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MRAPs, Irregular Warfare, and Pentagon Reform

by Christopher J. Lamb,
Matthew J. Schmidt, and
Berit G. Fitzsimmons

occasional paper

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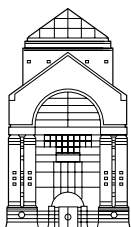
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Introduction

Mine resistant ambush protected (MRAP) vehicles¹ offer an excellent case study for investigating the current debate over the Pentagon's approach to developing and fielding irregular warfare capabilities. MRAPs first gained prominence for their ability to protect U.S. forces from improvised explosive devices (IEDs) and because the Pentagon did not deploy them en masse to Iraq until almost 5 years of fighting had passed. More recently, following extraordinary efforts to field more than 10,000 MRAPs quickly, the program has been criticized as wasteful and unnecessary.

Secretary of Defense Robert Gates often cites the slow fielding of MRAPs as a prime example of the Pentagon's institutional resistance to investments in irregular warfare capabilities. Some irregular warfare requirements traditionally bedevil the United States—such as human intelligence—but quickly producing and fielding vehicles is something the country has done well often in the past. Moreover, the Pentagon assessed MRAPs as 400 percent more effective² at protecting U.S. troops than other vehicles, and Congress was eager to pay for them. Thus, the slow fielding of the MRAPs certainly seems like *prima facie* evidence for the Secretary's claim that the Pentagon does not do a good job of providing irregular warfare capabilities.

Yet some analysts now argue that MRAPs are not really useful for irregular warfare and are prohibitively expensive.³ By the time the vehicles finally flowed into the combat zone, the need for them had diminished because the insurgency and the IED problem in Iraq were on the decline. Now the Pentagon's planned procurement of MRAPs is being slashed, Congress is demanding more accountability for controlling their costs, and the MRAP program is being accused of sidetracking important future acquisition programs such as the Joint Light Tactical Vehicle and the Future Combat System.⁴ As General Barry McCaffrey, USA (Ret.), asserted, "It is the wrong vehicle, too late, to fit a threat we were actually managing."⁵ Thus, MRAP proponents, who think their delayed fielding was unconscionable, and detractors, who consider them a misguided, emotional response to casualties,⁶ both view the MRAP saga as an acquisition disaster. For incoming senior officials who are vowing acquisition reform, the MRAP experience seems to strengthen their cause.⁷

The controversial MRAPs raise two questions. First, does the MRAP experience support Secretary Gates' contention that the Pentagon is not sufficiently able to field irregular warfare capabilities? To resolve this issue, we have to determine whether MRAPs actually are a valid irregular

warfare requirement, and if so, whether the Pentagon should have been better prepared to provide the kind of force protection armored vehicles like the MRAP provides. Second, what factors best explain the MRAP failure, whether that failure is determined to be the delayed fielding of MRAPs or the fact that they were fielded at all? More specifically, is the acquisition system to blame, as is commonly supposed? We conclude that MRAPs are a valid irregular warfare requirement and that the Pentagon should have been better prepared to field them, albeit not on the scale demanded by events in Iraq. We also argue that the proximate cause of the failure to quickly field MRAPs is not the Pentagon's acquisition system but rather the requirements process, reinforced by more fundamental organizational factors. These findings suggest that achieving Secretary Gates' objective of improving irregular warfare capabilities will require more extensive reforms than many realize.

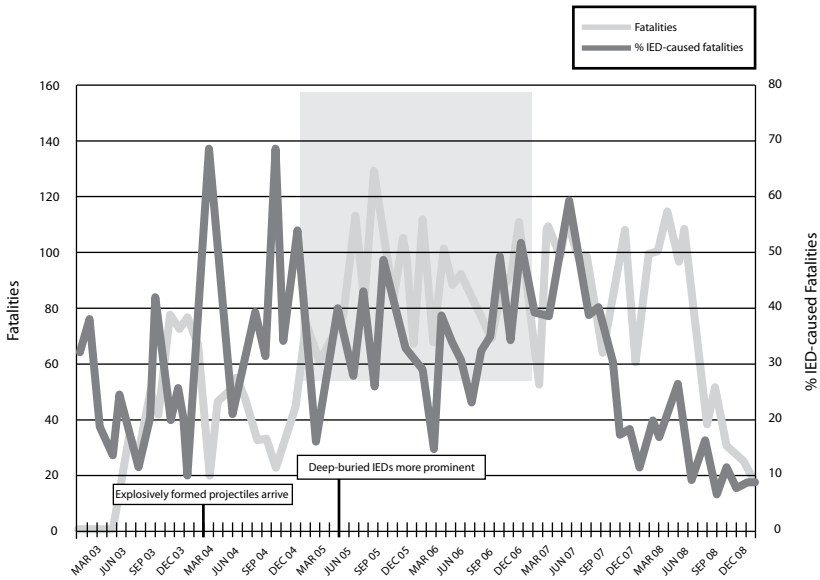
IEDs and Armored Vehicles in Iraq

The IED Challenge and Initial Armor Decisions

By June 2003, 3 months after the initial intervention, the IED had emerged as the enemy's weapon of choice. That month, then-U.S. Central Command commander General John Abizaid, USA, declared IEDs his "No. 1 threat." IED casualties as a percentage of total casualties dropped during the first and second Battles of Fallujah (the spikes on the dark line in figure 1) when sustained offensive action of U.S. forces generated more close-quarters combat deaths from other weapons, but by December the percentage of fatalities caused by IEDs rose to just about half of all U.S. combat deaths. From the summer of 2005 until the spring of 2008, the IED threat was responsible for 50 to 80 percent of U.S. fatalities. In short, IEDs emerged early in the war and remained the most effective weapon used against U.S. forces through 2008. The percentage of casualties caused by IEDs did not decline significantly until mid-2007 and 2008, when violence declined abruptly as MRAPs arrived in large numbers and the new American strategy under General David Petraeus, USA, took effect.

The IED threat evolved over time, but all major forms of IEDs were apparent early on—by 2004 or 2005 at the latest. Initially, the enemy just tossed charges underneath moving vehicles but soon began using roadside bombs set off remotely by electronic devices like garage door openers or cell phones. As up-armored Humvees that protected troops from IED shrapnel became prevalent, the insurgents buried large bombs in the roads to attack the soft underbellies of the vehicles, some packed with as much as 100 pounds of explosives.⁸ By early 2005, insurgents were using IEDs to conduct both side and under-vehicle attacks against the entire range of U.S. armored vehicles, but the majority were side attacks. Under-vehicle mines were common by the summer of 2006. Insurgents also used a particularly lethal form of IED known as the explosively formed penetrator (EFP), which is able to better penetrate armor and in doing so, spray elements of the weapons and the vehicle armor into the vehicle's interior. The EFPs arrived in Iraq as early as 2004. They reportedly were provided to Iraqi insurgents by Iran and Hizballah and were used almost exclusively by Shia insurgent groups such as the Mahdi Army. The sophisticated EFPs never amounted to more than 5 to 10 percent of the IEDs employed by insurgents, but they caused 40 percent of IED casualties. From spring into summer 2005, their use increased from about one per week to roughly one

Figure 1.P percentage of IED-caused fatalities and Total Fatalities



The box represents the roughly 2-year period before the 2007 “surge” when U.S. operational strategy was to reduce risks to U.S. forces and transfer security responsibilities to Iraq.

Sources: Michael O’Hanlon and Jason Campbell, *The Iraq Index* (Washington, DC: The Brookings Institution), available at <www.brookings.edu/FP/saban/iraq/index.pdf>; Defense Manpower Data Center, Statistical Information Analysis Division, available at <<http://siadapp.dmdc.osd.mil/personnel/CASUALTY/OIF-Total-by-month.pdf>>; Andrew Feickert, *Mine-Resistant, Ambush-Protected (MRAP) Vehicles: Background and Issues* (Washington, DC: Congressional Research Service, 2007), available at <<http://fas.org/sgp/crs/weapons/RS22707.pdf>>; and various reports from *Defense News*, *The New York Times*, *DefenseLink*, and *The Washington Post*.

every other day. The use of EFPs also jumped again between February and March of 2008 as MRAPs entered service in large numbers.⁹

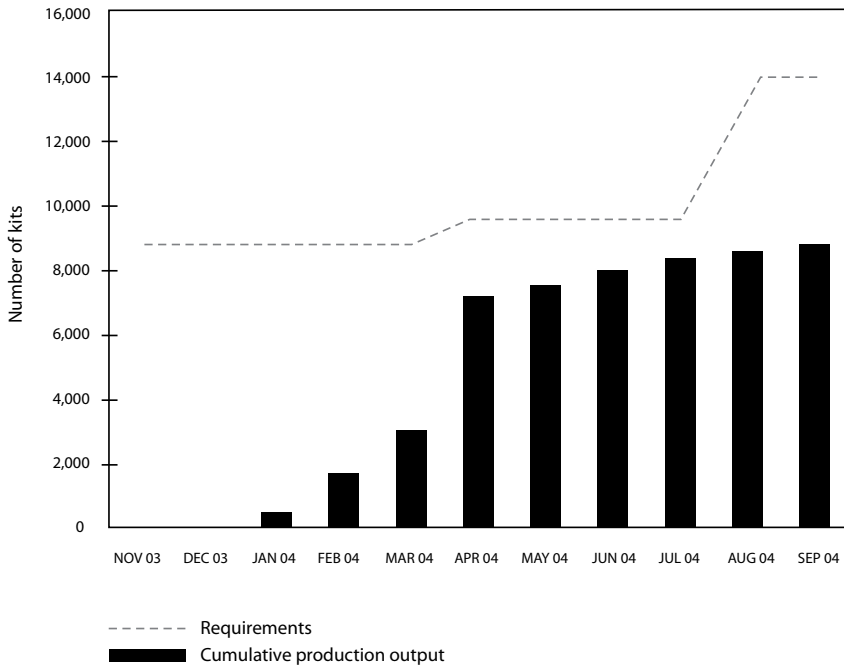
From the beginning, field commanders and Washington realized the IED problem¹⁰ was complex and required a multifaceted response. Better armored vehicles would be one part of the solution, but there were few options readily available. The Army scoured its bases for up-armored Humvees and was able to deliver over 200 to Iraq,¹¹ but more and better armored troop transport clearly was needed. Two courses of action were quickly settled upon. First, the Army decided to procure more up-armored Humvees to replace the thin-skinned versions. The Army worked with manufacturers to increase production from 51 vehicles per month in August 2003 to 400 vehicles per month in September 2004, and

Figure 2. Humvee modified for duty in Iraq



later to 550 vehicles per month.¹² Second, the Army approved the emergency expedient of adding armor kits to the existing Humvees because they could be fielded more quickly than the up-armored Humvees (see figure 2).

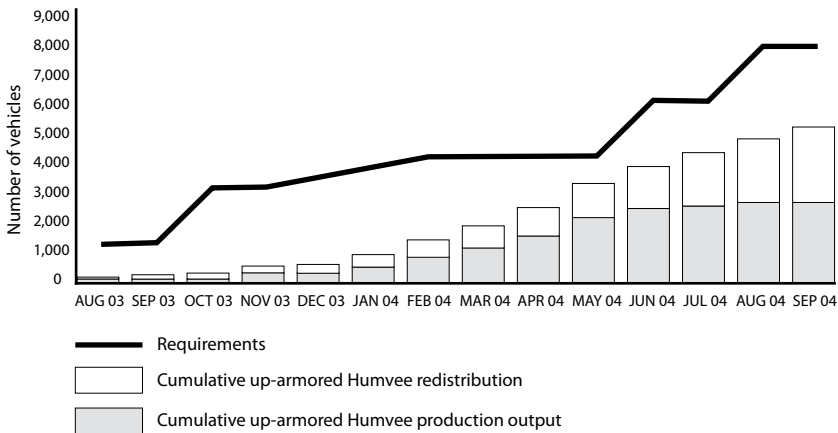
The House Armed Services Committee (HASC) monitored these efforts closely and believed they were proceeding too slowly. In February 2004, HASC staff members, pursuing a mandate from Representative Duncan Hunter (R-CA), took it upon themselves to investigate Pentagon claims that production of the add-on kits could not be accelerated. They determined that with the help of industry, production could be increased. The HASC staffers shuttled between manufacturers and suppliers, utilizing their private sector experience to clear production bottlenecks and get the kits into the field. With Congress pushing hard, the Pentagon and several Army depots increased production from 35 kits per month in December 2003 to 600 kits per month by July 2004. Consequently, 7,000 kits were delivered 6 months ahead of the Pentagon's original timetable.¹³ Still, the total number of up-armored Humvees in Iraq remained below the 2004 identified requirement. Only 5,330 of the 8,105 Humvees required to be up-armored by September 2004 were in place (see figures 3 and 4).¹⁴

Figure 3. Add-on Armor Kits Requirements and Rate of Production

Source: Government Accountability Office analysis of Army data.

Neither kits nor up-armored Humvees was the best solution for protecting U.S. troops. The weight of the add-on armor ruined the suspension and drive trains of the original Humvees and made them difficult to maneuver. Up-armored Humvees were designed to handle the extra weight better but do not protect troops as well as armored cars and MRAPs, with their higher clearance, V-shaped blast deflection hulls, and better integrated armor shielding.¹⁵ However, armoring the Humvees had the advantage of building upon an existing Army program, which would minimize additional support costs and allow some vehicles to be stripped of the armor and returned to their original configuration after withdrawal from Iraq.

As the IED problem grew and better armored vehicles could not immediately be fielded, innovative U.S. troops began adding improvised armor to their light Humvees. Scrap metal, plywood, and sandbags were used to increase protection. The problem was dramatically highlighted in December 2004 when a Soldier complained to then-Secretary of Defense

Figure 4. Up-armed Humvee Requirements and Rate of Production

Source: Government Accountability Office analysis of Army data.

Donald Rumsfeld in a town hall meeting in Kuwait: “Our vehicles are not armored. We’re digging pieces of rusted scrap metal and compromised ballistic glass that’s already been shot up, dropped, busted, picking the best out of this scrap to put on our vehicles to take into combat.”¹⁶ The Secretary’s response about “going to war with the Army you have” and his further explanation that the lack of armor was a “problem of physics” implied there was nothing that could be done about the situation, which elicited a firestorm of protest from Members of Congress, the public, and manufacturers who insisted they could increase production to meet the needs of U.S. troops.¹⁷

The resulting uproar put President George W. Bush on the defensive,¹⁸ and Secretary Rumsfeld moved fast to limit the political damage. Within one week of the exchange with the Soldier in Kuwait, Secretary Rumsfeld made delivery of up-armored Humvees and add-on armor kits a priority, and Pentagon officials “vowed to eliminate the armored-vehicle shortage in Iraq and Afghanistan within six months.”¹⁹ The Army was not enthusiastic but was compliant. The Service’s Director of Force Development noted both the expense of the program (over \$4 billion) and the Secretary’s direction: “This is an enormously expensive program, but very frankly, the communication from the secretary of defense has been real clear.”²⁰ The Army not only moved to provide the additional armor for Humvees, it also quickly changed course and approved standing requests

from field commanders for more heavily armored vehicles. For example, the longstanding request from the commander of the 3^d Infantry Division, Major General William Webster, to up-armor his M113 tracked personnel carriers was approved, as was the request from Colonel H.R. McMaster's 3^d Armored Cavalry Regiment to take their full complement of M1A2 tanks and Bradley armored fighting vehicles to Iraq. Webster was quoted as saying, "My troops won't drive out of the FOB [forward operating base] in an unarmored vehicle. We just won't."²¹ Also within a week of Secretary Rumsfeld's exchange with the Soldier in Kuwait, the Marine Corps Systems Command in Quantico posted its first notice seeking information on MRAPs from potential contractors.²²

The Political Problem: IEDs and the Home Front

Political pressure to do more to counter IEDs did not begin with the concerned Soldier's question to Secretary Rumsfeld. Representative Hunter and the HASC were already on the task. However, the incident propelled the armor issue into the public consciousness, where it remained until violence in Iraq declined precipitously in 2008. In Congress, numerous Representatives and Senators from both parties complained about the Pentagon's inadequate efforts to supply the troops with armor as well as other irregular warfare equipment such as body armor and electronic jammers. The complaint registered by Senator John Kerry (D-MA) in a letter to Secretary Rumsfeld was typical: "Over the last two years, Congress has provided more than \$200 billion in supplemental appropriations for the wars in Iraq and Afghanistan . . . in addition to the more than \$400 billion we spend each year on defense. . . . It is unbelievable, and quite frankly unacceptable, that American personnel face shortages of anything at this point."²³

Hunter was particularly determined to take action on perceived shortfalls, and especially to overcome the IEDs. His HASC hearings on military acquisition were excruciating for the Pentagon. In an April 21, 2004, hearing, Hunter pointed out that although the IED threat was identified in May 2003 and grew steadily worse, it was not until November that production of add-on armor kits began. Recalling Abraham Lincoln's admonishment to General George McClellan that he had a case of "the slows," Hunter said, "We've got an acquisition system that absolutely has a case of the slows. You guys can't tie your shoelaces." In response, Lieutenant General Joseph Yakovac, Military Deputy Director for the Army Acquisition Corps, noted that Humvees quickly provided with additional armor for deployment to the Bosnia contingency in the mid-1990s were "miserable failures" because they could not carry the

extra weight. Hunter was not impressed. He proceeded to relate in detail how he and his staff also had built a perfectly useable up-armored Humvee with help from Home Depot. Hunter and his staff were particularly incensed that in the President's budget request for fiscal year 2005, the Army had categorized the up-armored Humvee and add-on armor kits as "unfunded" requirements:

At a time when you're in a war fight and you've got these IEDs . . . and we're taking fairly substantial casualties, why would force protection, such as up-armor, ever be an unfunded requirement? . . . We've got military construction programs for things like gymnasiums, and yet that money continues to flow into those programs, which are peripheral to the war fight, and it doesn't go to the fight. That seems, to me, to be a major defect in this system.²⁴

Hunter even had his own armored gun truck built and driven to the door of the Pentagon to dramatize what could be done quickly with few resources. The Pentagon representatives listened and then explained the vehicle was too heavy and cumbersome to be useful.²⁵

When it became clear that even the up-armored Humvees offered insufficient protection against IEDs, Senators from across the political spectrum, including Ted Stevens (R-AK) and Joe Biden (D-DE), weighed in on what Missouri Republican Kit Bond decried as an unacceptable "set of bureaucratic delays" in fielding MRAPs. As pressure mounted, President Bush declared in March 2006 that defeating the IED threat was a top priority,²⁶ and by 2007 the commandant of the Marine Corps called the provision of MRAPs to troops in the field a "moral imperative."²⁷ Media and whistleblower exposés, war college studies, congressional investigations, and inspector general reports castigated Pentagon performance. Legislators, particularly in the HASC, complained about their inability to "legislate a sense of urgency" and withheld funding until mandates for improvements in armor were met. In short, there was sustained political pressure not only to do something about the IED problem in general, but specifically to provide better vehicular armor to the troops.

Pentagon Organizational Adaptation

The Pentagon did not anticipate or prepare well for the possibility of postwar disorder. As many studies of Pentagon war planning have concluded, senior civilian leadership expected U.S. military forces to leave Iraq quickly.²⁸ This predisposition meant that postconflict reconstruction

and stabilization operations received little attention, as did the possibility of extended civil disturbances or sustained irregular warfare. As a result, U.S. forces trained for high-intensity warfare suddenly confronted problems with which they had no previous experience,²⁹ including insurgent use of IEDs. While some inside and outside the Pentagon realized the potential for demanding stabilization operations, senior leaders apparently assumed any such problems could be turned over to international organizations or other U.S. agencies. Hoping to repeat the success achieved in Afghanistan, Secretary Rumsfeld was keen on a quick campaign that would rapidly return U.S. forces home so they could restore their readiness for other contingencies in the global war on terror.³⁰

The Pentagon objective of resetting the force for other contingencies proved impossible to execute as the insurgency heated up. The casualties produced by IEDs began to have a strategic impact as they contributed to declining American public support for the counterinsurgency effort in Iraq. As General George Casey, USA, then-commander of Multi-National Force–Iraq, noted in 2004, the enemy intended to use IEDs and distribute the images of their effects to force the United States to leave Iraq.³¹ As another Pentagon leader later explained, insurgents “use the IED as a fire system to create a constant flow of casualties to affect American political will.”³² Pentagon leaders knew that countering IEDs was an operational, political, and even strategic imperative.

Accordingly, the Pentagon created and repeatedly expanded a new organization to combat IEDs and exploit rapid acquisition efforts designed to save lives. First, at the behest of General Abizaid, the Army set up a small unit dedicated to defeating IEDs in September 2003. The task force motto was “Stop the bleeding.” During this period, the armor kits and up-armored Humvee programs got under way. Otherwise, the Army task force concentrated on the portion of the IED problem “left of the boom”—that is, on improving the ability of U.S. troops to avoid IEDs and attack the ability of the insurgents to make, emplace, and control the IEDs before they went off.³³ The Army’s Rapid Equipping Force also put its emphasis on solutions “left of the boom.”³⁴

The following summer, in July 2004, then–Deputy Secretary of Defense Paul Wolfowitz elevated the small Army-centric effort to an Army-led Joint Integrated Process Team that was intended to harness the expertise of all the Services. From September 2004 on, the Secretary of Defense and Deputy Secretary of Defense issued memoranda authorizing expedited procurement of equipment designed to save lives, and also created the Joint Rapid Acquisition Cell (JRAC) for this purpose.³⁵ Congress signaled the

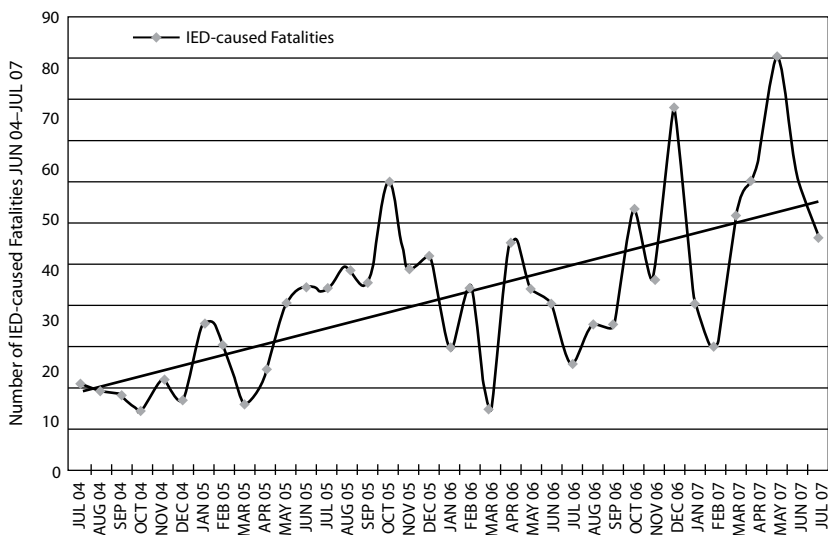
Department of Defense (DOD) leadership that it supported such initiatives, but continued to find fault with DOD for not making better use of rapid acquisition authorities and not empowering and funding the JRAC.³⁶

The following year, the Pentagon again strengthened its rapid acquisition capability, creating the Joint IED Task Force. The task force remained focused on attacking the network of bomb builders and users to find IEDs and prevent them from exploding. By the time the Joint IED Task Force became the Joint IED Defeat Organization (JIEDDO), it had burgeoned into a program with annual budgets of more than \$3 billion³⁷ and several hundred personnel from all Services and numerous coalition countries. At one point, it was estimated that some 137 different organizations were working with JIEDDO.

The Pentagon organizations dedicated to countering IEDs could claim some success. IED effectiveness dropped from a high of over 50 percent (measured by their ability to produce coalition casualties) early in the war to less than 10 percent effectiveness by the time MRAPs began flowing to theater in the fall of 2007.³⁸ Thus, JIEDDO and other counter-IED efforts such as up-armored Humvees reduced the average effectiveness of an insurgent IED attack so that the insurgents were forced to stage an increasing number of attacks. Unfortunately, the insurgents were able to do so and actually to increase their ability to inflict U.S. fatalities (see figure 5).³⁹ Clearly, the battle against IEDs was not being won.

In this context, it was natural to examine the full range of options to reduce the effectiveness of IEDs, including whether additional armor could better protect troops. JIEDDO did not push better armored vehicles because the organization focused more on prevention than protection and because it had no authority to field vehicles. The predilection for working the IED problem left of the boom was consistent with an offensive mentality (attacking the IED network) and offered the possibility of a more elegant solution if it could be achieved. This orientation was so strong that some of those working the IED problem for JIEDDO were dismissive of field commanders for wanting to “place a cocoon around the soldier driving down the street in his vehicle” rather than “taking out the IEDs first.”⁴⁰ Thus, additional armor was considered too defensive and narrow a solution by many assigned to solve the problem.

Second, and more important, JIEDDO did not have responsibility for acquisition of better armored vehicles. One point critics of JIEDDO make is that the organization lacked the authority within the Pentagon⁴¹ and among other departments and agencies⁴² to attack the whole IED problem

Figure 5. Trendline for IED Fatalities Before the Surge and MRAP Deployments

“end to end.” JIEDDO’s effectiveness extended only as far as its control of resources encouraged other organizations to cooperate.⁴³ The JIEDDO mandate allowed it to support development of better armor for MRAPs, which it undertook, but it did not have authority to procure and sustain better armored vehicles.⁴⁴ Fielding MRAPs was instead the prerogative of the military Services based on their assessment of requirements. Commanders in the field noted as early as the fall of 2004 that they needed MRAPs, but it took the Pentagon almost 3 years to arrive at the same conclusion.

MRAPR requirements: The Lost 2 Years

The Pentagon process to evaluate military requirements is overseen by the Joint Requirements Oversight Council (JROC), which is often maligned⁴⁵ because it typically defers to the military Services. Neither the Army nor the Marines wanted to invest in MRAPs, so neither did the JROC. Field commanders, however, wanted more armor in general and MRAPs in particular. First, a Military Police commander in Iraq issued an urgent request in June 2003 for armored security vehicles (ASVs) to help protect U.S. military convoys and patrols (see figure 6).⁴⁶ The ASVs were lighter than the MRAPs ultimately fielded but similarly designed for better protection against mines and other ambushes. The Pentagon was in the process of terminating the Military Police ASV program in the fiscal

Figure 6.A Armored security vehicle, used primarily by Military Police

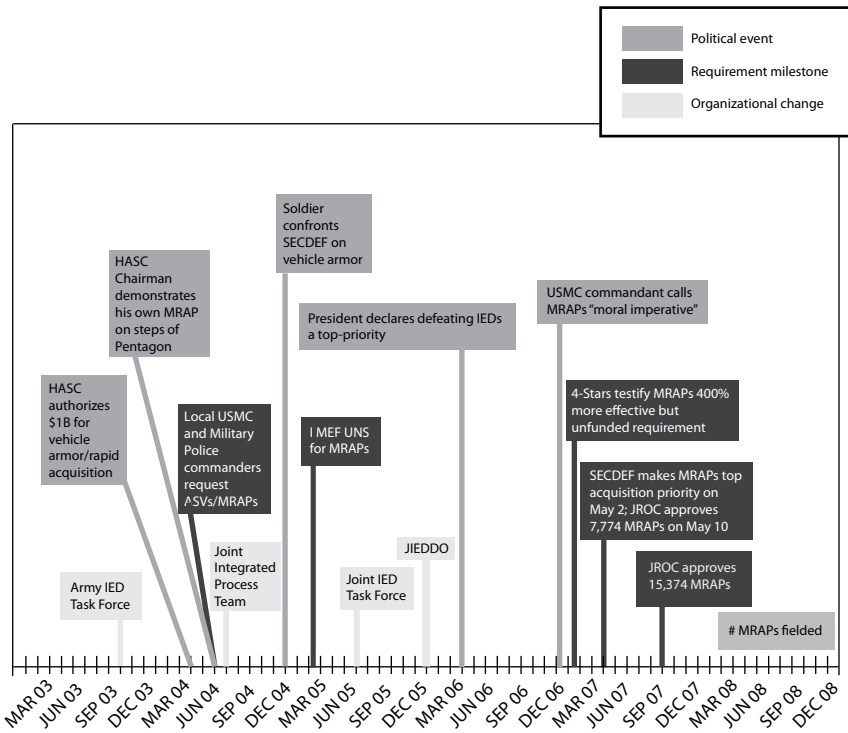


U.S. Army (Micah E. Clare)

2004 budget, but Congress intervened to save the program and rush more ASVs to Iraq.⁴⁷ Also late in the summer of 2003, the Army's 101st Airborne Division issued a report that cited "numerous" injuries from IEDs in its plea for more vehicle armor and training to evade the bombs.⁴⁸

In September, other commanders began to request MRAPs.⁴⁹ By November, a draft "urgent universal need statement" for MRAPs from a field commander was circulating in the Pentagon. The final version, sent by Marine Brigadier General D.J. Hejlik on February 17, 2005,⁵⁰ made the case for MRAPs forcefully:

The [Marine Expeditionary Force] cannot continue to lose . . . serious and grave casualties to IED and [motor vehicle accidents] at current rates when a commercial off the shelf capability exists to mitigate the technological casual [sic] factors. . . . Operating forces will . . . continue to accrue preventable level III and IV serious and grave casualties . . . while operating vehicle systems that do not have basic safety, crashworthy protection. . . . Continued casualty accumulation exhibits potential to jeopardize mission success.⁵¹

Figure 7. Timeline of Key Political and Acquisitions Events

ASV: armored security vehicle
 HASC: House Armed Services Committee
 IED: improvised explosive device
 I MEF: First Marine Expeditionary Force
 JIEDDO: Joint IED Defeat Organization
 JROC: Joint Requirements Oversight Council
 MRAP: mine resistant ambush protected vehicle
 SECDEF: Secretary of Defense
 UNS: universal need statement
 USMC: U.S. Marine Corps

However, the Pentagon would not act upon the request for MRAPs until late 2007. It took more than 2 years, political pressure from Congress, and a determined intervention by the Secretary of Defense before the JROC validated a large purchase of MRAPs as a military requirement (see figure 7). Even then, the Secretary demanded weekly briefings to ensure his mandate was taken seriously.⁵²

The slow approval of MRAP requirements was not due to lack of appreciation for their effectiveness. Their capabilities were well

understood. In fact, throughout the war, U.S. experts on military requirements recommended armored cars and MRAPs for Iraqi forces also under attack from IEDs.⁵³ For example, U.S. Army Brigadier General Roger Nadeau began looking into the BAE-produced Badger MRAP for Iraqi forces as early as 2004. BAE received the contract in May 2006 and had vehicles in theater 90 days later.⁵⁴ While U.S. experts understood the value of the MRAPs and their utility in counterinsurgency, those who dominated the Pentagon's requirements process did not think they were a good fit for the U.S. military.

As the details of an internal Marine Corps report make clear, despite interest from Marines in the field and some Marine supporters in the Pentagon, it was not possible to get the MRAPs approved in the Service requirements process. In the report, Franz Gayl, a retired Marine and science advisor, blames "a 'Byzantine' acquisition system that pushes bureaucrats to protect their own programs and priorities."⁵⁵ He argued—as Secretary Gates would—that MRAPs and other irregular warfare capabilities are largely ignored in the acquisition system, which is overwhelmingly focused on future operational capabilities and not on the irregular wars we are currently fighting. The study became the subject of an inspector general's report and received congressional interest when Senators moved to protect Gayl from retribution.⁵⁶

According to Gayl and the subsequent inspector general's report, Marine Corps senior leaders convened on March 29–30, 2005, to consider the need for MRAPs. The flag officers heard a strong case for MRAPs from a Marine who had long studied their value in irregular warfare. After conferring with other flag officers, the assistant commandant of the Marine Corps "directed the Deputy Commandant for Combat Development and Integration to review the feasibility of developing or buying a new, mine-resistant tactical vehicle to replace the HMMWV and to present the results at the next Executive Safety Board meeting."⁵⁷ But that did not happen. Instead, the Marine Corps decided to hold out for a future vehicle that would meet all the requirements for mobility and protection better than either the up-armored Humvee or MRAPs.⁵⁸ The Army requirements process was even less favorably inclined toward the MRAP, always moving more slowly than the Marines to approve MRAP requirements and always in smaller numbers.⁵⁹

In 2006, field commanders finally succeeded in getting the Pentagon requirements process to approve MRAPs. On May 21, 2006, the Commanding General, Multi-National Force–West, submitted a Joint

Staff Rapid Validation and Resourcing Request for 185 MRAPs to the JROC, and in July he submitted a second request for 1,000 more. It is unclear if the JROC or a Marine requirements oversight board eventually approved the requirement for 1,185 MRAPs,⁶⁰ but the approval cleared the way for a joint MRAP acquisition program, which began in November 2006. Approving the initial requirement for MRAPs removed a major roadblock, and the desired number of MRAPs grew rapidly. However, the approval of a large MRAP requirement did not guarantee the Pentagon would accord the program a high priority, as was soon made clear by testimony to the House Armed Services Committee on March 13, 2007, by Generals Robert Magnus, USMC, and Richard Cody, USA.

General Magnus acknowledged MRAPs are “up to 400 percent more effective than the up-armored Humvees in reducing injuries and deaths” and can “cut casualties by perhaps as much as two-thirds.”⁶¹ Yet just as armor kits and up-armored Humvees were classified as “unfunded requirements” in 2004, General Magnus and General Cody explained to the dismayed HASC in the spring of 2007 that MRAPs likewise were unfunded requirements. In other words, despite their demonstrated value, neither Service budget covered MRAPs’ costs. General Magnus told the committee an extra \$3.8 billion would be necessary for the more than 6,200 MRAPs needed. General Cody’s explanation for why the Army was not attaching a higher funding priority to MRAPs focused on the lack of an approved requirement and insufficient funding. When General Cody noted the Army put MRAPs in the 2007 budget supplemental but “it did not stick,” Representative Gene Taylor (D-MS) interrupted: “When you said ‘did not stick,’ who did that not stick with? Office of Management and Budget? The White House? The Secretary of Defense? Because I don’t think I have heard this committee say that is a nonstarter, and we are the ones who fund those things under the constitutional provisions of the law.”⁶²

General Cody answered by noting the Army “did not have a valid requirement except for 335 MRAP vehicles when the 2008 Title IV supplemental was being built,” and again was interrupted by Taylor:

But we are getting back to that word requirement. And I have pointed out three instances where somebody tried to fight this war on the cheap. . . . I guarantee you kids died needlessly and kids are lying up in Walter Reed needlessly because of body armor, because of Humvees and because of jammers. So the question is: Why do we go through this again? . . . We are finally admitting things that we should have been asking for

last year and the year before that and the year before that. If this vehicle is going to save lives, if Humvees, as we now know, are vulnerable to mines and a hugely disproportionate number of casualties are occurring in Humvees because of mines and we have a way to address that, why don't we address it now?

Taylor complained that the Army “seems to be dragging their feet” and suggested transforming auto plants to produce MRAPs if necessary. He concluded, “I think the Army is making a tragic—and I can't emphasize the word tragic enough—mistake in not asking for more of these vehicles.” General Magnus then intervened to support General Cody and argued that MRAPs were a “rapidly evolving requirement over the past three months.”⁶³

Almost 3 years after units in the field submitted their requests for MRAPs, the Pentagon requirements system had moved to the point where senior Service leadership could invite Congress to pay for a large number of the vehicles if it was willing to do so over and above the Pentagon's normal budget and its warfighting supplemental. Two months later, Secretary Gates cut the Gordian requirement knot and announced MRAPs were the Pentagon's number-one acquisition priority. Shortly thereafter, the JROC validated huge MRAP requirements, first for 7,774 and then for 15,374 vehicles.

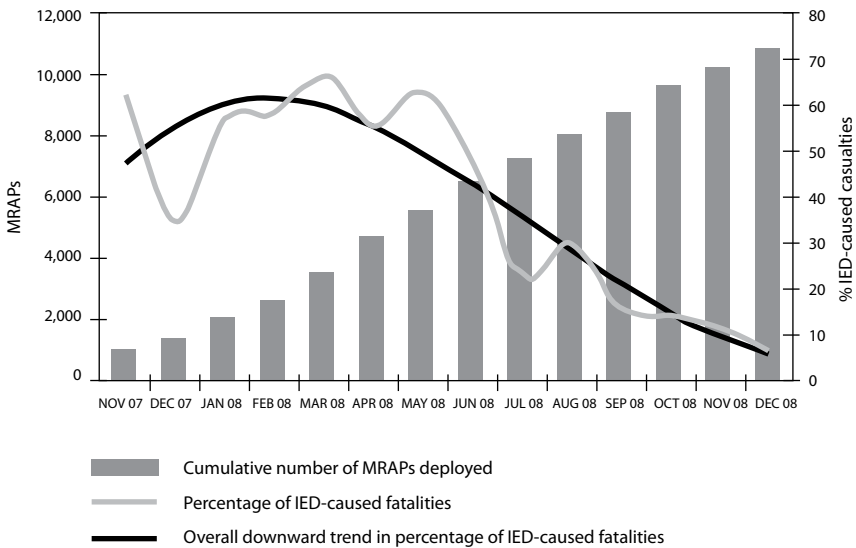
Strategy Significance: The MRAP Impact

Fielding MRAPs would have supported both the U.S. operational strategy under General Casey and the substantially revised U.S. approach to the insurgency under General Petraeus. When General Casey took command of forces in Iraq on July 1, 2004, he undertook a study to reassess his options in the war. Casey believed U.S. troops were seen as foreign occupiers, an innate irritant to Iraqi patriotism that helped feed the insurgency. Casey also knew he did not have enough troops to secure the population and was not likely to get more. With encouragement from civilian leadership looking forward to a withdrawal of some U.S. forces, Casey's operational strategy was to pull U.S. forces back and reduce casualties while pushing Iraqi forces forward into the fight.⁶⁴ Fielding MRAPs would have complemented Casey's strategy well by better protecting U.S. forces as they moved to and from their protected enclaves, reducing political pressure for rapid withdrawal, and buying time for the transition to reliance on the Iraqi army and police.

Instead, MRAPs were not validated by the Pentagon as a requirement for U.S. forces until mid-2007, just when the American shift in strategy under General Petraeus was being implemented. The acquisition system was already primed to move quickly on MRAPs before the Iraq War began because the Army's engineers had managed to negotiate the Army requirements process well enough to get approval for testing and fielding a handful of MRAP prototypes for the purpose of clearing mines from transportation routes.⁶⁵ With the support of Congress and Secretary Gates, more than 10,000 MRAPs were fielded in record time—about a year and a half. Congress pushed through funding; Secretary Gates made MRAPs a “DX” industrial priority for the country, allowing producers to lay first claim to whatever materials were needed; and acquisition officials worked with industry to increase production capacity.

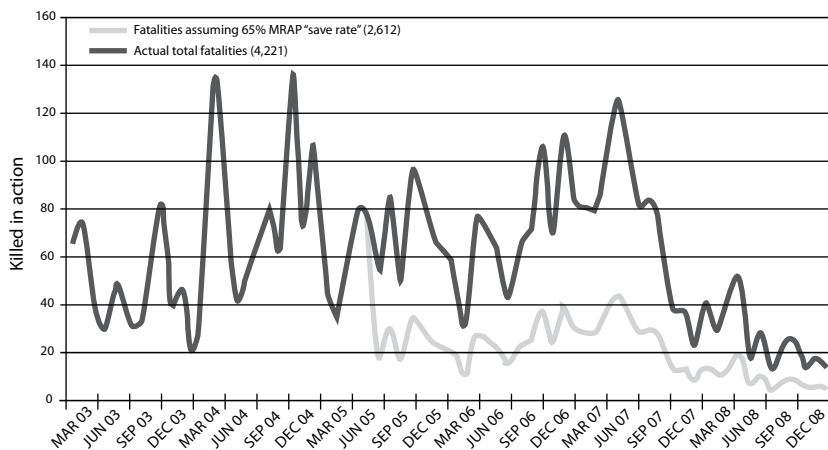
The MRAPs made a significant impact once they arrived in theater, but this fact is obscured by the decline in violence that accompanied the American shift in strategy under General Petraeus. He agreed with counterinsurgency experts who argued that retreating to big forward operating bases produced “a fortress mentality [that] simply isolated the counterinsurgent from the fight.”⁶⁶ Instead, he supported the dispersion of an increasing number of U.S. forces (the so-called surge of five additional Army brigades) among the Iraq population, principally in Baghdad. These efforts, in addition to other factors such as cooperation with Sunni tribal leaders, produced a sharp drop in violence—including IED attacks—from the summer of 2007 onward.⁶⁷ That drop in violence meant a reduction in the number of U.S. casualties.

Yet it was still desirable to reduce U.S. casualties as far as possible, and American casualties (fatalities and wounded) from IED attacks dropped even further after MRAPs arrived, as would be expected. Comprehensive statistics on IED attacks by type of military vehicle attacked are not available, but the signature characteristic of the MRAPs—survivability—was evident in particular and overarching trends. Specifically, the casualty rate for MRAPs is 6 percent, making it “the most survivable vehicle we have in our arsenal by a multitude.” By comparison, the M-1 Abrams main battle tank was said to have a casualty rate of 15 percent, and the up-armored Humvee, a 22 percent casualty rate. In more than 150 attacks on MRAPs, seven MRAP occupants had been killed, and an undisclosed number had been wounded.⁶⁸ As one defense official noted: “Compared to an up-armored Humvee against the same type of explosive, nine times out of 10 there are no injuries in an MRAP other than bumps, bruises and scrapes. And we’re talking about sizable amounts of explosives.”⁶⁹

Figure 8. MRAPs Deployed and Percentage of IED-caused Casualties

Overall trends were favorable as well. From June 2007 through August 2008, attacks declined 79 percent but fatalities from IED attacks fell further, by 85 percent. Even the most fearsome IEDs, the EFPs, were less effective as MRAPs flowed into country. Between February and April of 2008, when use of EFPs jumped about 40 percent, the deaths from such attacks dropped by 17 percent.⁷⁰ By the time 10,000 MRAPs were deployed in December 2008, the percentage of U.S. casualties in Iraq attributable to the IED attacks that MRAPs were designed to defend against dropped precipitously. As figure 8 illustrates, when MRAPs began to flow to Iraq in November 2007, almost 60 percent of U.S. casualties were attributed to IEDs. Just a little over a year later with 10,000 MRAPs in country, only about 5 percent of casualties were attributable to IEDs, despite the fact that insurgents were making a point of targeting MRAPs with IEDs for symbolic reasons.⁷¹ In short, General Magnus' testimony in March 2007 to the effect that MRAPs could "cut casualties by perhaps as much as two-thirds" seems well founded.⁷²

It is natural to speculate about the impact of the MRAPs if they had been fielded earlier when the counter-IED effort was going poorly, as many believe they should have been. Congressmen, Senators, and fellows at the Brookings Institution are among those who argued that earlier deployment

Figure 9. Hypothetical Reduction in Fatalities from Earlier Fielding of MRAPs

of MRAPs would have saved many lives.⁷³ Some sources suggest that fielding MRAPs earlier would have lowered roadside bomb casualties as much as 50 percent.⁷⁴ General Magnus' testimony suggested a two-thirds reduction in casualties, while some forces in theater suggested MRAPs could reduce casualties by as much as 80 percent in their sectors.⁷⁵ Assuming that all other factors are held constant, and using the same fielding timelines from later in the war, we can postulate the impact MRAPs might have had if fielded after the receipt of the first urgent needs statement in February 2005. Arguably, MRAPs would have achieved an even more dramatic reduction in IED effectiveness earlier in the war since other counter-IED efforts were not yet bearing fruit. But even a two-thirds reduction in just IED-related (not total) fatalities, which would be consistent with the level of impact postulated by General Magnus in 2007, would have been dramatic (see figure 9). Such a reduction in casualties would have reduced political pressure for withdrawal and bought time for Casey's strategy of pushing Iraqi forces forward. However, the substantial reduction in casualties from fielding MRAPs earlier also would have facilitated the strategy of securing the population that General Petraeus supported.

Explaining Delayed Fielding of the MRAPs

The overview of the Pentagon's record on fielding MRAPs corrects some mistaken impressions and substantiates some popular concerns. The following points bear emphasis:

- As has been widely argued, the Pentagon was poorly prepared for irregular warfare in Iraq in general and the IED ambush tactics it encountered in particular.
- The IED threat evolved, particularly in intensity, but all types of IED attacks—side, underbody, EFP—were evident by 2004 or 2005 at the latest, so the need for the range of better armored vehicles requested by commanders in the field was evident.
- While the response of the acquisition system in providing armor kits and up-armored Humvees was not as fast as it could have been, the Pentagon did launch new programs and special organizational efforts to address the IED problem comprehensively and to accelerate acquisition of needed equipment.⁷⁶
- Despite huge resources (for example, \$12.4 billion for JIEDDO from 2006 to 2008), the new organizations did not have the authority to tackle the problem in a comprehensive manner—particularly where armoring vehicles was concerned.
- The counter-IED organizations focused on attacking the precursors in the chain of factors leading to an IED explosion, primarily with new technology that their funding permitted them to readily influence.
- Senior military leaders who control the requirements process only validated better armored vehicle requirements under pressure from two Secretaries of Defense and Congress, despite the demonstrated effectiveness of better armored vehicles and early appeals from field commanders.
- The acquisition system fielded effective MRAPs quickly once they were approved and funded not only because Congress and Secretary Gates made them a top priority but also because the system had already developed and tested MRAP prototypes.

In retrospect, it is clear that the acquisition system was not responsible for the Pentagon's lack of preparedness for irregular warfare or its inability to respond quickly to the need for better armored vehicles. The glaring deficiency was in the Pentagon's requirements system, which requires further explanation.

Armored Vehicles and the Requirements System

As this account highlights, before any equipment can be bought, the need for it must be established along with its relative priority. The Pentagon process for determining military requirements, the Joint Capabilities Integration and Development System (JCIDS), is overseen by the JROC, and together they help the Chairman of the Joint Chiefs of Staff advise the Secretary of Defense on the military capabilities needed to support the national military strategy. Not all requirements are joint or are important enough to be considered by the JROC; many are handled at lower levels and by the military Services.

The process is rigorous, as numerous tradeoffs and consequences must be considered. Precisely how important the requirement is for mission success must be evaluated along with the best means of meeting the need. Both material and non-material solutions such as training, tactics, and techniques are considered. Possible solutions must be considered for their impact on doctrine, organizations, leader development, personnel, and facilities. For example, MRAPs required the Pentagon to open a new training center in Texas where contractors and government workers could be instructed on operating and supporting the MRAPs being sent to Iraq.⁷⁷ The requirements process is designed to reduce waste and maximize benefits for the Department of Defense. It is a lengthy process.

If and when a requirement is approved, and if the solution includes procurement of equipment, the acquisition system provides it. At each stage in the process, the individual with overall responsibility for the acquisition program reviews progress to determine whether the program should advance to the next stage. The relevant point here is that the process begins with a “Materiel Development Decision review” where JROC recommendations are heard and other factors are considered, “including the preliminary concept of operations, a description of the needed capability, the operational risk, and the basis for determining that non-materiel approaches will not sufficiently mitigate the capability gap.”⁷⁸ In short, it is not possible to acquire military equipment without a validated requirement or without considering whether other less costly alternatives might solve the problem.

While the system pays the most attention to future requirements, it also allows for the identification of urgent needs from field commanders. After a commander sends a joint urgent operational needs statement to the Pentagon, it is processed by the Joint Staff (J-8 Capabilities and Acquisition Division). During the Iraq War, the requirements system was modified to accelerate identification of requirements, including relief

from the requirement for JROC approval in some cases.⁷⁹ The acquisition system was also modified—for example, by the creation of the Joint Rapid Acquisition Cell (JRAC). Its purpose was to better meet “immediate warfighter needs,” which were defined as a higher priority subset of urgent operational needs that must be resolved within 120 days or less.

The JRAC is notable in three respects. First, it was innovative in that it used money from supplemental budget requests to fund immediate needs rather than going through the more laborious process of requesting permission from Congress to reprogram funds. Second, it brought more civilian influence from the Office of the Secretary of Defense into the requirements process. The JRAC core group membership includes representatives from the under secretaries for acquisition and comptroller and the DOD General Council. The JRAC advisory group includes representatives from the under secretaries for intelligence, personnel and readiness, policy, and networks and information integration, and the directors for Program Analysis and Evaluation and Operational Test and Evaluation. The expanded participation makes it more likely that the resourcing strategy for supplemental funds will be acted upon with alacrity. Third, JRAC must provide regular status reports to the Deputy Secretary of Defense, thereby providing greater senior leader scrutiny of progress on immediate warfighting needs.⁸⁰ The JRAC did not help speed large numbers of MRAPs to the field for two reasons. First, the amount of money required for thousands of MRAPs was too large to be handled through supplemental funding. Second, and more important, the requirements system was mired in debate over the need for the vehicles and did not validate the requirement.

Many factors besides the value of additional armor protection influenced the debate over better armored vehicles for forces in Iraq. Reliability and maintainability are key factors, since the vehicle will not protect anyone if it is constantly in depot being repaired. Mobility must also be considered, as well as agility (high speed, good acceleration, good handling for evasive maneuvers), since both contribute to mission success and the survival of soldiers. Deployability—how easily the vehicle can be transported to the fight—is also important for mission success, as is the vehicle’s versatility (that is, will its alternator provide sufficient electricity to power communication gear, jammers, and other electronic gear that contribute to survivability?).

The major tradeoffs between MRAPs and lighter tactical vehicles for forces in Iraq under sustained attack by IEDs were well understood from the beginning, however. As Representative Hunter noted, the advantages

Figure 10.Ca category I MRAP, intended for urban operations



U.S. Air Force (Craig Lifton)

the MRAP has over a Humvee are clear: “It’s a simple formula. A vehicle that’s 1 foot off the ground gets 16 times that [blast] impact that you get in a vehicle that’s 4 feet off the ground,” such as the MRAP.⁸¹ However, the higher clearance, along with additional armor, also makes the vehicle less stable and diminishes mobility, making it impossible to navigate narrow urban streets or rough off-road terrain. The new MRAP All Terrain Vehicle being developed for use in the rugged terrain of Afghanistan, where IED use and effectiveness is on the rise,⁸² is smaller and designed to minimize the tradeoff between mobility and survivability. The objective is to provide the “same level of protection as the previous MRAPs (used in Iraq), but with the mobility of a Humvee,”⁸³ which is a difficult engineering challenge (see figures 10 and 11).

The tradeoff between a low ground clearance and minimum weight for enhanced mobility and agility, and a high center of gravity, extra armor, and a V-shaped hull for deflecting blasts, is straightforward, but there are other requirements for armored vehicles optimized for irregular warfare. MRAPs are supposed to be both mine resistant and ambush protected, meaning they are effective at countering ambushes from any direction. “Off-the-shelf” MRAPs, however, are not designed

Figure 11.Ca Category II MRAP, used for convoy escort, troop transport, and explosive ordnance disposal



U.S. Marine Corps (Thomas Griffith)

for 360-degree warfare so much as mine clearance. They do not necessarily have all the advantages of a good armored car (outward-facing seats, 360-degree visibility and firing ports, means of easy egress, and so forth). The same is true of other heavily armored vehicles such as tanks and armored personnel carriers. Tank armor is stronger in front, where the vehicle is most likely to be hit by enemy fire, and more vulnerable from behind (for this reason, insurgents prefer to attack from behind). By mid-2005, the United States had lost more than 80 tanks in Iraq to insurgents.⁸⁴ Thus, “ambush protected” vehicles have more than high clearance and thick armor. Israel, for example, has modified tanks for urban combat against insurgents. The tank turrets are replaced by armored boxes with bulletproof glass that “allow the vehicle commanders to see 360 degrees without exposing themselves to fire.”⁸⁵ The massive size of MRAPs is another feature that some consider inconsistent with counterinsurgency requirements. Detractors argue that MRAPs are menacing, which interferes with building good relations with the population. However, during some stages of a counterinsurgency effort—for example, when restoring basic security in contested areas—a “menacing” posture can be helpful.

Moreover, when a less threatening posture is called for, troops can dismount their vehicles.

The point is that MRAPs are not necessarily optimized for counter-insurgency, and they satisfy a very specific requirement at the expense of other valuable attributes. All things considered, it is not surprising that when IED-related deaths were climbing, the perceived value of MRAPs by troops, commanders, and Congressmen was high, and when the rate of IED fatalities dropped dramatically, it was more common to hear complaints about MRAP mobility limitations from all of those sources. One Soldier summed up the situational value of MRAPs when he observed, “On main supply routes, MRAPs would be great, but out here [in urban areas] they are not tactical [because of their size and weight]. But I’d rather get hit by an IED in an MRAP than a Humvee any day.”⁸⁶

Armored Vehicle Requirements in Iraq

Those who argue the Pentagon did the best it could in providing better armored vehicles for U.S. forces in Iraq stress the fact that the threat kept evolving. Senior Pentagon leaders reiterated this point in testimony to Congress. When the majority of IED attacks were from roadside bombs that delivered shrapnel to the sides of the vehicles, it seems that the up-armored Humvee and kits would suffice. When the underbody threat emerged, it was clear some form of MRAP would be required, and this happened first and most frequently in areas where the Marines operated.⁸⁷ When EFPs became more prominent (primarily in areas where the Army operated), even heavier MRAPs with improved armor were needed; hence the requirement for the advanced armor. This so-called Frag kit six triggered the requirement for a DX industrial priority rating because this kind of armor was in high demand for multiple armored vehicle programs. When the threat declined in 2008, the Department of Defense decided not to purchase the 30-ton MRAP IIs that were optimized to defend against larger bombs and EFPs because their limited mobility seemed like a handicap that outweighed their advantages in survivability. In short, the threat evolved and requirements had to as well. As one participant later argued, “If anybody could have guessed in 2003 that we would be looking at these kind of [high-powered, buried] IEDs that we’re seeing now in 2007, then we would have been looking at something much longer term as a solution. . . . But who had the crystal ball back then?”⁸⁸

While acknowledging insurgents adapted and used IEDs differently as U.S. capabilities evolved, we believe entrenched attitudes explain the slow response to fielding MRAPs better than evolving threats. All types

of IEDs (roadside attacks, underbody attacks, EFP attacks) were used by insurgents early in the conflict, which explains the early requests from commanders in the field for better protection than the up-armored Humvee offered. Since it was clear to Department of Defense experts advising the Iraq military on their requirements that MRAPs were needed for counterinsurgency, the lack of enthusiasm for purchasing MRAPs for U.S. forces seems better explained by the view that they were an expensive “niche” capability for irregular wars that hopefully would soon be over.

In fact, when it came to equipping U.S. forces, the decisionmakers in the Pentagon’s requirements system were not enthusiastic about any additional armor, much less expensive MRAPs. Decisions to provide additional armor had to be made first by Secretary Rumsfeld and then by Secretary Gates. The lack of enthusiasm for additional armor also was manifest in the argument frequently made by force development leaders that the insurgents would simply build bigger IEDs, and thus “you can’t armor your way out of this problem.”⁸⁹ As one senior Army leader argued as late as fall 2007, “The lesson of this war says that no matter what kind of a vehicle you put soldiers in, what you are going to find is somebody who can assemble more explosives and can overwhelm anything you try to put together.”⁹⁰

The contention that any additional armor is futile because it can be defeated one way or another is not really a valid requirements argument. By that logic, the military would never use armor for any purpose. Armor has value not because it is invulnerable but because it makes it more difficult for the enemy to defeat you and easier for you to defeat the enemy. The extra armor boosts the confidence of U.S. troops and permits a quick response to ambushes. Also, as one commander of a division in Baghdad noted, MRAPs forced insurgents to build bigger and more sophisticated bombs. Those bombs take more time and resources to build and set up, which gives U.S. forces a better chance of catching the insurgents in the act and attacking them.⁹¹

Some have pointed out that the military did not want to invest in MRAPs because the heavy vehicles ran counter to the Pentagon’s vision that future forces must be light, lethal, and expeditionary. This is true, but it was not just the weight of the vehicles that made them unappealing to those who establish military requirements. Tanks weigh more than 70 tons but their value was recognized when they proved useful in Operation *Iraqi Freedom*.⁹² Instead, the MRAPs were unappealing because they are useful for a limited defensive purpose in select irregular warfare campaigns like Iraq and Afghanistan that military Service leaders hoped

would be short-lived. In this regard, the Pentagon requirements system was true to its historical mindset, which discounts the importance and persistence of irregular warfare.

Irregular Warfare and Force Protection

Pentagon officials explained the lack of readiness for IEDs by arguing that the threat could not have been anticipated.⁹³ Actually, the general requirement for better vehicular protection should have been well understood.⁹⁴ It is commonplace to note that irregular warriors typically hide among noncombatants so they are not easily identified and defeated, and use ambushes and other hit-and-run tactics to bleed and frustrate regular forces. Whereas the United States lost about 5 percent of its casualties to both mines and ambushes in World War II and Korea, mine-related casualties alone were 33 percent in Vietnam and 26 percent in Somalia.⁹⁵ In fact, since World War II, slightly more than half of all infantry deaths have occurred while troops were trying to find the elusive enemy.⁹⁶ Because insurgents are hard to locate and identify and use mines and ambushes as a common tactic, a patient strategy of securing the population is required to defeat them.⁹⁷ When the population feels secure, it is more likely to provide information to help locate the insurgents and avoid their ambushes.

In turn, such a patient, persistent strategy requires sustained support from the U.S. public. The American populace is more likely to support such a strategy that produces initially ambiguous results when costs, including U.S. casualties, remain low in comparison with perceived national interests and discernible progress. The need to limit casualties in irregular warfare is not absolute, but rather relative to the public's perception of progress and national interests at stake. When casualties seem disproportionate to the progress being made and the purpose for which we are fighting, public support will decline.

In the case of Iraq, since the war was controversial from the beginning and progress was not evident, it was particularly important to limit casualties. Before the war started, a majority of Americans opposed the war if it was going to mean "thousands of American casualties." As the war transitioned into a prolonged counterinsurgency, the number of Americans who supported sticking it out "until civil order is restored . . . even if it means continued U.S. military casualties" went from 72 percent in July 2003 to 39 percent in July 2007. Overall, those who thought the number of U.S. military casualties in Iraq was "acceptable" given the goals of the war dropped from a slight majority in June 2003 to 21 percent by

the end of 2006.⁹⁸ Similarly, support in Congress began to decline as well. Understanding the connection between combat losses and public support, members of both parties were emphatic about the need to give the military every possible means of reducing casualties.

Thus, statistical comparisons with World War II casualty rates, often raised by those questioning the will of the American people to fight extended wars, are beside the point. The public and Congress did not view the objectives or progress in Iraq the way they viewed the objectives and progress in World War II. Leaders in a democracy, including military leaders, must recognize that counterinsurgency typically will take more time, progress will be ambiguous, and the objectives will be considered more suspect by the public.⁹⁹ The shaky and declining congressional and public support for continuing counterinsurgency operations in Iraq was typical for irregular warfare that is proceeding poorly and with increasing casualties. Both opinion polls and the signals from Congress on this point were unmistakable.

Thus, military forces must place a higher priority on force protection in irregular warfare for strategic and tactical reasons. Force protection is a strategic imperative because costs must be kept low in comparison with perceived interests and progress. It is a tactical imperative because hit-and-run attacks at close quarters and from any direction are the norm in irregular warfare. This is why counterinsurgents historically invest more in key infrastructure protection, static fortifications to protect lines of communication (blockhouses or fortified operating bases), and modification of their approaches to force protection on the march.¹⁰⁰ These requirements for irregular warfare have not changed over time, but the technology has evolved so that counterinsurgents benefit more from both body and vehicular armor protection.¹⁰¹ Convoys that transport and supply the forces that constantly pursue the insurgents and protect the population must include well-armored vehicles that serve as firing platforms to counter ambushes.¹⁰²

Lessons from past U.S. participation in irregular warfare emphasize the importance of force protection and armored mobility.¹⁰³ In fact, the up-armored Humvee program originated with the U.S. intervention in Somalia. The warlord trying to frustrate U.S. forces in Somalia and encourage their withdrawal was using ambush tactics—including IEDs—to increase U.S. casualties and sap the Nation's will to remain engaged. In response, an urgent effort to get up-armored Humvees to Somalia was mounted. However, soon after U.S. forces left Somalia the program was phased out, only to be rushed forward again when troops were sent to Bosnia.¹⁰⁴ Both of

these emergency acquisition efforts delivered problematic results, and each time support for the program waned quickly after the intervention. The same thing happened to urgent operational needs for armoring trucks.¹⁰⁵ Only the U.S. Army Military Police, which specialize in population security, showed sustained interest in the up-armored Humvee program and ASVs. By the time U.S. forces went to Iraq, only 2 percent of the Army's 110,000 Humvees were armored,¹⁰⁶ and only the Military Police were equipped with ASVs. The Pentagon even had difficulty finding the up-armored Humvees in its inventory, which reflects the low importance attached to the vehicles and to irregular warfare more generally. Oddly, 70 of them turned out to be located at missile bases in North Dakota and elsewhere.¹⁰⁷

Thus, the DOD inspector general's report on MRAPs correctly concluded that the Department of Defense should have been better prepared to provide better armored vehicles for irregular warfare:

DOD was aware of the threat posed by mines and improvised explosive devices (IEDs) in low-intensity conflicts and of the availability of mine-resistant vehicles years before insurgent actions began in Iraq in 2003. Yet DOD did not develop requirements for, fund, or acquire MRAP-type vehicles for low-intensity conflicts that involved mines and IEDs. As a result, the Department entered into operations in Iraq without having taken available steps to acquire technology to mitigate the known mine and IED risk to soldiers and Marines.¹⁰⁸

Two objections to—or qualifications of—the general proposition that the Pentagon should have been better prepared to meet irregular warfare requirements with enhanced vehicular armor may be raised. First, as is frequently argued, force protection is not an end in itself. Fielding a heavily protected vehicle like the MRAP requires a greater appreciation for the importance of enhanced force protection in irregular warfare,¹⁰⁹ but this understanding must complement rather than supplant an aggressive, offensive tactical approach. Irregular warfare theorists deplore tactics that limit military forces to the protection of their compounds where they “lose touch with the people, appear to be running scared, and cede the initiative to the insurgents.” Instead, they argue that “aggressive saturation patrolling, ambushes, and listening post operations must be conducted, risk shared with the populace, and contact maintained.”¹¹⁰ Withdrawing inside of large, well-fortified vehicles may seem like the tactical equivalent of retreating to large bases.

On the contrary, however, as the new U.S. counterinsurgency manual notes, counterinsurgents must attach more significance to protection of logistic activities, treat “every logistic package or resupply operation [as] a mounted combat operation,” and appreciate the need for special equipment, including up-armored vehicles and specialized mine-clearing equipment (that is, MRAPs).¹¹¹ In short, the requirement for a higher level of protected mobility for troops conducting counterinsurgency supports rather than undermines an aggressive tactical spirit, and the use of the vehicles can be reduced as the threat decreases and troops set aside heavy equipment in favor of dismounted operations with less visible firepower and protection.

The second objection is that even though a general requirement for better armored vehicles in irregular warfare may exist, prior to Iraq it was not self-evident that DOD needed to invest in a large fleet of MRAPs. Force protection requirements vary from one irregular conflict to another and even within the different regions and phases of an individual irregular conflict. As pacification succeeds, force protection requirements can be relaxed. Thus, force protection, like all military requirements, must be balanced against other demands and cannot be considered independently from questions of affordability and “how much is enough.” The precise number and mix of armored vehicles, and the way they balance mobility, survivability, and other attributes, depend on terrain, level of irregular resistance, and proficiency in other tasks such as human intelligence, psychological operations, and discriminate use of force.

To determine the extent to which the United States should have anticipated the force protection requirements in Iraq, it is useful to compare the U.S. experience in Iraq with those of other countries that have fought irregular wars. Historically, forces well prepared for irregular warfare have fielded MRAP variants, but more typically they have had to compromise between better protected armored personnel carriers (APCs) with heavier armor but less visibility for the occupants and more mobile vehicles with better visibility but less protection. Some form of armored car variant is typically the result.¹¹² They are less costly and more mobile than an APC, but provide 360-degree visibility and better ballistic and blast protection than an unprotected vehicle like a jeep or Humvee. Most nations with modern counterinsurgency experience that can afford it—for example, Britain, Israel, and South Africa—use armored car variants with improved blast and ballistic protection, just as the United States did in Vietnam.¹¹³ Other countries with military forces in Iraq and Afghanistan deployed with better armored vehicles (armored car variants for the

most part) than the United States, but they too were left scrambling for MRAPs.¹¹⁴ In other words, the absence of up-armored Humvees, ASVs, or other armored car variants prior to Iraq is much more difficult to justify than the absence of a large fleet of much more expensive and heavy MRAPs. Once the nature of the IED challenge in Iraq became apparent, however, MRAPs should have been fielded expeditiously. Instead, the Services hoped to get by with up-armored Humvees and avoid the cost of the MRAPs. Adding armor to a Humvee cost only \$14,000; up-armored Humvees cost twice as much as the unarmored version (about \$200,000),¹¹⁵ and MRAPs can cost three to seven times as much as an up-armored Humvee, from \$600,000 to over \$1 million per vehicle.¹¹⁶ The \$25 billion cost projected for MRAPs is high and should have been kept down,¹¹⁷ but it is not indefensible. Congress provided annual supplemental war funding in the hundreds of billions of dollars,¹¹⁸ and the overall cost of the Iraq War is estimated at over \$1.6 trillion.¹¹⁹ Moreover, as Senators¹²⁰ and other sources point out, protecting people in an all-volunteer military is cheaper than replacing them. It is a cold-blooded observation that the cost of enlisted casualties averages \$500,000, while officers, depending upon their military occupation, range from \$1 million to \$2 million each. In other words, the average light tactical vehicle with one officer and four enlisted personnel is protecting \$2.5 million of DOD's operations and maintenance account funding, leading some to conclude that it is specious to argue we cannot afford armored vehicles. Even discounting political, operational, and vehicle replacement costs, the opposite is clearly the case when compared to the costs of replacing personnel.¹²¹ Considered in this context, and given their value for countering IEDs and reducing casualties, MRAPs were a bargain, and the same is true of up-armored Humvees. Yet DOD refused to invest in better armored vehicles such as the up-armored Humvee before Iraq and was slow to field the MRAPs during the conflict. The Pentagon's persistent tendency to ignore irregular warfare requirements is not an aberration but part of a larger trend.

The Pentagon Record on Irregular Warfare Requirements

Incredibly, several months after the Secretary of Defense declared MRAPs the top defense acquisition priority, his subordinates were explaining declining interest in the vehicles.¹²² The Secretary's top civilian acquisition official told Congress that MRAPs will be put in storage because "Service chiefs have indicated that these are heavy, large vehicles that might not fit well with mobile expeditionary missions."¹²³

Similarly, the Marine Corps commandant explained the Service's decision to cut the MRAP purchase in half with the observation that they would not be very useful after Iraq.¹²⁴ The Pentagon's explanation that MRAPs will not be a good fit for future conflicts seemed odd to Congress,¹²⁵ and understandably so. After all, as the 2006 Quadrennial Defense Review concluded, Pentagon policy, strategy, and planning guidance insisted irregular warfare would be a major element of the future combat environment.

The Services' attitude toward MRAPs reflects one school of thought in the Pentagon's longstanding debate over the nature and precise definition of irregular warfare capabilities.¹²⁶ This debate heated up in response to the war on terror, figured prominently in the 2006 Quadrennial Defense Review, and was further elevated by Secretary Gates who publicly reiterated that the Pentagon is unable to generate a proper balance of conventional and irregular warfare capabilities. Secretary Gates took the first step to correct this shortcoming with a policy directive that declares irregular warfare just as important as traditional warfare and prescribes improved irregular warfare capabilities to ensure the military is equally proficient at both.¹²⁷ The Secretary then rolled out a new defense strategy that emphasizes irregular warfare capabilities,¹²⁸ and followed up the strategy by announcing the termination or reduction of some major weapons programs such as the F-22 and Future Combat System to pay for more irregular warfare capabilities.¹²⁹

This is at least the third time since World War II that national leaders have been willing to spend significant political capital on promoting better irregular warfare capabilities. In 1986, after years of inadequate responses to terrorism and other political-military problems, Congress mandated new special operations and low-intensity conflict organizations¹³⁰ over the objections of the Pentagon. Prior to that, the Soviet Union's support for "wars of national liberation" led President John F. Kennedy to embrace Special Forces and unconventional warfare, even firing an Army chief of staff whom he found unsympathetic to his plans.¹³¹ The enthusiasm generated by Kennedy for Special Forces was reversed after Vietnam, and the new organizations created by Congress in 1986 never have been able to direct substantial investments in irregular warfare. Thus, past experience suggests it will be difficult to thrust irregular warfare capabilities on the Services.

Historically, the Services have focused on what they perceive to be their core mission: fighting regular wars and, more recently, deterring nuclear war. They argue irregular warfare is not sufficiently different from

conventional war to justify separate capabilities.¹³² When circumstances, such as the war on terror, demonstrate otherwise, the military Services avoid sustained investments in irregular warfare capabilities by supporting less onerous alternatives. They argue that special operations forces have the irregular warfare mission covered and, if necessary, can be augmented. They also insist that allies and other U.S. departments and agencies should provide additional irregular warfare capabilities. If forced to invest in irregular warfare, the Services tend to respond with less costly nonmaterial initiatives such as education and training programs that can be more easily reversed. The adjustments made to improve irregular warfare capabilities noted in the 2006 Quadrennial Defense Review primarily follow this pattern.

When pressed to invest in equipment tailored for irregular warfare, the Services argue that future capabilities should be equally effective in all types of conflicts. In the case of armored vehicles, the argument is made that those currently under development will meet all future requirements, including irregular warfare. Thus, the emerging preference is for “scalable armor” added to an all-purpose chassis that bears up well regardless of the levels of armored protection it carries.¹³³ Such versatility is desirable, but of course is difficult to achieve.

When niche science and technology efforts are tailored for irregular warfare, they often are isolated from the broader force development process.¹³⁴ This appears to have happened in the case of nonlethal weapons, for example. In the mid-1990s, the Department of Defense created a policy for nonlethal weapons, a joint concept for their use, and a joint nonlethal weapons program to develop prototypes. Yet a recent Government Accountability Office report found that the Department of Defense did not prioritize nonlethal capability gaps until 2007 and that most of the capability gaps identified in 2007 were already broadly identified 11 years ago.¹³⁵ Along with other shortcomings identified in the report, the lethargic requirements identification helps explain why today, more than a decade after policy and doctrine were developed, the gaps in nonlethal capabilities are still not remedied.

When operational needs force the urgent procurement of some specialized irregular warfare equipment, such capabilities are abandoned shortly after the conflict fades from memory. The Air Force quickly lost its slower fixed wing aircraft for reconnaissance and close fire support after Vietnam and never recovered it.¹³⁶ The Navy did the same for its brown and green water vessels that patrol coastlines and inland waterways. More recently, after accepting transfer of the U.S. Special Operations Command coastal patrol ships, the Navy planned

to decommission them and give them to countries such as the Philippines. The attacks on September 11 saved the vessels, which have gone to the Coast Guard to patrol U.S. waters or are now used overseas for coastal patrol in the war on terror.¹³⁷ The prognosis for MRAPs is the same. When U.S. forces leave the conflicts in Iraq and Afghanistan, some number of MRAPs may be converted to command and control vehicles and some may be stored in equipment stockpiles.¹³⁸ However, many will be left behind,¹³⁹ and others likely will be declared excess defense articles and given away to other friendly forces.¹⁴⁰ The substantial investment in these vehicles will be sacrificed in order to save some operations and maintenance costs.

A prudent base for irregular warfare capabilities that could be modified and expanded as circumstances warrant is necessary and would not be that expensive for several reasons. Many material requirements for irregular warfare are not technology-intensive. When sophisticated technology is required, it often just requires modifying capabilities developed for regular warfare, which means lower overall program costs.¹⁴¹ In addition, some irregular warfare requirements are so variable that it only makes sense to invest in research and a limited number of prototypes for experimentation, another factor that holds down the costs of irregular warfare capabilities. For example, specifications for electronic countermeasures can evolve so quickly that it is best to approach them as rapid acquisition challenges. Better preparedness for irregular warfare would save the costs later incurred by inefficient emergency acquisition programs. For example, up-armored Humvees had to overcome design and production flaws,¹⁴² including a tendency to roll over and injure the occupants,¹⁴³ and rushing MRAPs to theater with emergency airlift was quite expensive (about \$750,000 per vehicle).¹⁴⁴

In short, better preparedness for irregular warfare requires a solid research and development base and some programs of record that can be rapidly expanded depending on precise needs. This is Secretary Gates' goal; he wants to "institutionalize procurement of [irregular] warfare capabilities" so they can be quickly fielded when needed. He argues that the Pentagon should be able to deliver the "75 percent solution in months" to forces engaged in irregular warfare, in contrast to delivering "the 99 percent solution in years" that is typical of our conventional force modernization programs.¹⁴⁵ It would be nice to field equipment rapidly without sacrificing rigorous analysis of effectiveness,¹⁴⁶ but in most cases there is an inescapable tradeoff between quality and speed. A 99 percent solution requires investments well in advance (for example, the Military

Police investment in armored security vehicles), and a 75 percent solution fielded quickly—such as the up-armored Humvees and MRAPs—means we cannot lament the lost 25 percent (better prices and better sustainability for a more homogenous fleet of MRAPs) later on.

The source of resistance to the Secretary's goal of institutionalized irregular warfare capabilities is not the Pentagon's acquisition system, however. As acquisition professionals are quick to emphasize, and as the experience with MRAPs illustrates, it is impossible to legally procure anything without a validated requirement and congressional funding. Instead, it is the requirements system and, more generally, the way the Pentagon is organized to make decisions that frustrate fielding of irregular warfare capabilities.

Skilled Incompetence and Pentagon Decisionmaking

Secretary Gates has argued that the Pentagon's poor performance on irregular warfare stems from multiple, dysfunctional organizational factors present in "any large, hierarchical organization."¹⁴⁷ This is true. In the case of MRAPs, the Pentagon displayed a characteristic common to nearly all such large organizations known as "skilled incompetence."¹⁴⁸ Put simply, the kind of counterproductive behavior seen in the management of the force protection issue in Operation *Iraqi Freedom* was a "natural and routine" result of otherwise highly skilled and earnest practitioners resolving problems within their own frames of reference but without a broader appreciation of the entire problem. The MRAP experience reveals how reasonable but ultimately incorrect decisions can be made at different levels of the national security system to produce adverse outcomes.

To begin with, the DOD requirements process is focused on providing future operational capabilities at the expense of meeting current needs, an organizational penchant the Secretary calls "next-war-itis."¹⁴⁹ Commanders always want more than can be provided, and their many requests for additional capabilities must be vetted and balanced against competing requirements and limited resources, including the weapons being developed for future forces. There is a system for reconciling future and current requirements, but it is dominated by Service force development leaders who are rewarded for protecting future programs and who operate in Service cultures that are dismissive of irregular warfare requirements. It is not surprising that the Army and Marine combat development leaders decided to hold out in favor of a better future vehicle rather than purchase MRAPs in quantity for a war they hoped would quickly end. The Service leaders who made these decisions knew that from the force development point of

view, there were good reasons to avoid expensive new armor programs or minimize their costs by sticking with the up-armored Humvees. Doing so made little sense in the larger context of U.S. stakes in Iraq and the impact of the growing IED problem, however.

Leaders in the field looked at the IED problem from a different perspective, but they did not control the decisionmaking for procurement. General Casey recognized early on that IEDs threatened the ability of the United States to sustain operations in Iraq. He understood the need to “stop the bleeding.” He developed a strategy that relied on Iraqi forces and reduced the exposure of U.S. forces. At the same time, with the help of General Abizaid, he worked to further reduce casualties through extraordinary efforts to combat the IED problem, which the Deputy Secretary of Defense supported with new organizations and procedures, including the creation of JIEDDO. JIEDDO’s focus on “left of the boom” technologies reflected not only the larger DOD cultural predilection for “offensive” initiatives but also its limited scope of authority. JIEDDO helped with new armor technologies, but it did not have authority to oversee the ready solution MRAPs provided. All these individual decisions, defensible within a narrow frame of reference, were insufficiently comprehensive; they could not prevent the broader failure to field MRAPs.

At the national level, failure to work the invasion of Iraq as an inter-agency enterprise set the stage for the scope and level of the IED problem. With DOD in the lead, the decision was made to minimize the number of forces deployed, which in part explains the poor readiness for post-conflict stabilization tasks. Iraqi munitions were not secured, and there were insufficient forces to quickly control rising civil disorder. From the DOD point of view at the time, it was more important to reset U.S. forces and provide the President with options for further operations in the war on terror. Thus, DOD was slow to recognize and respond to a problem that its own commanders in the field reported and other departments and agencies predicted. Again, the inability to consider and work a problem comprehensively contributed to failure.

With the benefit of this summary, it is possible to highlight some of the organizational factors that Secretary Gates mentioned as an explanation for the Pentagon’s poor performance in irregular warfare. Beneath the Secretary of Defense, there was no entity empowered to work the IED problem holistically. Instead, the Pentagon is structured to delegate decisionmaking to enclaves of specialists and ignore the difficult job of making tradeoffs among many competing objectives and areas of expertise. Culturally, the Pentagon disparages irregular

warfare in general and particularly the defensive requirements derived from irregular warfare principles.¹⁵⁰ Other factors inhibit organizational learning so that pockets of expertise are not accessible to higher level general decisionmakers. Even when they are, as happened to be the case in the Marine review of MRAPs, leaders are very reluctant to override decisions made by those who have more time and detailed knowledge, even if the incentives and perspective of those subordinates are limited to their organizational mandates.

Thus, the planning for the Iraq War and its aftermath, the strategy development for the counterinsurgency that emerged, and the effort to defeat IEDs that were the insurgents' key weapons were all managed in a manner typical of large, hierarchical organizations. At each level, the problem was given to a lead element of the larger organization or system, one that had a constricted point of view or lacked the authority to address the problem comprehensively. To correct the tendency toward "skilled incompetence" typical of large, rigidly hierarchical organizations, the Secretary of Defense has two general choices. Either the Secretary must repeatedly intervene personally to manage complex issues—as both Secretary Rumsfeld and Secretary Gates had to do in order to address the need for better armored vehicles—or else he must change the way the Pentagon is organized to manage complex issues and contingencies. The first option will produce inconsistent results because one person inescapably has a limited span of control. The second option requires onerous reforms that go beyond adjustments to the acquisition process.

Conclusion

MRAPs are not a silver bullet for defeating IEDs or the only element of force protection important in irregular warfare, but they were and remain a valid irregular warfare requirement. They made a difference even as insurgent violence was winding down, and would have made a bigger contribution if deployed earlier. They will be used again in the future. In short, Secretary Gates is right to cite the MRAP experience as *prima facie* evidence of the Pentagon's inability to properly balance conventional and irregular warfare capabilities, and he could make similar points about the inadequate investments in up-armored Humvees and ASVs prior to the conflict in Iraq. At issue is what to do about it.

Most immediately, the Secretary is determined to rebalance the current defense program to better support irregular warfare. Secretary

Gates' experience with MRAPs reportedly disillusioned him to the point that he resolved to make more fundamental changes in DOD procurement programs.¹⁵¹ In announcing his decisions to terminate or curtail major acquisition programs, the Secretary explained that more resources were needed for irregular warfare capabilities and also observed that the current program inadequately integrates the investment in MRAPs.¹⁵²

Second, the Secretary's recent speeches justifying the historic rebalancing of the Pentagon's defense programs promote the need for lasting acquisition reform. Gates notes that we must have "a fundamental overhaul of our approach to procurement, acquisition, and contracting."¹⁵³ The call for acquisition reform is consistent with his observation that the key to solving the irregular warfare problem "is to make sure that the strategy and risk assessment drive the procurement, rather than the other way around."¹⁵⁴ In making this comment, Gates implied that Pentagon procurement—backed by powerful external interests supporting conventional force programs—is on autopilot and negates strategy. Thus, in addition to rebalancing the current defense program, the Secretary intends to realize his goal of institutionalizing procurement of "specialized, often relatively low-tech equipment for stability and counterinsurgency missions" through acquisition reform.

If there is one clear lesson from the MRAP experience, however, it is that the Pentagon's problems with irregular warfare go well beyond the acquisition system, a point that easily could get lost as the battle is joined over the current defense program and new Obama administration political appointees rush to implement acquisition reform. The long delay in fielding MRAPs is attributable first to the Pentagon's force development or requirements system, secondly to Service cultures that generally undervalue irregular warfare capabilities, and finally to the Pentagon's decisionmaking structure and processes that typically favor specialization over integration of diverse areas of expertise to solve complex problems. Once senior leadership corrected these problems, validated the requirement, and made resources available, the acquisition system was able to field large numbers of MRAPs within 18 months—an accomplishment often described as an industrial feat not seen since World War II. No doubt improvements in rapid fielding of high-quality systems could and should be made—for example, by testing systems as they are fielded in a spiral development process as is frequently advocated.¹⁵⁵ However, the inadequate effort to provide armored vehicles to troops in Iraq is better explained by broader organizational factors than acquisition processes.

Reducing the problem with irregular warfare to acquisition reform underestimates the institutional resistance the Secretary will encounter. Past efforts to get the Pentagon to take irregular warfare seriously have failed to produce lasting change despite major interventions by civilian leadership. If the MRAP example is representative of general Pentagon decisionmaking tendencies, as we believe it is, eliminating the imbalance between conventional and irregular warfare capabilities requires a broader and more robust reform effort than commonly understood. To get irregular warfare capabilities right,¹⁵⁶ the Secretary needs the cooperation of the Services, which would be more likely if the Pentagon was reorganized for more collaborative decisionmaking. The Secretary should be able to delegate decisionmaking to horizontal teams that could make the difficult tradeoffs across multiple areas of expertise required for successfully managing complex missions comprehensively.¹⁵⁷

Admittedly, the fundamental decisionmaking reform that the Pentagon requires to overcome its “skilled incompetence” in irregular warfare would be difficult. But as Secretary Gates has argued, “In the end, the military capabilities we need cannot be separated from the cultural traits and reward structure of the institutions we have.”¹⁵⁸ Hopefully, the Secretary’s broader understanding of the problem—and hence the proper scope of required reform—will not get lost in the rush to restructure the current program or reform the acquisition system.

Notes

¹ Mine resistant ambush protected (MRAPs) are vehicles designed from the ground up to reduce casualties and increase survivability for personnel subjected to mine explosions, improvised explosive device (IED) detonations, and small arms fire. Blast forces are deflected away from the crew with the vehicles' V-shaped hulls. The Pentagon designates two categories of MRAPs: "The Category 1 MRAPs are four-wheeled vehicles that carry a crew of two and four passengers. The six-wheeled Category 2 vehicles have a crew of two and can carry eight." Within these categories, there are 16 different variants, including separate Marine Corps and Army versions of the vehicles. See Jim Garamone, "Defense Department Contracts for 2,400 More MRAP Vehicles," American Forces Press Service, October 22, 2007, available at <www.defenselink.mil/news/newsarticle.aspx?id=47849>.

² Hearing on National Defense Authorization Act for Fiscal Year 2008 and Oversight of Previously Authorized Programs before the Committee on Armed Services, House of Representatives, 110th Congress, 1st Sess., Readiness Subcommittee Hearing on Budget Request on Adequacy to Meet Readiness Needs, March 13, 2007 (Washington, DC: U.S. Government Printing Office, 2008).

³ Andrew F. Krepinevich and Dakota L. Wood, *Of IEDs and MRAPs: Force Protection in Complex Irregular Operations* (Washington, DC: Center for Strategic and Budgetary Assessments [CSBA], 2007); Julian E. Barnes and Peter Spiegel, "Military Thinks Twice on Fortified Trucks," *The Los Angeles Times*, December 27, 2007, available at <www.latimes.com/news/nationworld/nation/la-narmrap27dec27,0,843075.story?coll=la-home-center>.

⁴ Kris Osborn, "Early MRAP Contracts Draw Fire," *Defense News*, July 16, 2007; "Will MRAPs Drain U.S. Army's JLTV, FCS Efforts," *Defense News*, July 23, 2007; and "MRAP Pushes JLTV Arrival Two Years to 2012," *Defense News*, September 3, 2007.

⁵ Barnes and Spiegel.

⁶ One of the authors of the CSBA report *Of IEDs and MRAPs: Force Protection in Complex Irregular Operations* called the MRAP a "million-dollar Kleenex." See Christian Lowe, "Marines Urge Caution on MRAP Fielding," Military.com, October 19, 2007, available at <www.military.com/News-Content/0,13319,153219,00.html>.

⁷ John Bennett, "DoD Nominees Vow Acquisition Reform," *Federal Times*, January 19, 2009, 12.

⁸ Inspector General, Department of Defense, *Marine Corps Implementation of the Urgent Universal Needs Process for Mine Resistant Ambush Protected Vehicles* (Arlington, VA: Department of Defense, 2008), available at <<http://pogoarchives.org/m/ns/dod-ig-report-20081208c.pdf>>, 7.

⁹ On explosively formed penetrator (EFP) use, see Gareth Porter, "U.S. Military Ignored Evidence of Iraqi-Made EFPs," Inter Press Service, October 25, 2007, available at <<http://ipsnews.net/news.asp?idnews=39810>>; "Military Vehicles to get Updated Armor," *Washington Times*, May 10, 2008; William McMichael, "IED Casualties in Iraq Drop Sharply," *Defense News*, October 6, 2008; William McMichael, "JIEDDO: Decisions Made within 3 Weeks," *Defense News*, November 12, 2007, 44; and Rick Atkinson, "You Can't Armor Your Way Out of this Problem," *The Washington Post*, October 2, 2007, A1.

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¹¹ Rick Atkinson, "The Single Most Effective Weapon Deployed Against Our Forces," *The Washington Post*, September 30, 2007, A1.

¹² Government Accountability Office, *Defense Logistics: Actions Needed to Improve the Availability of Critical Items during Current and Future Operations* (Washington, DC: U.S. Government Accountability Office, 2005), 120, available at <<http://purl.access.gpo.gov/GPO/LPS60246>>.

¹³ Interview with House Armed Service Committee (HASC) staff, Washington, DC, February 17, 2009.

¹⁴ Government Accountability Office, 22.

¹⁵ Marine Corps vehicle hardening study conducted in early 2005. See <http://blog.wired.com/defense/files/franz_gayl_complete_mrap_study_archive.pdf>.

¹⁶ Pamela Hess, "Troops Ask Rumsfeld Tough Questions," United Press International, December 8, 2004.

¹⁷ George Edmonson, "Armored Vehicle Shortage Disputed, Manufacturers Insist Production Not an Issue," *Austin American-Statesman*, December 10, 2004, A1; Bryan Bender, "U.S. Stance on Armor Disputed: Company Says Vehicle Orders Waiting for OK," *Boston Globe*, December 10, 2004, 1.

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²¹ Elaine M. Grossman, "Army Approval for Heavier Armor in Iraq Delayed until Last Month," *Inside the Pentagon*, January 20, 2005, 1.

²² Peter Eisler, Blake Morrison, and Tom Vanden Brook, "Pentagon Balked at Pleas From Officers in Field for Safer Vehicles: Iraqi Troops Got MRAPs; Americans Waited," *USA Today*, July 16, 2007, 1.

²³ Bryan Bender, "Lawmakers Criticize Marine Corps for Humvee Armor Delay," *The Boston Globe*, June 22, 2005, A7.

²⁴ HASC, hearing on DOD acquisition, April 21, 2004.

²⁵ Atkinson, "The Single Most Effective Weapon Deployed Against Our Forces," A1. CSBA analysts seem particularly concerned about MRAP weight and whether they are a good fit for the "transformed force" of the future. Andrew F. Krepinevich and Dakota L. Wood, "Unbalancing the Force?" *Defense News*, October 22, 2007.

²⁶ Bonsignore and Eshel, 108.

²⁷ Congressional Record, March 29, 2007, S4085, available at <http://bulk.resource.org/gpo.gov/record/2007/2007_S04085.pdf>.

²⁸ Antulio J. Echevarria II, *Toward an American Way of War* (Carlisle, PA: U.S. Army War College, Strategic Studies Institute, May 2004), 16.

²⁹ Thomas Ricks, *Fiasco: The American Military Adventure in Iraq* (New York: Penguin Books, 2006), 151.

³⁰ Joseph J. Collins, *Choosing War: The Decision to Invade Iraq and Its Aftermath*, Institute for National Strategic Studies Occasional Paper 5 (Washington, DC: National Defense University Press, April 2008), 6–8. Collins notes the unique role of Secretary Rumsfeld in planning the war. See also Rowan Scarborough, *Rumsfeld's War* (Washington, DC: Regnery Publishing, 2004); Thom Shanker with Eric Schmitt, "Latest Mission for Armed Forces: Analyze New Ways to Prepare for Conflicts," *The New York Times*, April 30, 2003.

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³² Noah Shachtman, "Pentagon Bomb Squad Chief Looks Back," *Wired.com*, November 16, 2007, available at <<http://blog.wired.com/defense/2007/11/the-other-day-i.html>>.

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³⁵ DOD Inspector General Report No. D–2009–030 (Project No. D2008–D000AE–0174.000), December 8, 2008, "Marine Corps Implementation of the Urgent Universal Needs Process for Mine Resistant Ambush Protected Vehicles," available at <<http://pogoarchives.org/m/ns/dod-ig-report-20081208c.pdf>>.

³⁶ Simons and Wason. Even though the Pentagon already had the authority for rapid acquisition, Congress reasserted this prerogative in section 811 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Public Law 108–375). The HASC would later chastise DOD for not making sufficient use of the authority. See House Report 109–089, National Defense Authorization Act for Fiscal Year 2006, available at <www.thomas.gov/cgi-bin/cpquery/?&dbname=cp109&sid=cp109bysbv&refer=&r_n=hr089.109&item=&sel=TOC_741620&>.

³⁷ CAPT Douglas Borrebach, USN, division chief of J-8, Joint Improvised Explosive Device Defeat Organization (JIEDDO), telephone interview, March 31, 2009.

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⁴⁸ Moss, 1.

⁴⁹ Simons and Wason.

⁵⁰ Inspector General, "Marine Corps Implementation."

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⁵³ Christopher J. Lamb and Michael Casey, "Armored Arguments: Tougher U.S. Vehicular Armor Critical to Success," *Defense News*, February 13, 2006; Coalition Military Assistance Training Team (CMATT), "Iraqi Armed Forces: The Way Ahead," unclassified briefing, CMATT Strategic Planning Workshop, January 20, 2004; Riad Kahwaji, "No Artillery, Tanks in Iraqi Buying Plan," *Defense News*, May 7, 2007. Also in 2004, the United States helped the Iraqi minister of interior purchase armored security vehicles. See "Textron Systems to Provide Armored Security Vehicles to Newly Formed Iraqi Civil Intervention Force," Textron Newsroom, July 29, 2004.

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⁵⁸ Gayl's report is available at <http://blog.wired.com/defense/files/franz_gayl_complete_mrap_study_archive.pdf>.

⁵⁹ In 2007, the Pentagon had to divert 1,200 Mine Resistant Ambush Protected vehicles ordered by the Marine Corps to the Army because of widespread concern about Army casualties in Baghdad. "DOD Shifts 1,200 MRAPs from Marine Corps to Army," *InsideDefense.com*, June 20, 2007.

⁶⁰ The two best sources on the Joint Requirements Oversight Council's (JROC's) involvement are the DOD Inspector General (IG) report, "Marine Corps Implementation of the Urgent Universal Needs Process for Mine Resistant Ambush Protected Vehicles," and the Government Accountability Office, "Rapid Acquisition of Mine Resistant Ambush Protected Vehicles," Report GAO-08-884R, July 15, 2008. Neither source specifies whether the JROC approved the initial 1,185 MRAPs. The IG report specifies the JROC approval of larger MRAP requirements after the Secretary of Defense weighed in on the issue, but simply notes the requirement for 1,185 was approved without reference to the JROC. Neither does testimony by the Under Secretary of Defense (Acquisition, Technology, and Logistics) clarify the issue, as Young notes only the later, larger JROC-approved MRAP requirements. See John Young, Jr., Bill Greenwalt, and Clovis Hoover, testimony before the Seapower and Expeditionary Forces and Air and Land Forces subcommittees of the House Armed Services Committee, November 2007, available at <www.defense-house.com/December2007.pdf>. One news article, relying on inside sources, indicates that the "Joint Chiefs validated requests from Iraq for 4,060 MRAPs" in December 2006. Eisler, Morrison, and Vanden Brook, "Pentagon Balked at Pleas from Officers in Field for Safer Vehicles," 1.

⁶¹ Hearing on National Defense Authorization Act for Fiscal Year 2008.

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¹⁰⁷ Rick Atkinson, "The IED Problem Is Getting Out of Control. We've Got to Stop the Bleeding," *The Washington Post*, September 30, 2007, A13.

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¹¹¹ *Ibid.* Not coincidentally, General Petraeus has praised the MRAPs and their performance. Kris Osborn, "Petraeus Praises MRAPs," *Defense News*, April 14, 2008, 4. "If given a choice, soldiers always choose to travel in an MRAP." See David Axe, "Petraeus' Weapons Picks," *Wired.com*, September 10, 2007, available at <<http://blog.wired.com/defense/2007/09/petraeus-weapon.html>>.

¹¹² By way of illustration, the USMC *Small Wars Manual* notes that "Normally, the addition of mounted detachments, armored cars, and aircraft is desirable in such [flying] columns" (5-9, 7).

¹¹³ Andrew Birtle notes that:

Army doctrine had always stated that tanks and armored personnel carriers would be of limited utility in counterinsurgency warfare. Westmoreland initially shared this philosophy . . . [But] the heavy vehicles demonstrated their worth as convoy escorts, raiders, rapid reaction forces, and as integral parts of many sweep, search-and-destroy, and assault operations. They were especially useful in minimizing casualties from mines, booby traps, and bunkers.

See Andrew J. Birtle, *U.S. Army Counterinsurgency and Contingency Doctrine, 1942-1976* (Washington, DC: U.S. Army Center of Military History, 2007), 384.

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¹¹⁶ Bryan Mitchell and Andrew Scutro, "Three Die Amid MRAP Rollover Concerns," *Defense News*, July 7, 2008, 26; Eisler, Morrison, and Vanden Brook, "Pentagon Balked at Pleas from Officers in Field for Safer Vehicles."

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¹¹⁸ Some analysts complain about the hidden costs of MRAPs, including their fuel consumption. However, as Franz Gayl argues, such costs should be balanced against the hidden savings from lower survivor benefits and physical rehabilitation when using vehicles that are so much more effective than the up-armored Humvees in reducing injuries and deaths.

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¹²⁴ “Making Sense of Vehicles,” *Defense News*, March 24, 2008.

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¹²⁷ Department of Defense Directive 3000.07, “Irregular Warfare,” December 1, 2008, available at <www.dtic.mil/whs/directives/corres/pdf/300007p.pdf>.

¹²⁸ John T. Bennett, “New U.S. Defense Strategy Focuses on Irregular Wars,” *Defense News*, August 4, 2008, 58.

¹²⁹ Anne Geran, “Defense Chief Proposes Weapons Cuts,” Associated Press, April 6, 2009, available at <www.google.com/hostednews/ap/article/ALeqM5idcsRSLw6_ppJCceAZXPgVBefojgD97D4TG00>.

¹³⁰ The Low-Intensity Conflict Board, the U.S. Special Operations Command, and the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict.

¹³¹ President Kennedy fired General George Decker in 1962 for asserting that “any good soldier can handle guerrillas.”

¹³² Alternatively, it sometimes is argued that irregular warfare is not a valid mission—that is, that it does not play to American strengths or strategic interests. This is an implicit acknowledgment that irregular warfare requires different skills and capabilities.

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¹⁴⁶ Kris Osborn, “Army Acquisition’s Challenge: Combining Rigor with Rapid Fielding,” *Defense News*, September 15, 2008.

¹⁴⁷ Gates, 7.

¹⁴⁸ Chris Argyris, *Overcoming Organizational Defenses: Facilitating Organizational Learning* (Boston, MA: Allyn and Bacon, 1990), 12–24.

¹⁴⁹ Robert M. Gates, remarks to the Heritage Foundation, Colorado Springs, CO, May 13, 2008, available at <www.defenselink.mil/speeches/speech.aspx?speechid=1240>.

¹⁵⁰ Representative of this attitude is the frequent observation that more armor is futile since insurgents can always build a bigger IED. See “Interview with Lt. Gen. Stephen Speakes, U.S. Army Deputy Chief of Staff for Programs,” *Defense News*, September 3, 2007, 38.

¹⁵¹ Jeffrey Smith, “Gates Proposal Reveals His Alienation from Procurement System,” *The Washington Post*, April 7, 2009, A4.

¹⁵² Robert M. Gates, press briefing, Arlington, VA, April 6, 2009, available at <www.defenselink.mil/speeches/speech.aspx?speechid=1341>.

¹⁵³ Robert M. Gates, speech at Air War College, Maxwell Air Force Base, Montgomery, AL, April 15, 2009, available at <www.defenselink.mil/speeches/speech.aspx?speechid=1344>

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