3 THE IMPACT OF CULTURAL FACTORS ON THE US REVOLUTION IN MILITARY AFFAIRS

ALTHOUGH the American technological capability to execute deep strikes using PGMs was significantly more advanced than that of its Soviet counterpart, the Soviet military had fuller comprehension of the revolutionary impact that the ALB and FOFA arsenals would have on the future battlefield than did the US military.[1] It took the Pentagon almost a decade to "become converted to the MTR" and to emulate the Soviet proposition of major changes in the character of warfare, which saw the "reconnaissance-strike complex" as the dominant architecture for future operations.[2] The phase of American "capabilities formation" was followed, beginning in the late 1980s, by the conceptual birth of the RMA. Not until Andrew Marshall and his colleagues introduced the notion of the RMA did this conceptual innovation reach the consciousness of the American military and defense establishment. The purpose of this chapter is to trace the impact of the American strategic culture on the approach of the US defense community to the RMA.

The chapter comprises three parts. The intellectual history of the American RMA is discussed in the first part. It describes the technological and conceptual preconditions for the innovation, touches on the US intelligence assessments of the Soviet MTR, refers to the conceptual birth of the American RMA, and analyzes the implication phase of this innovation. The second part concentrates on the general sources and the main traits of the American strategic culture. It describes several fundamental societal and cognitive characteristics and illuminates the principal traits that gave shape to American strategic culture, such as: the "American way of war"; "a-strategic thinking"; the engineering approach to security; time orientation; the role played by the Joint

Chiefs of Staff; a role of technology in military affairs; and inclination to ethnocentrism. The conclusion integrates the previous two parts and uses the characteristics of the American strategic culture to account for the conduct of the US defense community with regard to the RMA. The analysis of the cultural traits clarifies why the cultivation of the technological seeds of the American RMA preceded the maturation of the conceptual ones, and what prevented the US defense community from grasping the emerging RMA in a timely and proper manner.

PART ONE: AN AMERICAN REVOLUTION IN MILITARY AFFAIRS

The Formative Period of the RMA: Technological and Conceptual Preconditions (mid-1970s–early 1980s)

According to William Owens, one should associate a technological prequel of the American RMA with the Pentagon officials who began in the late 1970s to think about the application of technology in military affairs and to formulate a so-called offset strategy[3]—a program by which the US and NATO allies could use technological superiority to neutralize the overwhelming conventional-forces size advantage that the Warsaw Pact members had over NATO forces in Europe.[4] William Perry, undersecretary of defense for research and engineering, responsible for the development of the capabilities for the "offset option," stated in 1978: "Precision-guided weapons, I believe, have the potential for revolutionizing warfare. More importantly, if we effectively exploit the lead we have in this field, we can greatly enhance our ability to deter war without having to compete tank for tank, missile for missile, with the Soviets. *We will effectively shift the competition to a technological area where we have a fundamental long term advantage* [emphasis mine]." Although in retrospect Perry claimed that the offset strategy was more than just a plan to exploit "high technology" for its own sake, the primary objective of the defense establishment was to use high technology to build better weaponry systems than those of the Soviet Union.[5]

The means of precision strike, intelligence, and communication—the capabilities on which the concepts of the American RMA would later be built—matured technologically in various Defense Advanced Research Project Agency (DARPA) projects beginning in the late 1970s. DARPA allocated its budget to give qualitative advantages to American forces to offset the quantitative superiority the Soviet forces enjoyed in Europe[6]—the strategy pursued during the

1970s a nd 1980s.[7] A mong t he c ore te chnological f ocuses t hat shap ed r e-search, development, and production efforts were: *the families of land-, air-, and sea-launched precision-guided and stand-off weapons* such as terminally guided submunitions, smart and guided missiles and bombs, and stand-off land attack m issiles; *command an d c ontrol an d auto mated r econnaissance and target a cquisition pr ojects* suc h a s A irborne W arning a nd C ontrol S ystem (AWACS), E -8 Joint Su rveillance a nd Target A ttack R adar System a ircraft, Integrated Targets Acquisition and Strike System, and stand-off target acquisi-tion system (SOTAS); programs to bolster *anti- armor weapons,* such as "fire and follow" and "fire and forget" antitank missiles; *navigation and guidance devices* ba sed o n t he g lobal p ositioning s ystem (GPS); *stealth t echnology* such as F-117 aircraft or naval stealth and stand-off precision strike capabili-ties; a nd *unmanned a erial v ehicles* o f v arious a ltitude a nd en durance.[8] In 1978 DARPA integrated research and development of the above-mentioned capabilities u nder one u nified project entitled "Assault Breaker." From the 1980s, t he p roject b ecame a lso k nown a s t he " Smart W eapons P rogram." Tomes d efines t his p eriod o f c apabilities-developing a s t he " formation" stage of the RMA.[9]

Air-Land Battle doctrine, which was invented to stop the Soviet second ech-elons de ep i n t he r ear, l aid do wn t he te chnological f undament o f t he f uture American RMA.[10] Its more important contribution, however, was probably the unprecedented i ntroduction of t he operational perspec tive to A merican m ili-tary thought, or what Shimon Naveh defines as the emergence of "operational cognition."[11] In his landmark works on military history, Erickson claims that the recognition of the operational level is necessary to "think big" about war. To him, operational a rt is a me ans of ac commodating te chnical change to pro-duce n ew w arfare c oncepts.[12] C onsequently, t he i ntroduction o f o perational perspective became the conceptual precondition for the American RMA.

There tends to b e agreement among scholars that American receptivity to operational t hinking i n t he late 1970s was p romoted by the poor perfor-mance of the US Army in Vietnam.[13] Not before the early 1980s, as Lock-Pullan shows in his study, did US armed forces start to make the conceptual leap into the operation level of t hinking, when they embarked on the A LB doctrine.[14] During this "reawakening of American military thought, the operational level of war became a ke y focus of study a nd a n important consideration in defense planning."[15] In addition to other sources of inspiration,[16] Soviet op-erational theories stimulated more sophisticated and systematic thinking by

American theoreticians about the nature of battlefield integration and extension. ALB mirrored many of the developments of Soviet operational theory from the 1920s.[17] The emulation was so apparent that according to Erickson, "Generals Svechin and Isserson and Marshall Tukhachevskii, would at once be impressed and flattered, sufficiently so even to overlook the protracted intrusion upon their copyright."[18] The operational corpus of knowledge facilitates an intellectual climate suitable for systematic thinking about changes in military affairs. Consequently, it is indispensable for the diagnostics of future RMA. Without the broad professional aptitude for operational thinking in the US military, RMA concepts would have remained an abstract idea. Tomes concludes that the evolution of American military thought in frames of the ALB, and specifically the introduction of the operational level of thinking, was central to the future evolution of the American RMA.[19]

Azar Gat makes a sound argument that ALB and FOFA were devised as early as the 1970s to incorporate the new technologies outlined above. Thus, argues Gat, although the Soviet MTR vision was more comprehensive in understanding the revolutionary nature of the change, the US and NATO doctrines chronologically coincided with the Soviet theorizing.[20] Gat's argument is persuasive. However, it is important to state that these capabilities and visions have not matured either technologically[21] or conceptually during the period under discussion. For the most part, the defense community treated the emerging capabilities as a multiplier of the existing force effectiveness and did not deduce from it any revolutionary implications with regard to the concept of operations, organizational structures, or the nature of war.[22] Without a deeper understanding of the operational and organizational consequences of the new weaponry, the mere existence of the smart weapons and technologies did not produce the Revolution in Military Affairs. New weapons systems were produced in compliance with very mechanical logic—to ensure that the United States was not left behind in the area of new technology.[23] It was not the futuristic vision of military thought that was the driving force behind the innovations, but the linear arms race logic vis-à-vis the Soviet adversary. The offset strategy certainly reflected an American way of looking at the world and coping with its problems through its typical way of war. Seeking technological answers to the operational questions of the central front reflected a cultural affinity to leverage the challenges to national interests by technology.[24]

The key capabilities developed, then, created the technological quality that in tandem with the sophistication of American military thought produced

the fertile soil for launching and realization of a bold defense transformation in the 1990s.[25] However, the cultivation of the technological seeds of the American RMA preceded the maturation of the conceptual ones. The offset response consisted of little more than sustaining a technological edge in the face of an armored assault by the Warsaw Pact forces.[26] The corpus of operational knowledge was a solid basis for the development of new ideas but still inadequate for generating revolutionary visions of future war. No advances in reconceptualizing the existing paradigm about warfare were made in those years. The PGMs were seen as just another weapon in the military arsenal. The very community that developed the weaponry failed to recognize their potential in future war.[27]

American Intelligence and the Assessment of the Soviet MTR

Although there were a few academicians who saw the future in the early 1970s,[28] Knox and Murray claim that the tactical emphasis of the Pentagon's analysts had prevented them from seeing anything revolutionary in these new capabilities.[29] To make things worse, the phase of the technological and conceptual preconditions of the American RMA coincided with the misinterpretation by US intelligence of Soviet MTR concepts. The disregard of the American defense community for the emerging change in the military regimes lasted for about a decade. This inattention is particularly striking in light of the wealth of information accumulated in US intelligence about the Soviet theoretical writings on the MTR.

In its analysis of the Soviet perception of Western military capabilities, US intelligence detected at a very early stage, and with a high level of accuracy, the new direction of military thought that was evolving in Soviet military circles. By the mid-1970s, the US had developed a general understanding of the mechanisms of how the Soviets developed their military concepts, including exercises to test theoretical propositions, doctrinal discussions, and scientific conferences.[30] The intelligence community translated and disseminated Soviet writings on military thought, doctrine, strategy, and operational concepts to make important information easily available across the services.[31] The CIA had at its disposal a considerable amount of open Soviet sources that reflected the intellectual debate about the emerging MTR and its implications for the Soviet vision of future war.[32] These sources, which included translations from the classified journal *Voennaia Mysl,'* shed a great deal of light on the term *Military-Technical Revolution* within the context of Soviet military

thinking at the time.[33] In 1974, the seminal work *Scientific-Technical Progress and the Revolution in Military Affairs* was translated and disseminated by the CIA.[34] In 1981, a special report was dedicated to the Soviet methodology of "forecasting in military affairs," which inquired into the nature of the paradigmatic changes in the nature of war and into the essence of the current MTR in particular.[35]

Since the late 1970s, US intelligence closely monitored the growing Soviet interest in microelectronics, computers, and signal processing, and Moscow's continuous efforts to acquire them by both legal and clandestine means.[36] The CIA reported conspicuous Soviet concern with regard to the technological lag vis-à-vis NATO, particularly in key technologies that provided precision weaponry capabilities.[37] The analysts argued that the Soviet search for technologies was a necessary starting point in the implementation phase of the MTR decreed by the Soviet chief of staff. They estimated that the Russians intended to use the MTR concepts, and especially PGM, to change the total force structure and combat potential of Soviet forces.[38] The "smart" precision-guided munitions, which the Soviet military reckoned would alter the nature of war, relied on a variety of technologies in the field of microprocessors and computers, and consequently their acquisition became a more urgent necessity.[39]

On the heels of monitoring the Soviet quest for advanced technology, US intelligence soon began to arrive at the operational essence of the MTR—Soviet experimentation with reconnaissance-strike and fire complexes. Discussing Soviet conventional doctrine, the CIA understood that the Soviets considered conventional weapons so accurate, lethal, and destructive as to approach the potential of nuclear munitions.[40] A series of CIA estimates from the early 1980s refer to so-called *reconnaissance-strike organizations* (RSO), which had been developed out of the Soviet concern for the threat posed by the Assault Breaker, precision-guided, deep-striking, theater-level systems capable of firing on follow-on moving Soviet echelons.[41] According to the same estimates, the RSOs were a further expression of the new MTR concept of integrated, deep, simultaneous fire destruction of the enemy. The analysts grasped that the Soviet RSOs consisted of an integrated triad of reconnaissance and target acquisition complexes, automated command and control elements, and long-range striking systems. They correctly attributed the ROK and RUK to the operational (army) and the tactical (division) levels and envisioned them as the main trend in future Soviet force development.[42]

In the late 1980s the CIA reported that since the 1970s, motivated by the need to counter NATO deep-attack, high-technology conventional weapons and extended battlefield concepts, the Soviets had been able to match NATO capabilities in nearly every major ground forces weapons category. Discussing the Soviet conventional doctrine, the CIA acknowledged Soviet declarations regarding their perception of the virtual parity of conventional versus nuclear weapons. The CIA report argued that military advantages afforded to the USSR by its numerical supremacy might be mitigated by Western progress in advanced technology conventional weapons, especially long-range PGMs.[43] Toward the end of the Cold War, the CIA attained additional clarification of the Soviet doctrinal vision, which reckoned that the outcome of future war would be determined mainly by a massed strike of conventional PGMs linked to real-time reconnaissance systems and complementary ground maneuvers, rather than by masses of tanks, infantry, and artillery.[44]

However, in forecasting the development of Soviet military power for the 1980s, US intelligence concluded with an assessment that minimized the overall implications of the Soviet innovation. US intelligence predicted that if current trends continued, "new technology, whether developed or illegally acquired, was expected to lead to evolutionary improvements in individual systems. However, not one of these technological developments or even their combination in the foreseeable future was expected to revolutionize modern warfare."[45] Similarly, while discussing Soviet writings on the MTR and RUK concept during the early 1980s, senior DoD officials treated the issue according to arms-race Cold War logic: if the notion of what the Soviets termed Western "reconnaissance-strike capabilities" caused a certain strategic discomfort in Moscow, then the US should expand its investment in this area.[46] This logic was consistent with various administrations' efforts—among them economic ones—to neutralize Soviet influence, to place them at a competitive disadvantage, and to bring the struggle to an end on American terms.[47]

The wealth of information concerning Soviet views on the discontinuity in military affairs, accompanied by the poverty of comprehension regarding its consequences, was a situation that endured within most of the US defense community for almost a decade. Only a few American analysts, most notably Gen. William Odom, focused on the validity of the MTR and recognized it as more than just another Soviet innovation.[48] Most Soviet-watchers in the West, in their analysis of Soviet theoretical writings, were unable to see the forest for the trees of specific technologies and tactical-operational problems.[49]

The Conceptual Birth of the American RMA

Without a specific date for the birth of the current American RMA, one can designate the period of the late 1980s to early 1990s as the intellectual cradle of the paradigmatic change of American security thought. MacGregor Knox and Williamson Murray contend in their work on the dynamics of military revolutions that Andrew W. Marshall and his experts within the Office of Net Assessment (ONA) were the first to register the significance of Soviet writings on the MTR and to introduce the notion of revolutions in military affairs into the American defense community.[50] This claim was echoed by Gen. Makhmut Gareev, the president of the Russian Academy of Military Sciences. Gareev identified Marshall as a theoretical luminary who fully grasped the essence of the Soviet MTR and as a founding father of the American RMA.[51] Although the technological groundwork for the innovation had been laid down in the 1970s, for the American defense community the RMA thesis had been nothing but a vague, abstract term when Andrew Marshall and Andrew Krepinevich first circulated their memorandum on the RMA in the early 1990s. The US armed forces (similar to the British when they first began experimenting with armored and mechanized warfare in the mid-1920s) were not consciously thinking in terms of a revolution.[52] As one scholar remarked, the US military, like Molière's character in *The Bourgeois Gentleman,* had been "speaking in prose" (the RMA) but did not know it.[53]

Indeed, only a small group on the margins of American defense planning in the early 1980s would recognize the approaching RMA.[54] Albert Wohlstetter is generally considered to be the first senior figure within the American defense establishment to understand the dramatic impact of the new accurate weapons on the nature of war. Wohlstetter referred to the phenomenon as "revolution in the accuracies of unmanned weapon systems."[55] Envisioning the first-generation PGMs deployed in the latter stages of the Vietnam War, he realized their potential for substantial reduction of the inefficiencies and uncertainties that had plagued large-scale industrial age combat. In the face of what he called the "enormous inertia" of the armed services, Wohlstetter, supported by Andrew Marshall and a few other defense intellectuals, campaigned vigorously through the 1980s to consider more carefully the strategic implications of an expanding family of PGMs. In his view, the "revolution in microelectronics" opened up new vistas for the application of force and an increasingly wider variety of political and operational realities.[56]

It was only at the very end of the Cold War that a genuine interest in Soviet MTR theories gathered momentum in the American defense establishment. The highest point of Wohlstetter's national-level efforts to incline the defense community to reconceptualize the nature of warfare came in 1987, when he cochaired with Fred Ikle the Commission on Integrated Long-Term Strategy. By this time, it was no longer the standard intelligence analyses on the doctrinal action-reaction dynamic in the European theater that attracted American attention, but the essence of the discussion about the emerging nature of the future security environment. The report discussed the necessity of extending its studies beyond Cold War military balance assessments, even though the USSR was still alive and kicking.[57] The commission's report credited American technological advances discussed above, such as stand-off PGMs, space, "stealth," radar, and targeting capabilities. However, the report stated without hesitation that while the Soviets fully appreciated the implications of these systems on the ways of waging modern warfare, the Pentagon did not. On a more positive note, the commission declared that if the US awoke to the opportunity at hand, it might acquire a more versatile, discriminating, and controlled capability to employ this technology-driven change in war.[58]

To further develop its initial insights, in 1988 the commission established a working group, cochaired by Andrew Marshall and Charles Wolf. The group, which included a few select defense intellectuals from the establishment and academia, was entrusted with the task of projecting the likely contours of military competition in the future security environment. The report echoed the findings of its predecessor when it stated that the Soviets had identified roughly the same list of technologies important for future war but had considered their implications more systematically. It stated further that most, if not all, considerations given to this subject in the West had focused too narrowly on the utility of highly accurate, long-range systems for raising the nuclear threshold and enhancing conventional deterrence.[59] According to the Marshall and Wolf report, rather than merely identifying ways to improve specific systems or perform existing missions, Soviet writings had suggested that the conduct of war would be broadly transformed by a "qualitative leap" in military technologies. The report found that in contrast to the American approach, the Soviet MTR writings tended to focus not on questions of feasibility, cost, and timing for specific innovations, but rather to assume that families of new technologies would eventually be introduced, and to examine the tactical, operational, and strategic implications of technological trends. The report asserted

that the Soviets envisioned a more distant future than American military experts, and allowed that the Russians might be correct in their assessment that the advent of new technologies would revolutionize war. The group concluded that if this was indeed the case, then a transformation in the nature of war would affect American force structures and command practices in some cases more profoundly than the introduction of nuclear weapons.[60]

From the late 1980s, Andrew Marshall eclipsed Wohlstetter as the leading proponent of inquiring into a potentially emerging paradigmatic change in the future security environment. Building upon its work for the above commission, ONA embarked on a more detailed assessment of the Soviet MTR vision, starting in 1989. The preliminary lessons from the Gulf War provided further stimulus for this inquiry, as the US sought to conceptualize the new type of warfare seen during Desert Storm. The US specialists claim, and the Soviets concur, that during Operation Desert Storm the allies successfully executed a perfect version of the Soviet conventional theater offensive, which encapsulated most of the doctrinal principles developed by Soviet military theoreticians in frames of the MTR. In Ogarkov's view, the most impressive allied capability demonstrated during the war was the ability to conduct a tightly synchronized, integrated joint operations assault throughout the depth of the operational theater, striking both the enemy's strategic centers of gravity and its military forces, in order to produce decisive results.[61] The ONA experts had picked up on the writings by the Soviet military and offered an assessment that had two related goals: first, to identify whether or not the Soviet analysts were correct in their conviction that they were witnessing a fundamental discontinuity in military affairs; and second, if a military revolution was indeed on the horizon, to pinpoint critical issues that had to be given a prominent place on the defense management's agenda.[62]

This assessment of the Soviet MTR, which was completed in 1992 (with a more comprehensive assessment a year later), is perhaps the best-known document prepared by ONA. The ONA intellectual effort yielded what seemed to be a total consensus that Soviet theorists had been correct since the late 1970s about the character of the emerging MTR. The net assessment confirmed the Soviet postulates that assumed that advanced technologies, especially those related to informatics and precision-guided weaponry employed at extended ranges, were bringing military art to the point of revolution in the nature of warfare. Along with *information warfare,* the report identified the Soviet concept of *reconnaissance- strike complexes* as the main determinant of future

warfare.[63] The 1992 and 1993 assessments called for a significant transformation of the American military, not so much in terms of new technologies but rather in operational concepts and organizational innovation. Being more advanced in these two fields was expected to be far more enduring than any advantage in technology or weapons systems. The report underscored the importance of a concept of operations in identifying the most effective weapons. It criticized a tendency to utilize the advanced technologies simply as "force multipliers" in frames of the existing approach to warfare. The assessments attributed the highest importance to the investigation of and experimentation with novel concepts of operations and deducing from them a new architecture of military power.[64]

In contrast to the traditional "technology-driven" mentality of the American defense community, Andrew Marshall and his experts emphasized above all the conceptual and doctrinal, rather than the purely technological, aspects of the RMAs. The memorandum stated outright that although one would clearly want to have superior technology, the most important competition is not the technological but the intellectual one. The main task is to find the most innovative concept of operations and organizations, and to fully exploit the existing and the emerging technologies.[65] The phrase MTR denoted too great an emphasis on technology, and therefore an alternative term, *Revolution in Military Affairs*, was adopted. It is interesting to note that this expression as well was borrowed from Soviet military writings on the subject, though ONA experts considered it preferable because it emphasized *revolution* rather than *technology*.[66] According to William Owens, then vice chairman of the Joint Chiefs of Staff (JCS), Soviet ideas regarding the MTR had stirred enough interest among observers of Russia in the West to reduce it to the official Pentagon acronym. "A higher form of praise of Pentagon officials does not exist."[67] The observations about the characteristics of a new Military-Technical Revolution were made on the basis of Soviet and Russian insights presented in their writings and personal exchanges with Soviet/Russian specialists during the early 1990s.[68]

Marshall stressed the importance of the peacetime innovation that the US had effected since the early 1990s—a luxury afforded by the Soviet decline. He envisioned the challenges to come, but during the relatively peaceful years that followed, he called for undertaking a more active search for and experimentation with new doctrines. Addressing the implications for strategic management, the assessment called for the following specific actions: to implement new concepts of operations and organizations through changes in educational

programs and changes in acquisition and to create new promotion paths to train and to promote officers with appropriate skills and expertise. The memorandum also offered the SoD and the CJCS an opportunity to establish bodies and organizations that would develop knowledge concerning the military revolution. The memorandum recommended encouraging the services to entrust their very best people with the intellectual task of thinking about the future of warfare.[69] After conducting several historical studies sponsored by ONA,[70] Allan Millett and Williamson Murray concluded that "military institutions that developed organizational cultures where serious learning, study, and intellectual honesty lay at heart of preparation of officers for war, were those best prepared for the challenges that they confronted on the battlefield."[71] *The MTR Preliminary Assessment* became the intellectual starting point for the future US Defense Transformation.[72] Marshall and his proponents succeeded not only in intellectually defending their vision but in actually implementing the notion of the RMA across the US defense community.[73] The evaluation was circulated in the US defense community, initiating the most comprehensive reforms in the DoD since the Vietnam War.[74] A year after the publication of Marshall's legendary memorandum, there were five task forces exploring the RMA and its consequences.[75] From the mid-1990s on, the term *RMA* established itself among specialists as an authoritative frame of reference within which the debate over the future of war unfolded.[76]

The Role of ONA and of Andrew W. Marshall

There were individual analysts (most notably William Odom) who had been able to accurately assess Soviet MTR writings.[77] However, as a body, ONA outperformed all other segments of the US intelligence and defense community in this particular realm.[78] Marshall and Wohlstetter were the first Americans to introduce the idea of discontinuities in the methods of fighting into American military thought and the defense community. According to Richard Perle, the 2003 Operation Iraqi Freedom (OIF) was fought exactly along their vision of future war.[79] Although the most obscure, relative to other institutions of the American defense establishment, and most of the time below the radar, ONA significantly influenced US defense policy for several decades and was probably the most important institution in shaping US military thought from the late 1980s.[80] Because of the central role it played in the context of the RMA, this section will discuss briefly the intellectual history of the Pentagon's Office of Net Assessment.

Dissatisfied with the quality of long-term strategic thinking, in 1971 President Nixon established a unit of experts that would integrate intelligence and defense analysis on national security threats, which would report directly to National Security Advisor Henry Kissinger. The group was headed by Andrew Marshall, a graduate in economics from the University of Chicago, who had joined RAND in 1949 and who by 1969 had succeeded James Schlesinger as RAND's director of strategic studies. Marshall worked on a vast number of strategic defense and intelligence issues, together with the leading American defense intellectuals, and was a close friend and colleague of Albert and Roberta Wohlstetter. In 1973, when the unit was moved to the Pentagon, Andrew Marshall was named director of the Office of Net Assessment in the Office of the Secretary of Defense. The unit focused on analyzing competitive strategic environments between the US and the Soviet Union. To produce assessments of the nature of Soviet capabilities and of subsequent American countermeasures, it synthesized all available political, military, economic, and sociocultural data from within and outside of the defense and intelligence community. Frequently, ONA assessments brought up scenarios and issues that no other body had even considered, let alone assessed. Until now, Andrew Marshall's unit has advised twelve secretaries of defense from eight presidential administrations. The few available publications that discuss his work define Andrew Marshall as a "leading defense strategist," "unconventional long-term thinker," "one step ahead of the competition," and the experts of his office as the "Delphic Oracles" of the American defense system. The credo of this "bastion of futuristic brainstorming" was "to think out of the Pentagon box" on "important but overlooked" national security issues. Since the mid-1970s, this small office consisting of a dozen experts had become an intellectual center of gravity of the American defense bureaucracy.[81] Marshall is "the only prominent strategist from RAND's golden age still in government service."[82]

The idea of net assessment was dictated by the necessity to link defense policies with the anticipated reactions of opponents.[83] As an analytical tool, net assessment was neither art nor science and was distinct from system analysis, game theory, operations research, or strategic planning.[84] These formal analytical frameworks made predictions on the basis of players' rationality, assuming that strategic adversaries are following cost-benefit optimization rules. Net assessment parted ways with this conventional analytical wisdom because it lacked the tools to consider the "soft," immeasurable asymmetries

between the competitors. It was distinguished by the consideration of unexpected outcomes that emerge from unforeseen and unappreciated factors, some of which might initially seem totally irrelevant.[85] As Rosen put it, "net assessments sought to avoid the natural tendency to assume the enemy would behave as we would, were we in his position, or that our forces will engage like forces on the enemy side."[86] For example, when analyzing an adversary, ONA considered sociocultural-bureaucratic operating patterns more than officially approved strategies. Net assessment integrated the strategies of the "biased" adversaries in a single space and simulated a competitive dynamic between them. On this basis ONA specialists generated their long-term forecasting.[87]

The memoirs of ONA veterans indicate that Mr. Marshall's office had developed its peculiar style of thinking, distinguished from the one practiced by the other segments of the American defense establishment.[88] ONA experts cared no less about imagination than about methodology.[89] Although acknowledging that futurology is often wrong, Andrew Marshall's motto was that "one can get many things right just by thinking about them a little bit." According to Paul Bracken, an ONA veteran, it was "a way of tackling problems from certain distinctive perspectives."[90] Andrew Marshall is considered to be the central figure to apply the net assessment methodology to security affairs.[91] The multifaceted ONA net assessments were both regional and functional.[92] To assess the military, political, and economic relationship between the US and the USSR meant for Andrew Marshall, first and foremost, reading and learning about what the Soviets were saying to themselves.[93] In 1982 he wrote:

> A major component of any assessment of the strategic balance should be our best approximation of a Soviet-style assessment of the strategic balance. This must not be the standard U.S. calculations done with slightly different assumptions . . . rather it should be an assessment structured as the Soviets would structure it, using those scenarios they see as most likely and their criteria and ways of measuring outcomes. This is not just a point of logical nicety, since . . . the Soviet calculations are likely to make different assumptions about scenarios and objectives, focus attention upon different variables, include both long-range and theater forces, and may at the technical assessment level, perform different calculations . . . use different measures of effectiveness, and perhaps use different assessment processes and methods. The result is that Soviet assessments may substantially differ from American assessments.[94]

The eclectic, synthetic grasp of reality that Marshall established and cultivated at the ONA impelled it to go out of its way to extend its reach—outside of the intelligence community as well—to gather empirical evidence from all the sources it could tap. During the 1970s, Marshall hired Sovietologists to carry out an interview project with Soviet émigrés. The CIA and DIA generally ignored these people on the assumption that they were too biased to be useful sources of information. Marshall, by contrast, assumed they could be invaluable sources of insight and went out of his way to see what they had to offer.[95] He was behind the funding of virtually all nongovernmental research carried out in the US on this topic.[96] During the last decades of the Cold War, Marshall was perhaps the most consistent, and retrospectively prescient, critic of CIA estimates of Soviet defense.[97] Marshall based his understanding of the Soviet MTR literature on reading for himself what the Soviets were actually saying as opposed to accepting official intelligence summaries. He was one of the first researchers to notice that American expectations about Soviet strategic behavior did not coincide with the projections of nuclear-force developments of the 1960s. In 1972, Marshall criticized the American approach to nuclear strategy, arguing that the US "had followed a rich nation's strategy of attempting to compete with the Soviet Union in all areas of technology." From his time at RAND, he had become convinced that the Soviet military thinking was fundamentally different from that of the Americans. In the context of net assessment work on the US–Soviet strategic–nuclear and NATO–Warsaw Pact balances, he had directed extensive research into Soviet military theory, measures of effectiveness, and assessment methodologies.[98]

When Soviet MTR writings were regarded by most observers as signals of new advances in Soviet military technology, Andrew Marshall saw a completely different picture.[99] As Marshall himself later recalled, the Soviets were the first to bring to his attention the idea of revolution diagnostics. The diagnostics entailed examining entire decades, to identify the emergence of new forms of warfare that were destined to dominate military conduct. It seemed reasonable to him to refer to the discontinuity discussed by the Russians as a revolution, and to diagnose it as early as possible. In Marshall's view, when the Soviets declared that the world had entered into a new period of Military-Technical Revolution, in fact "they were consciously experiencing a change in the nature of war. Usually, when one is in the middle of it, he is least aware of it. However, the earlier the military acknowledges the emergence of the change in the military regime, the more efficient defense management it will generate."

Marshall was, for the most part, in agreement with the Soviet methodological-theoretical approach to the nature of war in general as well as with the content of their analyses regarding the current MTR. Marshall explained that in a number of previous military innovations, for example, as with the Germans and the British in the interwar period, people in the military were not consciously thinking in terms of a revolution. He deliberately wanted to introduce practice, which was so natural for the Soviet military intellectuals, to diagnose the periods of significant change in the nature of war. According to his own account, the Soviet theoretical writings of the 1970s first brought to his attention the historical period of the twenties and thirties as an exemplar of such a change. In the years to follow, the proponents of the RMA and of Marshall's ideas would cite this period as a frame of reference for the discussion about the emerging discontinuity. He wanted American military theoreticians to self-consciously pursue and experience the emerging Revolution in Military Affairs.[100] This approach was in keeping with the traditional focus of ONA experts on strategic diagnosis, and not prescription. Marshall believed that getting questions right was more important at the initial stage than trying to get the right answers.[101]

However, ONA had as many bureaucratic weaknesses as it had intellectual strengths. It was a small advisory body with its own budget for independent research but had neither command authority nor budget allocation responsibility within the military or defense system. A small number of ONA experts, the long-term deductive thinkers of the American defense establishment, were engaged in activities that were being performed in the USSR by thousands of people in military academies and in the GS. Consequently, relative to their Soviet counterparts, they were less influential organizationally and could cover fewer topics. ONA did not inquire into the nature of warfare per se; it concentrated on Russian perceptions of it and generated its insights from there. Since ONA's assessments had not been instituted as an integral part of any military or defense program, its bureaucratic influence varied with the changing administrations. Several secretaries of defense made use of ONA as an advisor, while others preferred to draw on other sources of strategic analysis, placing ONA in the background. As an in-house Pentagon think tank, its authority never went beyond giving advice to the secretary of defense. ONA maintained a "polite distance" from the rest of the DoD and JCS, and did not regard its assessments as prescriptive. In ONA's view, it was up to someone else to act on its insights.[102] It never had the organizational tools, nor did it regard

channeling its insights into immediate defense programs to be a part of its mandate. In contrast to the Soviet case, in which senior military leadership with command authority was involved in generating long-term forecasts, ONA's assessments were not necessarily translated into organizational or conceptual transformations.

The Implementation Stage of the American RMA

Following the overwhelming victory of coalition forces in Operation Desert Storm, a good deal of discussion took place as to whether the world had witnessed an RMA.[103] The RMA discourse of the 1990s became an "organizing principle of US defense modernization discussions."[104] According to Barry Watts, this innovative effort to think about how warfare might change in the years ahead spawned official work within the DoD as well as a wave of literature from the think-tank industry.[105] Throughout the early 1990s, the RMA thesis shaped the cognitive landscape of American military thought. According to Robert Tomes, ONA developed an intellectual climate that favored "thinking about changes in military affairs."[106] Marshall's office had taken the lead in financing studies on the history of military innovation in the interwar period—innovation that led to developments such as carrier strike aviation, amphibious warfare, and Blitzkrieg—and in sponsoring its own war games, conferences, and other RMA studies.[107] By 1995 a heady vision associated with the evolving RMA thesis aroused tremendous excitement among American defense planners.[108] The 1997 QDR "acknowledged the existence of the RMA" and urged to transform the armed forces accordingly.[109] From Desert Storm to Operation Iraqi Freedom, the notion of the RMA transformed American military forces tremendously.[110] Current American defense establishment "transformation" is, according to Colin Gray, a "logical and practical consequence of RMA."[111]

Although ONA experts tried to focus the professional attention of the US defense community on the symbiotic relationship between technology, concepts, and organizational structures, "techno-euphoria" thrived after the first Gulf War. "From the outset," argues Watts, "Marshall and Krepinevich were clear in their own minds that operational concepts and organizational adaptations were, if anything, more important than either new technology or getting it fielded in a significant number of systems."[112] An emphasis on very long time frames, the development of appropriate doctrine, organization, and practical operations, as opposed to a focus on technology alone, distinguishes Mar-

shall's approach to a future RMA from most of the US defense community and from American cultural predispositions in general. Andrew Marshall regarded the changes in fighting that occurred during the interwar years of 1918–39 as combined-systems revolutions. In these kinds of innovations, while technological advances were necessary, the underpinning was a symbiosis between systems, doctrine, and organizational developments.[113]

However, as Gray precisely states, "despite the sophisticated and originally fairly tentative, essentially speculative view of Marshall and OSD Net Assessment, once the RMA idea became general property it was captured by a profoundly technological view of the revolution that seemed to beckon the Armed Forces into a new golden age of enhanced effectiveness. This techno-philia was to be expected, given America's technological strengths, its military culture, and its preferred way of war."[114] Lock-Pullan believes the technological lessons overshadowed the conceptual, social, and cultural ones. The list of examples he provides to support his argument is compelling.[115] According to Watts, "because the American military establishment has been so resistant to making the intellectual effort to come to grips with the challenges of this period, the Pentagon has probably not yet gotten even a third of the way down the road to mastering the changes in war's conduct foreseen in Marshall's 1992 RMA assessment."[116] Flawed thinking about the impact of technology on the character of future war occurred not only at the stage of the paradigmatic change. H. R. McMaster has shown how the US military frequently failed to understand the implications of the RMA. The superficial thinking that accompanied the uncritical embracing of the RMA corrupted American strategic and operational thought in subsequent decades.[117]

PART 2: AMERICAN STRATEGIC CULTURE

Cultural Characteristics and Cognitive Style

The normative image of American culture is individualistic. American society tends to emphasize goals and individual accomplishments rather than the rationale pursued by a group. Individuals are motivated by self-interest and personal values. The US is a performance- and achievement-oriented society concerned with assertiveness, heroism, and material wealth as a sign of success. One is expected to be an ambitious and competitive achiever; the quick and successful are respected and admired. Social hierarchy does not impose much on the individual; social bonds are flexible and fragile. American communication style is an example of the low-context culture. It is open, dramatic, precise,

and explicit, ensuring that the listener/reader receives the message exactly as it was conveyed. During negotiations, ceremonial "beating around the bush" is not considered a virtue, while getting "straight to the point" is highly valued in the low-context American entrepreneurial culture. Using Edward Hall's terminology, scholars define Americans as a culture with a strong inclination to monochronism—considering issues independently from one another and contemplating one thing at a time.[118]

Assuming a correlation between the sociocultural structure of the society and its cognitive style, cultural psychologists recognize a strong predisposition of the American culture to the "analytical-logical" type of reasoning.[119] The so-called field or context independence inclines the subjects to focus on the particular object, to detach it from its context, and assign it to categories. Individuals with an analytical-logical grasp of reality pay attention to the salient object independent from the context in which it is embedded. This style of thought uses formal logic to explain and to predict an object's behavior. An observed phenomenon is dissected into pieces, which are linked in causal chains and categorized into universal criteria.[120] Sociologists argue that Americans assume that rational thinking is based on objective reality, where measurable results can be attained.[121] This manner of thought is well suited to the general American functional approach that emphasizes solving problems and accomplishing tasks. American mental formations favor procedural knowledge, which focuses on how to get things done, in contrast to descriptions of the way things are. This way of thinking is believed to be rational and efficient.[122]

This practical orientation of thought is consistent with a mental preoccupation with causality. Relative to other cultures, the idea of "natural happening" and "occurrence" is less acceptable to the American intellectual tradition. In contrast to holistic thinkers, this orientation creates a tendency to put data together in linear cause-and-effect chains along a single dimension. It is based inter alia on the optimistic belief that there is an objective essence that can be reached through linear processes of discovery. American experience employs psychology, game theory, and mathematics as dominant analytical approaches to channel human thinking and judgments into applications. It is a tendency that exists in symbiosis with the cult of the use of probability in risk analyses, which have penetrated through American culture.[123] Systems analysis prospered as an analytical instrument in military affairs under Robert McNamara. During the 1960s, progress in the Vietnam War was even measured by "body counts and track kills."[124] Practicality and functional orientation of

thought aims it toward the nearest future, which appears in American think-
ing in the form of anticipated consequences of actions.[125] When trying to en-
vision the future and to make effective forecasting, logical-analytical cogni-
tive style predisposes American mental formation to focalism—a tendency to
focus attention narrowly on the upcoming target event and not enough on the
consequences of other future events. Among other things, it is another symp-
tom of "field independency," when little attention is paid to the overall frame-
work in which rational and effective actions take place.[126]

Anthropologists argue that American social institutions and educational
organizations emphasize systematic and analytical thinking and provide a
less favorable environment for holistic conceptual reasoning.[127] The subjects
of the American cultural climate have been described as manifesting a "logical-
analytical" approach across the large spectrum of human activity.[128] The
American personality is distinguished to a significant extent by practicality,
which acknowledges the superiority of praxis over idealized concepts or ab-
stract virtues. As Andrew May argues, American science and technology were
historically produced in the most rational, pragmatic, and entrepreneurial fash-
ion. The aim was not to create abstract, fundamental knowledge, but to create
new, applicable technologies that could be widely sold or used to generate
profits.[129] This predisposes American conduct toward empiricism, a theory
of knowledge that emphasizes the role of experience and those aspects of sci-
entific inquiry that take shape through deliberate experimental arrangements,
in contrast to the a priori abstract knowledge that is independent of experi-
ence and experiment. Donnelly notes the strong predisposition of the Ameri-
can military tradition to value practice at the expense of theory.[130]

On balance, the mainstream of American thinking style has historically
manifested a strong inclination toward inductive reasoning—it derives prin-
ciples from analysis of data and generalizes from the facts to the concept.[131]
Robert Bathurst shows that in the military realm and in international negoti-
ations, the United States began analyzing situations from fragments. Keeping
with its low-context orientation, its practical approach concentrated on the most
rudimentary aspects of the problem and sought the most optimal mechanical
solution to it.[132] In discussing American negotiation style and legislation, Cogan
also describes an American proclivity toward inductive reasoning. He dem-
onstrates how this empirically based, inductive style of reasoning contrasts
with the Cartesian mode of deduction. While the deductive approach moves
from "top-down," first defining principles and then deducing the context, the

American approach is "bottom-up," moving from the particular to the general. This orientation also exists in American legal practice.[133] Comparative studies of political reasoning suggest that induction and empiricism are characteristic of Anglo-American societies, as opposed to the holistic-dialectical thinking of several other cultures.[134] This intellectual climate fostered America's cultural approach to innovation. In his most thorough and original analysis of US strategic culture, Brice F. Harris argued that "the story of scientific discovery in America is less the story of scientific research in its *creative* form—which is to say research in the tradition of Aristotle, Newton or Einstein—than it is one of *applied* research."[135] As was established above, creative holistic-dialectical thinking style has a greater aptitude than its logical-analytical alternative to grasp paradigmatic changes in military affairs.

American Culture of War: Swift Annihilation and Attrition by Firepower

The national mission of conquering an entire continent, together with the nation's prolonged frontier experience, left its mark on American strategic culture.[136] The United States developed into a country of unusual dimensions, and the scale of its resources has influenced the national security enterprises it has undertaken.[137] As American society grew in size and wealth, it also accumulated military power, with no apparent economic or demographic limits. Restrictions on American power were not natural, but rather determined by political and strategic considerations.[138] Almost two hundred years have passed since the United States faced an enemy with a larger gross national product than its own. American productive capacity, translated into overwhelming material superiority, has played a critical role in the nation's military successes. Its dominance in numerous industrial and technological sectors, in skilled manufacturing, and in the ability to increase production capacity created basic military advantages: a large defense budget, a significant pool of machines for fighting a war, and educated manpower capable of operating them.[139] Given the abundant material resources, troops' equipment, and excellent managerial expertise, the United States relied less on perfectly planned and executed strategies to win.[140]

Self-efficacy dictates a strategy to shift the conflict into those arenas where one enjoys an inherent advantage over one's enemy.[141] The strategy of attrition and annihilating the enemy with firepower was the best way to transform the nation's material superiority into battlefield effectiveness. The translation of enormous resources into firepower, technology, and logistical ability and a con-

sequent inclination for direct attack date back to the military experience of the American Civil War. This "annihilation by fire" approach has been largely successful throughout American military history.[142] In illustrating this tendency in the country's strategic culture, Cohen points to two outstanding characteristics of American conduct during the Second World War: a preference for massing a vast array of men and machines, and a preference for direct assaults.[143] According to John Ellis, on the operational level, US generals relied on material superiority, firepower, and overwhelming force rather than on creative maneuvers that would threaten the enemy and force them to surrender.[144] Referring to the American preference for mechanical and industrial solutions, some argue that the United States has often waged logistic, rather than strategic, wars.[145]

Discussing American strategic culture, Mahnken defines this preference for an overwhelming blow as taking a "direct approach to strategy over indirect." In his discussion of American strategic culture, he dubs this phenomenon "an industrial approach to war."[146] Echoing this claim, Chester Wilmot argues that the Americans have adhered to the theory that if a military machine was big enough, it could be driven wherever they wanted to go.[147] The conflicts in Korea and Vietnam provide further examples of the military doctrine of annihilation and a resource-based approach to warfare.[148] Capitalizing on this industrial approach, the US has often outproduced its enemies in the amount of military power that it is able to generate.[149] Criticizing this formulation, other scholars have insisted that the American armed forces have pursued a much wider range of strategies beyond pure attrition or annihilation. American military tradition, they argue, is also rich in fighting small wars and insurgencies and in developing excellence in deterrence strategies.[150] However, Mahnken has claimed, even in these cases, a preference for attrition and annihilation "stands up remarkably well as a portrayal of American military strategic culture and the aspirations of the US military."[151] It is most likely for this reason that US strategic culture, which seeks decisive battles, ultimate victories, and measurable national security outcomes, is less at home with stability and support missions, on which swift annihilation by massive firepower is less relevant.[152]

A-strategic Thinking

Longstanding American superiority in resources translated into a traditionally low incentive to engage in patient strategic considerations and in thorough operational calculations.[153] Scholars agree that the materially wealthy United States has, throughout its military history, preferred an approach to

war based on annihilation and attrition by means of technology and fire-power over a style of fighting resting on maneuverability or on strategic thoroughness.[154] The American military sought to take the war to the en-emy as rapidly and as destructively as the machinery of industrial age war-fare permitted, while maneuver was considered to be simply the means to impose firepower on the opposing force.[155] It almost took for granted that it would be able to mass forces and firepower whenever and wherever it de-sired.[156] This industrial approach to warfare accounts, according to some scholars, for the relative disfavor with which traditional military theory is regarded.[157] Lock-Pullan notes that the United States did not historically develop "excellence in strategy and military thought because it did not have to."[158] Scholars report the strong predisposition of the American military tradition to value practice at the expense of theory.[159] Although a profes-sional military education of the US officers' corps was strongly emphasized, Murray argues that American strategic culture frequently tended to be anti-intellectual and antihistorical. According to him, the US senior military leadership's "overall attitude at best appears to be that education is a luxury for the American military rather than a necessity."[160] According to Gray, this neglect of a professional military education at the top results, in part, in a tendency to think a-strategically.[161] The philosophy of a continuous and pro-found professional military education was simply not that important an at-tribute to American military culture. Intellectual curiosity in military sci-ence never became a criterion for promotion.[162]

The above observations also reflect on the American approach to devel-oping professional theoretical knowledge about the nature of war. No theo-retical approach for the organized study of war in all its aspects (the impact of social, economic, political, and technological phenomena on the methods of fighting) was ever formulated in the West.[163] Fundamental studies of war and predictions about its future obviously did take place in the US. However, when scholars compared them to those done in the USSR, they found the for-mer to be fragmented, not integrated, uncoordinated, and rarely linked di-rectly to the development of the state's military machine.[164] Edward Luttwak, in an essay written in 1981 in *International Security,* pointed out that despite the long-standing recognition of an operational level of warfare in classical military literature, there was no adequate term for this in Anglo-Saxon mili-tary thought.[165] John Erickson and Raymond Garthoff have concurred that the term *operational art* was foreign to Western military thinking.[166] This was

a serious conceptual shortcoming, since it is generally on this level that paradigmatic changes in the nature of warfare are debated. Strategic and tactical implications are an outgrowth of the initial insights produced in the milieu of operational art.[167] The American disinclination to invest in operational thinking comes as no surprise. The idea of "collapsing the enemy" by operational maneuver rather than simply annihilating it by firepower conceptually diverged from the established American strategic tradition.[168]

It was only in the wake of the Vietnam War that ALB concepts began to emphasize warfare maneuverability and the necessity to develop theoretical knowledge on the operational level. It was not until 1986 that the US army reoriented from battles of integral annihilation in favor of a more dynamic and complex understanding of war,[169] and officially recognized operational art as an integral part of US military thought.[170] In general, the American strategic community developed an approach to strategy that accounts less fully "for the range of strategic dimensions" than does that of Russia or China.[171]

Optimistic and Engineering Approach to Security

The belief of the founding fathers that America represented a "new beginning" contributed to a national identity based on liberal, democratic, Protestant, and capitalistic principles. Individual freedoms, pragmatism, and rationalism formed the cornerstones of the new society.[172] The capitalist economy, liberal political structures, and a strong spirit of exploration produced a belief that as nature could and should be understood, potentially almost any problem can be solved. Optimistic entrepreneurship became a value in all fields of American social activity and created a society based on notions of efficacy, rationalism, and pragmatism. Compounded by repeated success, it produced a romantic engineering creed that viewed social and security problems as essentially mechanical in nature and, consequently, consistent with the logic of man-mademachines.[173]

American history is rife with "miraculous" achievements, typically in the face of challenging geography. Conquering the wilderness bred a frontier pragmatism that was translated into an engineering, problem-solving ethos. This approach often regards political conditions as a set of problems,[174] and pushes strategists, influenced by engineering, to "attempt the impossible."[175] A belief evolved in popular culture that problems could always be solved.[176] As a society whose Declaration of Independence affirmed the "pursuit of happiness" as the natural right of every citizen, the Americans tended to take a proactive

approach, viewing sources of unease and discomfort as "engineering problems."[177] The political challenges posed by the American Indians or menacing European or Asian empires were transformed by the United States into military problems that could be resolved definitively by means of machine warfare.[178] The absence of national-level security disasters reinforced optimism as an American national philosophy.[179] Such a strategic culture is more at home with administration than with the art of diplomacy or strategy.[180] It is inclined toward reductionist methods of problem solving, by minimizing the complications created by culture, time, and distance.[181]

Similar engineering positivism is manifested in American military thought. Though Carl von Clausewitz might be considered the father of the American approach to civil-military relations and strategy, many claim that the true mentor of US military thinking is Antoine Jomini. He wrote about war as an art, but his quest for reducing complexity to a few apparently simple principles has characterized the cultural preference of American military thought for simplicity over complexity. Armed with the Jominian belief in the effectiveness and power of basic axioms, American practicality sought to reduce strategic problems to equations. Historically, American strategists have assumed that they could calculate the answers to the issues of deterrence and war. The country's domestic history encouraged the belief that American know-how would inevitably find a solution to any problem.[182] This tendency is reinforced by an American fascination with technology that dictates, drives, and organizes the managerial mind-set in military affairs.[183]

American Time Orientation—"Present and Immediate Future"

Scholars of American strategic culture describe how the need for immediate action, the rapid resolution of problems, and achieving results went hand in hand with a strong American time orientation toward the present instead of the past or distant future.[184] The practicality of American thinking "condemns the irrational past" and directs it toward the immediate future, making the orientation more functional than that in other societies, where the future is measured in decades or generations. American time, argues Edward Hall, is linear.[185] The future appears in American thinking in the form of anticipated consequences of actions.[186]

American culture usually considers the newest to be the best. This inclination is clearly reflected in the US military's approach to weapons acquisition policy. While Soviet weapons research, development, and procurement were

driven by consumer requirements, the Western armed forces often procured what industries produced and sold. In the West it was possible for a weapons system to be procured because it represented state-of-the-art technology, and not necessarily because its use was prescribed by the doctrine.[187] The fascination with novelty and rapid transformations predisposes American society to accept change more readily than do other cultures. However, as Downey and Metz have noted, with little attention paid to the past, the tendency is to look ahead—not to the distant future, but more to the demanding present time.[188] Although US strategic planning has not always focused solely on the here and now,[189] observers characterize it as generally averse to an extended strategic outlook and more comfortable with near-term crisis management than with long-term strategy planning.[190] As Murray put it, referring mostly to Vietnam, "the American nation's worst defeat resulted largely from a military and civilian leadership that prized modern technology over the lessons of the past."[191] This lack of historical and cultural curiosity frequently results in a situation in which the enemy of the US understands the Americans far more coherently and effectively than the Americans understand him.[192]

Democratic Tradition, Bottom-Up Organization, and the Role of the JCS

As a social-organizational phenomenon, the JCS manifested the American strategic culture just as the Soviet GS was consistent with the Russian cultural characteristics. The American political modus operandi prevented the concentration of an ultimate authority in a single military organization. Consolidating bureaucratic power in one central place (i.e., in the hands of the JCS chairman) would have contradicted the American democratic tradition of checks and balances. In keeping with the liberal tradition of American society, authority was delegated down to the services. Consistent with an entrepreneurial culture, the competition between services was expected to be beneficial and to serve as an impetus for innovative initiatives.[193] As a result, one of the most significant bodies of the American military system, the JCS, was also one of the most controversial. Although the JCS was designated as the principal military advisory body to the civilian leadership, the chairman lacked the statutory mandate for independent long-term recommendations. His advice centered more on budget allocations and less on long-term strategy or development of American military power. The JCS was, for the most part, disconnected from the operational realm, rarely held command responsibility

of its own, and as a rule, delegated considerable authority, including doctrinal development, to the services.[194] De facto, the services, and not the JCS or the Department of Defense, were the most powerful institutions of American national security.[195]

The establishment and subsequent functioning of the JCS was a distinct manifestation of American military parochialism. Its members faced a constant built-in dilemma, between representing the interests of their respective services and thinking jointly and broadly about the nature of the armed forces in an existing or emerging security environment. It was the former that prevailed. Rather than an elite military organization that concentrated the finest professional capital, the selection process produced narrowly focused, combat-oriented line officers, committed to the parochial interests of their services. The officers were selected late in their careers and were not formally educated for duty in the JCS. In striking contrast to the Soviet GS, the JCS by no means consisted of the intellectual crème de la crème of the American military.[196] Strategic and long-term defense planning were weakly institutionalized in the JCS. It lacked the powerful cadres required to produce effective cross-service vision and advice that was capable of affecting the long-term development of the US military. By definition, the chairman was a budgetary manager and occasional operational planner, but not a deductive thinker about the nature of war. He was neither a doctrinal luminary nor an initiator of long-term strategic decisions. The JCS remained a captive of the services and lacked the intellectual mechanisms to generate broad, cross-cutting, long-term recommendations. The institutionalized conceptual centers of gravity, such as Training and Doctrine Command (TRADOC), were diffused among the services, which initiated most American military innovations.[197] Lacking strategic guidance, the services' innovations were often piecemeal, inconsistent, and sectarian, and they rarely expanded beyond the operational level. "Each branch developed its distinctive strategic paradigm," and the JCS rarely offered conceptual alternatives to the views developed in the services.[198] As a rule, American military innovated bottom-up, from the services to the leadership.[199]

No single institution existed in the American military that possessed a synthetic grasp of the security environment. Given the structure of the JCS, there was no institution capable of systematically thinking through the discontinuities in military affairs along the entire spectrum of their implications for the services. Without that perspective, it was virtually impossible to ana-

lyze the impact of the scientific-technological changes on the nature of warfare in general and on the doctrine and organization of the American military forces in particular. The state of professional periodicals serves as a case in point. Following the 1986 military reform, the JCS established its own professional publication, *Joint Forces Quarterly,* for the dissemination of knowledge among senior military professionals. This vanguard of American military thought was established only in 1993. In contrast, the professional publications of the American military services had been established several decades earlier than the quarterly of the JCS. For the sake of comparison, the Soviet GS had established its periodical *Voennaia Mysl'* (Military Thought) in the late 1920s. The titles of the journals also manifest which raison d'être their founders attributed to them. Murray, in discussing the relatively insignificant attention paid to doctrinal conceptualizations and theory development within the framework of American military culture, argues that the Joint Staff never constituted the intellectual center of gravity of the US military forces.[200] Through the years, the above-mentioned weaknesses of the JCS system were observed and noted by several American defense intellectuals.[201]

Technological Romanticism in Military Affairs

The strong bias toward techno-centric warfare is an essential component of American strategic behavior. Scholars do not condemn prudent exploitation of the technological dimension of war, but rather its misuse and overreliance on machines.[202] According to Mahnken, "technological optimism has historically animated US defense planning"; "no other nation has placed greater emphasis upon the role of technology in planning and waging war."[203] Reliance on new technology is a corollary of the predisposition to solve problems quickly and in simple, direct terms.[204] Initially, America's romance with machinery, particularly with mechanical means of transportation, was a result of the need to conquer the wilderness. Population density on the frontier, together with an acute shortage of skilled artisans, obliged Americans to invent substitutes for human skill and muscle.[205] The new society responded to this shortage by ingeniously embracing machines and taking the lead in the production of mechanical tools. Since the early nineteenth century the United States has been a land of technological marvels and has developed an extraordinary rate of technology dependency.[206]

The fascination with technology was not unique to the military; it characterized the culture as a whole. In the popular narrative, technology is generally seen

as bringing benefits. In contrast to Europe, American history has few examples of mobs destroying industrial machines. The capitalist economy demanded ongoing innovation, while the character of the competition pushed scientists, technologists, and consumers closer together and produced unusually enthusiastic thinking with regard to technology.[207] The machine acquired symbolic meaning, and the liberal American tradition saw technology as an instrument for preserving the nation's immunity from war, rather than as new means for waging it.[208] One of the principal by-products of technology was a faith in technology.[209] American strategic culture viewed technology as a panacea in global affairs and sought ways to expand its scope and to apply technical solutions to strategic issues.[210] Weigley, in discussing the American way of war, argues that the pragmatic qualities of the American character have fostered a national penchant for seeking refuge from difficult problems of strategy in technology.[211] This predisposition to technicity—to the exaggerated significance of the technical—was characteristic of American defense policy makers, as well.[212] Many military historians regard the technology of warfare as one of the most important independent variables in the country's military thought.[213] Technological romanticism engendered visions of a mystical silver bullet promising decisive victory.[214]

The zeal for technology was further fueled by a desire to get more "bang for the buck" while minimizing American, if not enemy, casualties.[215] The desire to minimize human losses is another trait of American strategic culture. American society could not abide a high rate of casualties, and the military sought a style of fighting designed to minimize fatalities. Thus, it became American practice to send metal into battle in place of vulnerable flesh.[216] The preference to expend bombs and machines rather than personnel also led the United States to prefer to wreak destruction from a distance.[217] According to Cohen and others, these elements are mutually reinforcing. The armed forces opt for airpower, strategic bombing, stand-off strikes, overwhelming firepower, and high technology as a means to reduce the forces' vulnerability in military operations.[218] This technological enthusiasm varies across the distinct subcultures of the American military services.[219] The air force and navy were traditionally the most techno-friendly and techno-dependent. The army kept its distance from such techno-bias, and the marines valued technology the least. Being "boots-on-the-ground" services, the army and marines rely to a relatively greater extent on the human element than on machines and put the former at the center of warfare; hence, the saying that the air force and navy man the equipment, while the army and marine corps equip the man. How-

ever, scholars agree that in spite of these differences, optimistic techno-centric romantic culture was ingrained in all four of the American military services and also served as a common denominator for civilian policy makers involved in military affairs.[220]

Within the defense establishment, debates about technology and budgets frequently usurped the place of strategy. The traditional orientation toward quick action and results, an attachment to things new and futuristic, and a disinclination to wage long wars were frequently in keeping with the almost instinctive reliance of American strategists on technology as a panacea in national security affairs.[221] This pragmatism can result in a technical approach to international security, and a conception of complicated issues as problems requiring engineering solutions.[222] American reliance on technology, according to Mahnken, was a poor but ubiquitous substitute for strategic thinking in international security.[223]

An Inclination to Ethnocentrism

The US has historically seen itself as an arbiter of morality, with a special moral-political mission in the world.[224] It has been argued that this vision, fueled by the isolationist tradition, has sometimes created an ethnocentric belief among Americans that they occupy the moral high ground, as well as their inclination to view the world primarily through the perspective of their own culture.[225] The early ideologies of American colonists were influenced by the Protestantism of the Puritan settlers, who believed that they were God's people—chosen to lead the other nations of the world. John Winthrop gave this notion metaphoric expression in his description of America as a "City upon a Hill."[226] The successful course of political and military history in the US has provided justification for its belief in its own optimism, a self-confident sense of superiority and invulnerability.[227] Americans' high estimation of themselves as a nation, including a collective narrative that emphasizes political and moral uniqueness, liberty, a divine mission, and a multidimensional sense of national greatness, has made it difficult for them to accept the beliefs, habits, and behaviors of foreign cultures.[228]

American history, at least up until the Vietnam War, was presented as an extremely positive narrative. Young colonies evolved into a power capable of carrying out the world's most important endeavors. This generated an extraordinary optimism regarding what could be achieved by the American way of war.[229] The early wars—the Seven Years' War (1756–63), the Revolutionary

War (1775–83), and the War of 1812—regardless of how they had begun, were victorious at a relatively small cost. The late American entry into both World Wars was followed by a steady march toward victory. Successful involvement in both wars is recounted with considerable ignorance, minimizing the role played by Britain, Russia, and France, and with a belief that the United States had ultimately won in both cases.[230] This was a narrative that perpetuated ethnocentricity and bolstered the existing strategic culture.[231] The overwhelmingly victorious historical experience kept Americans from examining counterproductive conduct that might undermine military effectiveness.[232]

Ethnocentrism is known to produce a phenomenon known as mirror imaging, a cognitive situation in which decision makers or intelligence analysts project their thought processes or their value system onto the subject of reference.[233] The tendency toward mirror imaging also comes from insufficient interest in the opponent's way of thinking. This "pathology" has been diagnosed in the American security and intelligence experience.[234] It primarily hampers the ability to properly identify and assess emerging foreign methods of warfare, and inclines to assess technical developments on the basis of the analyst's own technology.[235] Bathurst has reported on constant "mirror imaging" in the routine work of American intelligence officers analyzing the Soviet military doctrine and technological capabilities during the Cold War.[236] The adversary's practices are studied not only in order to understand the potential enemy, but also in order to learn alternative military art to emulate valuable ideas. In this regard, ethnocentrism can prove to be a serious obstacle. While the Soviet Army showed no reluctance to imitate and copy ideas from the US, this was not usually the case in reverse. Western nations, and the American military in particular, were less flexible in their attitudes, exhibiting a "not invented here" mentality.[237]

CONCLUSION: CULTURAL FACTORS AND THE AMERICAN RMA

The cultivation of the technological seeds of the American RMA preceded the maturation of the conceptual ones. The US developed technology and weaponry for about a decade without realizing its revolutionary implications. Why did it take the US defense community close to a decade to acknowledge the accuracy of Soviet assumptions and to translate MTR theoretical postulates into a radical military reform? Several qualities of American strategic culture prevented its swift comprehension of the paradigmatic change in the nature of warfare discussed in the case under study.

The general American cultural predisposition to a logical-analytical cognitive style made the US military less receptive to the kind of reasoning needed for perceiving and comprehending dialectical transformations in military affairs. According to observations of cultural psychologists, American cognitive style was "field independent." It had a strong inclination to focus on the central object of the observed phenomenon and to pay little attention to the overall framework in which the action took place. During forecasting attempts, the logical-analytical style predisposed American mental formation to focalism—a tendency to focus attention narrowly on the upcoming event and to detach it from the overall implications. The pragmatic and practical American strategic personality predisposed to action, favored procedural knowledge that focused on how to get things done, and was inductive.

During the introduction of the PGM weaponry into the battlefield, mainstream American military experts concentrated on the *focal point*—mechanical application of the new technologies on the tactical level—and detached it from the *context*, that is, the implications of this new weaponry on the ways and means of waging operations. The concentration on the focal technologies at the expense of the broader contextual implications hindered the US military from the swift comprehension of the paradigmatic change in the nature of war. The US forecasting efforts were piecemeal and extrapolated from current capabilities, rather than trying to anticipate qualitative leaps in military regimes. The ALB innovation aimed to satisfy specific requirements related to a narrow, techno-tactical yet relevant set of operational threats. The US military for a long time saw in the stand-off PGMs no more than a perfect and immediate remedy to the Soviet echelonment doctrine. The US possessed only an intuitive understanding of the revolution that was about to occur, and was not consciously thinking in terms of a revolution. Not until Andrew Marshall and his colleagues from ONA introduced the notion of the RMA into the professional military discourse did the emerging discontinuity reach the consciousness of the American defense community. In keeping with the inductive approach to understanding reality, a paradigmatic change among the mainstream of the US military did not occur before the particular empirical experience (Gulf War) was observed and generalized.

Why did ONA experts reach better assessments than the rest of the American intelligence community on what the Soviets were thinking? As Gray noted in one of his publications, "a security community may have more than one strategic culture."[238] Indeed, several American leaders and analysts have challenged a techno-phile inclination of the US defense community. In Mahnken's

words, these "latter-day Luddites decry the American military's seeming fascination with technology."[239] Taken over by Andrew W. Marshall ever since, the ONA experts succeeded in grasping this discontinuity because they did not embody—in fact had consciously suppressed—most of the traits of American strategic culture. The intellectual conduct of ONA was the striking exception to the rule, which proved the rule. Eclectic, holistic, and synthetic in nature, the thinking style and the intellectual atmosphere inside ONA were remarkably divergent from the logical-analytical approach of mainstream American strategic culture. ONA experts consciously stressed the importance of context dependence in the course of their analytical activity and sought to distance themselves from mainstream mechanical focalism. In contrast to the prevalent American cost-effectiveness approach, which was procedural and prescriptive, ONA was consciously committed to producing descriptive knowledge.[240] Better manifestation of ONA's deviation from logical-analytical thought and its inclination toward a holistic-dialectical thinking style can hardly be found. However, its influence was too limited to reorient and retool the fundamental American approach. ONA was too weak to struggle effectively against the general decontextualized thinking, technological romanticism, and intellectual myopia.

American strategic culture was less prepared institutionally and intellectually to think in terms of revolutions in military affairs. Institutionally, in keeping with decentralized liberal culture, relevant conceptual and organizational military innovations, such as ALB, originated in a bottom-up manner, from the services, and not top-down from the JCS or DoD. In keeping with the American cultural tendency to divide strategic problems into discrete parts in order to solve them, discerning the whole was frequently difficult. American JCS had no ethos of being a "brain of the military," and consequently strategic and long-term defense planning was weakly institutionalized there. The JCS lacked a powerful bureaucracy capable of producing an effective cross-service vision and advice that could affect the long-term development of US military power. The chairman was a budgetary manager and occasional operational planner, but not a deductive thinker about the nature of war. He remained a captive of the services' parochialism and lacked the intellectual capital to generate deep, cross-cutting, long-term observations.

Intellectually, the US military was unprepared for grasping the RMA. For generations, an integral battle of annihilation and enemy attrition by superior firepower had been an American way of war. This industrial approach to war-

fare accounts for the relative disfavor of the American theoretical military tradition. One implication was that the notion of the operational art as a theoretical concept was rejected by the US military tradition until the 1980s. The aim of "collapsing the enemy" by operational maneuver rather than simply annihilating it by firepower conceptually diverged from the established American strategic tradition. Because ideas about paradigmatic changes in the nature of war originate on the operational level of military thought, the lack of this intellectual layer was a serious obstacle that prevented thinking in terms of the RMA.

The traditional orientation toward quick action and results, an attachment to things new and futuristic, and a disinclination to wage a long war resulted in almost instinctive reliance of American strategists on technology as a panacea in national security affairs. An optimistic and engineering approach to security, an industrial approach to warfare, annihilation and attrition by firepower, the positive role of machines in the American cultural narrative, and the desire for cost-effective firepower, while minimizing casualties, made the US probably the most techno-centric military in the world. In this atmosphere, functional and mostly tactical application of advanced technologies took center stage. With certain variations, techno-euphoria was deeply ingrained in all four military services. During the 1970s, this technological romanticism disinclined the defense establishment to perceive the broader impact of this technological breakthrough upon the nature of war and to make a quantum leap in the sphere of military thought. American thinking appeared to focus more on how new technologies could be used to enhance performance of existing missions. The PGMs were seen as just another, albeit significant, force multiplier in the military arsenal. Notwithstanding ONA's intent to focus the professional attention of the US defense community on the symbiotic relationship among technology, concepts, and organizational structures, techno-euphoria blossomed once again during the implementation stage of the American RMA in the late 1990s.

Historically, ethnocentricity was a considerable factor in American strategic culture. The US saw itself as an arbiter of morality, with a special moral-political mission in the world. This vision inclined to view the world primarily through the perspective of its own culture. Ethnocentricity increased the likelihood of such analytical pathologies as "mirror imaging," in which foreign security developments were measured by American standards. This unmotivated analytical bias of the US analysts made them less receptive to certain

military innovations from abroad, since they did not correspond to the common wisdom of the American defense establishment. In keeping with this cultural trait, in their evaluations of the Soviet MTR, American experts projected their own perceptions. They measured the Soviets by the standards of the US military and on the basis of American technology. Until the ONA assessment, the US defense community had failed to grasp the essence of the Soviet MTR developments and avoided accepting controversial futuristic conclusions offered by the Russians. Soviet writings about the revolutionary impact of the new weaponry were skeptically treated by the US experts as futuristic nonsense.

Ironically, Soviet theories ultimately provided a kind of a "mirror" for US strategists. By analyzing how American military power was reflected in Soviet eyes in the early 1980s, US strategists were able to realize during the early 1990s the value of the revolutionary treasure they held in their hands.