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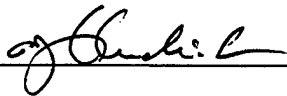
Dominant Maneuver, A Question of Balance

By

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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## ABSTRACT

Joint Vision 2010 (JV 2010) directs the armed forces to pursue a future where smaller, faster, more lethal forces will be able achieve the effects of today's massed forces through superior C4I and more lethal weapon systems. These smaller, lighter forces will be quicker to deploy and require a significantly smaller footprint and logistics tail than forces such as those the United States deployed to Southwest Asia for *Desert Shield* and *Desert Storm*. One suggested implication of this new doctrine is that the main battle tank (MBT) will become obsolete and that its role on the battlefield could be better preformed by the attack helicopter. This obituary of the tank is premature. The MBT now provides, and will continue to provide the operational commander with capabilities that are unique and complementary to attack helicopters and precision munitions. For the operational commander, capability is a question of balance. Balanced capabilities provide choice and choice ensures options that bring success across the full spectrum of military operations.

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## **Dominant Maneuver, A Question of Balance**

Joint Vision 2010 (JV 2010) directs the armed forces to pursue a future where smaller, faster, more lethal forces will be able achieve the effects of today's massed forces through superior C4I and more lethal weapon systems. These smaller, lighter forces will be quicker to deploy and require a significantly smaller footprint and logistics tail than forces such as those the United States deployed to Southwest Asia for *Desert Shield* and *Desert Storm*. One suggested implication of this new doctrine is that the main battle tank (MBT) will become obsolete and that its role on the battlefield could be better performed by the attack helicopter. This obituary of the tank is premature. The MBT provides today, and will continue to provide the operational commander with capabilities that are unique from and complementary to attack helicopters and precision munitions. For the operational commander, capability is a question of balance. Balanced capabilities provide choice and it is that range of options that enable the operational commander to operate successfully across the full spectrum of military operations.

### **JV 2010—Dominant Maneuver**

In the introduction to JV 2010, then Chairman of the Joint Chiefs of Staff General Shalikashvili wrote, "Joint Vision 2010 provides an operationally based template for the evolution of the Armed Forces for a challenging and uncertain future."<sup>1</sup> The emerging operational concepts of dominant maneuver, precision engagement, focused logistics, and full-dimensional protection will provide the framework for joint operations in 2010. These concepts will permit the United States Armed Forces to "accomplish the effects of mass – the necessary concentration of combat power at the decisive time and place – with less need to

mass forces physically than in the past.”<sup>2</sup> The synchronization of fires, rather than the phased application of fires, is the preferred method of engagement for a Joint Vision 2010 force.

Dominant maneuver will require forces that can outpace and outmaneuver an enemy force while continuing to apply overwhelming combat power. Precise, timely, and seamless command and control will be essential. Precision engagement will make it possible for JV 2010’s smaller, more widely dispersed forces to apply accurate and timely fires on an enemy from extended ranges and multiple platforms.<sup>3</sup>

### **The Attack Helicopter**

At first glance, the attack helicopter seems to provide the operational commander with a weapons system better suited to meet the tenets of JV 2010 than any ground system. The ability to move in the third dimension gives the attack helicopter superior speed and maneuverability over ground forces. Carrying a wide variety of weapons, the attack helicopter serves as a mobile firepower platform suitable for employment throughout the spectrum of conflict. Moreover, today’s attack helicopters are capable of operating in day, at night, and during adverse weather conditions.

In keeping with JV 2010’s goal to create smaller, more rapidly deployable forces, the attack helicopter appears to have the edge over current armor systems. In an Army College of Command and General Staff text, two hypothetical anti-armor force packages were compared: one consisting of four M1A1 Abrams tanks and four M2A2 Bradley Fighting Vehicles and the other of ten AH-64A Apache helicopters. The ground force package included 188 anti-tank rounds and the aviation package included 160 rounds. While six C-5 equivalents would be required to lift the ground assets into a theater and only two C-5 equivalents to deliver the helicopter force.<sup>4</sup> Nevertheless, the text’s lop-sided presentation is not the full story. U.S.

Army doctrine prefers to operate attack helicopters with scout helicopters. The scout helicopters are not factored into the airlift calculus. Nor does the text take into account the aviation support requirements for the helicopters. The recent deployment of 24 AH-64 Apache helicopters to Albania in support of *Operation Allied Force* illustrates the real-world problems of deploying a lighter all-attack helicopter force into theater. Weather and strategic lift priorities lengthened the deployment time-line of the helicopters by at least seven days. To protect the helicopter force once it arrived in Albania, the North Atlantic Treaty Organization (NATO) sent an additional 2,050 servicemen and women and several companies of tanks and Bradley fighting vehicles to provide protection for the Apaches.<sup>5</sup> In the end, the light, rapidly deployable all-helicopter force was neither.

The ability to airlift assets into theater is more than a function the number of airframes available. Not all locations in which U.S. forces are likely to be deployed can provide the mature infrastructure that was available in Saudi Arabia during *Operations Desert Shield* and *Desert Storm*. The United States' involvement in Somalia is a classic illustration of this dilemma. Mogadishu's International Airport could only handle two aircraft on the tarmac at any one time.<sup>6</sup> Even if unlimited strategic airlift had been available, the aerial port of debarkation placed severe limitations on logistical throughput.

Today's attack helicopters provide an effective command and control platform. Army and Marine aircrews are trained to coordinate and control naval gunfire, artillery, and tactical aviation assets during day and night operations. Proposed upgrades to the Marine's AH-1W and the Army's AH-64 will field more capable platforms, better able to mass effects in consonance with JV 2010. The Army's RAH-66 Comanche, which should enter service in 2006, will take the attack helicopter a step further towards making dominant maneuver a

reality. It will provide the operational commander with improved sensors and a data link capability to hand targets off to other weapons systems, making it easier to mass effects vice forces. The helicopter will also be more survivable than the present generation of attack helicopter. Stealth technology will significantly reduce the helicopter's radar cross section and the design of the helicopter's main rotor system and tail rotor will reduce the aircraft's acoustic signature further enhancing survivability.<sup>7</sup>

Nevertheless, neither today's attack helicopters nor tomorrow's will prove to be a panacea. Despite of improvements in helicopter survivability such as ballistic tolerant components, radar and laser warning receivers, and self-activating infrared and radio frequency jammers, the attack helicopter is a relatively fragile weapons system. The proliferation of affordable shoulder launched heat-seeking missiles and inexpensive but effective anti-aircraft artillery (AAA) systems has made the modern battlefield a dangerous place for the attack helicopter. Future technologies such as acoustic anti-helicopter mines and stealth defeating radar will further complicate helicopter operations on tomorrow's battlefield. Advances in flight controls and navigation systems notwithstanding, the attack helicopter will not always get through. Environmental conditions severely affect helicopter operations. None of today's attack helicopters are equipped with an anti-icing system making flight into known icing conditions dangerous. In fact, the flight manuals of the AH-64, AH-1W, and OH-58D all prohibit such operations. Dense fog, high winds, and other severe meteorological phenomena also limit or prevent helicopter operations.

### **Main Battle Tank**

The MBT has been the primary offensive weapon of maneuver warfare for most of this century. Its firepower, protection from enemy fire, and speed create the shock effect

necessary to disrupt and ultimately defeat an enemy.<sup>8</sup> The military history of the twentieth century is rich with examples of decisive armor actions made possible by the tank's maneuverability and power. Most recently, the M1A1 Abrams tank performed well against front line Iraqi armor in *Operation Desert Storm*, even surviving direct hits from Iraqi T-72 MBT main guns.<sup>9</sup> The current model of the Abrams, the M1A2, is a potent weapons system. The Abrams' 120 millimeter main gun fires a variety of munitions and can reach out accurately over 5,000 meters. Capable of speeds up to 42 plus miles per hour over roads and smooth terrain, the tank can shoot effectively on the move. Its thermal imaging system helps crewmembers identify and acquire targets at night. Depleted uranium (DU) armor, retrofitted on some MBTs, has further increased the tanks' survivability against kinetic weapons<sup>10</sup>. Additionally, tank crews are trained to act as supporting arms coordinators and can call in fires from field artillery as well as fixed and rotary wing aircraft. U.S. Army efforts to digitize the battlefield hold promise for making tomorrow's MBT an even more effective C2 platform. Multiple radios, integrated global positioning system, and two-way data link capabilities will offer tomorrow's MBT the ability to make maximum effective use of JV 2010's information dominance.

The main battle tank, nonetheless, is not without limitations. As previously mentioned, strategic lift is problematic. One set of solutions has been the Marine's Maritime Pre-positioning Program and the Army's Fast Sea Lift Program which can deliver a substantial armor force into a theater using port facilities or "in-stream" off-load. However, both of these programs require a benign area and do not provide U.S. forces with a forcible entry capability such as that provided by amphibious or airborne forces. Both services also have pre-positioned brigade sets in Southwest Asia and other potential hotspots requiring only the

delivery of personnel to field a credible armor force. Another solution offered to overcome the strategic lift problems associated with heavy armor units would involve restructuring the Army's 10 combat divisions into 25 "Mobile Combat Groups." Proponents of this plan, such as Senator John McCain, claim the restructuring would produce efficiencies that would allow the Army to move a 40,000-man force into Kosovo in 28 days.<sup>11</sup>

Terrain substantially affects the employment and operations of armor units. The desert of southern Iraq was ideal armor country, offering virtually unlimited maneuver room while the mountains, rivers and urban areas of Yugoslavia's Kosovo Republic would degrade the maneuverability of the MBT and channelize the movement of armored units. Critics also maintain that the relatively high speeds achieved by today's main battle tanks will not be fast enough to support dominant maneuver operations as envisioned by JV 2010.

Current and future antitank technologies have become increasingly lethal. The U.S. Army's Javelin antitank missile provides the infantryman with a lightweight "fire and forget" weapon lethal to 2,000 meters.<sup>12</sup> Systems with similar capabilities are being fielded by other militaries and are available on the international arms market. The Joint Direct Attack Munition (JDAM) has been cleared for acquisition abroad.<sup>13</sup> Brilliant Antiarmor Technology (BAT) submunitions and Sense and Destroy Armor Submunitions (SARDAM) are in various stages of developmental and operational testing and promise to make the future battlefield even more lethal for the tank.<sup>14</sup>

In order to keep the tank a viable weapons system in light of advances in antiarmor technologies, U.S. Army research and development centers as well as defense contractor General Dynamics are exploring designs and enhanced systems for the tank of the twenty-first century--the Future Combat System. Several concepts are in work ranging from a 57-ton

MBT armed with a large caliber conventional gun to a small 10-ton model armed with an advanced electromagnetic rail gun. All designs feature smaller and lower silhouettes to reduce an enemy's ability to acquire and destroy the vehicles. Most offer moderate increases in cross country speed and maneuverability as well as improved communications suites and target acquisition equipment.<sup>15</sup> Nevertheless, critics argue that none of these improvements go far enough towards making the MBT into an integral part of dominant maneuver on the future battlefield.

### **The World in 2010**

In addressing the continuities and the changes in the strategic environment, JV 2010 envisions a world much the same as that described in the current National Security Strategy--a world where the U.S. military will be required to operate across the full spectrum of military operations from major theater warfare to humanitarian assistance.<sup>16</sup> Both documents agree that although major theater warfare may be the most dangerous scenario, U.S. military forces will participate most frequently in low-end operations such as peacekeeping, disaster relief, no-fly zones, limited strikes, and interventions.<sup>17</sup> U.S. Marine Corps Commandant General Krulak's remarks to the National Press Club in October 1997 may be more prophetic, "In one moment in time, our service members will be feeding and clothing displaced refugees -- providing humanitarian assistance. In the next moment, they will be holding two warring tribes apart--conducting peacekeeping operations--and, finally, they will be fighting a highly lethal mid-intensity battle--all on the same day...all within three city blocks."<sup>18</sup> For JV 2010 to be viable, its four emerging operational concepts: dominant maneuver, precision engagement, focused logistics, and full-dimensional protection, as wrapped by information superiority, must be applicable across the broad spectrum of military operations. They must

be just as effective in humanitarian operations as they are in peacekeeping operations, or as they are in major theater warfare. To be successful the tool must work equally well in Somalia and Haiti as it does in Kuwait.

### **2010 High-End Conflict**

*Operation Desert Storm* was the nation's last major theater war (MTW) and the first large-scale combat test for precision munitions and modern maneuver warfare. In retrospect, the air campaign and shaping operations conducted prior to the ground war were the first steps towards dominant maneuver and precision engagement as envisioned by JV 2010. Land attack cruise missiles and coalition aircraft were able to neutralize Iraqi C2 nodes and damage its war-making infrastructure while inflicting minimal damage on Iraqi civilians. Operational fires from aircraft and naval gunfire pounded Iraqi troops in Kuwait and Southern Iraq, diminishing their combat effectiveness. Yet, it was not until coalition ground forces moved into Kuwait and Southern Iraq that the Iraqi forces surrendered. Spearheading the assault were armored and mechanized forces supported by attack helicopters. Despite the heavy damage that the air campaign inflicted on the Iraqis at the operational level, Iraqi forces did not capitulate until coalition ground forces moved against them.

The MBT's successful participation in Desert Storm's version of dominant maneuver notwithstanding, *Desert Shield* and *Desert Storm* highlighted the shortcomings of a heavy armor force. Foremost was the time required to build up a potent armor force in a distant theater. Had President Saddam Hussien chosen to proceed south into the Kingdom of Saudi Arabia immediately after consolidating his victory in Kuwait rather than taking up defensive positions, the play of events might have been different. The 82<sup>nd</sup> Airborne Division was the

first large force to arrive in Saudi Arabia but lacked the anti-armor capabilities to stop a large Iraqi armored assault. The 7<sup>th</sup> Marine Expeditionary Brigade began arriving in theater on 14 August 1990 to fall in on gear from Marine Maritime Positioning Force (MPF) ships. Their fifty plus M-60A1 tanks were the first serious anti-armor force in Saudi Arabia.<sup>19</sup> It was not until early October, two months after Iraq invaded Kuwait that General Schwarzkopf felt that he had sufficient forces to defend against a large-scale Iraqi attack.

The 7<sup>th</sup> U.S. Army Corps' end sweep into southern Iraq has left an unsettled debate on whether the inherent speed of an armor force is sufficient for dominant maneuver. Critics have laid blame for the failure of the coalition forces to close the door on the Iraqi Republican Guard on many different doorsteps. Some blame the Marines for moving too quickly through Kuwait, others blame the 7<sup>th</sup> Corps commander for moving too slowly, another camp blames the CINC for failing to synchronize the efforts of the two thrusts.<sup>20</sup> Without expanding into a discussion on blame, it is safe to say that the inherent capabilities of the MBT did not hinder the progress of the 7<sup>th</sup> Corps. The assault was not slowed because the tank was too slow to carry out the operation.

*Desert Storm* being the first step towards dominant maneuver and precision engagement, the Marine Corps' recently concluded Advanced Warfighting Experiment, *Hunter Warrior*, can be condered the next. The experiment tested a concept centered on squad-size, long range combat patrols that would locate and destroy major enemy ground forces through the use of long-range precision fires. Like JV 2010, the idea was to mass effects rather than forces to achieve operational success. The former operations officer of the Special Marine Air Ground Task Force (X) (SP-MAGTF(X)) opined that the technology is not yet available to make such a dramatic change in the method of warfighting.<sup>21</sup> He cited

difficulties in communications with small units operating 150 miles from their support bases. MAGTF(X) was unable to achieve the information dominance required to achieve the desired effects on the enemy operational forces. Moreover, he felt that the focused logistics necessary to support the small units would be difficult to accomplish given the survivability of the assault helicopter on the mid to high intensity battlefield. Concerns were also raised over the quantity of precision munitions available to the operational commander. Working without the direct fire weapons organic to a larger, heavier ground force, SPMAFT(X) expended precision munitions at a higher rate than a more conventional force, raising questions about procurement and logistics. This is more than an academic question as demonstrated by the U.S. Air Force concerns over the shortages of JDAMs and air-launched cruise missiles after the first five weeks of attacks during *Operation Allied Force*.<sup>22</sup>

*Operation Allied Force* presents an interesting case study as to how far U.S. military forces may be from executing dominant maneuver as described by JV 2010. By day 50 of the operation, the North Atlantic Treaty Organization (NATO) Forces had flown almost 20,000 sorties over Yugoslavia in an effort to compel Serbian President Slobodan Milosevic's government to end its "ethnic cleansing" activities in Kosovo.<sup>23</sup> The massed effects of land attack cruise missiles and air dropped precision guided munitions did not prevent the Serbian forces from expelling more than 750,000 ethnic Albanians from Kosovo.<sup>24</sup> In an attempt to bring the effects of fires to bear more directly on the 40,000 Serb forces in Kosovo, particularly their armor, NATO deployed OA-10 ground attack jets to Aviano, Italy and AH-64 attack helicopters to Albania. However, as of mid-May, 1999, the National Command Authority refused to allow the Apaches to conduct combat operations in Kosovo citing the

danger to the helicopters from shoulder-launched weapons.<sup>25</sup> Without support from heavy ground forces, the cost of the mission was simply too high.

Applying operational fires in the theater has not been easy.<sup>26</sup> Weather has limited the number of sorties flown and the mountainous terrain has complicated targeting, thus degrading the effectiveness of key U.S. targeting platforms: E-8 Joint-STARS, RC-135 V/W Rivet Joint, and U-2 reconnaissance aircraft.<sup>27</sup> General Wesley Clark, NATO Commander, conceded in a 27 March 1999 press conference that NATO had failed to halt Serbian efforts in Kosovo. The Milosevic government was still continually bringing in reinforcements. He concluded saying, "I can't give you a prediction on how long he's going to endure this kind of punishment."<sup>28</sup> As of this writing, *Operation Allied Force* is still ongoing and the final outcome is unknown. Nevertheless, it is clear is that NATO's massed fires (effects) were unable to prevent a determined enemy from carrying out the initial phase of his campaign--the expulsion of Albanian Kosovars from Kosovo. Without the balance of operational forces and fires, a ground force capable of expelling Serbian troops and occupying ground, NATO could not stop the Milosevic government.

### **2010 Military Operations Other Than War (MOOTW)**

Perhaps more than for a major theater war, MOOTW requires a precise balance of forces. And just as it does today, MOOTW will occupy the majority of the U.S. military's time in 2010. MOOTW focuses on deterring war, resolving conflict, promoting peace, and supporting civil authorities. MOOTW may involve elements of both combat and noncombat operations.<sup>29</sup> Joint Publications 3-0 and 3-07 list six principles for MOOTW. Three are derived from the principles of war and the other three are unique to MOOTW. Pursuing the principles of restraint, perseverance, and legitimacy may redefine what can be accomplished with dominant maneuver and precision engagement. The goal of moving quickly to mass

effects and then moving on to avoid counterattack may prove less effective than massing forces to remain visible. In the Savage Peace, Daniel Bolger wrote,

“A big foot stomps many ants, and operations that succeed are not shy about brandishing powerful air, sea, and land forces, the kind that make America a super power. The team usually includes some of each, tailored to fit the precise situation encountered and designed to allow sufficient capability to destroy bad guys and control ground and peoples. Rarely, if ever, will one force of military power be adequate.”<sup>30</sup>

The U.S. experiences in Somalia with Operation *Restore Hope* and with UNISOM II are illustrative of the balance necessary in MOOTW.

The Tripoli Amphibious Task Unit (ATU) introduced a relatively small force of Marines, the 15th Marine Expeditionary Unit (MEU) Special Operations Capable (SOC) into Mogadishu to secure the city for the arrival of the Joint Task Force. The judicious use of force as well as the threat of major force brought a relative calm to the city in short order. The MEU commander concerned with his limited number of personnel and equipment, kept the Marines visible and on the move.<sup>31</sup> For the citizens of Mogadishu there was always a HMMV, LAV, or Marine foot patrol near by. Assault and attack helicopters made their presence known through frequent flights in and around the city. In Mogadishu, patrolling and show of force operations took the place of dominant maneuver. Precision engagement required nothing more high tech than the individual and crew-served weapons organic to the Marine Air Ground Task Force, for the enemy, if he could be found, moved in and among the civilian population of the city.

Six months later, under UNISOM II, the original goals of *Restore Hope* had been broadened to include rebuilding Somalia. Tensions between Somali factions and the United Nations forces increased as clan leaders fought to keep their share of power. Recognizing the change in the situation, the American commander, Major General Montgomery requested that his force be provided with tanks. A small armored force would provide him a more balanced force to deal with the increased tensions. His request for tanks was denied by then Secretary of Defense Les Aspin. On 3 October 1993, Task Force Ranger launched four MH-60 Black

Hawk helicopters loaded with U.S. Army Rangers into Mogadishu in an attempt to capture two of Mohammed Aidid's lieutenants and 20 of his loyalists. Aidid loyalists downed two of the helicopters with rocket-propelled grenades sparking an eighteen-hour firefight between Somalis and U.S. soldiers. Two Army special operations AH-6s provided fire support for the soldiers of the task force and reportedly killed over 300 Somali militia. Nevertheless, they could not prevent the deaths of 18 Americans.<sup>32</sup> It is the opinion of most military commanders on scene that a quick reaction force equipped with tanks could have broken through the Somali lines and extracted Task Force Ranger with fewer casualties.

In Bosnia-Herzegovina, coalition forces deployed heavy armor units to perform peacekeeping duties as spelled out in the Dayton Peace Accords. The deployment of MBTs accomplished two goals: the tanks were a credible force that could handle the belligerents and they sent a clear message of allied resolve. Having made the substantial effort and investment to introduce the MBTs into the theater it was clear that the coalition forces would not be withdrawing soon, nor could they be easily coerced into leaving the theater. As is often the case in MOOTW situations, the presence of a credible ground force resolves many issues without having to resort to lethal means.<sup>33</sup>

### **Full-Dimension Protection**

JV 2010's Full-Dimensional Protection is the logical extension of today's operational protection and like its predecessor, the concept must be employed across the full spectrum of combat operations. Operational protection is not a new concept. It has gone by many names and encompasses a wide range of activities required to protect one's own forces from enemy actions and natural threats. Much of JV 2010's discussion on Full-Dimension Protection discusses the high end active and passive measures that will be required to guard against an opponents information warfare and weapons of mass destruction capabilities.<sup>34</sup> Nevertheless, JV 2010 states that a "...tailor-to-task organizational ability will provide the addition advantage of self-protection—another key element for achieving dominant maneuver."<sup>35</sup>

Tailor-to-task forces are those that provide the commander with the choices to meet the total

range of threats that the force might face. For U.S. armed forces that choice still includes armor as it did in Desert Storm, Somalia, and Bosnia-Herzegovina.

### **Conclusion**

The operational commander facing the challenges of tomorrow will need a balanced force to succeed across the full spectrum of military operations. The need to respond quickly to a high intensity crisis will require forces that can arrive in theater quickly with a smaller strategic airlift force than the nation possessed in 1990.<sup>36</sup> Some theaters will offer the advantages of port facilities and/or pre-positioned equipment. Others will not. Operations at the low end of the spectrum, MOOTW, may demand an equally quick response but require more than a small highly mobile force that is able to leverage long-range fires on the battlefield. American operations in Somalia, Haiti, and Bosnia-Herzegovina have demonstrated that MOOTW often requires presence of a credible force on the air, ground, and sea. It is often the visibility of that force that achieves the objectives of peacekeeping and peace enforcement. American-style MOOTW works best when it comes in strong and hard, ready to shoot if required.<sup>37</sup> The question of tank or helicopter is the wrong question to ask. As the 17<sup>th</sup> century Japanese warrior Miyamoto Musashi said, "You should not have a favorite weapon."<sup>38</sup> Both tank and helicopter have demonstrated their worth in high and low intensity military operations. There is not a single combat system that is immune to the technological thrust and parry of measures and counter-measures. History has also taught that no technology is invincible; nor is any counter-measure. The proper question to ask is, what balance of forces will the operational commander need in 2010 to provide him or her with the capabilities necessary to win an MTW or a "three block war?"

## Notes

- <sup>1</sup> Shalikashvili, Joint Vision 2010, i.
- <sup>2</sup> Shalikashvili, 18.
- <sup>3</sup> For a more complete discussion of dominant maneuver and precision engagement please see Joint Vision 2010 and the Concept for Future Joint Operations.
- <sup>4</sup> U.S. Army, Battle Book (CGSC Student Text 100-3) Fort Leavenworth, KS: 1 June 1996, 2-15 and 2-53.
- <sup>5</sup> William Drozdiak and Thomas W. Lippman, "NATO Stands Firm on Balkans Campaign," The Providence Journal, 24 April 1999, A-1.
- <sup>6</sup> Allard, Somalia Operations: Lessons Learned (Washington: National Defense University Press 1995), 45.
- <sup>7</sup> For a more detailed discussion of the RAH-66 helicopter and program please see Jane's, All the World's Aircraft, 1998-1999, (London: Butler and Tanner, 1998), 606 – 608.
- <sup>8</sup> Headquarters, Department of the Army, Operations, 2-22
- <sup>9</sup> Jane's, Armor and Artillery, 1997 – 1998, (London: Butler and Tanner, 1997), 143.
- <sup>10</sup> Jane's, Armor and Artillery, 1997 – 1998, 142 – 145.
- <sup>11</sup> Thomas E. Ricks, "Gung-Ho but Slow: Why the U.S. Army is Ill-equipped to Move Into Kosovo Quickly," The Wall Street Journal, 16 April 1999.
- <sup>12</sup> Association of the United States Army, "The Modernization Plan: Weaponry, Equipment and New Technologies," and Jane's Armor and Artillery, 1997 – 1998, 359 – 360. Army, October 1996, 297.
- <sup>13</sup> Doug Richardson, "JDAM Smart Bomb To be Offered to France and the UK," INTERAVIA, July/August 1997, 42.
- <sup>14</sup> Jane's Armor and Artillery 1997 – 1998, 815
- <sup>15</sup> For a more complete discussion of the FCS please see Jane's, Armor and Artillery, 1998 – 1999, (London: Butler and Tanner, 1998), 145 - 146.
- <sup>16</sup> Shalikashvili, 4.
- <sup>17</sup> The White House, A National Security Strategy for a New Century, (Washington, D.C.), 12.
- <sup>18</sup> Charles C. Krulak, Speech, National Press Club, Washington, D.C., 10 October 1997, text from: <http://www.usmc.mil/cmcspeeches.nsf>
- <sup>19</sup> Michael R. Gordon and Bernard E. Trainor, The General's War, (Canada: Little, Brown and Company), 60-61.
- <sup>20</sup> For a complete discussion of the 7th Corps End-sweep please see Gordon and Trainer, 355-432.
- <sup>21</sup> Patrick L. Beekman, "Concept Versus Capability," Marine Corps Gazette, March 1999, 41.
- <sup>22</sup> David A. Fulghum, "Bomb Shortage Crimps Air War," Aviation Week and Space Technology, 3 May 1999, 22
- <sup>23</sup> Paul Mann, "Belgrade Called Victor In War's First Phase," Aviation Week and Space Technology, 26 April 1999, 28 and John-Thor Dahlburg, "As Bombing Escalates, Some in NATO see a War Without End," The Providence Journal, 13 May 1999, A-1.
- <sup>24</sup> George Hahn, "Helicopters Arrive as Air Strikes Intensify," The Providence Journal, 22 April 1999, A-13 and John-Thor Dahlburg, "As Bombing Escalates, Some in NATO see a War Without End," The Providence Journal, 13 May 1999, A-1.
- <sup>25</sup> "Pentagon Blocks NATO Plan to use Apache Copters in Combat," The Providence Journal, 16 May 1999, A-24.
- <sup>26</sup> Mann, 28. And David A. Fulghum, "Isolated. Serb Army Faces Aerial Barrage," Aviation Week and Space Technology, 19 April 1999, 28.
- <sup>27</sup> David A. Fulghum, "Serb Threat Subsides. But U.S. Still Worries," Aviation Week and Space Technology, 12 April 1999, 24 – 28.
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