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CORRECTING COURSE: THE CANCELLATION OF THE FUTURE COMBAT SYSTEMS PROGRAM

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On April 6, 2009, Secretary of Defense Robert Gates announced a number of major decisions designed to reshape the administration's proposed fiscal year (FY) 2010 defense budget. One of the most notable was his decision to restructure the Army's Future Combat Systems (FCS) program, specifically by cancelling all eight of its manned ground vehicles.¹ While Secretary Gates acknowledged that this was his most difficult program decision,² he noted that there were "significant unanswered questions concerning the FCS vehicle design strategy," and that, in his view, the vehicles did not "adequately reflect the lessons of counterinsurgency and close quarters combat in Iraq and Afghanistan."³

The FCS program was the centerpiece of the Army's modernization plan. Yet it has been surrounded by controversy since its inception, due in large part to major cost increases, skepticism that the various component systems being developed would function as advertised, and significant criticism that the program as a whole was not optimized for the types of conflicts that the United States currently faces or is likely to confront in the future. In short, scaling back the FCS program fit squarely with Secretary Gates' stated desire to "rebalance" the US military by placing greater emphasis on preparing for irregular conflicts (such as those the United States has been fighting in Afghanistan and Iraq), and by avoiding platforms that are unaffordable, rely on immature technologies, or both.⁴

Although Secretary Gates' announcement has drawn criticism,⁵ these longstanding concerns indicate that his decision was an appropriate one. The FCS program was an

1 The FCS program was officially cancelled on June 23, 2009, and was broken up into several different acquisition programs to provide FCS components to all of the Army's combat brigades by 2025, continue developing FCS networking technology, and begin designing new ground combat vehicles. Marjorie Censer, "DOD Formally Cancels Future Combat Systems," *Inside the Pentagon*, June 23, 2009.

2 "Department of Defense Conference Call with Secretary of Defense Robert Gates and Gen. James Cartwright with Internet Security Writers," April 7, 2009, accessed at <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4398> on May 25, 2009.

3 "Defense Budget Recommendation Statement, As Prepared for Delivery by Secretary of Defense Robert M. Gates," Arlington, VA, April 6, 2009, accessed at <http://www.defenselink.mil/speeches/speech.aspx?speechid=1341> on May 25, 2009.

4 Gates, "Defense Budget Recommendation Statement."

5 See, for example, Thomas Donnelly and Gary Schmitt, "Obama and Gates Gut the Military," *Wall Street Journal*, April 7, 2009; and Donnelly, "Why Gates is Wrong," *Armed Forces Journal*, June 2009.

ambitious but fundamentally flawed attempt to transform Army force structure. Although its original intent—to improve the Army’s ability to meet emerging threats in a changing security environment—was reasonable, the program ultimately pursued extremely complex and costly solutions to a set of military challenges that have become less and less relevant since the program’s inception. This backgrounder provides a brief overview of the FCS program, assesses the various risks inherent in that program, and explains why the cancellation of its manned ground vehicles was justified.⁶

Army Modernization and The FCS Program

Over the past several years, the United States Army has been engaged in a broad modernization effort that, according to proponents, will enable it to respond more quickly and more effectively to twenty-first century security challenges. For example, as part of its Modularity Initiative, the Army is currently moving from a force structure based on divisions of 15,000 or more troops to one based on brigade combat teams (BCTs) of 3,000 to 4,000 soldiers.⁷ In addition, the Army is also making significant changes to the number and type of BCTs it plans to field, both within and between the Active and Reserve components of the force.

These changes, which are summarized in Figure 1, include an increase in the number of combat brigades in the Active Component along with a decrease in the total number of BCTs in the Army National Guard; the standardization of nearly all BCTs into three primary types (Heavy BCTs equipped with tracked armored vehicles such as the M1 Abrams tank, much lighter Infantry BCTs, and medium-weight Stryker BCTs built around a family of wheeled armored vehicles); and an overall reduction in the number of heavily armored brigades, which is being achieved by substantially decreasing the number of National Guard Heavy BCTs while adding more Infantry BCTs to the Active Component.⁸ When completed in 2013, this new organizational structure is expected to create a larger pool of readily deployable BCTs while also allowing the Army to more easily deploy less than a full division’s worth of troops.

6 This backgrounder draws upon and updates content from an earlier monograph in CSBA’s *Strategy for the Long Haul* publication series, Andrew F. Krepinevich, *An Army at the Crossroads* (Washington, DC: Center for Strategic and Budgetary Assessments, 2009).

7 Whereas divisions have traditionally comprised three (and, more recently, four) maneuver (or combat) brigades in addition to various support units, BCTs are single combat brigades with some organic support units such as artillery and engineers.

8 Interestingly, as a result of these changes nearly three quarters of the Army’s Heavy BCTs will be located in the Active Component of the force, while the Army National Guard will be composed primarily of Infantry BCTs (which are generally more useful in irregular conflicts, but which will not be able to deploy as often as units from the Active Component). Although one motive behind the Modularity Initiative was to increase the number of deployable BCTs and thus improve the Army’s ability to conduct manpower-intensive irregular warfare operations such as the ongoing conflict in Iraq, this suggests that the Army has determined that the Active Component should emphasize conventional combat operations instead.

Figure 1. Proposed Changes in Army Force Structure, 2003–2013⁹

2003			
Brigade Combat Teams	Active Component	Reserve Component (Army National Guard)	TOTAL
Infantry BCTs	11	10	21
Heavy BCTs	20	28	48
Stryker BCTs	2	0	2
TOTAL	33	38	71

2013			
Brigade Combat Teams	Active Component	Reserve Component (Army National Guard)	TOTAL
Infantry BCTs	23	20	43
Heavy BCTs	19	7	26
Stryker BCTs	6	1	7
TOTAL	48/45*	28	76/73*

* In addition to recommending the cancellation of FCS manned ground vehicles, Secretary Gates also called for the Army’s Active Component to field 45 rather than the planned 48 BCTs.

Until its recent cancellation, the Future Combat Systems program was the other key element of the Army’s modernization plan. Conceived in 1999 by then-Army Chief of Staff General Eric Shinseki, the underlying motive of the program was the need to resolve a dilemma: while the Army’s heavy combat units possess tremendous firepower, the size and weight of their armored vehicles make them difficult to transport in large numbers except by sea, which can take weeks or months depending on the number of brigades or divisions being deployed. These forces cannot, therefore, respond quickly to a crisis. Lighter infantry units, by contrast, can be deployed far more rapidly but lack the firepower of heavier forces. The Army’s solution to this dilemma was a new generation of manned ground vehicles, unmanned aerial and ground vehicles, advanced munitions, and tactical sensors, all of which were to be linked together by a state-of-the-art communications network.

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The FCS-equipped brigades were intended to be smaller, lighter, and more easily transportable than current armored forces. The manned ground vehicles themselves were initially designed to weigh less than twenty tons each, which would allow them to be transported by C-130 aircraft.¹⁰ Because they would share the same chassis, engine, and many of the same parts, the new vehicles would, the Army believed, require fewer support personnel and equipment to maintain. Moreover, because their

⁹ Congressional Budget Office (CBO), “An Analysis of the Army’s Transformation Program and Possible Alternatives,” June 2009, p. 6, Table 1-1.

¹⁰ Existing Heavy BCTs include variants of the M1 Abrams tank (between 60 and 70-plus tons each), the M2 and M3 Bradley Fighting Vehicles (approximately 30 tons each), M113 armored personnel carriers (12-14 tons each), and the M109 self-propelled howitzer (28-32 tons each). CBO, “The Army’s Future Combat Systems Program and Alternatives,” August 2006, appendix A.

hybrid diesel-electric engines would be more efficient, they would also require much less fuel to operate than current armored vehicles. The FCS designers believed all of this would significantly reduce the logistical burden of deploying and sustaining combat forces.

FCS BCTs were also intended to be at least as lethal and survivable as existing heavy forces. Constraints on size and weight, however, limited the amount of armor that the program's manned ground vehicles would be able to carry. This in turn would require FCS BCTs to operate very differently from current armored forces in order to survive on the battlefield: rather than closing with and destroying the enemy, FCS BCTs would depend upon enhanced situational awareness, increased mobility, and precision-guided munitions to avoid unfavorable engagements and locate, identify, target, and destroy enemy units from extended ranges.¹¹ In closer quarters, FCS vehicles would compensate for their lighter armor by using active protection systems to intercept incoming rounds before they could inflict significant damage.

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Although the program as originally envisioned would have outfitted all of the Army's combat brigades with FCS vehicles and equipment, later plans called for a total of only fifteen FCS BCTs, which would replace most of the Army's nineteen planned Heavy BCTs at a rate of one BCT per year beginning in 2015. In addition, elements of the FCS program (including unmanned vehicles, communications equipment, and sensors) would be distributed to all of the Army's Infantry BCTs between 2011 and 2025, a change from earlier plans to introduce FCS components to Heavy BCTs in stages.

Program Risk

While the FCS program offered the possibility of a new and more effective way to conduct land warfare, it also presented a host of risks for the United States Army. As a recent Government Accountability Office (GAO) report noted, "the program has yet to show that critical technologies are mature, design issues have been resolved, requirements and resources are matched, performance has been demonstrated versus simulated, and costs are affordable."¹² Four distinct types of risk stand out when assessing whether cancellation of the FCS ground vehicles was a wise decision: fiscal, technical, joint, and operational.

FISCAL RISK

Perhaps the most frequently cited risk associated with the FCS program was its enormous price tag. In 2003 when the program officially began, the Army estimated that it would cost \$92 billion. That number increased substantially, however, as the program was restructured several times to extend its overly-ambitious system development and demonstration phase, to gradually introduce more technologically mature FCS components

11 Joseph N. Mait and Jon G. Grossman, "Relevancy and Risk: The U.S. Army and Future Combat Systems," *Defense Horizons*, May 2002, p. 3; and Scott Boston, "Toward a Protected Future Force," *Parameters*, Winter 2004-05, p. 56.

12 GAO, Report to Congressional Committees, "Defense Acquisition: Decisions Needed to Shape Army's Combat Systems for the Future," March 2009, p. 7.

into the field rather than simply equipping brigades with the entire suite of FCS vehicles and equipment, and to repeatedly decrease the procurement rate for complete FCS BCTs. Thus the Army's most recent estimate placed the cost of the program at \$159 billion.¹³ Interestingly, the program's cost has remained nearly the same over the past several years despite the previous cancellation of four of the eighteen original FCS components, while the program itself was still several years away from the stage at which most cost growth in weapons systems development typically occurs.¹⁴ Moreover, the Army's figure of \$159 billion did not include an estimated \$21 billion to equip all of the Army's Infantry BCTs with FCS equipment through its revised "spin-out" program, or the additional \$80 billion that would have been required to fund enabling communications technologies that were not technically part of the FCS program but which were critical for it to function effectively.¹⁵ By 2015, FCS and its associated spin-out program would have accounted for approximately 40 percent of the Army's procurement budget—to fully equip only one third of active combat brigades. As a recent report by the Congressional Budget Office cautioned, "Dedicating such a large portion of the Army's procurement funding to the FCS-related programs might not have left sufficient money for purchasing other weapon systems... or needed support equipment."¹⁶

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TECHNICAL RISK

Any major modernization effort, especially one that attempts to incorporate new and unproven technologies, involves a degree of technical risk. As the Army's original concept for the FCS program noted, "Technology is not a panacea, and it brings its own set of unique challenges and vulnerabilities."¹⁷ Yet the demands of the program were particularly daunting, and required the Army to surmount formidable technological barriers across a wide range of areas: meeting strategic lift weight limitations as well as individual vehicle size and weight reductions, developing new munitions and a new propulsion system, creating

13 Two other independent cost estimates—one undertaken by the Institute for Defense Analyses and the other by the Office of the Secretary of Defense's Cost Analysis Initiatives Group—show results significantly higher than those presented by the Army. These estimates use historical cost growth rates for defense programs, whereas the Army estimates do not. Testimony, Paul L. Francis, GAO, "2009 Review of Future Combat System Is Critical to Program's Direction," Subcommittee on Air and Land Forces, Committee on Armed Services, House of Representatives, April 10, 2008, p. 10. Before the recent cancellation of the FCS ground vehicles, the Army also considered requesting an additional \$19 billion for the program. GAO, "Decisions Needed to Shape Army's Combat Systems for the Future," p. 17.

14 Valerie Reed and Jessica Guiney, "Future Combat Systems: Is the Army's Modernization Project Worth It?" *Defense Monitor*, July/August 2008, p. 1; and GAO, "Decisions Needed to Shape Army's Combat Systems for the Future," pp. 23–24.

15 GAO, "Decisions Needed to Shape Army's Combat Systems for the Future," p. 18; and Alex Klein, "Weapons Upgrade Faces Big Hurdles," *Washington Post*, April 8, 2008.

16 CBO, "An Analysis of the Army's Transformation Program and Possible Alternatives," June 2009, p. xix.

17 United States Army White Paper, *Concepts for the Objective Force* (Washington, DC: US Army, November 2001), p. 15.

advanced active protection capabilities, integrating the wide array of information systems that comprise the FCS battle network, and developing sufficient bandwidth to transmit the large volume of information that the network was being designed to handle.

Not surprisingly, then, the Army's ability to surmount these barriers in a reasonable period of time and at an acceptable financial cost appeared highly questionable. Consider that:

- > Although the FCS manned ground vehicles were designed to weigh less than twenty tons, that limit had already increased to between twenty-seven and thirty tons, undermining an initial program goal that FCS vehicles must be transportable by C-130 cargo aircraft;¹⁸
- > The amount of software required for the entire program had increased more than threefold since 2003 to over one hundred million lines of computer code, which not only highlighted the scope of technological effort required, but also raised concerns that the FCS network might be particularly vulnerable to hackers or the introduction of malicious code by foreign programmers;¹⁹ and
- > According to GAO, each of the three major elements that are critical to FCS vehicle survivability—information systems that locate the enemy and allow US forces to avoid close quarters engagements, active protection systems that destroy incoming munitions, and armor that is sufficient to absorb a direct hit—rely on immature technologies.²⁰

Complicating all of these factors, the FCS program schedule provided only limited time to identify and correct potentially serious technical problems. For example, the first large-scale demonstration of the FCS network was scheduled for FY 2012—one year after the vehicle prototypes (which would be highly dependent on the network for their effectiveness) would have already been completed, and only one year before the Army planned to initiate production.²¹

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JOINT RISK

The Army's concept of operations for the FCS also entailed a significant element of "joint risk," insofar as it depended upon other Services for command, control, communications, information, surveillance, and reconnaissance (C4ISR) capabilities, logistics, and strategic and operational lift. The Army also made major assumptions with respect to the type and level of support it would receive from the Air Force and the Navy in an anti-access/area-denial (A2/AD) environment,²² to include "a comprehensive joint force protection

18 CBO, "An Analysis of the Army's Transformation Program and Possible Alternatives," p. 12.

19 GAO, "Decisions Needed to Shape Army's Combat Systems for the Future," p.17; and Alec Klein, "The Complex Crux of Wireless Warfare," *Washington Post*, January 24, 2008.

20 GAO, "Decisions Needed to Shape Army's Combat Systems for the Future," p. 10.

21 *Ibid.*, pp. 16, 21–22.

22 In general, A2/AD capabilities are those designed to delay the arrival of US forces, to keep them beyond their effective range, and to defeat them if they try to penetrate the denial zone.

umbrella that includes air and missile defense [that] provides security of air and sea ports of debarkation, and enables uninterrupted force flow, against a diverse variety of anti-access threats, *including weapons of mass effects*.”²³ Many of these assumptions appear to have been overly optimistic. In particular, it is far from certain that the Navy and Air Force can or will develop the capabilities necessary to defeat an enemy’s anti-access forces, clear littoral zones and establish sea control over coastal areas to facilitate the resupply of rapidly deploying Army units, or provide their respective elements of a joint C4ISR architecture. This concern is highlighted by the Air Force’s Transformational Satellite Communications System, which was intended to help provide secure communications for FCS-equipped forces, but which had already been postponed last year before finally being cancelled by Secretary Gates in April.

OPERATIONAL RISK

Even if the fiscal risk associated with the Future Combat Systems could have been mitigated, if the technical hurdles could have been overcome, and if the other Services were willing and able to field the supporting capabilities necessary for the FCS to function effectively, one final issue remains: whether the program was the best way to modernize the Army given the types of threats the United States is likely to confront in the years ahead.

The FCS was designed principally for conventional combat operations against a mechanized force in relatively open terrain.²⁴ As the Army’s most recent Modernization Strategy notes, “Although *optimized for offensive operations*, the FCS BCT will be *capable of executing full spectrum operations*.”²⁵ Yet the possibility of a large-scale conventional conflict—particularly one in which armored ground forces will play a decisive role—appears increasingly remote. Today, for example, there are few potential adversaries with the motive and the means to pose such a threat to the United States. Moreover, the two nations that could in theory present this type of challenge—North Korea and Iran—are unlikely to fight the United States military symmetrically, or in a manner similar to the Iraqi Army and Republican Guard during Operation Desert Storm or the Second Gulf War. With respect to North Korea, the chief concern for American and South Korean military planners is not the possibility that Pyongyang’s large conventional forces will overrun the South, but rather its use of artillery against civilian as well as military targets, ballistic missile strikes (especially missiles armed with chemical and biological warheads), and rear guard attacks by the North’s special

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23 US Army Training and Doctrine Command, TRADOC Pamphlet 525-3-0, *The United States Army Objective Force Operational and Organizational Concept* (Draft) (Fort Monroe, VA: TRADOC, December 18, 2001), p. 20.

24 Kevin P. Reynolds, “Building the Future Force: Challenges to Getting Military Transformation Right,” *Contemporary Security Policy*, December 2006, pp. 449, 453.

25 LTG Stephen M. Speakes, *2008 Army Modernization Strategy* (Washington, DC: Department of the Army, July 25, 2008), p. 69 (emphasis added).

operations forces.²⁶ In the event of a conflict with Iran, the United States is also unlikely to find itself confronting massed ground forces in open terrain. Instead, as one study notes, Iranian military doctrine emphasizes “ballistic missile-based deterrence, unconventional operations, Iran’s strategic depth, and popular mobilization for partisan warfare.”²⁷

What, then, will tomorrow’s conflicts look like? Although it is impossible to predict the character of future wars with any certainty, the United States’ dominance in conventional warfare has given existing and prospective opponents (both states and non-state actors) a strong incentive to resort to asymmetric methods, against which FCS is either unnecessary or ill suited.

Hostile nations, for example, may rely heavily upon anti-access/area denial capabilities (such as mines, ballistic and cruise missiles, submarines, anti-satellite weapons, and weapons of mass destruction) that would make it difficult for the United States to introduce military forces into a theater of operations. In such a scenario, US air and maritime forces would first need to penetrate an opponent’s A2/AD network; if they were unable to do so, then the cost of introducing any ground forces—including FCS BCTs—would likely be prohibitive, and the possibility of doing so rapidly would be extremely low. If US air and maritime forces were able to defeat an A2/AD threat, however, they could also locate, track, and destroy any massed conventional ground forces, making the Future Combat Systems’ improved capabilities largely unnecessary. Alternatively, air and maritime forces might drive the enemy to disperse into terrain where FCS-equipped forces would be particularly vulnerable (e.g., urban areas).

Non-state actors such as terrorist organizations and insurgent groups present a different set of asymmetric challenges, interspersing themselves among civilian populations, using hit-and-run tactics, and exploiting urban or complex terrain that negates the American military’s advantages in information, surveillance, reconnaissance, and precision strike capabilities. As one recent Army publication acknowledges,

Conflicts of the foreseeable future may increasingly feature struggles to prevent non-state or individual actors from achieving domination through the use of violence. They will increasingly be waged among the people... They will be more leader intensive, requiring different training and skills. And they will require much greater effort on our part to work with indigenous forces and government organizations.²⁸

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26 Vernon Loeb and Peter Slevin, “Overcoming North Korea’s ‘Tyranny of Proximity,’” *Washington Post*, January 20, 2003; Roxana Tiron, “ROK Fears North Korean Ability to Wage Asymmetric War,” *National Defense*, January 2003; and Robert Karniol, “North Korea Rethinks War-Fighting Strategy,” *Straits Times*, March 16, 2009.

27 Steven R. Ward, “The Continuing Evolution of Iran’s Military Doctrine,” *Middle East Journal*, Autumn 2005, p. 559.

28 Department of the Army, *Stability Operations in an Era of Persistent Conflict* (Washington, DC: Department of the Army, June 1, 2008), p. 3.

In short, while Army officials often claim that the United States now confronts an “era of persistent conflict,” it is more accurate to say that it has entered an era of persistent *irregular* conflict.

Conflicts of this type are very different from conventional wars, however, and highlight several limitations inherent in the FCS concept. For example, although intelligence is essential in every form of warfare, it is particularly important in irregular conflicts such as counterinsurgency operations.²⁹ While the FCS array of sensors may have improved the Army’s ability to detect conventional enemy forces, it was far less likely to provide US forces with the type of information that they require in irregular campaigns, particularly the ability to discriminate between hostile elements and noncombatants. That information is more often derived from interactions with the local population than from unmanned vehicles or unattended ground sensors (although these capabilities can certainly prove valuable in a supporting role).

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Moreover, if FCS sensors cannot provide soldiers with sufficient information to locate, indentify, and neutralize enemy forces before they can attack, then vehicles without heavy armor will be dependent on their enhanced mobility and active protection systems to avoid or defend against attacks. Yet irregular operations are often conducted in areas where the mobility of FCS vehicles would be limited, including cities, mountains, or jungles. Active protection systems may also be of little use in confined or densely populated areas, given the danger they would pose to dismounted infantry and noncombatants.³⁰ In these circumstances the threat to FCS vehicles would be substantial, and would only continue to grow over time as non-state actors gain access to increasingly advanced improvised explosive devices, rocket-propelled grenades, anti-tank guided munitions, and other capabilities that are becoming more available throughout the developing world.

Conclusion

Given the many risks associated with the FCS program, it is hardly surprising that Secretary Gates chose to cancel it. His decision should be commended. Yet the question of how the Army will modernize its forces in light of this decision remains. As one FCS proponent has suggested, “What ultimately replaces the current FCS vehicle program will—should—be very much the same.”³¹ In fact, a number of FCS components will still be introduced to units throughout the Army over the next decade and a half, while reports indicate that the Army also intends to move quickly in designing a new series of ground combat vehicles and begin producing them within five to seven years—roughly the same

29 U.S. Army Field Manuel No. 3-24/Marine Corps Warfighting Publication No. 3-33.5, *Counterinsurgency* (Chicago: University of Chicago Press, 2007), pp. 79–80.

30 Boston, “Toward a Protected Future Force,” p. 59.

31 Donnelly, “Why Gates is Wrong,” p. 54.

timetable as the earlier FCS manned ground vehicle program.³² Apparently, the Army will attempt to incorporate as much of the FCS program as possible into any new design. According to Chief of Staff General George Casey, “A lot of folks worry that we wasted a lot of money on FCS, but that’s just not true. We intend to take that technology that we’ve got and move forward.”³³ As the Army does so, however, it must develop a modernization strategy that will mitigate the risks described above, in order to avoid repeating the mistakes of the past.

³² Jen DiMascio, “Army Wants to Save Pieces of FCS,” *Politico*, May 14, 2009; and Kris Osborn, “FCS is Dead; Programs Live On,” *Defense News*, May 18, 2009.

³³ Quoted in DiMascio, “Army Wants to Save Pieces of FCS.”

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