The fighting next time.

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Abstract:
The reluctance of the United States military to undertake revolutionary systems and strategic reforms in order to be prepared for combat in the 21st century and beyond is detailed.

Full Text:
Arthur Cebrowski flew 154 combat missions over Vietnam and commanded an aircraft carrier during the gulf war. He emerged from a 37-year Navy career with the rank of vice admiral despite a reputation as a maverick. He has run a university. So, you show up expecting a paragon of sangfroid and self-confidence. But half an hour into our first interview, the former fighter pilot seems to be on the verge of a meltdown. He has been pacing his pristine suite in the new Pentagon Office of Force Transformation like a man in the grip of a fever, trying to explain his mission as Defense Secretary Donald Rumsfeld's agent of revolutionary change in the United States military.

He has called up computer images of some novel weapons he likes. He has drawn me felt-pen business-school diagrams to illustrate the importance of ''working in the white spaces'' outside the organizational chart. He has riffed on ''network-centric warfare,'' interrupting himself to propose themes for my article -- Let's see if we can rack and stack some story lines.'' Now he senses he's not making his case. He slumps into a chair, grinding his fingertips into his temples. He lets out a groan of despair. ''This is the worst interview I've ever given,'' he announces.

I suppress an unprofessional urge to pat him on the back. There is something about trying to force change on the military that makes the best people a little crazy at times.

In the weeks after Sept. 11, in places where men argue about the future of war, you could detect an unmistakable mood of vindication. Since the gradual demise of the Soviet Union, certain scholars of combat had been arguing that the great lumbering military machine constructed for the cold war was stubbornly ill suited to the new threats of a disorderly world and slow to exploit the new technologies of the information age. As they watched American airliners explode into American landmarks, and then monitored the subsequent rout of the Taliban, the reformers could barely contain the urge to gloat: this is the sort of threat we were warning you about. ''The changing nature of war is now in your living room,'' proclaimed a post-9/11 manifesto posted on one of the several Web sites where the wonks of war congregate.

As you might expect in a field devoted to conflict, there are rival schools of reform. There is a loose coalition that goes under the rubric ''Revolution in Military Affairs''; a contingent of military reformers that fly the flag of ''Fourth-Generation Warfare''; and Rumsfeld's house brand, ''Force Transformation.'' There are sects within sects. They disagree about just what the new threats might be and about precisely how to refashion American armed forces to maintain our advantage. Their natural differences of temperament, training and intellectual perspective are compounded by the fact that the most temperate among them often get swept up, intentionally or not, by the polarizing partisan tides of Washington.

For example, Andrew W. Marshall, a gnomish 80-year-old strategic guru who has been enshrined as the Yoda of the Rumsfeld Defense Department, struck me in person and in his writing as a man without much ideological juice. But because he has focused on China as a threat and because he is sympathetic to the construction of a missile defense system (though not as enthusiastic as Rumsfeld and President Bush), people on the left regard him as a sinister figure, and those on the right tend to lionize him.

That said, the disparate revolutionaries do have a number of important things in common. One is a fascination with historical turning points. They all talk about great transforming moments -- from the invention of the stirrup to the advent of nuclear ballistic missiles -- when a new technology was matched with a new strategy to make great leaps of military advantage. Seven centuries ago, archers with six-foot bows rendered heavily armored knights on horseback obsolete. Infantry became the dominant form of warfare, chivalrous rituals of combat gave way to blood-soaked battlefields and, because bowmen were cheaper to train and equip than

horsemen encased in armor, minor powers like Flanders could hold their own with great powers like France. At the outset of World War II, the Germans rolled across much of Europe because, between the world wars, they liberated tank units from the slow-marching infantry, provided them with supporting aircraft linked to the ground by the novelty of two-way radio and used these aggressive formations to smash holes through enemy defenses. The blitzkrieg, as this lightning air-and-ground strike was called, replaced a warfare of fortifications and slow-moving foot soldiers with a warfare of maneuver. In that same lull between the great wars, the Americans and Japanese simultaneously refined the aircraft carrier, creating portable islands of power to float where they were needed and transforming naval battles from great slugfests of armored vessels into a thrilling choreography of aircraft. And, of course, the creation of nuclear-armed ballistic missiles enabled the cold war, a stalemate of terror that made direct confrontation between the superpowers almost unthinkable. (Most of the really engrossing writing on military reform is not about hardware but about history.)

The revolutionaries agree, too, that one of those moments is upon us. They agree that threats to America have become less predictable, that the next war is likely to be very different from Vietnam or the gulf war and that the proper response entails incorporating new technology -- vivid information-gathering sensors, fast computers, precision guidance, robotics -- and new fighting dogma to make our forces more aware and more agile.

One more thing they share is a grinding frustration with the vested-interest politics and sclerotic culture governing military affairs. They lament the way generals and admirals become devoted to tank divisions and aircraft carrier flotillas because that is what they know. They deplore the iron phalanx of contractors and congressmen who fend off competition and innovation as a threat to the featherbedded status quo. They see reform not as a shopping list of new wonder weapons, but as an upheaval in the military culture. Thus while most advocates of remaking the military can talk about weaponry down to the wind-tunnel performance of wing flaps, the discussion ultimately comes down to such arid subjects as organization, procurement, career tracks. If the quickest way to earn a general's stars in the army is running a heavy armored division (and it is), then what's the percentage in a smart colonel seeking out a career in computers?

The military we have is, in this view, the archenemy of the military we need. The system has even mastered the sly art of co-opting every reformist tendency. Already, since Rumsfeld's people declared their commitment to a transformation of the military, the services and weapons manufacturers have repackaged nearly every item on every budget wish list as ''transformational.''

''You wait, they're going to come up with a way to claim the Crusader is 'transformational,'' said Franklin C. Spinney, a guerrilla reformer inside the Pentagon. ''I don't know how, but it's going to happen.''

The Crusader is a 70-ton, classic war-of-attrition artillery system that most reformers scorn as contrary to their vision of a more nimble army. Spinney's sarcastic gibe was truer than he knew. Visit the Web site of Crusader's main contractor, United Defense, L.P., and you will learn that the monster artillery piece is integral to ''the Army's Transformation Strategy.''

A universal theme of the revolutionaries is that America spends entirely too much money buying slightly better versions of weapons it already has, at the expense of serious improvements. There are, of course, people who travel in the slipstream of the ''revolution'' whose real interest is to cut defense spending and divert the money to other uses, but the leading advocates of radical change, and certainly those with a foothold in the Rumsfeld Pentagon, are devoutly supportive of the military and tend to be hawkish in their outlook. They're all for military spending; just spending on different things.

Even before terror pushed the military up the budget priority list, the revolutionaries had in place a president and Pentagon leadership rhetorically committed to a radical makeover. As a candidate in 1999, George W. Bush -- perhaps without knowing entirely what he was subscribing to -- delivered a ghostwritten speech to cadets at the Citadel that pushed all the buttons. He vowed as president to exploit ''a revolution in the technology of war''; to ''skip a generation'' of weapons that bring only incremental improvements; and to put at least 20 percent of the acquisition budget into futuristic weapons based on mobility, stealth, precision and information-gathering. Sept. 11 quickened the hopes of the revolutionaries. The kamikaze attacks certainly validated the idea of new dangers, and the war in Afghanistan field-tested some notions of what the new military should be -- light on its feet, technologically sophisticated and collaborative. And the patriotic reflexes aroused by the terrorists gave the president unusual license to invest in a new military. Sure enough, he has taken that license to add $48 billion to military spending in the next fiscal year, with a promise of bigger budgets for years to come.

But the swift early successes in Afghanistan also raise a problematic question: Why mess with a military when it's winning? One thing the revolutionaries know from all that study of history is that big changes rarely derive from success. It was the defeated Germans who came up with the blitzkrieg, and it was the world's greatest naval power, the smug British, that missed the two critical naval developments of World War II -- the threat of submarines and the possibilities of the aircraft carrier. What derives from success is often complacency, and more of the same.

''Historically, victors don't learn nearly as well as losers,'' says Cebrowski, the new transformation czar. ''In general, transformation is made easy by a battlefield embarrassment, or by a looming threat. And we don't have either of those.''

Andrew marshall's suite of offices, on the innermost of the Pentagon's five concentric rings, has the cerebral hush of a college mathematics department. Marshall, a bald man with a steady gaze behind wire-rimmed spectacles, is wearing a professorial navy blue cardigan and a neatly knotted necktie. Wary of public attention, he has insisted through the protective Pentagon press apparatus that our conversation be on background; only later will he agree to let me quote him. Marshall has learned that being a little anonymous minimizes incoming fire.

His role became somewhat more visible last year when Rumsfeld put him in charge of an ambitious review of how the military might

be transformed. The studies by Marshall and kindred thinkers amounted to a powerful assault on cherished weapons and on the compartmentalized identities of the services themselves. The military service chiefs and their Congressional allies let the press know they regarded the exercise as secretive and ham-handed (the Hillary Clinton health care study was trotted out as a damning analogy), and you can tell Marshall is a little weary of the backlash. This day he stresses that he sees his job mainly as "diagnosis" rather than "prescription."

One critic, alluding to the Pentagon "whiz kids" of the Vietnam generation, joked that Marshall is Rumsfeld's "whiz geezer," but he seems mentally spry and more stimulated by the future than by the political here and now. At one point he digresses excitedly into speculation about the military possibilities of new behavior-modifying drugs, something he has been puzzling over lately. What if we could activate specific receptors in the brain to create fearless soldiers, or to make pilots on long-range missions more alert for longer periods of time? Then he pulled up short, sensing the controversy this would arouse if it were presented as a Pentagon bioengineering scheme rather than just Andy Marshall and his wonks looking over the horizon.

Marshall has little published work to show for his half century as a defense thinker -- most of it either at the RAND Corporation or here at the Pentagon Office of Net Assessment, an in-house policy center he has run for nearly 30 years. His reputation as the founding visionary of the Revolution in Military Affairs (R.M.A.) school rests partly on a cautiously worded eight-page memo, "Some Thoughts on Military Revolutions," which Marshall wrote in 1993 for William Perry, a reformer who was about to be promoted to Bill Clinton's secretary of defense. But Marshall's real public face is the legion of prolific R.M.A. proteges in policy institutes and universities whose work he has sponsored. His consistent theme (and theirs) for at least a decade has been that the nature of warfare is in for one of its periodic upheavals as nations adjust to two major developments.

One is the perfection of long-range precision strike weapons that enable armies to fight from great distances and that make massive, conspicuous platforms like carriers and air bases more vulnerable. As our adversaries acquire more accurate missiles, Marshall argues, wars will probably be fought either from long range or by quick and comparatively small units that get in and out quickly. The other change is the emergence of "information warfare," in which the most valuable assets are more powerful sensors -- satellites, airborne cameras, handheld global positioning system equipment, robotic snoopers -- that give the advantage to the side that can better read the battlefield and more quickly disseminate information to its commanders.

In Afghanistan last fall, Marshall saw much that confirmed his thesis. Most accounts of the war to date have celebrated the success of precision bombs guided to their targets by lasers or satellites; of battlefield surveillance that pooled the information from satellites and reconnaissance planes and drones using radar and infrared lenses; and of pilotless aircraft like the Predator, equipped for the first time with antitank missiles. The fighting also validated another theme of Marshall and other reformers -- the value of collaboration among the services, in this case represented by Special Forces ground troops using laser binoculars to pinpoint targets for Air Force and Navy bombardment.

From Marshall's vantage point, probably the most exciting thing about Afghanistan was not the jazzy new technology but the imaginative way it was wedded to the old, producing a huge leap in fighting ability. One such technological joint venture, a pinpoint bomb guidance device called the Joint Direct Attack Munition, or JDAM, is essentially a $20,000 backpack full of satellite guidance equipment that can be strapped to a cheap gravity bomb and delivered by B-52 bombers as old as their pilots' parents. About a third of all munitions in Afghanistan were delivered by JDAM's (including one that went astray, killing three American commandos and nearly killing the new interim Afghan leader, Hamid Karzai, apparently because the ground spotter mistakenly gave the bomber his own coordinates). The Special Forces troops who used laser binoculars to spot targets for aircraft did their work from wooden saddles, on horseback.

"I don't find that surprising," Marshall said, peering over steepled fingers. "In the German Army, they were going into France with 10 Panzer divisions out of an army that had 190 divisions. Most of the transport was horses. In all of these things it is not just that there is some new kind of gadget or platform, but that some new concept of organization has been developed."

Marshall preaches that new weapons are only revolutionary if they are married to new organizations that capitalize on success, which the military often fails to do. He cites another of the stars of Afghanistan, the Joint Surveillance and Target Attack Radar System, Jstars, an airborne control center that delivers commanders a radar portrait of a battlefield. Marshall says a study team recently visited the Jstars headquarters and discovered that the most important element of this wartime video arcade, the people who sit at screens and make sense of the data jumping before them, were all planning to take early retirement.

"They were majors who thought they were never going to make colonel," Marshall said. "If you say that these information technologies are the key thing, you can't have a system where people who are good at that think, probably realistically, that they're never going to make colonel." In the military, there is little glamour or reward in being an air-traffic controller.

At the end of the 2000 presidential campaign, Marshall's acolytes thought they had the politics wired for a coup. Former Senator Daniel R. Coats of Indiana, a revolution devotee, seemed on track to be secretary of defense, and one of the most ardent radicals, Richard Armitage, an author of Bush's fire-breathing Citadel speech, was a hot prospect for his deputy. But Coats was passed over (he is now ambassador to Germany) and Armitage, who is not fond of Rumsfeld, went instead to work for his friend Colin Powell at the State Department. The new defense secretary and his deputy, Paul Wolfowitz, are supporters of change, but they are not as single-minded about it, or as deeply immersed in the rationale. And their particular futuristic specialties have been the military use of space and missile defense, not remaking the vast conventional forces that dominate the military.

Last summer, after Marshall's team had produced a blueprint for "transformation," Rumsfeld and Wolfowitz delivered it to the service chiefs and asked them how they would carry it out. The generals and admirals were already feeling insulted at not being included in the secretive exercise. They felt the reports gave them no credit for their own internal efforts at reform -- notably a campaign to

''lighten'' the army and make it more maneuverable. More important, after a decade of budgets that were, by their lights, tightfisted, and with the President in need of money for promised tax cuts, they were reluctant to offer up anything in trade, for fear they'd get nothing in return.

''The services essentially came back to Rumsfeld and said, you can get any kind of military you want, as long as it's the one we're already building,'' said Andrew Krepinevich, a Marshall disciple who was enlisted for the study from the defense think tank he runs, the Center for Strategic and Budgetary Assessments. ''They said the one we're building is fine for all these things you're talking about. We don't need to change.''

Meanwhile, the defense industry had gotten wind that the transformation might imperil some of their most lucrative contracts, and congressmen in whose districts the weapons are built and based began emitting rebellious rumbles. Rumsfeld and Wolfowitz at this point were feeling pretty lonely at the Pentagon. They still had not gotten their key assistants confirmed by Congress, so they had no team to contend with the brass or with the hungry military industrialists and their supporters on Capitol Hill. The Pentagon was enduring the scorn of allies over the president's devotion to missile defense and was dueling with the Office of Management and Budget because the tax cut left little room for a boost in military spending.

It is hard to recall, now that Rumsfeld has acquired beefcake status, but last summer the cumulative disenchantment of the military brass, the Congress, the allies and the press was so great that Washington conventional wisdom predicted Rumsfeld would be the first Cabinet member to be tossed out of work. A war with the services was a fight he didn't need. ''He was eyeball to eyeball with the service chiefs, and he blinked,'' Krepinevich said.

And then they were distracted by the reality of an actual war. By the time Bush spoke again to the Citadel cadets in December, the radical talk had been toned down. And the budget the President released last month foresees the continuation of virtually every weapons program in existence. To be sure, the new budget sprays money at new weapons that the reformists like. But it also drenches all the old status-quo programs that keep the military pretty much the way it is.

Krepinevich, one of the most politically astute R.M.A. proponents, has no problem with a bigger military budget. (Wolfowitz was on the center's board before he took the job as Rumsfeld's deputy.) But he is positively wistful about the refusal to cut old weapons, because they perpetuate old ways of doing business. ''Transformation is as much about what you decide not to do as what you do,'' he said.

Unlike Marshall, Krepinevich is happy to provide a hit list of weapons that should go. It is not every reformer's list, but it is a useful illustration of what a ''revolution'' would actually entail. The Pentagon has three separate programs to upgrade short-range fighter aircraft, a new version of the Navy's F/A-18, the Air Force F-22 and a ''next generation'' Joint Strike Fighter for both services. The R.M.A. would scale those back sharply, because airplanes need carriers or bases from which to take off, and in the new world 15 years from now, where enemies might have precision cruise missiles of their own, airfields and carriers make lovely targets. In any case, nobody else is building aircraft that seem likely to challenge the fighters we've got, and the money saved could go to missiles and robot drones, which are improving faster than aircraft.

For the same reason, Krepinevich would ''defer'' the purchase of a 10th Nimitz-class aircraft carrier, the largest warship ever built and, in revolutionary theory, a floating bull's-eye. Likewise he would cancel that mammoth Crusader artillery piece and shrink investments in heavy tanks, cumbersome weapons that have to be delivered to bases or seaports that may be ''the ambush points of the 21st century.''

Krepinevich and Marshall and their allies do not contend that these are bad weapons, nor do they propose to instantly abandon the present-day fighting machine that is, by any reckoning, the best in the world. They all concede that their notions of future war could be completely wrong. It is a matter of pruning the garden a little to make way for new growth, and ultimately about letting a diverse profusion of flowers bloom.

The Pentagon, however, is a monoculture world. The brass picks a weapon, buys in bulk and builds fighting doctrine and careers around it. Until the wars in Bosnia and Kosovo, for example, the Air Force fiercely resisted unmanned flying vehicles. Drones don't fit the pilot mystique of the service. The Air Force also feared losing a piece of its mission to other services. The Air Force has a big job in reconnaissance, which it does from U-2's and other manned surveillance aircraft. If you don't need a pilot, the job can migrate elsewhere; in fact, Predator drones operated in Afghanistan under control of the C.I.A.

In the absence of a clear national-security alarum from the Pentagon, Congress is no more eager to cut weapons programs than the services. Since the mid-1990's, various reformers have proposed to prune the redundant fighter-plane programs, but the constituency defending these programs is vast. The Boeing Company and its brigade of big and little subcontractors have spread the work on the Navy's F/A-18 around 46 states, which makes for a lot of congressmen who can expect phone calls from voters who feel a vested interest in the plane.

Add to that influential legislators like Senator John Warner of Virginia, whose state builds the aircraft carriers that would have no purpose without the airplanes, and Senator John McCain, who has a former Navy pilot's devotion to Navy planes. The Air Force's rival F-22 has a comparable support group, led by Lockheed Martin and the Georgia Congressional delegation.

''If the Pentagon makes a clear case that the national security requires a course of action, in the end Congress will go along,'' said Fred Downey, an Andrew Marshall protege who works for Senator Joseph Lieberman. ''But nobody's going to unilaterally disarm.''

Not surprisingly, then, the new Bush version of the ''revolution'' seems to consist mainly of buying a lot more of the high-tech

weapons that ostensibly succeeded in Afghanistan, but without passing over any traditional weaponry. There is more money for precision-guided bombs and flying robots and special forces, and a plan that reformers like that would convert four stealthy Trident nuclear missile subs into carriers of non-nuclear cruise missiles. Krepinevich calls these ''poster children for transformation.'' But even more money is going into those duplicate fighter jets, the Crusader artillery system, the tanks and carriers around which the military organizes itself. With all the constituencies happily quenched, there is little ardor in Congress for a fight over the future of the military.

''What happened to skipping a generation of weapons?'' said Michael E. O'Hanlon, an R.M.A. skeptic operating at the Brookings Institution. ''What happened to the notion of an American military unfit for the tasks? The starry-eyed talk is gone, and what remains of the revolution is at the margins.'' This retreat is fine with O'Hanlon, who thinks the military already does a reasonably good job of innovating -- as Afghanistan seems to demonstrate.

Andrew Marshall seems somewhat less downcast by the apparent dissipation of revolutionary zeal than his out-of-government disciples. He is not one who argues for upheaval across the board. In fact, he dislikes the administration's chosen slogan, ''transformation,'' because it sounds too wholesale. He says he believes revolutions can take place without great expenditures, localized within the military establishment. The profound changes in warfare that incubated between the world wars -- the German blitzkrieg, the American and Japanese development of aircraft carriers -- took place despite declining budgets and a powerful ennui resulting from the punishing trench slaughter of the First World War.

''The thing that's interesting about both those cases is that it's a very small part of the force,'' Marshall told me. ''You go into the war with a navy of about 650 ships, of which 8 are carriers. By the end of the war, the carriers become the central part.''

And the rest of the Navy realigned itself around this new weapon. Battleships, which had been the mainstays of war at sea, essentially became bodyguards for the carriers. Today, Marshall said, ''you're probably in a period where major change in the military can take place, and it can happen, as both these earlier examples show, through changing a part of the force, which then changes the way in which everything performs.'' He talks in terms of changing 10 to 15 percent of the force from old to new. While the new budget essentially diverts nothing, Marshall seems to hope it may be possible for some new things to flourish in the cracks. Whether this is optimism talking or resignation, I can't tell.

A related and vexing concern for Marshall's revolutionary brood just now is the wholehearted focus on what might, in their view, ultimately be the wrong enemy. The Marshallites aren't indifferent to terrorism or regional conflicts, but over the years their main worry has been the rise of a genuine military rival with the capacity to seriously challenge America. Marshall has tended to regard Bush's ''axis of evil'' states, Iraq, Iran and North Korea, as mildly interesting leftovers from the cold war era. The future threat Marshall has in mind is China, a country with the size, infrastructure and ambition to challenge America in 10 or 20 years.

He may yet be right about that, but just now Sino-American relations are on a warming platter, and the declared archenemy is a stateless, ruthless menace with no industrial base and the most basic of technology. Marshall worries there's some danger in thinking that Afghanistan demonstrates that we've made the leap into the future.

''In the future, we're likely to be in some cases up against people who have some of the same stuff we have, and then it's going to be a very different story,'' Marshall said. ''You won't be able to bring the carriers in as close to the shore maybe, and many other changes. As we look ahead, 5 years, 10 years, at whatever opponent you might be up against, it might not be quite the one-sided affair that some of these things have been.''

One of the more eerily prescient documents I ran across in reading the archives of military revolutionaries was an article published in October 1989 in Marine Corps Gazette, by four military officers and William S. Lind, who had been a military adviser to Senator Gary Hart. The paper identified three generations of modern warfare and warned that a new ''fourth generation'' would appear. (The first generation was clashing columns of manpower; the second was the industrial-age war of attrition, masses of artillery hammering each other; the third was the warfare of maneuver pioneered by the Germans.) The fourth-generation threat sounds, when you read this text today, uncannily like Al Qaeda.

The authors suggested the threat would emerge from a non-Western culture like Islam, that it might be stateless, that, lacking modern means, its warriors would infiltrate our society and use our own technology against us, that they would regard our whole civilization as a battlefield. Fourth-generation warriors would ''use a free society's freedom and openness, its greatest strengths, against it.'' The authors of the article were worshipers at the shrine of a charismatic Air Force colonel named John Boyd, whose studies of fighter-jet combat influenced a generation of military reformers, particularly in Congress. Dick Cheney, then a member of the House of Representatives, was an enthusiast. Senator Hart was another.

Military ''reform'' has long had a nonpartisan appeal to Republicans eager to prove they were not just attendants at the Pentagon trough and to Democrats battling the charge that they were reflexively anti-military. The reformers of the Boyd school saw the military as musclebound and, at the same time, too easily seduced by the hubris of high-tech. They favored cheaper, quicker, nimbler weapons. Boyd died in 1997, but there is still a loose fellowship of thinkers who talk of warfare in ''generations'' and who represent a skeptical alternative to what they see as the tech-heavy Marshall view.

To the extent that any one person has kept Boyd's spirit alive, it is Franklin C. Spinney, known as Chuck, a civilian engineer whose

nominal job is to evaluate tactical aircraft in the defense secretary's Program Analysis and Evaluation office, but whose de facto title is resident pain in the neck. One good sign of Spinney's outside-the-loop status is that no one from the press office vets his visitors. You

call him directly, and he meets you at the Pentagon metal detectors, wearing tan corduroys, a plaid shirt and scuffed, comfortable shoes. His office is a counterculture mess. He rocks back in a squeaky office chair wedged between stacks of documents, two computers, combination-locked file drawers and a scrawl-filled chalkboard.

Where Andrew Marshall is Delphic, Spinney is loquacious and profane. Where Marshall keeps a low profile, providing his wisdom to a select few, Spinney is a spigot of information -- spraying his unconventional wisdom on a Web site, to sympathizers on Capitol Hill and to reporters who have known him for years as a source of reliable dish on doubtful weapons. His role is less strategic philosopher than gadfly; he has devoted great energy to attacking undertested weapons, the cronyism of the procurement system and a Pentagon bookkeeping operation that makes Enron seem transparent.

Spinney and other Boyd apostles, who sometimes label their work 4GW, shorthand for fourth-generation warfare, have many differences with the R.M.A. camp, but their main complaint is that Marshall and his followers place too much faith in technology, promoting it as a way of removing discretion from the battlefield and having the battle managed from a distance, by "generals in chateaus," as Spinney likes to say. Spinney is, of course, dubious of the claims for high-tech weapons in Afghanistan. When we talked, he was certain the Predator, a drone aircraft that got great press in the war, had been overpraised. Sure enough, a couple of days later he e-mailed me an Aerospace Daily report in which Air Force Secretary James Roche conceded to some defense reporters that Predator "doesn't work so good" at guiding bomber pilots to targets without added help from spotters on the ground. Also, Roche admitted, the drones will probably have to be flown at higher altitudes in the future because they have a tendency to crash or be shot down.

For Spinney, the best military lesson of Afghanistan was that special forces on the ground did extremely well when they were given authority to make combat judgments. The "technocrats," he contends, "don't trust the people at the pointy end of the spear." "In this Afghan war, to the extent that we understand anything right now, which is pretty limited, it's clear the established command system was modified on the fly to empower these special ops guys to make decisions. They were making the targeting decisions."

However valid his critique, Spinney does not have much of a movement behind him. The Congressional champions of cheaper, dependable weapons have mostly moved on or been silenced by the gains of weapons technology. And companies that build weapons have so thoroughly dispersed their subcontracts around the landscape that almost any congressman has something to lose by taking on the military products of a colleague's district.

The original military reformers have dispersed, too -- sometimes to unexpectedly far corners of the political landscape. Take William Lind, an author of that prescient paper on fourth-generation warfare. In the ensuing years Lind has become a key figure at the Free Congress Foundation, a hard-right policy center. Earlier this year, when Marine Corps Gazette invited him to revisit the notion of fourth-generation warfare in light of Sept. 11, Lind proposed a four-step response to terror that suggested he had moved beyond the tedious business of reforming military procurement. His first recommendation was this: "Within 48 hours, we should have wiped Taliban-held Afghanistan off the map, using nuclear weapons."

The pointy end of the transformation spear is Arthur Cebrowski, who was appointed in October to the new job of advising Rumsfeld and Wolfowitz on ways to prod the military into the new century. "Nonconsensual change" is the way he puts it. The second time I visited his little complex, he was more relaxed and lucid and stayed in his chair, though I'm pretty sure he went an entire hour without blinking.

Cebrowski, who is 59, retired last year from the Navy and from the presidency of the Naval War College in Rhode Island, where Andrew Marshall conducts a legendary summer seminar on military problems. Marshall told me that "it's hard to think of anyone better" to try to foment the revolutions he, Marshall, has been theorizing about. Cebrowski is Lenin to Marshall's Marx, an analogy that would probably make them both cringe.

Unlike Marshall, Cebrowski is not supposed to be thinking 20 years ahead. His job is to prescribe -- mainly things the services won't like at first, including shifting money from old "legacy" weapons to new things. "The old funds the new," he says. "We might have a very nice budget now, but will spending that money on more of the same produce the same competitive advantage for the nation? Almost certainly not."

One revolutionary notion Cebrowski favors is "network-centric warfare," a concept he attributes to Sun Microsystems, which means hooking ships, aircraft, satellites and ground forces together to create a rich, shared picture of the battlefield in motion. This is warfare as a kind of interactive, multiple-player computer game, and it changes the dynamics of fighting in important ways. For one thing, everything happens faster. For another, the war becomes more about the chase than the kill; the most important asset on the battlefield is not a weapon but a sensor.

Cebrowski is inclined to see Afghanistan as a step in that direction, with the real game being the pursuit of an elusive enemy. He follows the idea in a direction that is closer to Spinney than to Marshall. The striking thing he sees in Afghanistan is how the rich supply of information did not produce a remote-control war, but one in which the soldiers at the front were more important than ever. "For a long time, people were talking about, well, we have long-range weapons," he said. "And so what we're going to have is warfare that is fought at long range, over a sparsely populated battlefield. As it turns out, it may be just the opposite."

Cebrowski may well have the most impossible assignment in the American government, but he has made some shrewd choices about how to tackle it. For one thing, he intends to use his status to gather his own information. The military services usually conduct a "lessons learned" exercise after a conflict, and too often they learn the lessons they want to learn.

A lot of people in the Pentagon will tell you, for example, that the American-led ouster of the Serbian Army from Kosovo proves what

glorious things you can do with air power and precision weaponry. Cebrowski tends to side with Bill Owens, a former vice chairman of the Joint Chiefs of Staff and an author on military revolution, who argues that Kosovo was a litany of failures. The precision-bombing campaign destroyed the Serbian industrial base, but it was not that great at hitting the Serbian Army, which managed to conduct a sadistic ethnic purge of Kosovar Albanians while under American fire. One weapon that might have worked against the Serbs, a fleet of Apache helicopters sent to Albania for just that purpose, stayed grounded in part because the Army and Air Force couldn't agree which service would be in charge, in part because the Clinton administration could not bear to put such a valuable weapon in harm's way. From a military vantage point, Kosovo should have been the occasion for rebuke, but in the end, since the Serbs backed down, there was not a big Pentagon market for recriminations.

So in Afghanistan, Cebrowski has launched a parallel study of the war, using outside experts. Besides having no vested interest in the answers, they will ask different questions. "Most lessons learned are developed with an eye toward how you could do better what you tried to do," he added. "If you look at it through a transformational lens, you ask how could I have done something completely different."

A second encouraging sign is that Cebrowski is wary of setting his sights on wholesale systemic change. There is a tendency among reformers to take on everything at once. This gets you into an endless, frustrating policy war of attrition, and it leaves no room for trial and error. I was struck, reading the literature of military revolution, how often the solutions seemed to resemble the problem.

For example, the one point on which virtually every reformer agrees is that the services need to work together better. "Jointness" has been an elusive goal of military reformers for half a century, at least. But all the radical proposals to impose "jointness" on the services contain seeds of the same problem. Some reformers, like David Gompert, a Marshall disciple who studied the issue as part of the transformation review last year, would essentially merge the four services and then divide the military's responsibilities by regions of the globe. Others, like Bill Owens, would create new services based on function -- an intelligence service, a logistics service, an attack service and so on. Before long, I wondered, wouldn't you end up with a different version of the same entrenched, bickering bureaucracies?

Cebrowski, too, is wary of big-think reorganizations that amount to, as he says, "different ways of slicing cheese." He tends to talk about a more modular military, a big tool kit, from which a commander can assemble all the things he needs on very short notice when an emergency arises. This was essentially how the military pulled together the odd conglomeration of high-tech and horseback that seemed to work in Afghanistan. Cebrowski argues that the military should concentrate on that critical moment, the commander assembling the tools for a sudden war, and then make sure the people who run the major functions of the Pentagon -- buying weapons, training men -- are judged by whether they make that commander's job easier.

The third shrewd thing Cebrowski has done is resist the temptation to throw himself onto the immense grindstone of the annual budget process, which has pulped generations of reformers. Instead, embracing Marshall's view that military revolutions are localized, he is operating more like a venture capitalist. He will underwrite experiments and try to cultivate the successes into something bigger.

A favorite project of Cebrowski's, for example, is trying to get the Navy to create a new class of fast, cheap, frankly expendable warships, dubbed Streetfighter, that a crew of just a dozen sailors could take into shallow coastal waters to hunt down enemy defenses. Operating in swarms, connected by a wireless network to powerful radar and satellite images, the ships could be the first wave in a war against anyone with a coastline.

The Navy has fought the idea because it assumes some of those ships will be sunk. (The governing principle of American warfare since Vietnam, reinforced by the "Black Hawk Down" episode in Somalia, is to minimize casualties, on the questionable basis that Americans have no appetite for putting Americans in danger.) Despite Navy resistance, Cebrowski is still hopeful of adding a prototype to the fleet. Many will tell you that if you don't have a big hand in the budget-making, you are little more than a spectator, and it is true that the budget matters hugely -- not just the money you get for new things but the money that is cut from old things standing in the way. Cebrowski could exhaust his minuscule $20 million annual allowance and his staff of 18 in the trenches of Congressional appropriations. Or he can play the entrepreneur, providing seed money for interesting experiments that might catch fire. After all, getting the budget to match the rhetoric of reform is the job of Rumsfeld and the president. They will either push for a revolutionary budget or they won't.

When I asked Cebrowski, a few weeks before the 2003 budget proposals were made public, whether what the president had in mind would represent a revolutionary shift in priorities, he shrugged and conceded, "Only on the margins." And that seems right. Cebrowski may get his little boats, but they will bob along, figuratively speaking, in the powerful wake of the military juggernaut we already have. It's beginning to look as if a radical makeover of the American military is not the great beneficiary of Sept. 11, after all, but another casualty.