

# Remarks to the Army Science Conference

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P.F. Gorman

Wagnerian theme music is appropriate indeed, because in transforming the Army's C4ISR a number of planned or prospective programs will be slain. The Valkyrie, as you know, were the maidens Odin sent to carry valorous warriors killed in action to the Hall of the Slain, Valhalla, which is today a small community not far from Eatontown, New Jersey.

Had I been asked to suggest preliminary readings for this event, I would have nominated Elting Morison's lectures of the 1950's and '60s, and his great uncle's papers, from the 18908, published one hundred years ago. The younger Morison presented, in his book Men, Machines, and Modern Times, one of the more perceptive commentaries on the interaction of innovative technology with American military institutions, while the elder Morison was, as far as I am aware, one of the first to observe that such transformation is inherently disruptive:

**“...in many ways the new epoch must open as an era of destruction ... both in the physical and the intellectual world, of old buildings, and old boundaries and monuments, and furthermore, of customs and ideas, systems of thought and methods of education ... the danger is that the destructive changes will come too fast, and the developments which are to take their place not fast enough. The trouble will lie in the gap between the two ...”**

Let none here believe that this Administration's enthusiasm for transformation will yield place to the urgencies of the war on terror. Donald Rumsfeld himself stated this year that: "Change is continuous - the military will never be transformed. They will always be transforming." And none here should doubt that the current leadership of the Department of Defense understands that transformation is inherently a process of destruction as well as construction. OSD stated last year that:

"Transformation is a process of change that involves developing new operational concepts, experimenting to determine which ones work and which do not, and implementing those that do. Transformation deals with:

- changes in the way military forces are organized, trained, and equipped;
- changes in the doctrine, tactics, techniques, and procedures that determine how they are employed;
- changes in the way they are led; and
- changes in the way they interact with one another to produce effects in battles and campaigns."

*Office of the Secretary of Defense, . 2001*

That seems to me to be warning that Odin's thunderbolts are aimed squarely at the Army's C4ISR, and that the Valkyries are indeed riding as I speak.

Of what do I speak? Nothing less than OSD's attack on the Army culture supported by current command, control, communications and computing, and its appended intelligence, surveillance, and reconnaissance .

**Army culture prizes uniformity.** The latest relevant Operational Requirements Documents to come out of TRADOC prescribe standardized platforms and shelters for C4ISR. When challenged, the Product Manager righteously supported this collection of TRADOCian misapprehensions by stating that

at present Army command posts are different from one division to the next, and since commanders are spending their own money to particularize their CPs, his mission was to relieve them of this burden, to provide uniformity, and thereby to achieve economies of scale in procurement. You know, it is just possible that the Army is wrong-minded in trying to standardize CPs, and that the less vulnerable, and therefore more cost effective approach, would be to underwrite particularization. I believe that is possible to argue that Senator Nunn and his colleagues has it right back in the '80s when they appropriated discretionary funds for innovations by commanders for command and control. My service as an intelligence officer instructs me that issuing standardized vehicles and shelters will be a boon for present and prospective enemies, whose access to commercial hyperspectral imagery will render such equipment an invitation to decapitating attacks. In short, modern ISR dictates **non**-standardization of command posts, as does every recent experiment with collaborative command and control of which I am aware. He commands most competently and confidently who particularizes to fit his own style of command, and to discommodate his enemy.

**Army culture emphasizes C4ISR process over performance.** "The right way, the wrong way, and the Army way." The aphorism is surely descriptive of the Intelligence Preparation of the Battlefield, and of the nine step process of course of action analysis taught at Leavenworth and evangelized by Observer Controllers in the Army's Combat Training Centers. Whatever their propaedeutic value, these procedures are demonstrably dysfunctional for time-sensitive, adaptive, collaborative command in battle. As never before, we ought to educate and to train the way we hope we will fight.

**Army culture rests on branch pretensions.** Within current S&T testing there is a pilotless helicopter and a cruise missile, either of which able to support all C4ISR functions. I would not suppose it useful to seek an exclusive proponent for such a system in Dothan, Alabama, any more than I would look for one in Lawton, Oklahoma. Distinguishing between mounted and dismounted battlespace is no longer helpful, and close combat is no longer the province of the bayonet. Discrete C4ISR systems that require specialists to operate and maintain them in the field must be replaced by systems for combat generalists. Therefore, the Army must realize that since it intends to fight collaboratively, it ought collaboratively to conduct S&T, to state operational requirements, and to develop materiel.

**Army culture treats manpower as a commodity.** The leadership of the Army is now moving away from individual replacements in units of the combat arms toward a personnel system designed to foster stability, cohesion, and teamwork. One major thrust of Army S&T ought to focus on reinforcing that truly transformational redirection, and to assess cost effectiveness with the realization that soldiers are at once our key asset and our principal cost driver. How can we reduce the need for support personnel and vehicles in combat units? How can we reduce the need for highly-trained technicians there? How can we field materiel that can be supported with minimal manpower? How can we provide for the introduction of new systems, or the updating of issued systems, without interrupting a unit's operational tempo, or necessitating the introduction of new personnel?

I could lecture on in this fashion, but by now you have no doubt detected that I am somewhat uncomfortable with the predispositions of my beloved Army.

General William Eugene DePuy, the architect of the STEADFAST reorganization of 1973, and the first commander of TRADOC, used to tell his officers that they could not write requirements for the future Army future sitting at a desk. Rather, he told us, we needed to travel to the laboratories and the testing grounds, and to learn from technicians what lies within the realm of the possible. That wisdom is still cogent, but I would add that today technicians could profit from outreach for better understanding of what war-fighters are thinking and doing.

You of Army Science and technology are at the forefront of Army transformation.

- You are witness to the Army's technical progress from a two-dimensional force to a three dimensional force.
- You know that radars can be communication devices, and that radios can be sensors.
- You know that the Army's way ahead in S&T lies upward in elevation and frequency, downward in power consumption, faster in all combat functions, and forward to empower the foremost combatants.

The Army exists to project and to support an infantry soldier able to control the territory and people thereon within range of his weapon. Ergo, equipping that soldier ought to be, but has seldom been, the principal object of a "procurement secretary" and the professional soldiers serving under him. Think of the repeated failures in the past:

a) Eli Whitney won an audience before Thomas Jefferson in the White House on musket manufacture because of his breakthrough cotton-gin. Whitney strewed the contents of a box of mass produced parts of several muskets on a table, and proceeded to assemble from the pile a workable firearm. Here was American ingenuity overcoming theretofore slow, expensive individually-fabricated weapon production! But wait ... the US Army's Chief of Ordnance stepped forward, selected a ram-rod from the parts, and bent it into a U, saying "You see, the parts are shoddy, they will not stand up in the field." [Never mind that that no ram-rod of the period would have withstood such a test.] Whitney's ingenuity had to await adoption until the emergency of 1812, and even then, he was not recompensed for nearly a decade.

b) During the Civil War (1861-1865) the "revolution in military affairs" had to do with rifled shoulder arms enabling infantry units to deliver lethal fire to drive back crews of smooth-bore cannon arrayed in the battle front-line, per the practice of armies since the Napoleonic era. The 1855 Springfield .58 caliber rifled musket was transforming battle: it could kill at 400-600 yards, but that piece was muzzle-loading, and volume of fire/time necessitated masses of men in ranks. In 1860 Christopher Spencer of Connecticut had patented a .52 caliber magazine-loaded repeating rifle, which he promptly offered to the government. The Department of the Navy liked it, and placed a small order, but beyond that success, Spencer's path was barred by BGen James Ripley, Chief of Ordnance, US Army, a thorough-going admirer of functional simplicity who was prepared to contest the field-worthiness of anything more complicated than a club. Ripley had been in command of Springfield Armory when the Model 1855 emerged, and he professed grave concern over Spencer's intricate mechanism and the baleful logistic implications of any magazine-fed, rapid-firing weapon. Spencer then arranged for Abraham Lincoln to fire his rifle, and the President, favorably impressed, ordered Ripley to place an order for the weapon. There were predictable contractual delays, but Ripley seemed determined to avoid the procurement or to reduce its size by any means. By 1863 some Union regiments were buying Spencer's rifle with their own money, and there were many favorable reports on its performance in battle -e.g., at Gettysburg, Perplexed by Ripley's continued delays, Spencer again appealed to Lincoln. On August 18, 1863, Lincoln sent an aide next door to ask Secretary of War Stanton to join him for a shoot in a park near the White House, but Stanton declined. Lincoln remarked that "they do pretty much as they have a mind to do over there," and went out with Spencer to conduct the trial. A board with a bulls-eye was set against a tree, and Lincoln fired seven shots from forty yards, one through the mark, and all within the board. Lincoln presented the board to Spencer, and Spencer presented the rifle to Lincoln. Within two weeks. Ripley retired. In Sheridan's Shenandoah Valley campaign of 1864, cavalry troops under BGen GA Custer, armed with the Spencer rifle, flanked at Waynesboro Jubal Early's veteran infantry blocking the road and railroad through the Rockfish Gap, and routed the Confederates with superior firepower.

c) In 1862, Oliver Winchester, owner of repeating –weapon patents granted less than a year after Spenser’s, had sent silver-engraved models of his version of the Henry rifle to Secretaries Simon Cameron and Gideon Welles, and to other “procurement secretaries” whose knowledge of the weapon might be influential in a decision to proceed with large government orders. Again Ripley barred the way. But Winchester’s weapon was of small caliber that Spenser’s, easier to aim because of higher muzzle velocity, lighter, simpler, sturdier, and cheaper – able to shoot every 3 seconds, and to provide a soldier with one round in chamber and fifteen in magazine: a “sixteen-shooter.” Nonetheless, during the Civil War the Army procured only 1,731 of Winchester’s weapons. Still, the Winchester carbine, as it came to be known, became the weapon of choice in the post-war, Indian-fighting army. Custer’s victory at Waynesboro with Spencer rifles was eclipsed by his defeat at Little Big Horn with Winchesters.

We Americans invented the airplane and led its development, but we have seldom agreed what to do with the technology of flight. Army aviators have held that the experience of World War II justified their drive for an independent service. I would argue that the post World War II Strategic Bombing Survey casts at least some doubt on the Army Air Force's preoccupation with strategic bombing, and that the U.S. services profited from avoiding the RAF-like consolidation that Mitchell advocated in the inter-war years precisely because service diversity encouraged the growth of the USN's fleet air arm during a period when that of the Royal Navy -the true naval air pioneers-- atrophied. In the Louisiana Maneuvers of 1940, General George Marshall, discovering that Hap Arnold had neither aircraft nor pilots capable of emulating the German *Stuka*, had to borrow dive bombers from Admiral Stark. There is a [probably apocryphal] story about Tasker Bliss, Chief of Staff during World War I, who on his deathbed was asked if he had any regrets about his service; the old hands clutched the bedsheet, and in a long-unused voice of command he declared, "I should never have let the bastards out of the Signal Corps."

I call attention to another instructive example: the determination by Army leaders and the Congress to develop the tank as a weapon system for infantry support: Congress legislated in the Defense Act of 1920 that a tank's speed could not exceed that of foot soldiers -2.5 mph. Major DD. Eisenhower, then commanding the Infantry Tank School at Fort Meade, knew that was wrong: in 1920 he wrote an article for Infantry Journal advocating a 15 ton tank mounting a cannon and two machine guns with a speed cross-country of 12 mph, and on-road, of 20 mph. For his temerity he was summoned before the Chief of Infantry who told him that his ideas were not only wrong, but also dangerous, and threatened him with court-martial. As late as 1939, published Army doctrine asserted that the role of the tank was either to precede infantry in the attack, or to support that attack by fire.

Comment: I saw little of my young family over the Christmas holidays of 1963 because I played a spear-carrier role in the pick-a-rifle opera. I was assigned as ODCSOPS rep to an Army Staff study-group tasked to recommend to CSA (Buzz Wheeler) what to do about the Stoner-rifle controversy --one of those fourteen-hours per day, 7 days per week hassles. I remember being approached by officers of all ranks eager to press upon me the "inside story" from this or that range-firing, or this or that lab evaluation. But most vividly, I recall the study group's final report to CSA. LtG Johnson, DCSOPS, directed the briefings for CSA, in which the study-group tried its utmost to separate the wheat from the chaff among bushels of so-called facts. In the last analysis, however, the matter came down to the views of the generals sitting around the long table, each of whom was called upon to state his recommendation.

What followed was classic group-think: "No soldier will march confidently against an enemy armed with such a toy." "You can tell it's Mattel- it's swell." "Doesn't have the heft to make it effective with the bayonet." "Our tests prove it can't penetrate a helmet at 800 yards." "A rapid-fire weapon like this will create a nightmare in resupply for forward infantry units." Etc., etc. Finally MG Abrams was asked to speak: "I've seen mighty few enemy killed with shoulder arms beyond 50 yards range. I am for an infantry soldier able to carry lots of firepower, and it looks to me like this weapon can equip him to be a close-in killer. So I recommend the AR-15." Abrams' was the final, and telling pronouncement from the assemblage of generals. General Johnson stated flatly that he recommended adoption of the AR-15. General Wheeler, after a moment's pause, said "OK", and the meeting was over.

A procurement secretary for the Army in any era has to live down the dreadful mistakes of his predecessors, as well as to cope with service culture and entrenched bureaucracy. I have criticized earlier decisions relating to shoulder arms, but we are a service that also:

- Spumed the American originators of the machine gun --Browning, Thompson, Lewis, and Hotchkiss-- and consigned Gatling's automatic weapon to the role of direct support artillery, insuring that we would fight World War I with French weapons.
- Bungled the armor/anti-armor problem during the years between the World Wars, failing either to develop a tank capable of offensive use, or an anti-tank gun that could overmatch the threat. Worse, we forced J. Walter Christie to sell his designs abroad where they became part of that threat.
- Struck an agreement between the Army Air Corps and artillery branch dividing the battlespace into areas reserved for the particular weapon systems of each party, thereby insuring that it would be 1944 before American close air support for maneuvering ground forces would weigh heavily on our foes.
- Has faced over fifty years of clearly stated requirements to transport effective forces overseas, and to support them in action with a fetish-like attachment to cannons, ballistic projectiles, and associated trucks when more effective firepower could have been fielded with a far less burden on deployment and sustainment means.
- Has created, in the contemporary Acquisition Corps -now our most numerous branch—a bureaucratic straight-jacket the equal of Ainsworth's Adjutant General Corps a century ago.

**Recommendation: assemble a small tiger team from the best minds in the Acquisition Corps: task them to modernize, ye~ transform, the *Program of Record* into an instrument for change that truly and swiftly can affect the outcome of battles.**