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The End of History and the Last Soldier: Training Military Leaders to Operate With Information Superiority

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirement of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Today it is clear that information, *not* ordnance or weapons systems is the current coin of the realm in serious discussions of future warfare. Each of the military departments are now wrestling with how to procure, employ and organize units to take advantage of the anticipated flood of information and the "dominant battlespace awareness" which it confers.

Joint Vision 2010 posits that near perfect battlefield knowledge makes smaller units increasingly more capable. Does this mean those unit leaders will now become operational level commanders? What are anticipated changes and processes to develop leaders who can operate and execute the art of command using the advantages of information age technologies? Will the art of command dramatically change? What changes should be made to the training system to adapt leaders to these changes?

This monograph considers information superiority and its impact on the training of future military leaders.

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Introduction

"The problem is that some analysts and policy-makers are drawn to the past to understand change or cling too ardently to immediate issues...We are thus at a juncture of continuity and change. The jury is still out..."[1]

The future of warfare for the U.S. military is now driven by discussions of "information superiority," "dominant battlespace awareness" and other "technospeak" terms which seem to advocate a new type of warfare dominated by information. While warfare may indeed be moving into a new period unlike any that has come before, these discussions have an ominous undercurrent. There now seems to be an inclination to view information – its generation, control, flow, and volume – as the sole means to guarantee combat success in the 21st century. These debates seem to repeat a scenario common to defense policy formulation prior to the Vietnam War where "a common theme developed...that saw American technology and the coming of the computer age as rendering factors such as history, culture and the traditional understanding of war irrelevant."[2] This trend does not bode well for the American military. Military art and science is an area of human endeavor in which the "intangibles" such as courage, force of will and leadership count for much. In order to understand how best to prepare for the future of warfare, we must first consider what it means.

Information Superiority – What is It?

The cornerstone document of the "revolution" is *Joint Vision 2010 (JV2010.) JV2010* and its companion publication, *Concept for Future Joint Operations (CFJO),* lay the intellectual groundwork for the way the American military will prepare for war and fight in

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[1]Stephane Lefebvre, Michael Fortmann and Thierry Gongora, "'The Revolution in Military Affairs': Its Implications for Doctrine and Force Development Within the U.S. Army" *The Operational Art: Developments in the Theories of War*, (Westport, CT: Praeger Publishers), 174.

[2] Williamson Murray, "Clausewitz Out, Computer In: Military Culture and Technological Hubris," *The National Interest,* Summer 1997, 60.

the 21st century. *JV2010* introduces several new operational concepts such as "dominant maneuver, precision engagement, full dimensional protection, and focused logistics." A full consideration of these concepts is beyond the scope of this paper, but successful implementation of these concepts depends on one commodity – information superiority. *JV2010* defines information superiority as "the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same."[3]

Impacts on Operational Art

Since the dawn of organized warfare military history has been written with the human element foremost in the mind of the author. While historians do not neglect the effects of weapons, technology, logistics, doctrine or tactics, in the main military history has been about the soldiers and sailors who fought the great battles. Today, we are witnessing a headlong rush to embrace a "new" kind of warfare – a "revolution in military affairs" (RMA). Advocates of this new kind of warfare emphasize that the primacy of the human element will be reduced as sensors, precision guided weapons and information become the *sine qua non* for combat success.

Information Superiority Warfare – The Intersection of Operational Art and "Jointness"

This new kind of warfare will be fought by smaller units. Indeed, one analyst sees the death of the Army's heavy divisions as they become no more than a command and control structure directing a group of reinforced forward detachments.[4] But, where small units have historically had a narrow view of the totality of the action going on around them, this new

[3] Joint Chiefs of Staff, *Joint Vision 2010 – America's Military: Preparing for Tomorrow,* (Washington, D.C.: May 1996), 16.

warfare will bestow a wider vision of battlefield action. When information was once limited, the side that possessed more, and as importantly, more *reliable* information was the side that had a significant advantage. *JV2010* assumes that perfect knowledge, or "dominant battlespace awareness," will be the normal operating environment for the 21st century American military. In this milieu, smaller and smaller units become increasingly more capable because they have an exact picture of the battlefield. On the battlefield of the future the modern leader will also see the battlefield with a greater depth than before. But *JV2010* posits that the control of information will be such a decisive factor that it has the potential to rearrange the geometry of warfare, and it acknowledges as much:

> "The combination of these technology trends will provide an order of magnitude improvement in lethality. Commanders will be able to attack targets successfully with fewer platforms and less ordnance while achieving objectives more rapidly and with reduced risk. *Individual warfighters will be empowered as never before, with an array of detection, targeting, and communications equipment that will greatly magnify the power of small units.* "[5] [emphasis added]

Other analysts also note the trend and state more explicitly that "[s]imultaneity of actions will blur the distinctions between the strategic, operational and tactical levels and alter what has heretofore been known as battle command."[6] If a potential effect of information superiority is to increase the capability of smaller units, then a logical extension of that ideal is smaller units will then become capable of operations historically in the province of the operational level of war.

"Jointness" and Operational Art

Joint Vision 2010 also stresses the "imperative of jointness." In describing how the American military will operate, *JV2010* envisions for a military that is "fully joint:

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[4] James J. Schneider, "Theoretical Implications of Operational Art" in *On Operational Art* ed. Clayton R. Newell and Michael R. Krause (Washington, DC: U.S. Government Printing Office, 1993), 20.
[5] Joint Chiefs of Staff, *Joint Vision 2010*, 13.
[6] Lefebvre, 176.

institutionally, organizationally, intellectually, and technically."[7] This simple statement has great impact. In essence, those words mandate something that has heretofore been on the fringes of the American method of preparing officers for leadership positions – an education in operational art. Operational art, according to Clayton Newell, "normally involves a combination of air, land, and sea forces executing a campaign that involves a series of battles to attain both intermediate and final objectives."[8] So "jointness" as envisioned by *JV2010*, and operational art as envisioned by Newell and others are inextricably intertwined. In fact, joint operations *are* operational art. Even a short examination of Joint Publication 3.0, *Doctrine for Joint Military Operations*, shows the influence of Clausewitz, who even today remains the touchstone for any consideration of operational art.

What the Joint Staff has driven the American military toward is a future where smaller units will find themselves more capable, hence able to execute operations at both the tactical and operational levels of war. This trend coexists with another bias in favor of more "jointness." As we have seen, jointness is the very essence of operational art. This introduction of operational art to smaller units may call for a new kind of leader.

Operational Leadership – The Broad Vision

Analysts who write on war at the operational level may differ in disputing finer points, but in discussions of leadership at the operational level, all seem to agree on one prerequisite for success, a broad view of war and warfare. Milan Vego argues that the operational leader must have that "rare gift of thinking broadly and understanding how each

[7] *Joint Vision 2010*, 9.
[8] Clayton R. Newell, "On Operational Art" in *On Operational Art,* ed. Clayton R. Newell and Michael R. Krause (Washington, DC: U.S. Government Printing Office, 1993), 9.

action fits into an overall design."[9] William Stofft maintains that leadership at the operational level requires a mind that "is open and curious, and one that has more than simply technical competence."[10] Stofft goes on to articulate other requirements of operational leaders such as experience, courage, the ability to intuitively acquire the feel of a campaign, and creativity.[11]

The *JV2010* follow-on, the *CFJO,* also echoes the basic requirements postulated by Vego and Stofft by calling for "mental agility" on the part of leaders, but the *CFJO* goes much further.

> "Leaders must understand the interrelationship of military power, diplomacy, economic pressure, and the media as well as the role of various agencies...They require a sophisticated understanding of historical context and superb communications skills to perform well in the changing international environment.... the increased tempo and scope of operations, and the continuing refinement of force structure and organizations require leaders with knowledge of the doctrine and systems of all Services. They must also have the skills to operate routinely and easily as part of a joint force. In 2010, as today, commanders must be able to master both the science and the art of command."[12]

The requirements for leaders articulated by *CFJO* are unmistakably within the realm of operational art as illustrated by Vego, Stofft and others. In fact, if a "broad vision" is a prerequisite for operational command, then *CFJO* could not be broader in its requirements of future leaders. For *CFJO* calls for future military leaders to be more than fleetingly familiar with political science, history, economics, geography, international relations, psychology, sociology, rhetoric, and of course, military art and science. The *CFJO* is less clear on how to create these leaders.

By now it should be clear that today's military leaders must have a sufficiently broad view of the totality of warfare and operational art in order to be prepared to fight and win the nations wars, or serve anywhere else the National Command Authorities direct. The

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[9] Milan Vego, extracts from *On Operational Art*, NWC 4107A, 1.
[10] William Stoft, "Leadership at the Operational Level of War" in *On Operational Art* ed. Clayton R. Newell and Michael R. Krause (Washington, DC: U.S. Government Printing Office, 1993), 20.
[11] Ibid.

requirement for increased "jointness," the requirements of operational leadership as smaller units become more capable and the sheer diversity of potential future military operations all prescribe that military leaders have a broad background. While information superiority is valuable, there is little that electronic sensors can tell a commander about the history, culture or politics of a country, or of the human nature of his adversary. Electronic systems cannot inculcate a deep understanding of operational art when a JCS deploy order arrives. That knowledge must already be in the mind of the commander; there is only one way to inculcate that knowledge, but how well do we do that?

Information and Context

> *We did not need more information at Pearl Harbor, and it is doubtful that we will need more information in the future. What we will need in the next century is a deeper understanding of the political context of war and the very different set of assumptions that our opponents may bring to it."*[13]

The problem with relying on information, and training one's subordinates to "trust the icon," is there is no room left for a deeper understanding not only of war in general, but the historical precursors of the battle in which one currently finds oneself. More information is not always better if there is no context in which to place it. Wayne Sweitzer points out that:

> "Historically, the Clausewitzian 'fog of war' has been associated with a *lack* of available information. Today, this naturally occurring 'battlespace fog' is being exacerbated by *too much* information." [emphasis in original][14]

In other words, the fog of war has now merely changed to a different set of obstructions – not eliminated, as some have claimed information superiority could bring about. The effects of information superiority are both positive and negative. Information superiority has the ability to:

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[12] Joint Chiefs of Staff, *Concept for Future Joint Operations – Expanding Joint Vision 2010*, (Washington, D.C.: 1997), 19.
[13] Murray, 64.

- Increase the effects of weapons – By providing "perfect" battlespace awareness, information superiority will allow units to mass quickly, avoid enemy strength and disperse quickly.
- Overwhelm leaders with information – The large volume of information soon to be available to the commander risks inhibiting quick, decisive action in favor of waiting for yet more information that will allow the "perfect" decision.
- Push the operational level of war to lower command echelons – By making smaller units more capable information superiority can make operational leaders from leaders whose view of the battlefield had heretofore remained in the tactical realm.
- Kill subordinate initiative by allowing (although not encouraging) senior leaders to control combat at lower at lower levels.[15]

But again without context, information superiority is a case of the dog who chases cars every day – what does he do when he finally catches one?

It seems here that the potential effects of information superiority might be offset by the characteristics of operational leadership. A broad vision, for example, would tend to counter the problem of the vast volume of information that would flood those leaders. A broad vision gives the commander a feel for what is truly important in the "big picture" and gives the ability to cast off "nice to know" details. Another component for operational leadership, decentralized execution, gives the commander the ability to issue broad guidance and move on to the next challenge, secure in the knowledge that subordinates are exercising their own initiative. (That commander is secure, of course, only if he/she has enough experience in issuing broad guidance and having it followed – a challenge only overcome through training and experience.) The problem for leader training of the future is how to overcome negative effects of information superiority while retaining the benefits of improved battlespace awareness.

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[14] Wayne F. Sweitzer, "Battlespace Information, Command and Control (C2), Operational Intelligence and Systems Integration," United States Naval War College NWC 2127A, September 1997, 3.
[15] For an excellent discussion of this trend see Robert L. Bateman, "Force XXI and the Death of *Auftragstaktik*," *Armor*, Jan-Feb 1996, 13-15.

> *"How can it be that the American military culture is throwing history and all its associated intangibles overboard not thirty years after we paid such a high price for our appreciation of them? The great tragedy of the post-Vietnam War experience of the American military is that its deeper understanding of war was never institutionalized."*[16]

In the modern history of the U.S. defense establishment there have always been competing strains in defense policy. These are the technological and the traditional. Another subtext of defense policy is the "last war" syndrome.[17] The technological strain emphasizes an approach to warfare driven by modernization – more and better hardware – as the solution to defense preparedness. The traditional approach does not eschew technology but cautions against an overreliance on untried weapons systems and instead places its faith in the human element. The last war syndrome effects both currents of thought. In this theme the danger is not so much that the military intentionally prepares to fight its last war again, but rather that the experience of the last war tends to color key decisions on policies in an interwar period. These two tendencies operate like a pendulum. Today, the ascendance of the technological strain coupled with a "last war syndrome" approach threatens to negate the lessons of history. How did we get here?

Williamson Murray summarizes what happened recently to push us toward a technological orientation where the importance of human factors are minimized:

> "With the passing of the Vietnam War generation, another major shift in the cultural and intellectual framework of the American military is occurring. The Clauswitzian universe is under attack by a new generation with no experience in Vietnam. A leader in this attack is Admiral William Owens, recently the vice chairman of the Joint Chiefs of Staff. Owens has made the extraordinary claims that:
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> > 'Technology could enable U.S. military forces in the future to lift the 'fog of war'...Battlefield dominant awareness – the ability to see and understand everything on the battlefield – might be possible.

[16] Murray, 64.
[17] For a discussion of typical American interwar trends see, Stofft and Heller, *America's First Battles.*

> When you look at areas such as information warfare, intelligence, surveillance, reconnaissance and command and control, you see a system of systems coming together that will allow us to dominate battlefield awareness for years to come...And while some people say there will always be a 'fog of war', I know quite a lot about these programs.
>
> The emerging system of systems promises the capacity to use military force without the same risks as before – it suggests we will dissipate the 'fog of war.'

Owens is not alone; his views represent a major trend in the culture of the American military. This new *Weltanschauung* represents in essence a return to the McNamara paradigm, a belief that American technological superiority will allow easy victories over their opponents with relatively few casualties."[18]

Admiral Owens' views still hold sway within the Pentagon. As Murray points out Owens, as Chairman of the Joint Requirements Oversight Council (JROC), was in the position to push the technological approach to future warfare and to have an impact long beyond the end of his tour as Vice Chairman of the Joint Chiefs of Staff. Owens' views and his approach are not necessarily wrong. But unless the American penchant for technology at the expense of other means of knowledge of war is checked, it runs the risk of "soldiers...willfully blinding themselves to other powerful elements that shape warfare."[19]

Meeting the Training Challenge

> *"The chief human response to changing military technology has been organizational and pedagogical; increasing specialization in the new technology, more and more schooling to teach new specialists the new tasks."*[20]

The challenge for the training system that will prepare the leader of the future is to decide where the line is between training to use the new technology and training to use the lessons of the past. Historically, the preference is for the former.

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[18] Murray, 62.
[19] A.J. Bacevich, "Preserving the Well-Bred Horse," *The National Interest*, Fall 1994, 49.
[20] John Shy, "First Battles in Retrospect" in *America's First Battles*, ed. Charles E. Heller and William A. Stofft, 348.

The Shape of Training

Discussions of the training for the future war tend to revolve around the "how" of training. The treatment of future training revolves around distance learning, simulations, "virtual" training for individual soldiers and increases in joint exercises. With the exception of joint exercises, this is a "hardware" driven approach in that it is preoccupied with the technology that will deliver the training. Almost never does one encounter discussions of the "what" of training. In the literature one finds few discussions of what leaders will need to know in order to cope with the changes wrought by new technologies or what subjects of instruction are most likely to impart the needed qualities. When discussing operational leadership, the literature is clear when discussing what leaders need, but less definitive when discussing *how* to structure a training system that imparts those needed qualities. The *CFJO* is typical of the genre:

> "Our education and training systems must prepare joint warriors to meet the challenges that *JV2010* envisions. Joint professional military education (JPME) programs must provide our warfighters with an understanding of the strategic concepts that underlie operations."[21]

If anyone missed the implications of that last sentence, *CFJO* makes it clear when it later states "Even junior leaders must understand that tactical actions can often have strategic consequences."[22] The problem remains how to instill that kind of awareness.

Military leaders of the future will also need mental agility and a broad vision in order to integrate the vast amount of battlefield information soon to be available to them. The sheer avalanche of data potentially available to future commanders combined with the accelerated pace of operations may be a problem.

> "Information processing system capabilities can cause data overload...[n]evertheless, individual judgment is a uniquely human trait that even the most sophisticated support systems cannot replace. The key is to consciously and systematically develop, using new,

[21] U.S. Joint Chiefs of Staff, *Concept for Future Joint Operations*. 20.
[22] Ibid.

> properly focused training and education approaches, the human ability to exercise correct judgments in a rapidly changing digitized environment covering a widely dispersed battlespace."[23]

There seems to be an antipathy in the American military to looking to the past for answers. If, as Admiral Joseph Prueher says, "intelligence is the ability to make sense of the information you have," then the one thing the American military has is a history.[24] The preparation for the types of future environments envisioned by *JV2010*, *CFJO* and other analysts must begin with a deep background; and that background is gained first in the study of history and followed by the study of operational art.

Where are We?

In the 1930s British military theorist B.H. Liddell Hart lamented the neglect of the study of military history among the British officer corps.

> "Unfortunately the professional soldier, with rare exceptions, is an amateur in this knowledge of his craft. His study of military history is neither sufficiently extensive nor intensive. Customarily it follows the method of concentrating on a few campaigns without a background, without acquiring a broad knowledge of all warfare."[25]

Not much has changed since Liddell Hart wrote that passage and his criticism applies equally to the American officer corps of today. Martin Van Creveld has published regarding the paucity of instruction in history, operational art and the general structure of training programs for American military officers and he laments the decline of military history as the backbone of a service school curriculum. The title of his study stands as a ringing indictment of the American officer schooling system – *The Training of Officers: From Military Professionalism to Irrelevance*. His study questions the practical efficacy that the current American manner of preparing officers has in modern warfare. The study of military history and operational art, even though enjoying a truncated renaissance in the Army of the late

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[23] Ibid. 26..

[24] Admiral Joseph Prueher, "An Address," Lecture, U.S. Naval War College, Newport, RI: 7 January 1998.

1970s and early 1980s, seems to again be in decline. Recently, Williamson Murray sounded the death knell of the study of military history and military theory:

> "The Gulf War represented the culmination of the Clauswitzian era...The success in the Gulf represented the fundamental payoff for an officer corps that had learned at great cost that the world offers little of the predictive, mechanistic philosophy that so enamored their superiors in Vietnam."[26]

While *JV2010* at least recognizes that training is required, it is curiously silent on *what* that training will be. It is similarly ambiguous on how we will achieve the mental agility required of future leaders.

> "From deliberate and intensive processes involving institutional, on-the-job, and self-study methods, the men and women of our Armed Forces gain the skills, knowledge, and attitudes required to accomplish their required tasks across the range of military operations."[27]

It seems that *JV2010* and *CFJO* place a high emphasis on self-study and on-the-job training at the expense of more formal, guided study. This may not be adequate to gain a deep appreciation of operational art.

Conclusions

> *"History never repeats itself exactly, but it is a mistake to think that history has ended and we now live in a modern age with nothing to learn from the past."*[28]

If warfare of the future will be different, either through technological enhancement, an increased focus on joint operations, or through an increase in military operations other than war; we must consider how training programs, especially leader training programs should change. We have seen that junior leaders will no longer be successful with a narrow, tactical view of the battlefield, or a specialization in those systems which confer information superiority. Those leaders must have a larger vision.

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[25] B.H. Liddell Hart, *The Ghost of Napoleon*, (New Haven, CT: Yale University Press 1934), 181.
[26] Murray, 61.
[27] Joint Chiefs of Staff, *Joint Vision 2010*, 6.

Military leaders of the future will be faced with a wide array of possible modes of operation, from domestic assistance to conventional war, all of which they must be prepared to execute. These possibilities demand a mental agility that will enable those leaders to shift seamlessly from one mode to the other. Perhaps this is even more important now as the specter of major conventional war diminishes but as other threats to U.S. national interests grow. It is curious to note that even as the U.S. fully embraces its "revolution in military affairs" with its emphasis on technology not history, our potential adversaries are looking to history for the answers. A.J. Bacevich notes that:

> "By jettisoning the established conventions governing armed conflict, [we] move into murky terrain: people's war, subversion, terror, and banditry. In truth, the past is rich with examples that testify to the efficacy of such methods. The brief Cold-War history of the post-Cold War era...suggests that the continuing relevance of those examples has not been lost on those who reject America's view of how the world should work."[29]

Bacevich continues in a vein that suggest that operational art and military history are used by our adversaries who may be undergoing their own RMA, whether or not they understand it, and whether or not they hold degrees in military art and science:

> "Unhampered by the squeamishness or scruples of our own post-Clausewitzian elites, these neo-Clausewitzians are eager to subvert the status quo, adopting selected new technologies that make it possible for ever smaller groups of perpetrators to inflict ever more mayhem."[30]

This seems to suggest that if our enemies are using the lessons of Clausewitz, perhaps we should not be too eager to cast him aside.

This confluence of trends; an increase in military operations other than war, a bias toward joint operations, and an increasing capability of smaller and smaller units all represent the very essence of operational art. In order for future operations to be executed well we

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[28] Sir James Cable, "Gunboat Diplomacy's Future," *Proceedings,* August 1986, 41.
[29] A.J. Bacevich, "Morality and High Tech", *The National Interest* No. 45 Fall 1996, 44..
[30] Ibid

must create leaders well versed in operational art and operational leadership, something the historical record suggests we do not do well.[31]

We will need to restructure our officer education system, and perhaps our noncommissioned officer education system, in order to impart the skills that confer the characteristics of operational leadership. If *JV2010* envisions an increase in capability of smaller units, it is not an intellectual stretch to assume that a brigade commander could soon find himself with the "punch" previously only within the realm of a corps commander. (Could not company commanders soon find themselves with the firepower and capability of the brigade commanders of today?)

We must create the mental agility in leaders which enables them to differentiate between when the electronic information "feels" right and when it does not. We must give them mental tools to overcome "data smog" and its tendency to overwhelm leaders with both essential and non-essential information. Leaders should use all means at their disposal to accomplish the mission. Technology is one of those means, as are operational art and military history. We must create leaders with a healthy skepticism, ones devoid of an unblinking acceptance of electronic data. To rely too heavily on "dominant battlespace awareness" runs the risk of creating a cadre of leaders, trapped at their computer screens, who are nothing more than specialists in the practical application of violence. It is likely that these specialists would have no greater understanding of the nature of war or the cycles of history than the average American on the street. The reason is their schooling system would not have prepared them for any larger vision. If this seems a *reductio ad absurdum* then we

[31] For an excellent discussion of the genesis of operational art see John English "The Operational Art: Developments in the Theories of War" in *The Operational Art: Developments in the Theories of War* ed. B.J.C. McKercher and Michael A. Hennessey. (Westport, CT: Praeger Publishers) 1996.

should consider the words of one Washington wag who summed it this way: "You *have* to take this argument to the extreme, the guys on the other side of the aisle will. [emphasis in original]"[32] Here it seems clear -- the antidote to overly specialized functions is an overly broad education. That education must be in operational art with a deep background in military history.

Recommendations

> *"The great battlefield captains of the future will be students of history and leaders of men who understand the limits, vulnerabilities, and advances that flow from digital technology."*[33]

If we accept the conclusion that a broad background, deep in military history and operational art, is the antidote to the uncertainty in future operational environments, then what action should we take to ensure the leaders of tomorrow are trained correctly today?

First, as a general rule each service should move the study of operational art from the mid-career point of officers to an earlier point. If Captains will find themselves as capable as brigade commanders of today, then it is only logical to move the preparation that today's brigade commander receives to the Captain level (perhaps the 5-8 year of service point). This is not to advocate that services take the program of instruction offered at intermediate and senior service colleges and move it wholesale to the Captain level. The instruction in operational art, however, offered by the College of Naval Command and Staff or the Army's School of Advanced Military Studies should be the basis of instruction at the Captain level. Nowhere is this more important than in the combat arms of the Army and Marines.

Second, the study of military history should be vastly expanded and pushed into pre-commissioning programs. Currently, instruction in military history in pre-commissioning programs is minimal. The background that will allow officers to grasp the finer points of

[32] Author's personal notes. This remark was overheard during a Congressional conference on the FY1997 Defense Authorization Bill, in March 1996. Source is unknown.

operational art is in military history. There will be no time to offer more than supplementary readings once an officer is commissioned since he/she will then have to begin the study of operational art in earnest. This background must come "up front," prior to commissioning. This program should then continue through junior officer and field grade ranks using the "institutional, on-the-job, and self-study methods" prescribed by *JV2010.*

Finally, our non-commissioned officer corps should be brought on board by deepening their study of military history both in a formal and an informal manner. Since non-commissioned officers do not command, there is little need for grounding in the requirements of operational leadership. To take the time to provide this would rob these NCOs (and the services) of valuable training time best spent doing what NCOs do best – leading and training. But non-commissioned officers play a vital feedback role for officers in addition to their primary role as first-line trainers. If the future of warfare will be one of constant flux, it would be helpful if both NCOs and officers were operating from the same page in their intellectual "playbook." This would have a potential side benefit of making the commander's intent a more readily understood affair from top to bottom in any organization. Given the uncertainty of the future battlefield and the types of conflicts in which the American military is likely to be involved, this is the very least the military education system can do to ensure success.

[33] Bruce B.G. Clarke, "Leadership on the Digital Battlefield," *Armor*, Jul-Aug 1996, 13.

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