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RAH-66 Comanche–The Self-Inflicted Termination: *Exploring the Dynamics of Change in Weapons Procurement*

Julien Demotes-Mainard

An intriguing question in weapons acquisition is why some weapons programs—initially designated Major Defense Acquisition Programs (MDAP)—collapse after a long development process, resulting in wasted money and expertise. A salient illustration is the RAH-66 Comanche stealth helicopter. For 20 years, the Army designated the RAH-66 an MDAP. Yet, in 2004 the Army decided that the RAH-66 was no longer affordable. What changes led the Service to reverse its position? This study shows that despite the explicit Army posture favoring the program, the Comanche had in fact suffered from an implicit and progressive decrease in support within the Service.

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RIP
RAH-66

The RAH-66 Comanche Scout/Attack (SCAT) helicopter represents an unusual case study for those addressing the question of program termination in public policy. Certainly, the Comanche story does not fit the classical model of how to terminate a major weapons program after it enters the Department of Defense (DoD) procurement process. Interestingly, the aircraft was not cancelled by the DoD in its oversight role of the Services as was, for example, the Future Combat System program (Montgomery, 2009). Nor did Congress, despite its usual concerns about growing costs and schedule slippages, eventually direct DoD to discontinue the funding. According to many of those who witnessed the demise of the next-generation helicopter, the program, after a decade of languishing in program instability, was—*finally*—healthy and on track by the time it was terminated in 2004 (C. M. Bolton, personal communication, November 23, 2010).

Surprisingly enough for observers of defense policy, the decision to kill the Comanche was made by the Army itself—the very same institution that was expected to enjoy Comanche capabilities in the future. Moreover, the decision came at a time when the Comanche program was eventually showing progress (U.S. Senate Committee, 2005, pp. 134–136).

At first glance, the case study presented here appears out of the scope of any traditional hypothesis on program termination in public policy. Comanche cancellation fails to illustrate the "lengthy political struggle" expected to surround the termination decision—a phenomenon first observed by Eugene Bardach in his article "Policy Termination as a Political Process" (1976, p. 125). A former Deputy for Aviation to the Secretary of the Army, who had been following the program for over 20 years, highlights this absence of clear antagonism over the program: "Nobody stood up and opposed the Comanche. The enemy was the price, which ran up" (Army source, personal communication, November 15, 2010). During Donald Rumsfeld's second tenure as Secretary of Defense (2001–2006), there was clear evidence showing the Office of the Secretary of Defense (OSD) was dissatisfied with the program, but unlike the Crusader artillery, DoD didn't dictate cancellation of the Comanche (M. W. Wynne, personal communication, June 6, 2011). It seems that Comanche termination was a pretty peaceful process, a circumstance that also challenges Robert D. Behn's assertion that termination invariably triggers strong resistance from those who benefit from this particular policy or program (Behn, 1976, p. 393). In the case of Comanche, numerous interviews

showed that very few in the Army (even among the pilots) were reluctant to terminate the program, and no organizational response took place to defend the vanishing aircraft—a situation clearly articulated by the former Assistant Secretary of the Army for Acquisition, Logistics and Technology, who played an essential role in the termination :

> As a result, it was one of the least painful terminations that we ever had, because everybody wanted it. The Army can't use it; it doesn't fit any need, so the warfighters don't want it. Warfighters want upgrades to the current aircraft, self-protection, new fixed-wing, new [Unmanned Aerial Vehicles]. So, if you can take the money and buy the stuff for them, they're happy. Contractors were happy; when not building [Comanche], they're building other stuff, so the workforce stays employed and they remain comfortable. Congress is happy as long as the voters, who were the employees of the contractors' facilities, are still employed. (C. M. Bolton, personal communication, November 23, 2010)

Comanche's case also challenges conventional hypotheses about weapons' procurement. The civil-military's model of military innovation that depicts the Services as conservative entities, unable to evolve without civilian intervention (Posen, 1984), fails to explain how the Army, which invested $6.9 billion in the program over 20 years, eventually changed course on its own initiative toward termination. The classical "technological imperative" argument makes things even more troubling: With sensor integration, high agility, and low-observable technology, Comanche had promising capabilities beyond anything that still exists today in the Army Aviation inventory. Yet the Army finally refused to go further with the aircraft and, instead, decided to reallocate the money to rapidly modernize existing platforms (AH-64 Apache, UH-60 Blackhawk, and CH-47 Chinook), and to ultimately fund a far less hi-tech scout helicopter, the ARH-70 Arapaho (also cancelled in 2008).

Is there a logical, easy-to-defend explanation for Comanche's cancellation? To this author, the case appears as a clear illustration of Peter deLeon's "financial imperatives" termination (deLeon, 1983, p. 634). Despite encouraging capabilities, Comanche was simply not worth the 40 percent of the Aviation budget it was projected to swallow until program completion (Bonsignore, 2004, p. 104). A former Comanche program manager commented:

> The Global War on Terror was chewing-up our Blackhawks, Chinooks, and Apaches in such a frenetic way, that the Army had to get more resources to upgrade these aircraft, and the only way was to kill one of the programs; and so the Comanche got killed. (R. P. Birmingham, personal communication, November 19, 2010)

Like the former program manager quoted here, every actor interviewed agreed that Comanche termination was, above all, a financial decision made by the Army to restore the balance in the Aviation budget, and enable the much-needed upgrades to aircraft that were deployed to Iraq and Afghanistan. But despite its relevance regarding the final decision, the "financial imperative" model tells little about the 20-year process that eventually led the Army toward cancellation.

Just before the end of the Cold War, Comanche (formally known as the LHX [Light Helicopter Experimental] program) was still the focus of Army modernization: "It was the centerpiece of Army R&D [Research and Development] across the board. It was a very expensive program," stated

a former Deputy for Aviation to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (M. R. Kambrod, personal communication, November 19, 2010). One of the first program managers on Comanche also recalls that it was "the number one priority" at the time for the Army (Army source, personal communication, February 28, 2011). However, 15 years later, Comanche moved from the status of a critical development program down to a termination that nobody ever seriously opposed in the Army.

This article demonstrates that Comanche termination can be understood within the framework of a dynamic correlation between the external disruptions the program underwent during its development, and the level of the Army's commitment to proceed with the program. Indeed, previous studies indicated that weapons systems are likely to survive external changes (i.e., the end of the Cold War or the beginning of the Global War on Terror, or GWOT) that threaten their core rationale, if the interested Service continues to manifest an undeterred resolve toward the completion of the program (Kotz, 1988; Hampson, 1989, pp. 153–179). There is still a tendency in modern political science and defense analysis to postulate that weapons programs logically enjoyed a die-hard constituency inside their own Service. Few studies enlighten that military services can sometimes show disinterest in a system (Werrell, 1989). Even fewer contemplate the Services' support as a dynamic variable that can be affected by major strategic and budgetary shifts.

The case of Comanche illustrates the consequences of declining support to a weapon program's termination within a military service. After the Vietnam War and the refocus on the European theater during the 1980s, the Army was strongly supportive of the need for a new scout helicopter; and a wide consensus was prevailing between the Service and DoD on the tactical imperative to develop a stealth rotorcraft. The breakup of the Soviet Union in 1991, however, abruptly ended this agreement. DoD went on to raise serious concerns during the 1990s over cost, schedule, and performance of the program. At the same time, Comanche was decreasingly perceived as a "top priority" by the Army, which in a constrained budget environment, favored the modernization of its ground force components. To circumvent this spiral of neglect, Comanche's advocates worked on securing constituencies inside the Army by extending the range of capabilities of the aircraft. Beginning its development as a light Apache companion—a strategy that made sense only to Army Aviation—Comanche was, by the time of its termination, "an information

collection and distribution node in the network" (C. H. Allen, personal communication, February 27, 2011) that would have provided information to every Army unit on the battlefield. As a result, the program evolved from concept and development throughout the early 2000s as a highly capable (also expensive) rotorcraft, which was only superficially relevant to the operational requirements of the GWOT. Additionally, the Afghanistan and Iraq campaigns marked a critical shift in the Army's mindset. Comanche was a cornerstone of Chief of Staff of the Army General Eric Shinseki's and U.S. Army Training and Doctrine Command (TRADOC)'s modernization plan; but prospects abruptly became gloomy for the program when Army General Peter Schoomaker, a former Special Forces' operative, stepped in to replace Shinseki. The special operations community was one of the least interested in Comanche, and their operational perspectives had been gaining favor within DoD since the early successes of operation Enduring Freedom.

The Maturity of Army Aviation and the Formation of a Military-Political Consensus on a Stealth Helicopter

The Aviation Mutation Toward the Attack Mission

The LHX (precursor to the Comanche) earliest concept explorations are deeply connected to the Vietnam practical experience that for the first time permitted the clarification of the strengths and weaknesses of rotorcraft in large-scale operations. The 1958 *Airmobility* doctrine that called for rapid troops and hardware lift, combined with armed assistance to ground forces (Department of the Army, 1958, pp. 6–7), had indeed proved to be controversial during the war (Allen, 1993, p. 16).

On the one hand, Army Aviation rotorcraft demonstrated their combat effectiveness as close air support (CAS) and escort platforms that can operate in mid-intensity conflict (Williams, 2005, p. 171). Three helicopters were in the midst of this recognition: the AH-1 Cobra, the OH-6 Cayuse, and the OH-58 Kiowa. They operated closely together: The AH-1 acted as a firepower delivery vehicle, while OH-6 and OH-58 were deployed forward to find targets for the Cobra and other platforms (Rottman, 2007, p. 58). But, on the other hand, Vietnam-era rotorcraft demonstrated their inherent limitations on the modern battlefield. They were vulnerable—U.S. Armed Forces lost a total of 4,879 helicopters from 1962 to 1973 (Stoffey, 2008, pp. 323–324)—and also too lightly armed: Cobra's early versions suffered from limited killing power until the

Army equipped the aircraft with the heavier 20mm M61A1 Gatling gun in 1969 (Bishop, 2006, p. 23). OH-58 and OH-6 faced a similar problem: "Those were not armed, and in Vietnam they ran around trying to draw fire to find where the targets were. That was the aerial scout, as it really started" (Army source, personal communication, November 15, 2010). The Vietnam campaign undoubtedly shined a spotlight on scout and attack rotorcraft, but their legitimacy in the overall Army was yet to be confirmed. While the Army was shifting its focus back on the European theater to counter the growing conventional Soviet threat, helicopters were still regarded by most as vulnerable pieces of hardware (Allen, 1993, p. 16). Studies of the Yom Kippur War showed the Army that aircraft, and especially helicopters, may soon evolve on a battlefield saturated with surface to air missile (SAM) sites, anti-aircraft (AA) guns, and man-portable air-defense systems (Williams, 2005, p. 173). In 1976, Army General William DuPuy's *Active Defense* doctrine became the first TRADOC doctrine, and widely acknowledged that NATO forces will fight outnumbered in a very fire-intensive environment. DuPuy's doctrine emphasized the use of massive firepower and protection, a strategy that implicitly recognized the predominance of artillery and armor divisions to counter the Soviet steamroller (Department of the Army, 1976, pp. 3/5–3/6).

Active Defense represented both a tremendous opportunity and a serious challenge for helicopter proponents. Indeed, Aviation would be likely to receive additional funds if rotorcraft could perform the anti-tank mission DuPuy's doctrine so adamantly stressed. AH-1 Cobras, armed with Tube-launched, Optically-tracked, Wire-guided missiles, were deadly weapons against armored vehicles; however, Cobra's skinny airframe was unable to accommodate additional firepower, such as a 30mm cannon (Bardin, 1994, pp. 135–136). The heavy attack requirement asked for the development of a more capable aircraft, which would demonstrate to the Army and other Services the effectiveness of rotorcraft in fire-intensive operations. Even though the Air Force, which regarded the dispersion of tactical air power as a threat to its own CAS capabilities, insisted that the A-10 would suffice for the mission (Army source, personal communication, November 15, 2010), the Aviation directorate was able earlier in 1973, with the blessing of then-Chief of Staff of the Army Creighton Abrams, to secure the Advanced Attack Helicopter (which later became the AH-64 Apache) in the top-priority Army programs package, dubbed the "Big Five"—Abrams, Bradley, Patriot, Apache, and Blackhawk (Allen, 1993, p. 23).

The "Flying Humvee"

In 1982, Aviation was finally granted branch status; the same year, the *AirLand Battle* doctrine was published. The opposite of the fairly static *Active Defense* strategy, *AirLand Battle* shifted the focus to deep-strike attacks that aimed to cut the first Soviet echelon from its reserve and logistics supplies (Department of the Army, 1982, p. 2/2). Maneuver became the centerpiece of the U.S./NATO strategy to confront the Soviet army in Europe; and, with their speed and versatility, attack helicopters were logically tasked by the Army to play a decisive role on the battlefield (De Durand, 2003, p. 22). The AH-64 Apache and its Hellfire missiles were now in the planning to join the arsenal and perform the heavy attack role attributed to Aviation; but, as the strike mission grew in importance, it appeared to Army Aviation military leaders, in the early 1980s, that the combined portfolio of OH-6 Cayuse and OH-58 Kiowa was not sufficient enough in numbers to properly carry out the forward scout mission crucial for Apache targets' designations:

> There was a void of 600 aircraft in the Army Aviation inventory for something similar to the Bell OH-58. So the program started off with having people from Fort Rucker coming and asking for a replacement for this aircraft. Then it turned into an

> attack aircraft, and then it became a scout-attack aircraft, and that ended-up as the basis for the LHX program. The intended replacement for 600 Kiowas went away; instead, the Army decided that a much more capable scout-attack was needed, and that became the LHX. (M. R. Kambrod, personal communication, November 19, 2010)

In January 1983, the LHX program was initiated to address this void in inventory for a more survivable and faster scout aircraft that would also be capable of engaging targets, if necessary. In its earliest concept phase, the LHX was supposed to fit into the "lower portion" of the high-low mix, produced in combination with the "high end," heavier Apache. The requirement for a mixed scout/attack aircraft that fully took advantage of the lessons learned in Vietnam (better survivability, targets' engagement capability) was strongly supported by Army Aviation, and especially its commanding officer, General Carl McNair. Fort Rucker then started discussions with the civilian leadership of the Army, and the idea of a new helicopter soon met the enthusiasm of proactive then-Under Secretary of the Army James Ambrose (M. R. Kambrod, personal communication, November 19, 2010). Army Aviation was adamant on the need to replace its current scout rotorcraft, but Ambrose took a broader approach and saw in this project the promise for developing a low-cost, multipurpose airframe that would eventually replace not just the OH-58 and OH-6, but all utility, light attack, and scout aircraft in the inventory:

> The Comanche started as the LHX program, and it was the brain child of Jim Ambrose. LHX was like Humvee. Humvee is a very good engine and chassis you can reconfigure; it can be an ambulance, it can be a truck, it can carry a machine gun, it can do a lot of things. Ambrose wanted a helicopter just like that—a good airframe and a good engine—and it can be a scout helicopter, attack, and utility. (P. L. Francis, personal communication, November 18, 2010)

LHX started as a consensus between Army Aviation and TRADOC, which were looking for the next-generation scout helicopter, and the civilian leadership of the Army, led by James Ambrose, which agreed on the development of a versatile airframe. On the operational side, LHX was strongly supported by the Army because attack and scout helicopters were increasingly seen by Army leaders as a focal capability to perform the deep-strike mission envisioned in *AirLand Battle*.

Aviation's operational perspectives were gaining thrust inside the Army. Institutionally speaking, the branch status obtained in 1982 allowed Army Aviation to handle its acquisition process, and better defend its programs against tank, infantry, and artillery requirements (Allen, 1993, pp. 47–48). Finally, the personal involvement of the influential Jim Ambrose helped the LHX to swiftly reach the status of top priority within the Service (T. P. Christie, personal communication, June 30, 2011). The LHX would be a low-weight, low-maintenance, single pilot aircraft that would enter Aviation inventory in very large numbers (5,023 units:

3,072 scout-attack, and 1,951 utility), with a modest fly-away unit cost of roughly $3 to $4 million for the utility version, and $5 to $6 million for the SCAT design (U.S. House Committee, 1984, p. 250).

The near-obsolescence of the Vietnam-era OH-58, OH-6, UH-1, and AH-1, combined with the planned cost savings that would have materialized in production and sustainability from buying a multipurpose airframe, were sufficient arguments to persuade civilian leaders that a new program should be developed to face the Soviet air defense system on the European front (U.S. Senate Committee, 1984, pp. 1308–1314). In 1983, it was assumed that the Soviet air defense branch (V-PVO), along with the Warsaw Pact air defense troops, could have deployed in wartime over 6,400 AA guns, 6,300 SAM launchers, and 4,000 interceptors to thwart any NATO attempts to control the air and deny the conduct of forward operations (International Institute for Strategic Studies, 1982, pp. 132–133). The Western perception of a Soviet qualitative increase in military hardware was the core incentive that drove, during the 1980s, the requirements for new programs; and the more the balance of power was perceived as shifting in favor of the Soviets, the more U.S. weapons were accumulating capabilities to match this alleged Soviet progress.

LHX was no exception to this dominant mindset; the program was perhaps even more sensitive than others to threat perceptions, as LHX had not been started according to a strict requirements' approach, but was instead designed as a fairly open program, able to absorb, during its Demonstration/Validation (Dem/Val) phase, a large quantity of the new promising technologies that were emerging during the 1980s (digital optical control system, ballistic tolerant components, embedded diagnostics, etc.). Stealth was one of them, but the Army wasn't familiar with it until the early 1980s, when the DoD acquisition overseer, then-Under Secretary of Defense for Research and Engineering (USD[R&E]) Richard de Lauer, and his military assistant, John Douglass, started to actively encourage the Services, with the blessing of Deputy Secretary of Defense Paul Thayer, to implement stealth on their ongoing tactical programs (T. P. Christie, personal communication, June 30, 2011). The Pentagon was increasingly envisioning stealth as a crucial capability to defeat the proliferation of Soviet SAM and radar sites. The Director of Program Analysis and Evaluation at the time recalled:

> In attack aircraft that would need to penetrate hostile airspace, there was an emerging consensus on the need to reduce the signature of the airplanes in every dimension, and stealth was a particularly salient element of that debate in the 1980s. (D. S. C. Chu, personal communication, June 27, 2011)

In the face of DoD enthusiasm, the Air Force strengthened its stealth requirements on the F-22A Advanced Tactical Fighter (ATF); the Navy agreed to develop the technology on the A-12 Advanced Tactical Aircraft (ATA); and, to a lesser degree, the Army adapted it on the RAH-66 LHX. The low-observability requirement on LHX was, at the time, consistent with its operational assignment. The aircraft was supposed to proceed ahead of the offensive force to search for targets in a very high-threat environment, where Soviet air-defense systems would have seriously endangered the survivability of more "conventional" scout helicopters.

The First External Shock—The Demise of the Soviet Threat and the Comanche's Quest for Staying Relevant within the Army

Losing its Rationale

In the mid-1980s, the Soviet threat was undoubtedly dominant in the strategic landscape, but with Gorbachev's Perestroika in 1986 and the diplomatic re-warming of U.S./Soviet relations, the DoD budget was starting to stagnate. During the first half of the decade, defense spending literally skyrocketed from $130 billion in 1980 to $281 billion in 1986, but between 1986 and 1990, the budget rose only modestly from $281 to $286 billion (in 2005 dollars) (Congressional Research Service [CRS], 2005, pp. 27–28). As the political imperative for an ever-increasing military budget was fading away, the technological (and cost) inflation of LHX started to draw the attention of Congress and of the OSD (General Accounting Office, 1987, pp. 7–8). Still in its concept formulation phase, the program was not yet benefiting from a strong constituency in Congress, which subsequently did not hesitate to slash the program's funding, thereby raising concerns over the Army's choice to fund the LHX development at the expense of Apache and Blackhawk production (Galindo, 2000, p. 54). In DoD, the program underwent a Defense Acquisition Board review that forced the Army to restructure the program. Following the recommendation of a RAND study, the new USD(R&E) was doubtful that the technology for a single pilot helicopter was available, and he subsequently took action to cancel the one-seat design (D. A. Hicks, personal communication, June 29,

2011). The OSD Director of Program Integration managed to convince the Vice Chairman of the Joint Chiefs of Staff and the Deputy Under Secretary of Defense for Acquisition to put a price and a weight cap on LHX (T. P. Christie, personal communication, June 30, 2011). The price for Army Aviation to enter the Dem/Val phase (Milestone I) was to go along with the more conventional two-seat design and drop the utility variant, which subsequently reduced the procurement quantity to 2,096 units. The fall of the Berlin Wall ushered in another restructuring in 1990, which further decreased the procurement quantity to 1,292. In April 1991, the Boeing/Sikorsky contractor team was selected to develop the truncated LHX SCAT program, subsequently renamed the RAH-66 Comanche (Werthman, 2007, p. 2). In an additional irony, later in December of that year the Soviet Union, along with the Warsaw Pact threat, collapsed.

The former Comanche program manager (1984-1991) recalled that the demise of the Soviet Union inflicted a severe setback to the Comanche's relevance (Army source, personal communication, February 28, 2011). Since its inception, the program had been tailored and sold by Army Aviation as a means to confront the Soviet war machine in Europe. The Army leadership was still strongly committed to swiftly fielding high-tech weapons systems such as the RAH-66, but on the other hand, the administration was increasingly concerned with rationalizing the Pentagon budget handed out by the Reagan build-up. The disappearance of the Soviet threat acted as an external shock that eventually broke the consensus between the Army and DoD on the imperative nature of Comanche's further development. However, under the George H. Bush administration and Bill Clinton's first mandate, DoD was not disposed to terminate the program. Two major rationales were dictating this choice. First, even if the absence of a peer-competitor undoubtedly relaxed the incentive to rush weapons programs into production, the United States was willing to maintain a strong leadership position in international affairs, which called for a downsized, but still dominant, armed forces (Kagan, 2007, p. 146). Second, the RAH-66 was at the time the only advanced-technology program available to sustain the know-how of the industrial base in helicopter design (Galindo, 2000, p. 65). These two motives drove DoD's decision to enforce two additional restructurings (approved in 1993 and 1995) that further streamlined the Dem/Val phase, limited the funding for research and development, and deferred production indefinitely (Office of the Inspector General, 2003, p. 16). The Comanche was kept barely alive in case its capabilities and technology would be remotely required.

The Apache Rivalry

Another obstacle for the Comanche was its complex relationship with the AH-64 Apache. The AH-64 was Comanche's *raison d'être*. The RAH-66 was originally designed as a light companion that would have evolved in pair with the Apache, in a sensor/shooter configuration. But during the 1980s, the Comanche mutated, in accordance with the perception that the Soviet threat was strengthening into a heavier, stealth, two-seat helicopter (T. E. White, personal communication, June 23, 2011), with strong air-to-air and air-to-ground combat capabilities that could carry a significant payload (4 Hellfire and 2 Stinger missiles in internal weapons bays, and a 20mm canon on front). In a declining defense budget environment, critics were prompt to note that Comanche capabilities, which matched or even surpassed those of the Apache, were blurring the role of the two helicopters (CRS, 1996, p. 2). Additionally, and according to many interviewees who witnessed the evolution of the RAH-66 program during the 1990s, the development of the Longbow target acquisition system raised, within DoD, the question of whether the Apache could assume its attack mission efficiently without the RAH-66. Comanche became frequently portrayed as a too-early follow-on of the AH-64, presenting no undisputable needs for its SCAT mission (G. F. Decker, personal communication, November 3, 2011). The perceived lack of firm necessity and added value complicated the task of the Comanche program office to properly "advertise" the program. In a restricted budget environment, the two programs were indeed forced to compete, and Comanche's survival was in balance with Apache upgrades (DoD, 1993, pp. 40–41).

Rebuilding a Constituency

The Comanche program office was deeply concerned by its languishment in the Dem/Val phase. The stealth rotorcraft was indeed facing two crucial challenges that could potentially lead toward its termination: (a) The RAH-66 technology was not yet proven, and (b) to date, the aircraft had been unable to secure an indisputable role within the Army. To address the first challenge, the program office persuaded the Aviation Program Executive Officer and the Army Acquisition Executive to build, as part of the restructuring, two flying prototypes. The objective was to demonstrate to civilian leaders the capability of the aircraft and, implicitly, to convince DoD and Congress to remove the production deferment (Galindo, 2000, pp. 69–70). The first prototype flew in 1996, and the political move undertaken by the program office was a stark success among Congress. The fly-off achievement had been a great help for

the contractors to remind Congress that jobs were and would be guaranteed in their districts if the program proceeded. House and Senate Armed Services Committees were now willing to pour additional funding into the program (CRS, 1996, p. 2). The Comanche program received $282 million for FY1998 and $391 million for FY1999 (CRS, 2000, p. 6). Despite the persistent opposition of Congressman Peter DeFazio (D-OR), the two program managers, who together covered the 1997-2003 period, confirmed during interviews that the Comanche, which employed more than 10.000 people in 42 states, enjoyed robust support from Capitol Hill (R. P. Birmingham, personal communication, November 19, 2010; J. L. Bergantz, personal communication, June 7, 2011). The Pentagon position remained, however, unchanged. OSD did not object to the program and let the Comanche proceed with a new restructuring in 1999; but in the eyes of many civilian leaders, Comanche still was a low priority for Army modernization (J. S. Gansler, personal communication, November 16, 2010).

Securing a New Role Inside the Army—The "Quarterback of the Digital Battlefield"

The Army went through a significant reorganization during the 1990s. Despite the crushing blow inflicted on Saddam Hussein's forces in the Gulf, its whole doctrine and force structure were based on a potential conflict with the Warsaw Pact in Europe. Its divisions were large, heavily armored and armed, and little incentive had been put, so far, on rapid strategic deployment and tactical agility—two capabilities that were increasingly seen by political leaders as imperative to match the proliferation of limited conflicts throughout the world (the Gulf, Somalia, and Bosnia) (Jackson, 2009, pp. 45–46). With Les Aspin's *Bottom-Up Review*, the Army drastically downsized its active force, going from its 18 divisions' peak of the 1980s down to 10 divisions at the end of the 1990s (DoD, 1993, p. 28). To put it simply, the Army was tasked to do more (be more deployable, more agile, more reactive) with less (less volume and less budget). The Army Chief of Staff's answer to meet this challenge—*Force XXI*—was an initiative to bolster the Army's effectiveness on the battlefield: Smaller forces would do greater damage by sharing real-time situational awareness. *Force XXI*'s objective was to take full advantage of the "information revolution" that was occurring during the 1990s. In the second half of the decade, General Dennis Reimer, Chief of Staff of the Army (1995–1999), in his *Army After Next*, confirmed the cornerstone concept of force "digitization" (Adams, 2008, pp. 38–40). His successor, Shinseki, was pressed by the Task Force Hawk episode to

urgently solve the Army's deployability issue. His answer was a two-step program (Interim Force, then Objective Force) to eventually field a whole new generation of lighter, easier-to-deploy vehicles, with improved ISR (Intelligence, Surveillance, and Reconnaissance) and precision strike capabilities (the FCS program) (Jackson, 2009, pp. 45-46).

As the Army was reshaping according to the "network-centric warfare" concept, in 1997 the Comanche program office and TRADOC were in agreement that the RAH-66 would have to fully embrace this new direction to secure an indisputable role in tomorrow's Army, and finally escape the agony of its everlasting Dem/Val phase (Williams, 2005, p. 346). The Comanche program office's and TRADOC's idea was to expand the capabilities of the aircraft toward a much more integrated system that would provide real-time situational awareness to every Army unit on the battlefield by taking full advantage of the fast-evolving information technology. The program's mutation into a holistic ISR platform (later dubbed the "Quarterback of the Digital Battlefield") rather than a simple SCAT aircraft, which made sense only to Army Aviation, would require significant upgrade (Longbow radar, enhanced software). The effort was endorsed by then-TRADOC Commander John N. Abrams and Shinseki, who envisioned the system as a critical capability to win the information war (R. P. Birmingham, personal communication, November 19, 2010). But, in retrospect, the Comanche program office/TRADOC initiative to bolster Comanche visibility had conflicting effects. On the one hand, it allowed the RAH-66 to enter the Engineering and Manufacturing Development (EMD) phase by securing the much-needed support of the Army's top leadership (Shinseki). On the other hand, for those who were not closely associated with the program, Comanche's enhanced role was becoming harder to conceptualize within the modernization effort the Army was trying to promote through the FCS program. The Program Analysis and Evaluation Director of Land Forces Division at the time highlights the issue:

> The Army vision was a future force that has very good sensors, so the idea was to substitute knowledge for armor and to be able to strike precisely at long-range. It wasn't clear that Comanche's sensors would fit in that, and if you have long-range precision munitions, why send a helicopter out there? (M. F. Cancian, personal communication, June 9, 2011)

A former program manager also confirmed that despite its "transformation," Comanche failed to build the anticipated consensus over its role and mission:

> The Army didn't understand the Comanche requirement. For Division Commanders, Corps Commanders, and many of the four-star generals who weren't associated with the Comanche, they didn't understand the capability. It was not a very well-articulated capability, from a TRADOC perspective. The program had been going on so long, and had so many changes to requirements, that it had time and money taken out, which forced the program to be restructured and stretched out. (R. P. Birmingham, personal communication, November 19, 2010)

Despite proactive efforts by the Comanche program office/TRADOC to arouse Army enthusiasm for Comanche, the program's condition remained somewhat fragile. Major branches within the Service, such as Armor, Infantry, and Artillery, were focusing on the completion of an FCS program that better reflected their operational perspective. Also, the flipside of the decision to transform Comanche into the "Quarterback of the Digital Battlefield" was an increasing technical risk, which further diminished the credibility of the program in the eyes of the Army and OSD. A last restructuring was directed in 2002 by the Comanche program office itself, to address this impending requirements creep. Retrospectively, however, it appeared that the program was not robust enough—in terms of relevance, constituency, and feasibility—to successfully undergo the new, major upheaval created by the GWOT.

The Second External Shock—9/11 and the Rise of U.S. Special Operations Command

Abrupt Change in Army Priorities

The Afghanistan and Iraq campaigns totally disrupted the overall Army plan to invest in long-term/high-tech capabilities for remote wars against North Korea and Serbia-like enemies. The Army was suddenly facing a low-tech enemy who was mainly using small arms, rocket propelled grenades (RPG), and improvised explosive devices. One of the most imperious needs for the U.S. Army was to possess real-time, accurate situational awareness to search and destroy the small groups of insurgents relying on cover, camouflage, and deception to mitigate the overwhelming U.S. technological advance. Comanche, whose capabilities

were centered on the concept of gathering and disseminating tactical information, was, in a sense, relevant to this aspect of a counterinsurgency operational environment (T. E. White, personal communication, June 23, 2011). But the high-tech/high-cost design of the aircraft only offered superfluous capabilities. The light-weight composite armor (on which the contractors experienced tremendous design difficulties) was ill-suited to protect the aircraft against 12.5 or 20mm rounds (R. P. Birmingham, personal communication, November 19, 2010), while the survivability of the tougher Apache was challenged by small arms and RPGs (O'Hanlon, 2005, pp. 88–89). Comanche was caught in the midst of a collision between the Army's plan for lighter, high-tech forces that emphasized deep-strike, and the urgent operational need for more robust materials in close-combat environments.

This wartime mismatch would have been theoretically enough of a rationale to swiftly cancel the program. But up until 2003, two major elements were still shielding the Comanche from cancellation. For one thing, the program had been secured into the "Objective Force" vision, and was consequently benefiting from the official endorsement of the Army's highest leader—Shinseki. Moreover, OSD's lack of enthusiasm for the Comanche was self-constrained by its reluctance to further damage its relationship with the Army in leading the termination of another program (M. W. Wynne, personal communication, June 6, 2011). After having abruptly enforced the Crusader self-propelled howitzer cancellation in May 2002, Rumsfeld's team was indeed rather disposed to take a half-measure on Comanche, by cornering the program into a niche capability with a reduced quantity (650, as reflected in the 2002 restructure). Further decisions regarding the RAH-66 were thus delegated to the Army civilian leadership, which was still committed to field the rotorcraft, despite serious concerns on cost and risk mitigation (T. E. White, personal communication, June 23, 2011).

Final Stroke—Shift in Leadership and Operational Perspective

The strong incentive for change came in 2003 when Schoomaker stepped in to replace Shinseki as the new Chief of Staff of the Army. The appointment of a former Special Forces operative as the Army's highest ranking officer reflected the strong inclination of the Secretary of Defense for the Special Forces' operational perspective. USSOCOM (U.S. Special Operations Command) warfare concepts were widely compatible with the Rumsfeld vision of a much smaller, highly special-

ized, relatively low-tech Army—an idea that was in essence far different from Shinseki's plan, which was still massively relying on large armored forces (Herspring, 2005, pp. 394–395). Favored by the Secretary of Defense, USSOCOM and the U.S. Army Special Operations Command (USASOC) were rapidly gaining thrust in terms of war planning and resources allocation since the early successes of Operation Enduring Freedom (Herspring, 2008, pp. 57–58). For the Comanche program office, Schoomaker's nomination by Rumsfeld was a serious concern. For years, the aircraft had been carefully designed to fit into Shinseki's "Objective Force" by evolving to become the central ISR platform for conventional armored, infantry, artillery, and aviation units. Therefore, little had been done to accommodate the less orthodox requirements of USSOCOM/USASOC for helicopters, which favored short-term development programs, proven and modifiable airframes (CH-47, UH-60, and OH-6), long endurance (Comanche had a 300-gallon fuel tank and no refuel probe), and troop-carrying ability. As a consequence, the Special Operations community was one of the least interested in Comanche capabilities (R. P. Birmingham, personal communication, November 19, 2010).

The aircraft was threatened by an unprecedented coalition formed between OSD and the Army leadership. Before Schoomaker's nomination, the support of Shinseki (and before him, Chiefs of Staff of the Army Gordon Sullivan and Dennis Reimer), who all envisioned Comanche as a needed capability in the Army modernization effort, effectively sheltered the program from OSD's and other Army components' increasing skepticism during an entire decade. But the loss of the Chief's commitment was now leaving an open door to the detractors inside and outside the Army, who underscored the prevailing thought that Comanche was too expensive for the Army to procure. The current GWOT was further adding some consistency to their arguments. On the budgetary side, the Army was indeed struggling with two conflicts that necessitated reorganizing its funding allocations. The situation was especially tense for Army Aviation, where upgrades to the current fleet were becoming imperious in the wake of its wartime necessities (C. M. Bolton, personal communication, November 23, 2010). With a $32 million price tag per unit, Comanche was by far the most expensive program in the Aviation budget, and consequently the greatest obstacle for improving the aging fleet that was fighting in Iraq and Afghanistan. On the technical side, the Army Vice Chief of Staff, after having flown the Comanche in 2003, raised serious concerns to the USD(AT&L) over the maintainability of the aircraft on the field, due to the extensive use of stealth coating (M. W.

Wynne, personal communication, June 6, 2011). This observation was a grave impediment to the aircraft, as the top-to-bottom review of Army Aviation capability ordered by Schoomaker in September 2003 specifically calling for a "shortened logistics tail" (U.S. Senate Committee, 2004, p. 132). Although the Vice Chief publicly affirmed that Comanche was "absolutely the best flying helicopter the industry ever built for us" (U.S. Senate Committee, 2004, p. 155), the program was regarded by a vast majority of Aviation operators as an expensive, yet superfluous war-fighting capability (C. M. Bolton, personal communication, November 23, 2010). Now that the Army leadership was willing to lower its guard on Comanche, OSD was in a favorable position to push its preferences and to cut a deal with the Service: Unlike the Crusader, the Army this time would ultimately enforce the Comanche termination and, in return, the Pentagon and the President would allow the $14 billion to stay within the Aviation budget (M. W. Wynne, personal communication, June 6, 2011). The Army agreed, and the Comanche was officially terminated in February 2004.

Conclusions

Retrospectively, the Comanche would appear an ill-fated program that had been gradually undermined by two significant and unexpected strategic shifts. The first external shock was the end of the Cold War, which seriously impeded the need to urgently field, in vast numbers, a stealth SCAT helicopter. Orphaned of an indisputable purpose, the program languished in its Dem/Val phase during most of the 1990s. The Army's effort toward "digitization" opened a window of opportunity for the aircraft that briefly renewed its relevance in the early 2000s until the requirements for the GWOT, which called for better survivability, finally struck the program its death blow. But the Comanche had not been the only program dubbed as a "Cold War relic" during the last decade. The F-22A was and continues to be widely criticized for the unsuitability of its requirements to fight today's war. But the outcome for the two programs diverged: The Raptor was finally truncated to 187 units, while the Comanche suffered pure termination. The difference can be explained by the support the two programs enjoyed within their respective Service. Each time OSD and Congress raised serious questions about cost, schedule, and performance of the F-22A, they faced a resolute and resilient coalition formed between Air Force civilian management, military leadership, and pilots, all of whom knew the air-

craft intimately and consistently closed ranks to defend it (J. G. Roche, personal communication, June 17, 2011). While the Raptor benefited over time from a die-hard constituency, the Comanche only sporadically enjoyed the Army's commitment when its capabilities were challenged by the alteration of the strategic landscape. This can be explained by the comparatively weak institutional position of the Aviation branch within the Army, the intra-Service competition with other programs (notably FCS), and a perceived disinterest in Comanche, which over time forced the Comanche program office and TRADOC to transform the program into an all-inclusive ISR platform to secure an incontestable role for the helicopter. But Comanche's constituency had remained so fragile within the Army that it only took the departure of Shinseki—last and most highly ranked supporter of the aircraft—to doom the program. The merger that followed of Army and OSD operational perspectives, which took place when Schoomaker became Chief of Staff of the Army, was the final stroke that killed the program.

One may be tempted to explain Comanche's fate through the rational framework of cost effectiveness, claiming the advent of the Unmanned Aerial Vehicles (UAV)—which have proven their capability to efficiently perform the reconnaissance mission at a much lower cost—was the strong incentive that led the Army toward the decision to terminate the stealth helicopter (De Durand, 2003, p. 22). But interviews conducted with DoD and Army key players refuted this assumption. The aircraft had not been the unfortunate victim of an emerging "disruptive technology" (Christensen, 2000, pp. 69–88). Rather, civilian and military actors pointed out that the value of UAVs, which were in 2004 at a primitive stage, had been fully understood by the Army *after* the decision to abort the RAH-66 (C. M. Bolton, personal communication, November 23, 2010). Instead of simply looking at Comanche's cancellation in the framework of a cost/benefit analysis, this article invites Defense Acquisition Workforce students and practitioners to understand weapons programs' development as a highly dynamic political process, where a given Service's support is *not* a settled postulate, but rather a core variable that can explain termination.

Author Biography

Mr. Julien Demotes-Mainard is a doctoral candidate in Political Science at Sciences Po Toulouse (France). His research focuses on U.S. defense policy and weapons acquisition. Prior to pursuit of his PhD, he earned an MS in International Relations from Sciences Po Bordeaux. His final dissertation on the Strategic Defense Initiative received the French Air Force 2nd award for Best Master's Thesis in 2009. He also graduated from ESEC (Film School, Paris), and holds a BA in Film/TV production from the University of Bordeaux.

(E-mail address: jdemotes@gmail.com)

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