology Are the Right Answer," *International Security*, Vol. 22, No. 2 (Fall 1997), pp. 137-46; Thomas G. Mahnken and Barry D. Watts, "What the Gulf War Can (and Cannot) Tell us about the Future of Warfare," *International Security*, Vol. 22, No. 2 (Fall 1997) pp. 151-162.

[5] For discussions on skill see Stephen Peter Rosen, *Societies and Military Power: India and Its Armies* (Ithaca, NY: Cornell University Press, 1996); Risa A. Brooks, *Shaping Strategy: The Civil-Military Politics of Strategic Assessment* (Princeton: Princeton University Press, 2008); the essays in Risa A. Brooks and Elizabeth A. Stanley, eds., *Creating Military Power: The Sources of Military Effectiveness* (Stanford: Stanford University Press, 2007); James T. Quinlivan, "Coup-proofing: Its Practice and Consequence in the Middle East," *International Security*, Vol. 24, No. 2 (Fall 1999). The foundational study on this subject remains *Military Effectiveness*, 3 volumes, Allan R. Millett and Williamson Murray, ed. (Boston: Allen & Unwin, 1988).

[6] For a discussion why national militaries vary in their capacity to hold together and fight with determination under difficult strategic circumstances see Jasen J. Castillo, "The Will to Fight: The National Sources of Military Cohesion," Draft Manuscript Under Review, George H.W. Bush School of Government and Public Service, Texas A&M University, May 2012. For representative sources on combat motivation see Edward A. Shils and Morris Janowitz, "Cohesion and Disintegration in the Wehrmacht in World War II," *Public Opinion Quarterly*, Vol. 12, No. 2 (Summer 1948), pp. 280-315; John A. Lynn, *The Bayonets of the Republic: Motivation and Tactics in the Army of Revolutionary France, 1791-1794*, 2nd. ed. (Boulder: Westview Press, 1996); and, Barry R. Posen, "Nationalism, the Mass Army, and Military Power," *International Security* Vol.18, No. 2 (Fall 1993), pp. 80-124.

potential U.S. opponents can acquire the precision strike and surveillance technologies is not clear. [7]

Similarly, will the Revolution in Military Affairs work as well at sea as it did during the land campaigns discussed in Shimko's book? A few years ago, a consensus seemed to exist that the U.S. commanded the commons. This would not surprise advocates of the RMA given their confidence in U.S. military technology.[8] Recently, however, some analysts have argued this command of the commons has weakened. China's anti-access, area-denial strategy, for example, appears to have curtailed the U.S. ability to project air and naval power into the Straits of Taiwan.[9] If U.S. conventional advantage have begun to weaken in places like East Asia, for example, then the implications for the RMA seem difficult to interpret. This development could mean that recent U.S. victories reflect nothing more than lopsided successes against inferior opponents. It could also mean that capable adversaries can find ways to offset the RMA, or even that some countries, like China, might stand on the verge of joining the Revolution.

Other countries, like Iran, North Korea, and even Russia, appear to have concluded that nuclear weapons offer a potential shield against superior U.S. conventional forces. None of the wars discussed in Shimko's book took place against nuclear-armed states. Today, U.S. defense planners have begun to study more closely the problem of projecting military power against nuclear-armed adversaries. Interestingly enough, preventing Iraq from acquiring nuclear weapons was one of several U.S. motives for the second campaign against Saddam Hussein. The Persian Gulf War would have looked much different had Iraq possessed nuclear weapons. Borrowing a page from American strategy to protect NATO, some states seem to believe that nuclear weapons could deter the United States from using formidable conventional forces against them. Nuclear weapons, then, could represent a potential limit to the RMA.

Third, do the Iraq Wars mark a Revolution in Military Affairs by changing how battles are won or lost? In the book's conclusion, Shimko gives a vague explanation for why revolutionary change has taken place. At one point he describes the RMA as a qualitative change in the nature of warfare because these new technologies force the United State to develop new core competencies. By this observation I think he means the U.S. must craft a new, more suitable military doctrine to fit a radically different operational environment. What it takes to win battles today is very different than it was in the past.

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[7] These are some of the questions explored in Michael C. Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton: Princeton University Press, 2010).

[8] Barry R. Posen, "Command of the Commons," *International Security*, Vol. 28, No. 1, Summer 2003, pp.5-46; and more generally, William C. Wohlforth, "The Stability of a Unipolar World," *International Security*, Vol. 24, No. 1, Summer 1999, pp.5-41.

[9] Andrew F. Krepinevich Jr., "The Pentagon's Wasting Assets," *Foreign Affairs*, July/August 2009.

This claim directly refutes Stephen Biddle's argument that the nature of conventional warfare has largely remained unchanged since the First World War. Because firepower dominates the battlefield, attackers and defenders must adopt specific tactics to win engagements. Success depends on adopting what Biddle calls *the modern system*, the use of cover, concealment, small-unit maneuver, and dispersion to fight in the presence of such lethal firepower. For Biddle, the more things change in war, the more they remain the same.

If the Revolution in Military Affairs represents a radical departure from the past, then military organizations no longer need to adopt the tactics of the modern system. By definition, political revolutions upend long-standing political institutions, so it follows that a military revolution would render the modern system obsolete. Instead, Shimko argues that improved precision-strike and reconnaissance technologies, the core features of the RMA, have helped U.S. forces perform better *using the modern system*. The RMA is not a qualitative change, but rather a quantitative change: new technologies enable the U.S. to strike more targets with greater precision. Dominant firepower still defines the contemporary battlefield, like it did in World War I, but today the U.S. possesses technologies that bestow advantages within the modern system. At the end of the book, then, I come away with the impression that the U.S. has not experienced a revolution in warfare but rather evolutionary improvements in military technology. This conclusion is less dramatic, but probably more prudent for defense planners, especially after the turmoil of the last few American wars.

Shimko has improved our understanding of the Revolution in Military Affairs. The key contributions of this book rest in its ability to clearly layout the foundational arguments for the RMA and to provide us with a clear discussion of its defining characteristics, precision-strikes and surveillance technologies. Nevertheless, for scholars, more work remains. Students of national security must now decide whether the last few U.S. wars represent something new or reflect old-fashioned disparities in capabilities between strong states and weak states. Although researchers might find it hard to find another set of cases to test whether an RMA has emerged, some observable hypotheses and associated causal logics could provide a next logical step in this research agenda. Similarly, we must assess whether the RMA, Biddle's modern system, or some other perspective provides the framework by which to see future wars. Finally, defense planners and scholars must determine, if a Revolution in Military Affairs has in fact taken place, what it might mean for wars between countries with more evenly-matched capabilities, for wars not on land but perhaps at sea, and for conflicts under the shadow of nuclear weapons.

Review by Paul K. MacDonald, Wellesley College

Have information technologies and precision weaponry transformed the nature of warfare? Were the rapid, decisive victories by the United States in the 1991 Gulf War and the opening weeks of the 2003 Iraq War signs of an impending Revolution in Military Affairs (RMA)? These are just some of the questions that Keith Shimko addresses in his impressive and well-written new book, *The Iraq Wars and America's Military Revolution*. Although he does not provide a clear answer until the conclusion, the argument that Shimko develops is both nuanced and convincing. "The case for a contemporary RMA," he writes, "is persuasive, if not definitively compelling" (214). In particular, the technological innovations that have enhanced the capacity of the United States military to identify, locate, track, and target certain types of military assets represent "a potentially revolutionary change in the character of war" (216). In the opening phases of both of its recent wars with Iraq, for example, the American military's ability to strike a variety of distant targets quickly and precisely "contributed significantly to the favorable outcomes for the United States" (216).

At the same time, Shimko is neither a technological determinist nor an RMA triumphalist. He is careful to note that the advantages provided by enhanced reconnaissance and precision-strike capabilities "varies by conflict and opponent, as does the value of destroying those targets" (217). Here Shimko draws a reasonable contrast between conventional and unconventional military operations. He notes that the "information gathering and targeting technologies that define the RMA are by their very nature better suited to revolutionizing conventional war" (218). Yet the lethality and firepower that is often decisive in conventional wars that are "enemy-centric" may be ineffective – if not counterproductive – in counterinsurgency operations that are "population-centric" (209). The telling contrast here is between the opening weeks of the Iraq War, where parallel strikes against strategic and operational targets disrupted and destroyed much of the fighting power of Iraq's conventional armed forces, and the subsequent insurgency, where small bands of Iraqi fighters evaded detection and harassed unprepared and undermanned American forces.

One of the notable characteristics of this book is its clarity, a virtue that much of the voluminous literature on the RMA cannot claim. Shimko cuts through the unnecessary jargon and military argot that plagues much of this writing, providing clear and succinct summaries of central RMA concepts such as 'parallel warfare' 'systems within systems,' 'shock and awe, 'net-centric warfare,' 'effects-based operations,' 'transformation' and 'jointness,' among many others. An additional feature of this book that merits praise is its fair and impartial approach. In his assessments of the relationship between new technologies and battlefield outcomes in conflicts ranging from the Gulf War to Kosovo, Afghanistan, and the Iraq War, Shimko gives equal time to both the RMA's staunch advocates and its bitter critics. He provides the necessary context to temper the extreme

predictions of writers such as Alvin and Heidi Toffler, and George and Meredith Friedman.[1] Yet he also notes how skeptics such as Stephen Biddle frequently hold arguments in favor of the RMA to impossibly high standards.[2] In the end, Shimko concludes that the impact of new technologies and the doctrines associated with them will be mixed: they will transform some military activities, but not all of them. They will be decisive in some conflicts, but not others. They will influence the conduct of war, but not alter its fundamental character.

There are places, however, where Shimko's evenhandedness borders on equivocation. In his discussion of America's lopsided victory in the 1991 Gulf War, for example, he notes that precision guided munitions made up a small fraction – less than 10 percent – of the ordinance used in the war and that Iraqi forces were poorly trained and suffered from low morale (68). Yet he maintains that "there undoubtedly were elements of the Gulf War supporting the case for an RMA" (89). Similarly, in his discussion of the Kosovo War, he acknowledges that the combination of poor weather and Serbian air defenses complicated NATO's air operations, that airstrikes failed to degrade Serbian forces in Kosovo itself and may have accelerated ethnic cleansing, and that precision guided munitions again represented only a small portion – roughly twenty-nine percent – of all ordinance used (112). In the end, Shimko concludes that Kosovo "revealed how far the United States had come in exploiting some technologies, but also how far it had yet to go with others" (129).

These conclusions highlight three remaining questions I had after reading Shimko's analysis. The first concerns the metrics by which we should evaluate whether a particular case qualifies as evidence for or against the RMA. Shimko is clearly aware of the difficulties of defining appropriate standards by which to judge the RMA. Indeed, he criticizes Biddle for arguing that innovations must enable militaries to "see and destroy anything on the Earth's surface regardless of cover or concealment" for them to qualify as evidence in favor of the RMA (17). Yet it is unclear what alternative metrics Shimko is employing when he makes positive claims on behalf of the RMA in cases such as the Gulf War or Kosovo. Are lopsided victories alone evidence of the RMA? Is the breadth and speed by which the United States can strike at enemy targets in and of itself evidence of an RMA? Can we prove the existence of an RMA simply by counting the number of precision munitions used or enemy targets destroyed?

One of the obvious challenges in evaluating the impact of the RMA is that battlefield outcomes are driven by a variety of interacting factors – including the size and structure of the opposing forces, the skill by which they are employed, and so on. Compounding this problem is the fact that militaries make operational and tactical choices in response to their

[1] See, for example, Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (New York: Little, Brown and Company 1993); and George and Meredith Friedman, *The Future of War: Power, Technology and American Dominance in the 21st Century* (New York: Crown 1996).

[2] Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton: Princeton University Press 2004).

adversaries, often to exploit or compensate for imbalances in technology or skill. For these reasons, one wishes that Shimko had made his accounting clearer and entertained counterfactuals in a more rigorous manner. Had the United States not employed precision munitions in the Gulf War, what would have been different? Would the critical engagement of tanks at 73 Easting, for example, have played out differently had American tanks not possessed advanced thermal sights? Similarly, had the United States not used airborne assets such as the Joint Surveillance Targeting and Attack Radar System (JSTARS) to track and target Iraqi ground forces during the 2003 invasion, which outcomes might have changed? Would ambushes of the kind the 3rd Infantry Division encountered around Samawah in late March, for example, have proved more crippling? This kind of close analysis is critical for assessing which elements of the RMA are most important and which specific aspects of warfare have been transformed.

The second question raised by Shimko's analysis concerns the scope conditions of the RMA. Shimko is quite right to argue that context matters a great deal in assessing the impact of information technologies or precision strike capabilities on warfare (206-207). Yet it is often unclear what precisely Shimko means by context, as well as which contexts matter most. Does the impact of the RMA, for example, depend on whether one is examining strategy, operations, or tactics? Shimko tends to discuss these three levels of war as a whole, although one of the more incisive critiques of the Iraq War is that the impact of the RMA was vital at the level of operations, yet inefficacious and perhaps self-defeating in terms of strategy.[3] Similarly, might the influence of the RMA vary by particular missions or combat functions? As is the case in most of the literature, Shimko focuses on the role of airpower and – to a lesser extent – ground forces. Does this suggest that the RMA is less relevant in the realm of naval power? Similarly, Shimko emphasizes the importance of the RMA in areas such as intelligence and fire support. Does this suggest that the RMA is less relevant to combat functions such as maneuver, survivability, logistics, or command? These specific distinctions crop up throughout Shimko's careful case studies, yet a more explicit attempt to theorize across levels and functions might have provided a more systematic picture of the scope and depth of the RMA over time.

As noted, the one area where Shimko is most explicit in terms of the relative reach of the RMA is in the realm of conventional versus unconventional warfare. He claims that in counterinsurgency operations, in particular, "critical military assets are much less susceptible to military detection" (207). As a result, networks of sensors and strike platforms will be less important than "knowledge of local culture and regular interaction with the local population" (208). Yet even here, it is difficult to draw clear distinctions. In certain contexts, information technologies can help counterinsurgency operations by facilitating the mapping of local social networks, the collection and processing of biometric data, and the interception of insurgent communications. Many authors have noted that advanced airpower, especially unmanned aerial vehicles (UAVs), can play a critical role in

[3] Shimko notes these potential connections, but dismisses arguments that blame the RMA for strategic missteps during the Iraq War. Instead, he faults the myopia of political leaders for the failure to adequately plan for and commit the resources necessary for nation building (204-206).

counterinsurgency operations.[4] Conversely, it is unclear whether superior signals or imagery intelligence is a panacea in conventional wars. The confidence of Israeli military intelligence in these indicators, at the expense of human assets, was one of the many reasons why Egypt and Syria were able to achieve surprise in the 1973 Yom Kippur War.

A final question concerns the implications of Shimko's claims. As he notes, there is a fierce debate currently taking place inside the American military establishment about the utility of investing in forces optimized for conventional war fighting versus counterinsurgency operations (224-226). This debate mirrors those surrounding the RMA, and has become all the more contentious in light of the Obama Administration's 'pivot to Asia' and the prominence of new doctrines, such as Air-Sea Battle, inside the halls of the Pentagon. Given his ecumenical 'it depends' stance on the RMA, it is unclear what Shimko would make of these debates. On the one hand, his description of the halcyon days of the Gulf War would thrill supporters of conventional war fighting. On the other hand, his cautionary tale of the Iraq occupation would reinforce the claims of counterinsurgency advocates.

In the end, the most relevant factors in these debates may be beyond the scope of Shimko's analysis. The wisdom of investing in a particular force structure, after all, is not simply a matter of military effectiveness, but also efficiency. There may well be an RMA underway, yet the cost of purchasing squadrons of fifth-generation F-22 fighters and fleets of *Zumwalt*-class stealth destroyers has proven prohibitive. Moreover, the effectiveness of these tools is as much a function of grand strategy as operational art. As Shimko notes, American policymakers have a dispiriting tendency to overestimate the utility – and underestimate the risks – of using military force (204).Whether in Vietnam, Somalia or Iraq, the United States military is often asked to perform missions that would be difficult, whatever its particular technological investments. The RMA may indeed be here, yet given the twin constraints of austerity and domestic politics, its impact may be even more circumscribed than Shimko acknowledges.

[4] See, for example, Charles J. Dunlap Jr., *Shortchanging the Joint Fight? An Airman's Assessment of FM 3-24* (Maxwell AFB: Air University Press 2007). Shimko himself notes the importance of UAVs in supporting operations in Baghdad during the 2007 surge (210).

Review by Forrest E. Morgan, RAND Corporation

Scores of books have been written about the Revolution in Military Affairs (RMA) since the concept gained public attention after the 1991 Gulf war, but few have done a better job of navigating the complex, evolving RMA debate than Keith L. Shimko's *The Iraq Wars and America's Military Revolution*. This is a commendable achievement, given the degree to which the theory's scope and causal mechanisms are vague and, consequently, the many arguments it generates.

Origins of the concept can be traced to Soviet military writers who, witnessing the dramatic advances in high-tech weaponry being acquired by U.S. forces in the closing decade of the Cold War, postulated that the United States was on the cusp of a military technological revolution that threatened to nullify the numerical advantages that the Soviet Union enjoyed in conventional forces in Europe.[1] America's performance in the 1991 Gulf War confirmed that assessment in the minds of many U.S. and Soviet military analysts.[2] Yet that opinion was not universally accepted, nor did those who did believe a revolution was underway agree on its character or scope. These questions launched a debate that continued for the next two decades and remains unresolved today. Shimko does an exemplary job of detailing that debate and then assessing the performance of U.S. military forces in the Gulf War and subsequent conflicts in order to weigh the substance of alternative arguments about the RMA. He sets out to answer two fundamental questions about this period in the American military experience: "What are the military lessons of the Iraq wars for the future of American defense policy?" and "Should the Iraq wars be seen as a turning point in the history of warfare?"(25).

Shimko begins his treatment of the topic with a survey of contemporary arguments about the RMA, exploring definitional issues, such as what exactly constitutes an RMA and what distinguishes it from military revolutions more broadly. Much of this argument and those that follow come down to the question of what constitutes revolutionary change in terms of the conduct, process, or character of warfare. He maps this theoretical landscape in detail, juxtaposing the work of RMA skeptics such as Stephen Biddle with a range of writers who disagree less about whether a revolution has taken place than what caused it and what it entails.[3] All of those in the latter category agree that something fundamental has changed

[1] For an analysis of Soviet writings on the military technological revolution, see: Jacob W. Kipp, "The Russian Military and the Revolution in Military Affairs: A Case of the Oracle of Delphi or Cassandra?" a paper presented at the MORS Conference, Annapolis, Maryland, 6-8 June 1995, available at: http://www.fas.org/nuke/guide/russia/agency/rusrma.htm, accessed 4 September 2012.

[2] See for instance, Andew F. Krepanevich, Jr., "Keeping Pace with the Military Technological Revolution," *Issues in Science and Technology* Vol. 10 (Summer 1994), pp. 23-29; Mary C. Fitzgerald, "The Soviet Image of Future War: Through the Prism of the Persian Gulf," *Comparative Strategy* Vol. 10, No. 4 (1991), pp. 393-435.

[3] See Biddle's argument in Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, N.J.: Princeton University Press, 2004).

in the way U.S. forces fight, resulting in a dramatic increase in effectiveness as compared to earlier eras, and most of them agree that the changes involve advances in technology coupled with doctrinal and organizational innovations. But opinions differ regarding which advances and which innovations have been the most instrumental in making U.S. forces so effective. Some, such as Jacob Kipp, Jeffrey Cooper, and Alvin and Heidi Toffler see the revolution in broad terms, citing a shift from mass industrial warfare, which characterized most of the twentieth century, to the information warfare that they maintain characterizes the current age.[4] Others, such as Benjamin Lambeth and Richard Hallion, see the RMA as the long awaited fulfillment of promises made by early air power theorists, arguing that technology has finally granted air weapons the requisite precision, lethality, and sustainment in firepower to become the dominant instruments of war, thereby revolutionizing warfare.[5] Others, such as Eliot Cohen and William Owens, are more circumspect in their claims or focus on narrower aspects of the RMA, such as how information technology has enabled the coordination of sensors, weapons, and decision makers in the execution of Net-Centric Warfare (NCW).[6]

To provide a background for this discussion, Shimko traces the roots of the current RMA to the technological advances that began to emerge in the late stages of the Vietnam War, which accelerated in subsequent years, and to the doctrinal and organizational reforms motivated by that frustrating chapter in U.S. military history. He then begins his historical analysis of the wars in which U.S. forces have fought since the end of the Cold War. As the title of the book suggests, the Iraq wars are featured, but to his credit, Shimko also addresses other conflicts in which the United States was involved during the period and examines the implications of those events in terms of arguments about the nature, scope, and relevance of the RMA. He starts by summarizing the planning and execution of the First Gulf War, explaining how the United States harnessed its emergent transformational technologies to enable coalition forces to quickly gain air dominance, hammer Iraqi targets in thirty-eight days of air bombardment, and execute a classic flanking maneuver—one which, without the coalition's informational advantage, would have been a high-risk venture—to rout Iraqi forces in dramatic fashion.

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[4] Jacob W. Kipp, "The Labor of Sisyphus: Forecasting the Revolution in Military Affairs During Russia's Time of Crisis," in Thierry Gongora and Harald von Riekoff, eds., *Toward a Revolution in Military Affairs? Defense and Security at the Dawn of the Twenty-first Century* (Westport, Conn.: Greenwood Press, 2000), pp. 87-93; Jeffrey R. Cooper, "Another View of the Revolution in Military Affairs," John Arquilla and David Ronfeldt, eds., *In Athena's Camp: Preparing for Conflict in the Information Age* (Santa Monica, Calif.: RAND, 1997, pp. 111-115; Alvin Toffler and Heidi Toffler, "War, Wealth, and A New Era in History," *World Monitor*, Vol. 4, No. 5 (May 1991), pp. 46-52; Alvin Toffler and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (Boston, Mass.: Little, Brown and Co., 1993).

[5] Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, N.Y.: Cornell University Press, 2000), pp. 297-298 and 302; Richard P. Hallion, *Storm Over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian, 1992) p. 254.

[6] Eliot Cohen, "Change and Transformation in Military Affairs," *Journal of Strategic Studies*, Vol. 27, No. 3 (September 2004), pp. 403-407; William Owens, "The Emerging U.S. System of Systems," *Strategic Forum* No. 63 (February 1996).

He then relates the developments that transpired between the Gulf wars. He describes the U.S. experience in Somalia, where the struggle to pacify multiple factions of irregular adversaries in a dense urban setting rendered many of the technological advantages enjoyed in the Gulf War irrelevant. He contrasts this with the Kosovo conflict, one in which rapid air dominance and a coercive air campaign enabled NATO air forces to impose a settlement on Serbia without the use of ground forces. Along the way, he weaves in discussions about the technological advances that emerged in the 1990s, such as the Global Positioning System (GPS) satellite constellation's attainment of full operational capability in 1995, and Joint Direct Attack Munitions (JDAMs), which became operationally available in 1997, thereby harnessing GPS's all-weather, precision-guidance potential. More significantly, he examines the theoretical developments that emerged in the era, such as NCW and "Shock and Awe", showing how, particularly in the latter case, attempting to develop theory in a "strategic vacuum"—that is, without consideration of a specific adversary to provide geographical, military, and political context—can result in ideas that are disconnected from reality (129-130).

With that groundwork laid, Shimko turns to the United States' post-911 conflicts. Again he contrasts cases in which Western advantages in technology have translated to dramatic victories against conventional opponents at the operational level of war with those in which irregular adversaries have found ways to nullify many of those advantages and drag out conflicts to U.S. strategic disadvantage. He points out that this is not a problem unique to this RMA or the current era. Napoleon Bonaparte and Adolph Hitler both imposed rapid defeats on conventional adversaries, only to find themselves bogged down in long-term struggles with guerillas and resistance movements in the territories they occupied. Yet he raises the insightful question of whether America's fascination with RMA theories and faith in the transformational technologies it pursued so aggressively in the 1990s led U.S. military and political leaders to unrealistic expectations about the scope of their capabilities and the nature of future opponents.

He conducts all of these discussions in an objective and dispassionate manner. Drawing from the evidence he provides in his historical case studies, Shimko leads readers through a balanced appraisal of the many arguments that comprise the RMA debate. He continues this analysis in the concluding chapter where he returns to his two central questions: whether the Iraq wars provide military lessons for the future of American defense policy, and whether they should be seen as a turning point in the history of warfare. This is all admirable work, but as strong as it is, one aspect of it bears criticism.

Although Shimko does an exemplary job of documenting most of the technological, organizational, and doctrinal developments that comprised America's military transformation from the Vietnam War to the present, there is one important area to which he gives only superficial treatment. That is the central enabling role of space capabilities in all transformational concepts. Granted, he mentions the use of space-based intelligence, surveillance, and reconnaissance (ISR) assets for targeting and the use of GPS data for navigation and precision weapons guidance, but there is a larger story to be told about how space capabilities and the military organizations that operate them were transformed from

providing support almost exclusively to strategic nuclear missions during the Cold War to becoming a central pillar in conventional military operations in the post-Cold War era. The organizational side of that story addresses the activation of U.S. Space Command and its service component commands, such as Air Force Space Command, in the 1980s, and the subsequent reorganizations that occurred after the First Gulf War. The doctrinal side of the story explains how space operators had to reorient their thinking and ways of doing business in order to provide tactical support to conventional forces. War fighters, in turn, had to learn what was available from space and how to apply it most effectively. But the most important aspect of the story about space in the RMA involves the interdependence between technology and theory. Virtually all of the theories about how to transform the U.S. forces that have emerged since the First Gulf War assume the United States will retain the information dominance it has enjoyed thus far in the post-Cold War era. That dominance depends heavily on the availability of space-based ISR and information networks built on a communications backbone residing largely in space. In fact, some analysts even argue that "spacepower" *is* the real RMA, or at least will be in the future.[7] Whether such an assertion is sustainable, the fact that the U.S. national security space architecture is becoming increasingly vulnerable to hostile interdiction—it is more than mere coincidence that China has begun developing counterspace capabilities, such as the ground-based, direct-ascent, kinetic anti-satellite (ASAT) weapon it successfully tested in January 2007—raises questions about the future viability of U.S. transformational concepts, the answers to which bear on both of Shimko's central questions.

Despite this oversight, this book is well worth reading. Shimko does a commendable job of summarizing the many facets of the RMA debate and testing alternative arguments against the historical record. His use of evidence is thorough and exacting, and his argumentation is clear and precise. His conclusion that, "The experience of the last two decades suggests that although the answers are complex on balance the case for a contemporary RMA is persuasive, if not definitively compelling" may not be fully satisfying, but it is a reasonable finding given the complexity of the issues (214). I highly recommend this book to policy makers, senior military officers, security policy analysts, and students of contemporary security studies.

[7] See for instance, Colin S. Gray and John B. Sheldon, "Spacepower and the Revolution in Military Affairs: A Glass Half-Full," in Peter L. Hays, James M. Smith, Alan R. Van Tassel, and Guy M. Walsh, eds., *Spacepower for a New Millennium: Space and U.S. National Security*, United States Air Force Institute for National Security Studies (New York: McGraw-Hill, 2000), pp. 229-257.

Author's Response by Keith L. Shimko, Purdue University

It has now been more than two years since I delivered the final manuscript for *The Iraq Wars and America's Military Revolution.* Since then I have largely moved on to other issues and projects, so I welcome the opportunity provided by this roundtable and the thoughtful comments of Forrest Morgan, Paul MacDonald and Jasen Castillo to revisit, reevaluate, clarify and/or restate in a more persuasive form the central thesis of the book. As I read through their comments, three questions came to mind. First, given the small library of essays, articles and monographs already published on the subject, did the world really need another book about the Revolution in Military Affairs (RMA)? Second, what did I hope *The Iraq Wars and America's Military Revolution* would accomplish and contribute? And third, do the essays in this roundtable suggest that I was successful? The judgment appears mixed on this final question. There seems to be a consensus that I achieved some of my objectives, though not all of the reviewers agree with my final thesis. Though this last question is arguably the most important of the three, I will be in a better position to consider it if I begin with the first two as background.

The book grew out of a course on "Modern Weapons and International Relations" (a title I hate but which is too bureaucratically time consuming to change) that I started to teach about fifteen years ago after the colleague who created it retired. While his version of the class focused on the post-WW II period, I preferred to interpret "modern" broadly, approaching it as an examination of technology and warfare since the development of gunpowder weapons. Faced with the challenge of covering so much material and history in fourteen weeks, I latched on to the concept of Revolutions in Military Affairs that was so popular in the mid-1990s as a useful pedagogical tool for bringing some order to a potentially overwhelming subject.[1] From then on I followed the RMA debate from the highs of post-Desert Storm enthusiasm to the second guessing that accompanied the Iraqi insurgency after the summer of 2003 as American fortunes took a turn for the worse. With the Iraq war starting to wind down by 2009, I thought it was a good time to reengage with, or reignite, the debate. Much ink had already been spilled, of course, on almost every conceivable aspect of the RMA: concepts were refined at length, technologies described in depth, and missions dissected in fine detail for evidence of change or continuity. Missing from the voluminous literature, I thought, was a broad examination of the RMA debate as it evolved over the previous three decades in light of all the United States' military involvements in Iraq and elsewhere. This was the gap I sought to fill. I viewed the book as a

[1] Michael Roberts is sometimes credited with introducing the concept of military revolutions in his book *The Military Revolution* (Belfast, 1956). See also Clifford Rogers, ed., *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe* (Westview: Boulder, CO, 1995), Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West* (Cambridge: Cambridge University Press, 1988), Brian M. Downing, *The Military Revolution and Political Change: The Origins of Democracy and Autocracy in Early Modern Europe* (Princeton: Princeton University Press, 1992), William H. McNeill's classic *The Pursuit of Power: Technology, Armed Force, and Society Since 1000* (Chicago: University of Chicago Press, 1982), Williamson Murray and MacGregor Knox, "Thinking About Revolutions in Warfare," in MacGregor Knox and Williamson Murray, eds., *The Dynamics of Military Revolution, 1300-2050* (Cambridge: Cambridge University Press, 2001), pp. 1-14.

stock-taking enterprise, a chance to sit back and bring everything together while venturing some judgment on the central question in the debate – i.e., whether new technologies were driving a transformation in warfare.

I was, however, motivated by more than just a sense that the time was right to reexamine the possibility of a contemporary RMA. I had long been dissatisfied with the course and tenor of the RMA debate since Desert Storm. Even when I was in basic agreement, I always cringed at the wild and excessively grandiose visions and rhetoric of RMA enthusiasts.[2] Valuable and defensible arguments were too often buried in a lot of nonsense and hyperbole. Much of what appeared on the RMA in the mid and late 1990s seemed like an intellectual straw man unlikely to survive close scrutiny or the test of time. Indeed, once major combat operations ended in 2003 and the insurgency emerged and spread throughout Iraq, the RMA skeptics seized the opportunity to pounce.[3] Though much of the criticism was well-deserved, I nonetheless sensed an overreaction. Perhaps this was rooted in a tendency to treat American military success as a barometer for an RMA, or maybe it reflected the somewhat faddish nature of military/strategic studies. Whatever the reason, this rush to dismiss the RMA appeared premature to me, an equally exaggerated counter-reaction to the RMA triumphalism of the previous decade. It was my hope that a broader perspective might help temper these wild swings of opinion and analysis, allowing us to come to grips with the potentially contradictory lessons of the previous two decades. I saw the thesis and antithesis in the RMA debate, so maybe it was time for a synthesis. For lack of a better word, I wanted to 'rescue' the RMA not only from it critics but also its more avid supporters by recognizing both its promise and limitations. And I wanted to do this while clarifying much of the frustrating jargon and terminology that plagued the debate over the RMA, usually obscuring more than it revealed (Morgan, MacDonald, Castillo and reviewers elsewhere at least seem to agree that I succeeded on this front).

I was not certain what my conclusion would be when I began the project, though admittedly my initial inclinations were favorable toward the RMA thesis. I was open (sort of) to the possibility that advances in surveillance, communication and guidance technologies had failed to produce any revolutionary change in the nature of warfare, but such a proposition struck me as deeply counter-intuitive. It was possible, but, I suspected, unlikely. My initial predispositions in favor of the RMA were challenged most by Stephen Biddle, certainly the most articulate RMA skeptic.[4] Jasen Castillo is right to return to Biddle

[2] See George and Meredith Friedman, *The Future of War: Power, Technology and American World Dominance in the Twenty-First Century* (New York: Crown, 1996) and William Owens, *Liftng the Fog of War* (Baltimore: Johns Hopkins University Press, 2001). One could add to this a host of Department of Defense documents such as The Joint Chiefs of Staff, *Joint Vision 2010* (Washington D.C.: Department of Defense, 1996).

[3] One of the better critiques is Frederick Kagan, *Finding the Target: The Transformation of American Military Policy* (New York: Encounter Books, 2007).

[4] Stephen Biddle major work is *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton: Princeton University Press, 2004). Focusing on the Afghan war see his *Afghanistan and the Future of Warfare: Implications for Army and Defense Policy* (Carlisle, PA: U.S. Army War College, 2002). And on

in expressing some reservations about my argument. But no matter how insightful and skillful I found his discussion of the "modern system," I remained unpersuaded. I could never quite reconcile the fact of tremendous technological change with his narrative of military continuity. Even before I could put my finger on where I thought Biddle went wrong, I just felt there had to be something wrong, or at least inadequate/incomplete, about his analysis of the RMA. I kept asking myself whether it was really possible that a century of perhaps the greatest and most rapid technological advances in all of human history had produced no radical or revolutionary changes in the character of warfare. I wondered whether a soldier or commander from the Somme or Verdun brought back to life on the battlefields of Afghanistan in 2001 or Iraq in 2003 would, like Biddle, be struck by *how little* had changed over the intervening century. Would they have been able to step into the fray with just a brief tutorial on some of the new weapons? Some may view this framing of the issue as unfair, but the logic of Biddle's argument suggests they could, since conceptually he argues little had changed – warfare remained in 2003 as it was in 1918 a combination of firepower and maneuver.

I could also never shake my suspicion that guidance technologies had to be revolutionary. I had been telling my classes for more than a decade that one of the most enduring problems of warfare at the tactical and operational levels was target acquisition. Soldiers and militaries have always had to grapple with the fact that any single arrow, bullet or bomb had only a small chance of hitting what it was supposed to. There were solutions to this problem, but none of them optimal. One could improve the chances of success by getting closer to target, but this only increased one's own vulnerability to enemy fire. Two other solutions were more common. The first was a statistical solution: if any single arrow, bullet or bomb had only a small chance of hitting a target, one could increase the chances by sending lots of arrows, bullets or bombs toward it. Send enough, and one is bound to hit by sheer chance. The machine gun and mass aerial bombardment can be seen as the logical culmination of such a statistical solution to inaccuracy. Arthur Harris understood this all too well. The other solution was to have an explosion so great that accuracy hardly mattered. Nuclear weapons were the logical culmination of this response to inaccuracy. Thus, until very recently militaries have compensated for inaccuracy with more projectiles and/or bigger explosions. With advent of guidance technologies, none of this was necessary anymore. One or two much smaller bombs could reliably hit and destroy or disable a target. This technological solution to the problem of target acquisition essentially reversed military trends that had been evident for hundreds, if not thousands, of years. Echoing my previous questions, was it really possible that finally solving one of the age old problems of warfare would have no radical effect on its conduct?

But where is this radical/revolutionary impact to be seen? There are a number of possibilities in the abstract, but in general terms it might radically alter existing forms/elements of warfare or create new ones. Here Jasen Castillo focuses on my observations about the modern system, the implementation of which I do indeed argue is

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Operation Iraqi Freedom see Stephen Biddle, "Speed Kills? Reassessing the Role of Speed, Precision and Situational Awareness in the Fall of Saddam," *Journal of Strategic Studies* Vol. 30 (February 2007), pp. 3-46.

made more effective by new targeting, surveillance and communications technologies. As a result, he comes away with the conclusion that I demonstrate only an evolutionary and quantitative change in warfare, not a qualitative transformation or radical departure. He sees this as a less dramatic but more prudent conclusion. On this point he is absolutely correct. This also illustrates that I do not think Biddle's analysis is wrong: instead, I would characterize it as incomplete because it essentially equates war with conventional battlefield tactics. These tactics may very well have remained constant in their broad outlines. But there is more to war, and new technologies have also created options that simply did not exist before in elements of warfare beyond battlefield tactics. The ability to strike at very large numbers of targets – tactical, operational and strategic – simultaneously with a high degree of success is a fundamentally new capability, one that certainly did not exist at the dawn of the modern system. This is the essence of "parallel warfare," a conceptual approach to the application force contained in varying degrees under many guises in much RMA theorizing and on display in the Iraq Wars.[5] Biddle fails to find any radical change in warfare because he is looking in the wrong places. So there is nothing inconsistent with the proposition that we have seen only quantitative, evolutionary change in one element of warfare (battlefield tactics) but radical/revolutionary change elsewhere.

At the end of the day, however, what really matters is that we understand the ways in which changes in technology affect the character of warfare. Whether these changes happen to rise to the level of "revolutionary" is largely matter of how we define the term. And while definitions are important, we need not be obsessed by them. Such concepts as the RMA are primarily heuristic devices that help us think about the phenomena they embody. Despite reservations about my claims of revolutionary, though still limited, change in the character of warfare, I am certain there is more agreement about what is going on than disagreement.

[5] See Robert R. Soucy, *Serial v. Parallel War: An Airman's View of Operational Art* (Fort Leavenworth, KS: School of Advanced Military Studies, 1993); Steven M. Schneider, *Parallel Warfare: A Strategy for the Future* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1998); David Deptula, "Parallel War: What is It? Where did it come from? Why is it Important?" in William Head and Earl A. Tilford, eds., *The Eagle in the Desert: Looking Back on U.S. Involvement in the Persian Gulf War* (New York: Praeger, 1996), pp. 127-56. The classic statement of the principles underlying parallel warfare is John Warden, *The Air Campaign* (New York: toExcel Press, 2000).