Air Force Transformation

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Summary

Many believe that the Department of Defense (DOD)—including the Air Force—must transform itself to ensure future U.S. military effectiveness. The Air Force has a transformation plan that includes advanced technologies, concept development, and organizational innovation. Issues for Congress include the efficacy of this plan, its feasibility, and the attendant costs. This report will be updated.

Introduction

Beginning in the 1990s, observers have discussed the need for DOD to transform in light of rapidly changing international circumstances.[1] Both the Clinton and George W. Bush Administrations argued that the United States must embark on a transformation path today, to meet a range of future security challenges.[2] While the United States is today's dominant military power, past dominant powers have been surprised by changing circumstances and unforeseen threats.[3] Further, the need for DOD to confront non-state actors (e.g., terrorists, insurgents, international organized crime, narco traffickers)—a very different challenge than confronting nation-states, may grow in the future.

In May 1996 the Chairman of the Joint Chiefs of Staff published *Joint Vision 2010*, a conceptual template for how America's armed forces may exploit technological opportunities to achieve new levels of effectiveness in joint military operations. This transformation guide was updated, expanded, and republished in May 2000.

DOD's 2001 Quadrennial Defense Review (QDR) described six critical goals to focus transformation efforts: (1) protecting critical bases of operations and defeating weapons of mass destruction; (2) assuring information systems and conducting effective information operations; (3) projecting and sustaining U.S. forces in distant anti-access environments; (4) denying enemies sanctuary by providing persistent surveillance; (5) enhancing the capability and survivability of space systems; and (6) leveraging information technology and innovative concepts to develop an interoperable, joint command, control, communications and surveillance architecture.[4] In November 2001, DOD established a new office to manage its transformation efforts.

It is generally accepted that transformation will require new technologies, new operational concepts, and organizational innovation. Transformation will likely require more emphasis on service and joint concept development and experiments, science and technology efforts, tied closely to warfighters, processes that identify and quickly operationalize promising concepts, and interoperability efforts critical for effective coalition operations.[5] DOD and the military services have developed transformation plans and, to varying degrees, embarked upon them. Yet, questions remain about cost, schedule, and the need to balance transformation objectives with near term modernization needs. Transformation is not modernization, which aims at improving existing capabilities. Thus, transformation and modernization may diverge, and can compete for funds and priority. The need to "re-set" equipment worn-out in the conflicts in Afghanistan and Iraq also competes with transformation.

[1] The 1997 Quadrennial Defense Review (QDR); The National Security Strategy of the United States; The Secretary of Defense's Annual Report to the President and Congress; The 1998 National Defense Panel; P.L. 105-261, Title IX, Subtitle A, Sec. 903; The 2001 QDR.

[2] Secretary of Defense William S. Cohen, *2001 Annual Report to the President and the Congress*; George W. Bush, "A Period of Consequences," speech at the Citadel, Sept. 23, 1999.

[3] Eliot Cohen, "Defending America in the Twenty-first Century," *Foreign Affairs*, Nov. 2000.

[4] U.S. Department of Defense, *Quadrennial Defense Review Report*, Sept. 30, 2001, p. 30.

[5] Secretary of Defense William S. Cohen, *2001 Annual Report to the President and the Congress*, Ch. 11, "A Strategy for Military Transformation."

Air Force Transformation Activities

The Air Force's transformation process is encapsulated in its Transformation Flight Plan (AFTFP), first published in 2003 and updated in 2004. The AFTFP documents ongoing Air Force transformation efforts and ties them to the 2001 QDR's six operational transformation goals. The AFTFP describes the Air Force's core competencies, efforts to adapt the Air Force culture and organizational structure, six concepts of operations which are under development and eight transformational capabilities that will enable them. The 2004 AFTFP departs from the 2003 version by combining some of the concepts of operation (CONOPs) being pursued, and articulating new efforts in business transformation. Unlike the 2003 version, the 2004 AFTFP also discusses the role of "battlefield airmen" and helping U.S. allies to transform.

The Air Force defines transformation as "A process by which the military achieves and maintains asymmetric advantage through changes in operational concepts, organizational structure, and/or technologies that significantly improve warfighting capabilities or ability to meet the demands of a changing security environment."[6] By this definition, Air Force leaders say that the Air Force has been engaged in a military transformation for decades and that current activities are a continuation of this process.[7]

Air Force officials contend that in the 1991 war with Iraq the Air Force demonstrated two of the three required elements of a military transformation: the use of new technologies (stealth and precision guided munitions) to enable novel operational concepts (effects-based planning, and parallel warfare) and "leap-ahead" capabilities (the total destruction of Iraq's air power capabilities). Following this war, the Air Force launched organizational changes (joining the Strategic and Tactical Air Commands, and introducing the Expeditionary Aerospace Force (EAF)), that represented the final piece of this first phase of Air Force transformation.

Whether the Air Force view on its state of transformation is accurate or not, it appears that the Air Force has taken steps aimed at transformation, and has established processes designed to guide these efforts. The Air Force has established six functional Battle Labs to develop new ideas and concepts. The Air Force also annually conducts wargames and experiments such as the Expeditionary Force Experiments. An Innovation Steering Group was established to guide transformation activities, and ensure "warfighter" inputs and feedback into the process.

The Air Force has also made changes to weapon acquisition and budget development and allocation processes. For example, the Air Force Resource Allocation Process, initiated in October 2000, is designed to give the Major Commands (e.g., Air Combat Command, Space Command, and Air Mobility Command) a greater voice in the budgeting process. This increase in the Major Commands' voice in budgeting has been reflected at higher levels within DOD.[8] According to the 2004 AFTFP, the Air Force's goal is to "shift from threat- and platform-centric planning and programming to adaptive and capabilities-and effects-based planning and programming."[9] While Air Force officials express satisfaction with achievements to date, they say

[6] U.S. Air Force, *The USAF Transformation Flight Plan, FY03-07*, HQ USAF/XPXT, p. iv.

[7] John Roos, "Effect-Based Operations," *Armed Forces Journal International*, Mar. 2001, p. 66; Brig. Gen. David Deptula, *U.S. Air Force Transformation Review*, Mar. 9, 2001, p. 5.

[8] Amy Butler, "Combat Commanders To Direct Unprecedented Spending at Pentagon," *Defense Daily*, Feb. 11, 2004.

[9] U.S. Air Force, *The U.S. Air Force Transformation Flight Plan 2004*, HQ USAF/XPXC, p. 3.

that Air Force transformation is not complete. The Air Force is continuing the process by pursuing advanced technology, new operational concepts, and organizational innovation.

The Air Force is pursuing technologies that it believes could engender new operational concepts, to dominate air, space, and cyberspace. These include high performance stealthy aircraft (the F-22 and Joint Strike Fighter (JSF)), unmanned combat aerial vehicles (UCAVs), directed energy weapons (such as the airborne laser), miniaturized munitions, and advanced command, control, communications, computers and intelligence (C^4I). The Air Force's space-related programs are in varying states of maturity, and include space-based radars, space-based lasers, micro satellites, "next generation" missile defense, and space operations vehicles. Air Force efforts in the area of cyberspace include computer network attack, computer network defense, and information assurance activities. Both space and cyberspace capabilities are expected to become increasingly important as the Air Force and the other services leverage U.S. information technology assets in numerous warfighting applications.

The impact of new technologies is limited if they do not create new warfighting approaches. The Air Force says it is developing new operational concepts designed to exploit emerging technologies and enable new capabilities. These operational concepts are in varying stages of maturity and they often overlap. Between 2003 and 2004, the Air Force has made changes to the CONOPs it says are transformational and now say that developing these CONOPs (Global Mobility, Persistent Attack, Global Strike, Homeland Security, Nuclear Response and Space & C4ISR), are an expression of "capabilities-based" planning and programming.

The final facet of the Air Force's ongoing transformation effort is organizational innovation. Organizational changes can be the most difficult and most important piece of the transformation puzzle. Organizational change is difficult because it involves human factors; non-quantifiable, social and psychological issues, such as tradition, culture, and mind set. However, organizational change is central to transformation, because it codifies and institutionalizes new capabilities and ways of doing business.

Refining the EAF is the Air Force's main effort in the area of organizational change. The purpose of the EAF is to provide a structure and schedule to effectively meet contingency demands. The EAF organizes much of the Air Force into 10 Aerospace Expeditionary Forces (AEFs) that include combat, mobility, and combat support forces that rotate on a 15-month training and deployment cycle. Each AEF includes approximately 175 aircraft and 20,000 active and reserve personnel. AEFs (and two rapid-reaction Aerospace Expeditionary Wings) form the heart of the EAF, but strategic mobility forces and so-called low density/high demand (LD/HD) forces (such as U-2s and JSTARS) are also key elements. The Air Force hopes to deploy an AEF in 48 hours, and up to five AEFs within 15 days. Each AEF is tailored to the regional commander's needs.

The Air Force completed its first full AEF rotation and began its second in December 2000. The Air Force learned some lessons from this first cycle, and refined the concept. It created additional LD/HD crews and linked them to the AEFs. Although this does not reduce the burden high deployment rates place on aircraft, it does help reduce the stress on people. The Air Force conducted another review following September 11th. This review spurred more changes to the AEF, such as more evenly distributing Reserve and Guard personnel throughout the 10 AEFs. To meet military requirements in Afghanistan, Iraq, and Korea, the Air Force deployed several units outside the normal 90-day AEF rotation between January and July 2003. Starting in July 2004,

120-day AEF rotations began. While the Air Force reported in early 2004 that the AEF had returned to its 90-day schedule, thousands of troops remained on extended deployments.[10] In 2006 the Air Force reported that the number of airmen deployed beyond 120 days was increasing.[11]

Issues for Congress

The 110th Congress may, as part of its defense oversight function, assess the merits of the Air Force's transformation program: Is it aggressive enough? Is it feasible? Will it achieve the desired effect? Are transformation goals balanced with modernization needs? The debate over the F-22 and JSF offers an example of how transformation questions intersect, and may increasingly vie for Congressional attention. Evident in this debate are contrasting views on technologies to pursue, how aggressively to pursue them, and the difference between transformation and modernization.

Critics of USAF plans to acquire F-22s and JSFs argue that these aircraft are modernization programs, and that the Air Force's requirement for new fighters would be adequately satisfied in the near term by upgrading and procuring F-15s and F-16s. They argue that the effectiveness of today's fighter and attack aircraft can be maintained through upgrades to their radars, command and control systems, and weapons. Future adversaries, they argue, will increasingly employ mobile cruise, ballistic and surface-to-air missiles that will jeopardize the forward operating bases that shorter range military aircraft—such as the F-22 and JSF—will require to generate significant sortie rates. By cancelling or truncating the F-22 and JSF, critics argue, the Air Force can free substantial funds that can be used to more aggressively pursue programs such as space-based assets, directed energy weapons, UCAVs, or long range bombers. Such programs are more likely to overcome tomorrow's anti-access threats, and offer more transformation potential.

Supporters of the Air Force's transformation plan counter that while the F-22 and JSF do modernize today's fighter and attack aircraft force, they will also transform air operations. Their combination of stealth and high aeronautical performance (e.g. maneuverability, speed, and endurance), will enable radical capabilities and operational concepts. Further, they argue, along with long-range bombers, stealthy high-performance aircraft offer the best potential for overcoming tomorrow's anti-access threats. Air Force supporters also contend that F-15s and F-16s are nearing the end of their useful lifetimes. Spending today's money perpetuating 1970s-era technology, they argue, is not wise. Finally, supporters note that the Air Force is already pursuing space-based assets, cyberspace operations, directed energy weapons, and UCAVs. The Air Force's current budget makes it difficult to spend more on these programs, given other pressing priorities.

An issue implicit in the debate described above, is the pace and aggressiveness with which the Air Force should pursue potentially high-payoff technologies such as space-based assets and unmanned aerial vehicles (UAVs and UCAVS). Many analysts argue that exporting Air Force operations from the atmosphere to outer space could increase their effectiveness and survivability, and should therefore be pursued aggressively; perhaps at the expense of other programs. Others strongly support increased use of UAVs to engender new warfighting capabilities, and to reduce the risk of U.S. casualties. In addition to setting aggressive goals for fielding UAVs, advocates

[10] Gordon Trowbridge, "AEF Schedule Back on Track," *Air Force Times,* Feb. 23, 2004.

[11] John Tirpak, "Expeditionary—and Seriously Extended," *Air Force Magazine,* Apr. 2006.

also find fault with the decision not to accelerate procurement of the Global Hawk UAV, the Air Force's next generation airborne intelligence, surveillance and reconnaissance (ISR) platform. This perspective argues that the Air Force is prone to sacrificing transformation opportunities for modernization needs, and that a balance between the two must be found.

A balance may also need to be struck between supporting current operations and investing in transformation. Many fear that the costs of the ongoing war in Iraq will consume transformation funding. Some DOD officials argue, however, that the war in Iraq is not shortchanging transformation. In fact, they say, the war in Iraq is actually accelerating transformation efforts.[12]

Air Force officials argue that they are pursuing transformation programs as aggressively as is prudent within projected budgets. Current readiness shortfalls make Air Force modernization a tangible and high priority, that should not be sacrificed for transformation programs that may or may, not pay off years hence. Also, senior Air Force leaders have said that transformation "very much depends" on another round of base closures.[13] If the Air Force is asked to more aggressively lead DOD's efforts in these transformation areas, they argue, this effort should be funded in addition to modernization. Perhaps a re-examination of the traditional division of DOD's budget among the Services is appropriate, they argue.

Air Force organizational activities are also an issue. The Air Force believes that refining and implementing the EAF will have a transformational effect. Air Force officials say that the EAF compels the Air Force to organize and think about itself in terms of composite teams, not along functional "stove pipes." It also ensures that the units deployed to conduct a mission are at the peak of their training and readiness. Furthermore, Air Force officials believe that the EAF creates an expeditionary mind set and provides an effective mechanism for reducing personnel tempo, which in turn could ameliorate recruitment and retention problems. Finally, the Air Force believes that the EAF provides a basis for additional organizational innovation. As an example, Air Force officials cite the GSTF, which will be composed of the first two or three AEFs deployed to a theater.

Critics suggest that while a useful force management tool, the EAF concept is not transformational. The EAF, they argue, is a more modest organizational change (like changes instituted by the Navy many years ago) that simply facilitates rotational forward deployments of forces. To transform the Air Force's warfighting capabilities, the EAF, or other organizations, must inherently leverage new technologies and enable new operational concepts. These characteristics are not evident in the EAF, they argue. Furthermore, the recent fluctuations in the 90-day AEF deployment cycle shows, detractors argue, that this concept is still a work in progress.

A great debate also revolves around some of the Air Force's transformation operational concepts, such as Rapid Halt Operations.[14] While many in the Air Force believe that air power alone can defeat or at least stalemate enemy ground forces, many other analysts maintain that only ground

[12] Jefferson Morris, "Iraq Operations Accelerating Transformation, Cebrowski Says," *Aerospace Daily & Defense Report,* Aug. 4, 2004.

[13] "Air Force Transformation Depends on Base Closing Round, Jumper Says," *Aerospace Daily & Defense Report,* June 28, 2004.

[14] "Rapid Halt Operations" did not appear as a CONOP in the 2004 AFTFP.

forces can capture and control enemy territory and forces. Do the 2004 AFTFP CONOPS suggest a similar "go it alone" mindset?

Many studies say that another issue for Congress may be its own role in transformation.[15] Some argue that transformation faces powerful status quo opposition, and will be infeasible without congressional support. They advocate new working arrangements between the Services and Congress. These studies assert that to achieve transformation, Congress should consider modifications to current budgetary oversight mechanisms, such as bi-annual budget authority, giving DOD managers more flexibility to shift funds between accounts, and removing statutory barriers to a greater private role in areas such as defense depot maintenance.

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[15] 1998 National Defense Panel, pp. vi, 67, 82; Defense Science Board on Transformation, p. 28.