The rise of military transformation

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2   The Rise of Military Transformation

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Armed forces cannot just change these days; instead, they must transform. Instigated by Secretary of Defense Donald Rumsfeld, US armed forces have embarked on a deliberate program to improve the agility, lethality, and expeditionary capabilities of the US military. European militaries too must now transform. After the Prague Summit of November 2002, "Transformation" became institutionalized within NATO, and operationalized with the creation in 2003 of Allied Command Transformation (ACT) in Norfolk, Virginia. NATO's Transformation program is an ambitious institutional effort—and an imperative in the eyes of US political leaders—to get European nations to converge in their defense policies in a very particular direction.

The first deputy commander of ACT, the British Admiral Ian Forbes, emphasized the strong connection with the US Transformation program when he stated in 2003 that "[a] transformational process akin to that which has been taking place in the United States is essential to modernize the Alliance's capabilities and ensure that they stay consistent with US military thinking and development."[1] Within many European armed forces, Transformation (with a capital T) is now a formally accepted idea, objective, program, topic of academic debate, pretext for reprioritization of investments, and the main reason for the existence of several new defense organizations.

As Transformation captures recent developments in US military technology and ideas and the declared aspiration of European nations, Transformation—the US and NATO version of it—offers us a useful template for approaching the issue of contemporary military innovation and change in Europe. Moreover, NATO is an obvious and important avenue of infusion of US military ideas

and technology. For many European nations, NATO is one of the prime international institutions through which they collectively respond to international security issues. Many smaller nations in particular, and those nations that have recently joined NATO, also look to NATO to inform and sometimes justify their national defense policies. NATO furthermore acts as an "agent for change," a role it has deliberately and explicitly endorsed with the creation of ACT.

Transformation is therefore a useful tool—a conceptual lens—for approaching the question of whether European nations are in fact explicitly adopting US military ideas and technology, and to what extent. Subsequently, tracing the history and trajectory of US transformation can inform us about the expected trajectory of European armed forces if they indeed want to make good on their stated intentions. If European nations use Transformation as an idea to inform their future, the history of US Transformation will show us the mold, and the future of European militaries lies in no small measure in the history of US transformation. However, Transformation has also proven to be a fluid idea, changing somewhat over time, and US Transformation is similar to, but still different from, NATO Military Transformation.

This chapter charts the rise of Military Transformation in both the US and European contexts. It begins by using official US documents to develop a perspective on the meaning, key concepts, and implications of US Military Transformation. Second, the chapter will show how those key concepts, which are at the heart of Transformation, emerged from developments in the 1990s and resulted in a specific way of warfare. The final part of the chapter discusses the European context in which the idea landed in 2002, and shows how Transformation in NATO gained a slightly different, or rather, additional meaning.

THE US POLICY PERSPECTIVE

The term "defense Transformation" came into common use in the late 1990s and has been defined in various ways. One dominant perspective stresses the nature of the process of change. Prompted by significant changes in technology or the emergence of new and different international security challenges, this perspective describes transformation in terms of comprehensive, discontinuous, and possibly disruptive changes in military technologies, concepts of operations (that is, approaches to war-fighting), and organization, in contrast to incremental or evolutionary change that marks normal defense modernization. In 2003 the US Department of Defense (DoD) in one document defined transformation in this way:

> a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world. [. . .] It does not have an end point. Transformation anticipates and creates the future and deals with the co-evolution of concepts, processes, organizations, and technology. Profound change in any one of these areas necessitates change in all.[2]

In addition, the process of Transformation would touch noncombat aspects such as training, personnel management, logistics, and worldwide basing arrangements, and affect DoD business policies, practices, and procedures, geared toward achieving efficiencies and reducing costs as well as the time between developing and fielding new weapon technologies.

In the wake of Operation *Enduring Freedom* in Afghanistan, Transformation also gained operational substance and bureaucratic traction. In a widely quoted article in *Foreign Affairs,* Donald Rumsfeld saw in the Afghanistan operation both a validation of the idea of Transformation and the future trajectory of it.[3] In this perspective, Transformation concerns improving mobility, agility, and lethality. Key to this process was the further development and implementation of technologies and organizational adjustments to effect network-centric warfare (NCW), a concept that emerged in 1998 (as will be described below). Second, ground forces would in the future need to operate increasingly like special operations forces (SOF). Meanwhile, the improved joint interoperability achieved through NCW capabilities would foster precision-strike operations. Acting hand in glove with these tenets was the third element of Transformation: making US military forces more expeditionary.

These notions found their way into DoD plans. In 2003, Rumsfeld developed six critical operational goals that would focus transformation efforts: (1) protecting critical bases and defeating chemical, biological, radiological, and nuclear weapons; (2) projecting and sustaining forces in anti-access environments; (3) denying enemy sanctuary; (4) leveraging information technology; (5) ensuring information systems and conducting information operations; and (6) enhancing space capabilities. Through the Office of Force Transformation, created by Rumsfeld and headed by the conceptual father of the NCW concept and Transformation proponent, Vice-Admiral Arthur Cebrowski, the US DoD promulgated a number of documents that laid out the plans for defense transformation.[4] They called for shifting the US military away from a reliance on

TABLE 2.1

The Changing Security Environment

From	To
A peacetime tempo	A wartime sense of urgency
A time of reasonable predictability	An era of surprise and uncertainty
Single-focused threats	Multiple, complex challenges
Nation-state threats	Decentralized network threats from nonstate enemies
Conducting war against nations	Conducting war in countries we are not at war with
"One size fits all" deterrence	Tailored deterrence for rogue powers, terrorist networks and near-term competitors
Responding after a crisis starts	Preventive actions so problems do not become crises.

massed forces, sheer quantity of firepower, military services operating in isolation from one another, and attrition-style warfare, and toward a greater reliance on joint (that is, integrated multiservice) operations, NCW, Effects-Based Operations (EBO), speed and agility, and precision application of firepower. These changes constituted a shift from an industrial-age approach to war to an information-age approach.[5] But whereas Transformation initially was technology driven with an eye on improving combat *and* cost effectiveness, from 2003 onward Transformation was seen as an integral part of the administration's wider policy response to the new security environment post 9/11, an environment that the 2005 *Quadrennial Defense Review*, submitted to Congress on 6 February 2006, described in terms of shifts (see Table 2.1).[6]

The same document subsequently states that these shifts in the environment require changes—Transformation—in the structure and modes of operations of US armed forces (see Table 2.2).

The military services and DoD agencies subsequently developed Transformation plans (or road maps). The Army's Transformation plan centered on reorganizing the Army into modular, brigade-size forces called Units of Action (UAs) that can be deployed to distant operating areas more easily and can be more easily tailored to meet the needs of each contingency. Key elements of the Air Force's Transformation plan included reorganizing the service to make it more expeditionary, and exploiting new technologies and operational concepts to improve dramatically its ability to deploy and sustain forces rapidly, to dominate air and space, and to rapidly identify and precisely attack targets on a global basis. Finally, Naval Transformation centered on operating in littoral

TABLE 2.2

Consequences for Defence Planning

From	To
A focus on kinetics	A focus on effects
Twentieth-century processes	Twenty-first-century integrated approaches
Static defense, garrison forces	Mobile, expeditionary operations
Under-resourced, standby forces	Fully equipped combat ready units
A battle-ready force (peace)	Battle-hardened forces (war)
Large institutional forces (tail)	More powerful operational capabilities (teeth)
Major conventional combat operations	Multiple irregular, asymmetric operations
Separate military service concepts of operation	Joint and combined operations
Forces that need to deconflict	Integrated, interdependent forces
Emphasis on ships, tanks and aircraft	Focus on information, knowledge, and timely, actionable intelligence
Massing forces	Massing effects
Set-piece maneuver and mass	Agility and precision
Single service acquisition systems	Joint portfolio management.
Service and agency intelligence	Truly Joint Information Operations Centers
Vertical structures and processes (stovepipes)	More transparent, horizontal integration
Moving the user to the data	Moving data to the user
Predetermined force packages	Tailored, flexible forces
Department of Defense solutions	Interagency approaches

(that is, near-shore) waters, new-design ships requiring much smaller crews, directly launching and supporting expeditionary operations ashore from sea bases, more flexible naval formations, and more flexible ship-deployment methods. All transformation plans stressed greater jointness and implementing NCW.[7]

THE MOTHER OF TRANSFORMATION: DESERT STORM

The logic of the argument of the Transformation initiative follows and flows directly from the rapid developments in military technology of the 1990s, which, some argued, constituted nothing less than a Revolution in Military Affairs (RMA). Transformation in that sense can be seen as the culmination of fifteen years of rapid military changes within the US armed forces and can also be equated with the emergence of the so called New American Way of War. And arguably this can be traced back to Operation *Desert Storm* (the Gulf War,

1991). While the RMA and ideas embedded in network-centric warfare can be traced back to Vietnam, the teachings of John Boyd and the AirLand Battle concept, *Desert Storm* can be considered the spark plug of much of the debate on the RMA, and subsequent efforts to make it a reality.[8] Rightly or wrongly, *Desert Storm* was taken to represent a new age of warfare, and high-ranking US politicians such as Dick Cheney and William Perry saw a revolutionary advance in military capabilities in the Gulf War.[9] *Desert Storm* was a watershed because the way it unfolded surprised even US military experts. The thirty-nine days of massive yet precise air attacks preceding the four-day ground campaign was a break with the common and expected pattern of operations.[10] Another factor was the "CNN effect." For the first time the entire world could witness the effectiveness of modern Western military systems on television just hours after the actual attacks, and sometimes even in real time when cruise missiles were recorded buzzing through the streets of Baghdad. A new image was created.

Two icons stood out in this image.[11] The first was the demonstrated advance achieved in precision in detection, identification, and attack capabilities. *Desert Storm* heralded the age of precision warfare (remarkable considering that only 5 percent of all ordnance dropped was actually precision guided). Attacks employing precision-guided munitions (PGMs) proved thirteen times as effective as nonprecision attacks.[12] Stealth was the second icon, and for most people, even military experts, a novelty in its effectiveness and strategic value. It has been labeled, with some justification, revolutionary. With a radar reflection surface similar to that of a golf ball, F-117 stealth fighter aircraft could operate almost unseen deep in enemy territory from the first moment of the war, sometimes attacking two targets per mission in the Baghdad area, which sported the highest density of air defense systems in the world.

The new dominance of offense over defense in air warfare through the use of stealth, stand-off weapons, electronic warfare, and drones offered a sanctuary that could be exploited for various purposes. And even nonstealth aircraft, if equipped with precision munitions and precision information, could steer clear of even advanced air defense systems by flying at high altitude while maintaining accuracy of attacks. *Desert Storm* demonstrated that advanced air power capabilities offer the option to open a flank in the third dimension. Intense day and night air attacks with PGMs offered the possibility of relatively quick success against old-fashioned armed forces relying on massed mechanized ground combat. In addition, relentless PGM attacks on trucks and bridges was effectively used to halt the flow of supplies to the Iraqi frontline and the movement

of units within the Kuwaiti theater. This drastically shortened the time required and the risk involved for ground units to complete the coalition victory.

Moreover, precision, stand-off, and stealth capabilities offered new possibilities for strategic attacks against multiple target-categories of a nation-state (for example, military units, leadership, and critical infrastructure). Even if targets were in the vicinity of civilian objects, it was possible to attack these near-simultaneously in order to rapidly degrade the functioning of the entire "enemy system." Instead of the traditional model, in which a country's defeat required first a decisive victory over the armed forces, *Desert Storm* heralded the "inside-out" model. The overwhelming air power capabilities offered the potential to strike at the heart of a country (the regime) from the first moment of a campaign and cripple the strategic command capabilities before attacking fielded forces.[13]

Several lessons were drawn from *Desert Storm*. The demonstrated new air power capabilities promised "overwatch" over a crisis area or during posthostilities, such as was practiced later over Iraq during Operations *Southern* and *Northern Watch*. It appeared that diplomacy could now be bolstered by a credible force able to strike accurately, at short notice if necessary, without undue risk of casualties. It also promised the ability "to seize and maintain the initiative, to dominate the course of hostilities, to deny the adversary the ability to force an alteration in US strategy and to foreclose its pursuit of strategic alternatives, and the capacity to defeat adversary forces in the field."[14]

Desert Storm also hinted at implications for force structures and joint doctrine. As Eliot Cohen observed, platforms would become less important, while the quality of what they carry—sensors, munitions, and electronics of all kinds—would become critical. In addition, the quality and speed of the command process itself was becoming a war-winning element. *Desert Storm* was heralded as the first information war. The flow of secure, rich, relevant, and timely information, and the denial of it to the opponent, was increasingly becoming a decisive front. Moreover, the age of mass warfare was regarded as drawing to an end. It appeared that "everything that moves can be seen and everything that can be seen can in principle be hit."[15] Massing of ground troops and armored units was becoming more and more dangerous and outdated. The industrial-age warfare model that had existed since World War I now seemed to be surpassed by another—yet to be defined—model.

Another implication was that military campaigns could be designed differently in the future. The enormous effects of air attacks on ground units suggest-

ed that, in future, ground operations should begin only after optimal conditions have been created by air attacks so as to minimize risk. In the Kuwaiti theater, coalition air attacks managed to destroy sometimes more than 50 percent of Iraqi armor and artillery equipment, and Iraqi ground troops surrendered by the thousands after being pounded by B-52 strikes or leaflets threatening such attacks. The correlation of this trend was the suggestion that control of territory could no longer be equated or ensured with physical presence of ground troops. Nonlinear warfare could be envisioned in which small teams of ground troops would operate deep within enemy territory in close coordination with air power, replacing linear warfare, defined by long, closed frontlines of army units advancing slowly. It indicated that joint doctrine, too, had to be amended, to reflect the insight that the ground phase of a military campaign could start much later and would be a function of the effectiveness of the air campaign.

The experience of *Desert Storm* also held another promise for the future. It suggested that military operations need not necessarily entail massive civilian casualties and that "collateral damage" to civilian infrastructure could be contained. In addition, the risk for coalition troops was lower than expected. Approximately 148 coalition military personnel died in combat, a regrettable but also unprecedentedly low number considering the scale of the operation and the pessimistic prewar estimates of 10,000 coalition casualties.[16] Indeed, the Gulf War departed from others in its speed, scope, and relative "cheapness" in terms of casualties. Keaney and Cohen concluded that "the ingredients for a transformation of war may well have become visible in the Gulf War, but if a revolution is to occur, someone will have to make it."[17]

THE EMERGENCE OF NETWORK-CENTRIC WARFARE

And that is exactly what the US military and its industrial suppliers set out to do. Ever since the Gulf War, experiments and concept development aimed to fully exploit the technological advances that *Desert Storm* foreshadowed.[18] Prime objectives were to make the battlefield more transparent, to achieve "information dominance" and create situational awareness at all command levels, to disseminate target information in a timely manner to those who needed it, and to adjust command and control doctrine accordingly. The objective was to shorten the "sensor-to-shooter" time, and to improve responsiveness. In short, the US military aimed to improve military effectiveness on three different axes: lethality, visibility, and agility.[19]

Three technological streams were instrumental in this effort. First, informa-

tion technology: the rapid increase in computing power and transmission capabilities of modern communication systems offered the opportunity to analyze, disseminate, and access unprecedented quantities of information in ever shortening time. Efforts were directed at fusing data-streams originating from different units, services, nonmilitary governmental organizations such as the CIA, and from different sensor platforms (satellites, Early Warning [EW] aircraft, Unmanned Aerial Vehicles [UAVs], forward air controllers) into coherent "pictures" in command centers offering greater situational awareness. Experiments explored ways to organize the flow of information, to eradicate organizational barriers to information access, and to define the appropriate level of (de)centralization of command in light of the increasing availability of information at lower command levels and the consequences of operating over vaster distances.

The second and closely related technological stream was the development in surveillance and sensor capabilities. Detecting, observing, and tracking objects of military concern during all weather, day and night, on a routine basis became increasingly feasible, also for nonspecialized air and ground combat systems. Tanks, armored personnel carriers, and individual soldiers gained night vision equipment, in addition to GPS location devices, data links, and mobile computer displays, all improving their situational awareness. Night precision air attacks and all-weather/beyond-visual-range air combat operations used to be the preserve of specialized aircraft. New radar systems, onboard infrared sensors, and improved navigation equipment brought these within reach of aircraft such as the F-16 and A-10, originally designed as simple, lightweight, day fighter aircraft.

The 1990s also saw the (albeit reluctant) rise of a new generation of UAVs that operate at medium and high altitude, mainly at the operational level of war, in contrast to previous systems that were merely for tactical artillery spotting. These new vehicles could perform dull, dirty, and dangerous reconnaissance missions over enemy territory for twenty-four to forty-eight hours nonstop. Initially equipped for photoreconnaissance, the emphasis gradually shifted to multispectral sensor suites and to realizing the ideal of real-time "streaming" of video through various data-links to other aircraft and command centers. Operating at 65,000 feet, the large Global Hawk UAV can survey 40,000 square miles and focus on 1,900 spot targets in twenty-four hours by day or night under all weather conditions, with a resolution of 30 centimeters from a distance of 100 kilometers.[20] These developments translated into an improved ability to spot, identify, and track potential or actual targets no matter what their speed and,

if necessary, provide the information through data-links in real time to command centers and weapon platforms.

The third stream of technological developments concerned airframes and air armament, or rather, the ability to hit targets precisely and quickly.[21] Stealth technology was further refined. Not only was stealth accorded with immense operational value, it was also deemed a measure of indispensable efficiency improvement. *Desert Storm* indicated that, whereas a typical nonstealth attack package required thirty-eight aircraft to enable eight of those to deliver bombs on three targets, only twenty F-117s were required to simultaneously attack thirty-seven targets successfully, in the face of an intense air defense threat. Precision-guided munitions were improved, with average miss distances reduced to three to ten feet by the end of the decade and stand-off range constantly increasing. The cost of PGMs went down dramatically, too. While one cruise missile costs more than $1 million, the latest generation of JDAM (Joint Direct Attack Munition) weapons with GPS guidance "sells" for $20,000. These developments improved the efficiency of attacks. With state-of-the-art systems, one strike aircraft, be it a B-2 bomber or an updated F-16, could strike several targets on one mission from a stand-off range outside the threat envelope of surface-to-air missile (SAM) systems. Instead of large-scale destruction of targets, precision information and precision weapons allow for the achievement of measured effects.

The digital battlefield was thus in the making. Information was becoming the driving factor in warfare;[22] indeed, two RAND analysts predicted in 2003 that "Cyberwar Is Coming."[23] They noted that sea changes were occurring in how information is collected, stored, processed, communicated, and presented, and in how organizations are designed to take advantage of increased amounts of information.[24] Thus, they claimed, success in warfare was no longer primarily a function of who puts the most capital, labor, and technology onto the battlefield, but of who has the best information about the battlefield. What distinguishes the victors is their grasp of information, not only from the mundane standpoint of being able to find the enemy while keeping it in the dark, but also in doctrinal and organizational terms.[25] Organizations should adapt their structures and processes toward flexible, network-like models of organization. The information revolution favored the growth of networks by making it possible for diverse, dispersed actors to communicate, consult, coordinate, and operate together across greater distances, and on the basis of more and better information than ever before.[26]

By 1997, US Defense Secretary William Cohen had asserted, "The information revolution is creating a Revolution in Military Affairs that will fundamentally change the way US forces fight."[27] Joint Vision 2010 condensed information age warfare tenets and the US defense aspirations as follows:

> By 2010, we should be able to change how we conduct the most intense joint operations. Instead of relying on massed forces and sequential operations, we will achieve massed effects in other ways. Information superiority and advances in technology will enable us to achieve the desired effects through the tailored application of joint combat power. Higher lethality weapons will allow us to conduct attacks currently that formerly required massed assets applied in a sequential manner. With precision targeting and longer range systems, commanders can achieve the necessary destruction or suppression of enemy forces with fewer systems, thereby reducing the need for time consuming and risky massing of people and equipment. Improved command and control, based on fused, all-source real-time intelligence will reduce the need to assemble maneuver formations days and hours in advance of attacks. Providing improved targeting information directly to the most effective weapon system will potentially reduce the traditional force requirements at the point of main effort. All of this suggests that we will be increasingly able to accomplish the effects of mass—the necessary concentration of combat power at the decisive time and place—with less need to mass forces physically than in the past.[28]

The vision was of a small, rapidly deployable, highly accurate, stealthy, highly lethal, extremely well skilled, and less costly force.[29] It capitalized on various service level experiments such as the US Navy *Cooperative Engagement Concept* (CEC), which built upon the "system of systems" concept. According to its author, Admiral Owens, this was the emerging mode of US warfare. If US systems could be better integrated, that could potentially "lift the fog of war" in a battle-space of 200 by 200 nautical miles.[30] According to the CEC, the US Navy would link sensors of all ships in a battle group together with airborne and space-based assets to provide an increase in situational awareness and engagement capability in each ship without increasing the sensor suite. The US Army experimented with digitization and reorganization of its brigades in its Force XXI initiative. The USAF created Air Expeditionary Forces and funded the development of new Combined Air Operation Centers with a heavy emphasis on modern IT support. Furthermore, the USAF successfully attempted to datalink sensors, communication systems, and weapon delivery platforms with the aim to improve the situational awareness of air operation centers as well as

projecting real-time target data and images into the cockpits of bombers. This would allow for "flex targeting" whereby aircraft could be retasked in flight or be provided with data of emerging targets while orbiting in a patrol area.

From 1998 onward these ideas found a home in an overarching concept, Network-Centric Warfare, which subsequently became the formal guiding framework for shaping the future of the US armed forces.[31] Summarizing the NCW advantages, Paul Murdock lists the following:[32]

- NCW could permit a geographically dispersed force to operate as a system—in effect, as a "dispersed mass." Such a force, though its elements might be spread over a large area, should be able to concentrate precision weapons rapidly upon targets hundreds of miles away.
- Its units may be able to mass fires not only with decisive effect but without the need to maneuver—without having to get closer to targets, avoid geographical constraints, or achieve some positional advantage.
- NCW offers the flexibility, operational reach, and battlespace awareness needed to operate on the strategic, operational, and tactical levels at once. Combat would no longer have to proceed in the traditional step-by-step, or serial, manner. Combat would instead be multidimensional and comprehensively joint.

Indeed, with NCW the Pentagon embraced the belief and the tenets of the RMA thesis. NCW, according to its advocates, is the "emerging theory of war in the information age," "a paradigm shift," "the military embodiment of Information Age concepts and technologies."[33]

TOWARD EFFECTS-BASED OPERATIONS

What and how to strike was also subject of debate. Inspired by the promise of new technologies of stealth and precision, John Warden, one of the principal designers of the air campaign, and one of his assistants, Dave Deptula, elaborated upon the strategic utility of intense precise coercive air attacks on "leadership" targets, and the paralyzing theater-level employment of air power as demonstrated in *Desert Storm*. The concept of *Parallel Warfare* was debated, which called for simultaneous attacks on the enemy's key systems, or centers of gravity, so as to paralyze them.[34] Attacking various interrelated nodes could create a ripple effect across an enemy system, direct or indirect, be it in the physical, cognitive, or moral domain. They argued that, instead of focusing on armed forces exclusively, with modern air power other options were available

as well, such as regime targeting and precise infrastructural disruption that could have direct, strategically significant effects. Parallel warfare also held the promise that several smaller-scale physical and nonphysical attacks—with less destructive power—conducted simultaneously could achieve disproportionate strategic outcomes.

This academic exercise met real-world needs when US commanders encountered operational and strategic problems in the Balkan conflict. This inspired a debate among US academics and military planners on the best strategy for coercing an opponent (whereas in Europe much doctrinal discussion centered on the principles of peacekeeping).[35] This debate concerned the questions of what and how to target, when, and for how long. Although the parameters of defeating a mechanized army in a traditional high-intensity war were quite well understood, in particular after *Desert Storm*, the opposite was true of the dynamics of coercing unwilling leaders such as the Serbian leader Milosevic with conventional force in a limited conflict. Various "coercive mechanisms" were discerned and advocated, such as *decapitation* and *incapacitation* (paralyzing the country or its military apparatus by eliminating command nodes or disrupting command processes), *punishment* (increasing the cost of achieving a strategic aim), *denial* (eliminating the means to carry out the strategy, thus decreasing the chances of success), *second-order change* (threatening a higher order interest than the values originally at stake), or *hybrid strategies* (combining these). The intensity of attacks was also a topic of debate, with one doctrinal school advocating "decisive force," massively and continuously applied for maximum political and military shock, while others favored a gradually increasing intensification so as to provide room for political maneuver.

Eventually, these various schools of thought on targeting were conceptually tied into an overarching concept called Effects-Based Operations, which became part of US joint targeting doctrine in 2001. It recognized that US forces must be able to produce a variety of desired military and political effects, not merely destruction. Tailored to the type of conflict and the specific political objectives, an EBO-based strategy aims to produce distinctive and desired effects through the application of appropriate movement, supply, attack, defense, and maneuvers. Effects-Based Operations focus on functional, systemic, and psychological effects well beyond the immediate physical results of a tactical or operational undertaking. This requires detailed and up-to-date knowledge of the behavior of various subsystems of the opponent. Consequently, the ability to plan and conduct Effects-Based Operations is predicated on a task force op-

erating along the principles of the Network-Centric Warfare concept.[36] When Transformation was launched by Rumsfeld, he was thus building upon a stream of technological and doctrinal developments spanning a decade.

MIDCOURSE VALIDATION AND VINDICATION

Two consecutive operations seemed to validate those developments, and thus Transformation, in the eyes of the US administration as well as scores of analysts. First, in Afghanistan in 2001, the odds had been distinctly against the favored low-risk, high-tech type of warfare of the West. The US was confronted with an enemy trained in guerilla fighting in mountainous terrain, with an impressive track record against the former Soviet Union and domestic rivals, with no significant infrastructure offering strategic coercive leverage, and within a region nonsupportive of US military action. It was neither obvious nor predetermined that the US would come out victorious from Operation *Enduring Freedom*, and with such relatively low costs in terms of destruction and losses. Only 300 to 500 special forces actually operated within Afghan territory, uniting, empowering, and fighting alongside local opposition factions totaling no more than 15,000 men. This combination of US troops and proxy forces managed to evict a force of 60,000 Taliban fighters and the regime.[37] This required a relatively limited operation of 100 combat sorties a day, amounting to 38,000 sorties flown. Outside Afghanistan, a US/UK force of approximately 60,000 personnel supported this operation, dispersed over 267 bases, in 30 locations in 15 countries. The US lost 30 personnel.[38] And again, the use of PGMs increased, this time up to 60 percent, indicating that PGMs had become the norm. As the commander, General Franks, asserted, this was by far the greatest application of precision munitions in the history of his country.

Importantly, the operation reflected the merits of the NCW concept discussed above.[39] The integration of ground-air communications was unprecedented and represented a revolutionary operational concept.[40] Combat aircraft, dispersed air bases, command centers, and special forces were glued together by a network of sensors and communication systems. In the opening phase of the air campaign, fixed targets (roads, bridges, and command facilities) had been struck, limiting the Taliban's ability to communicate, move, disperse, reconverge, and attack unobserved and unhindered. Afterward, attention shifted to so-called emerging targets such as small Taliban troop contingents.[41] JSTARS (Joint Surveillance and Target Attack Radar System), UAVs, and special forces acted as eyes, spotting pop-up targets and relaying time-sensitive, up-to-date,

accurate target information to shooter platforms inbound or already circling in the vicinity. Considering the ways of the opponent this C4ISR capability was indispensable,[42] as Franks later asserted.[43] It offered a stunning reaction capability, with response times sometimes down to several minutes, and averaging only twenty minutes. Rumsfeld thus saw in *Enduring Freedom* a revolution similar to the blitzkrieg concept.[44] In both, old and new technology was employed in innovative ways. US Defense Under Secretary Paul Wolfowitz proudly agreed and told the US Congress that "the capabilities demonstrated in Afghanistan show how far we have come in the 10 years since the Persian Gulf War."[45] For the Office of Force Transformation, it redefined "The American Way of War."[46]

Compared with Afghanistan, Iraq provided an even better test ground for the new concepts. The planning for Operation *Iraqi Freedom* was dominated by a clash between new and old thinking. Actually it was a clash between the advocates of modern and postmodern warfare.[47] Especially the US Army presented heavy options with big, mechanized divisions. Most force packages presented to Rumsfeld were rejected as "too big." The secretary put his trust in NCW with precision bombing, a small, fast-moving ground attack force, and heavy reliance on special operations forces and air power.[48]

The Americans confirmed that the combination of innovative concepts and power projection with high-tech forces for advanced expeditionary warfare was able to achieve objectives with astonishingly low numbers of friendly casualties and modest collateral damage. Air-ground surveillance systems, unmanned aircraft, and SOF located conventional Iraqi forces while a continuous stream of fighter aircraft delivered ordnance on the accurate target locations they were provided. As a result of superior intelligence and the number of available offensive air assets over the area at any one time, it took approximately twelve minutes to destroy a confirmed target; in some cases it was five minutes after detection. In the west and north of Iraq large numbers of SOF teams operated as part of a closely integrated team with airborne sensors, command nodes, and offensive aircraft to detect and neutralize potential launches of surface-to-surface missile such as the Scud, and to restrict Iraqi freedom of movement on the ground.

Networking of forces contributed to the tempo. The combination of intensive air strikes with the highly mobile ground force continued day and night, and small, fast-moving forces defeated larger forces. There were only 125,000 personnel in Iraq with only three divisions forming the "spear" of the attack, while Iraqi forces numbered 400,000 including some 100,000 well-trained and

-equipped Republican Guard troops. In a single week, the coalition destroyed 1,000 tanks and reduced the Republican Guard by 50 percent. Equally important was the effect on Iraqi military morale, which effectively collapsed as coalition air strikes caused increasing attrition to Iraq forces. Precision strikes combined with psychological operations caused Iraqi units, including one entire armored division, to dissolve.[49] Vice Admiral Cebrowski observed tighter integration between land and air operations. Logistical support was equally impressive. The United States not only managed to fight halfway around the globe; it could also move ammunition, fuel, and water to maneuver units deep within the theater of operations. A new model of warfare thus emerged; its merits were seen as validated, and a revolution seemed to be confirmed—or at least such a narrative was plausible.[50]

TRANSFORMATION HITS NATO

The events of 9/11 served as a catalyst in the sense that for the US the time had come to press forward forcefully within NATO the need for military change commensurate with the changes in the geopolitical environment. In various NATO summits and meetings from December 2001 till the one in Prague in November 2002, Rumsfeld made it clear that, if NATO were to remain a relevant organization, it needed not only to embrace new missions but also to make good on the initiatives to improve Europe's military capabilities so as to be able to execute those missions. Over Kosovo, US forces accounted for 60 percent of all sorties, dropped 80 percent of all expended ordnance, and provided 70 percent of all support sorties and 90 percent of all suppression of enemy air defenses and electronic warfare sorties—not to mention the fact that without US support NATO would have lacked effective command facilities.[51] In response, at the 1999 Washington summit, NATO launched the Defence Capabilities Initiative (DCI), which listed fifty-eight shortfalls, divided into areas of deployability, sustainability and logistics, effective engagement, survivability of forces and infrastructure, command and control, and information systems. Six areas of high priority were identified, involving strategic lift, air-to-air-refueling, suppression of enemy air defenses, support jamming, precision guided munitions, and secure communications.

The policy initiative, however, had not gained much traction in practice. Although many blamed the costs of modernization, the heart of the problem was not money but policy reorientation and force restructuring.[52] Through the 1990s most European armed forces had not changed their orientation on ter-

ritorial defense. Europe still had 1.5 million people in arms, and in excess of 10,000 tanks. On the other hand, only 10 to 15 percent of those troops were actually deployable.[53] If NATO could barely manage Operation *Allied Force*, a small-scale operation of limited complexity, what did that mean for more demanding operations?

The Prague Capabilities Commitment of 2002 unsurprisingly read like a repetition of DCI, but now it was more focused (some would say also more limited) and included specific, ambitious, quantified goals and timelines. This also reflected the widening of NATO's geopolitical envelope, a trend not quite unrelated to the shifting US security political agenda under the Bush administration. From 2003 onward NATO's scope became defined by a range of up to 10,000 kilometers from Brussels, and since the Istanbul Summit of 2004 the alliance has made overtures toward, for instance, Australia and Japan, while continuing gradually to expand its network of members and partners east and southward. De Hoop Scheffer stated in Munich early in 2006, "We have broadened our strategic horizon far beyond Europe, and tackling terrorism, engaging it at the source, is now a main mission."[54] Threats now include failed states, radical ideologies, unresolved conflicts, and criminal networks trafficking in people, drugs, and weapons, while energy security is also being considered.[55] During the Riga Summit of November 2006 this trend was continued. Again it was noted that the alliance needed the ability to respond to challenges "from wherever they may come." NATO needs to be able to face weapons of mass destruction (WMD) and other asymmetric threats, and attacks that may originate from outside the Euro-Atlantic area.[56]

Missions now include humanitarian relief operations, and in the wake of the US experience in Iraq and that of NATO in Afghanistan, counterinsurgency, and stabilization and reconstruction. At the 2004 Istanbul Summit, defense against terrorism had already been added as a key priority. As NATO Secretary-General Robertson had noted in 2003, this new security environment required "not a sumo wrestler" but "a fencer—light, fast, able to adjust quickly and strike precisely."[57] In 2004 his successor, de Hoop Scheffer, warned his audience in a similar vein that NATO needed "forces that are slimmer, tougher, and faster; forces that can reach further, and stay in the field longer but still can punch hard."[58]

NATO Transformation has thus gained a specific political content. When NATO documents state that NATO Transformation is about the future of the alliance, this may be understood as justification and hope, but also as a threat. Indeed, NATO Transformation is in no small measure a renewed and down-

scaled attempt to solve the problems that became glaringly evident during Operation *Allied Force*, and to get beyond the period of "dynamic stagnation" in terms of European military modernization and capabilities improvement.[59]

NATO MILITARY TRANSFORMATION

The scope and importance of capability improvement and modernization under the banner of NATO Transformation was expressed squarely by the first commander of ACT, US Admiral Edmund Giambastiani (a Rumsfeld protégé),[60] when he told an audience that it involved bringing changes to doctrine, organization, capabilities, training, and logistics, and would be significant, both culturally and intellectually. The prize, he noted, would be improved interoperability, fundamentally joint, network-centric, distributed forces capable of rapid decision superiority and massed effects across the battlespace, critical to continuing alliance relevance.[61] While broad, overused, and underdefined, recent NATO publications are also quite specific concerning the meaning of Transformation, taking their cues from the New American Way of War. Inspired by the much discussed high-level document *Concepts for Allied Future Joint Operation*, the ACT pamphlet *Understanding NATO Military Transformation,* published in 2005, for instance, notes that Transformation encompasses reorientation and reorganization of force structures, redefines the way combat power is generated and employed, and leads to new ways to approach and conduct military operations, thus addressing the capability gap between the US and Europe and hence between actual and required capabilities vis-à-vis the new security environment.[62]

Overall, NATO Transformation calls for expeditionary capabilities, as NATO will most likely operate from austere bases that are potentially under threat, at strategic distances, in a variety of environments, including urban jungles. Several specific benchmarks are listed, such as scalable command, control and communications (C3) assets that can span large distances, precision, speed, agility, and the ability to disperse rapidly and concentrate force and forces. NATO operations must also be conducted in a way that minimizes unintended damage as well as the risk to our own forces. All this calls for lighter ground units than ever before, reconfigurable and mobile, equipped with more precise and effective firepower, all the while ensuring a smaller logistic "footprint" than before so as to minimize the threat to vital supply lines. That in turn implies sizable air capabilities to provide in-theater transport, surveillance, interdiction and intervention options, as well as offensive and force protection capabilities.

It requires European air forces to broaden their range of capabilities so as to go beyond their Cold War tactical focus, to include strategic lift, precision attack, and stealth capabilities. Navies will have to include the littoral as the most likely operating environment and invest in sea lift.

Such a concept, moreover, presumes modern 'command, control, communications, computers, military intelligence, and surveillance, target acquisition, and reconnaissance' (C4ISTAR) and networking capabilities to enhance situational awareness, timely operational planning, and decision-making, and to improve "the links between commanders, sensors and weapons" as the Comprehensive Political Guidance, agreed upon in Riga, noted with priority.[63] NATO needs information superiority, a notion captured in the *NATO Network-Enabled Capability (NNEC)* concept. NNEC differs from the US NCW idea in the sense that European armed forces are reluctant to put networks at the core of war-fighting, for both financial and operational reasons, but it acknowledges that increased investments in, and exploitation of, latest generation C4ISTAR technology are much needed, overdue, and operationally very promising. One cannot escape the impression that many of the NNEC publications have been unashamedly informed by US NCW publications as published by Rumsfeld's two in-house think tanks, Office of Force Transformation (OFT) or Office of the Secretary of Defense/Command and Control Research Program (OSD/CCRP) .

ACT, meanwhile, has tried to gain acceptance within NATO of the concept of the Effects Based Approach to Operations *(EBAO)*, which includes the narrow military EBO concept. It is based on the idea of coherence and interdependence, and the realization that peace, security, and development are more connected than ever.[64] Security can be achieved only when threats are dealt with in coordination with other international and nongovernmental organizations, the Riga Summit communiqué noted. EBAO recognizes that, apart from the military instrument, there are three other instruments that need to be coordinated in concert: political, economic, and civil. The political instrument refers to the use of political and diplomatic power to influence an actor or to create conditions that are advantageous to the alliance. It involves efforts within and among the various regional and international organizations and actors. The use of the economic instrument refers generally to financial incentives or disincentives. This instrument is most likely to be exercised not by NATO but by nations or international organizations. The civil instrument refers to areas

such as judiciary, constabulary, education, public information, and civilian administration and support infrastructure, which can lead to access to medical care, food, power, water, and administrative capacities of nations and nongovernmental organizations. Recognizing that a preponderance of nonmilitary capabilities are not at the direct disposal of NATO, the EBAO concept encourages NATO to work to achieve coherence among the actions of various agencies and organizations toward the achievement of effects that are beneficial to the ends of NATO's particular operation. In Oslo on March 2006, de Hoop Scheffer noted that intense interagency cooperation was already a reality on the ground, whether in the Balkans, Afghanistan, Iraq, or Darfur, stressing, however, that these ad hoc methods of cooperation need to become structured relationships at the institutional level—to be able to coordinate strategically, not just tactically.[65] NATO has thus elevated EBO out of its military environment and expanded it. While EBAO may thereby have become "just" another bureaucratic acronym that really means nothing more than a call for a capacity for proper (grand) strategy making, it again points at the influence of US ideas.

Several instruments are, in principle, at NATO's disposal for effecting change. First, it can strive to improve coherence among national defense investment plans through the revamped "Defense Requirements Review" process. Second, through concept development and experimentation, and multinational exercises, through the constant updating of the standards concerning training, tactics, techniques, and procedures, and through developing new doctrine and concepts, it hopes to get nations to converge in their defense policy orientation and investment priorities, and to foster closer cooperation and interoperability. Finally, the NATO Response Force (NRF) was created, to which nations must contribute with units that would of necessity be forced to become interoperable. Thus the NRF is considered both a rapidly deployable force as well as a catalyst for Transformation.

CONCLUSION

US "Transformation" emerged from a series of interlinked conceptual and technological developments over the past twenty years, showing the interplay of experience, debate, technological developments, and policy development. The conceptual and technological developments have been funneled into NATO, and are captured in the term NATO "Transformation." In NATO, Transformation refers to the following objectives:

- Closing the so-called capability gap between the US and Europe;
- Catching up on the RMA of the 1990s—that is, modernizing European military technology and accelerating the process of technological, doctrinal, and organizational innovation;
- Improving the expeditionary capabilities of European armed forces;
- Adopting—more of less—the New American Way of War, including ideas such as Effects-Based Operations and Network-Centric Warfare;
- Improving and thereby ascertaining interoperability with US armed forces.[66]

Indeed, if NATO's documents of the past few years can serve as a guide, it is quite clear what European defense policies should aim for, and the ideas captured in those documents strongly suggest that the future of Europe's militaries can in no small measure be found in the narrative of US military experience over the past fifteen years. Conceptually it is but a small step from US Transformation to NATO Transformation. Whether the US-driven push through NATO to insert American ideas and technologies into European armed forces will succeed in practice is another matter. As noted in the first chapter, security and defense policy is heavily shaped by strategic as well as domestic political and cultural factors, and a myriad of intervening domestic variables may quite well lead nations onto other pathways. To what extent, why, and how European nations actually adopt US ideas and technology will become evident in the next chapters.