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Technological Development and Military Reform: Revolutionary Change in the Way of War or Revival of the Feature of U.S. Defense Culture?

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Warning against Overreliance on New Information Technology

The advocates of U.S. Forces transformation have stated that emergent information technology, such as target detection sensors, precision-guided munitions, and the digitized information system that can give a precise and real-time picture of the battlefield, would cause historic changes in the nature of war, the way to conduct warfare, and military organization. In addition, they have iterated that the new era would come in which it would be possible to win while suppressing bloodshed and destruction to the utmost limit.[1]

However, in 2005, COL Herbert R. McMaster[2] asserted that there was a danger in embracing entirely the vision of future war which the transformation advocates offered. He concluded that the ability to share information quickly and deliver weapons effects precisely ought to be pursued vigorously, but without addressing its potential shortcomings, transformation based on information technology would not make America safer.[3] This was a warning against the ongoing military reforms at the time.

The shortcomings which McMaster pointed out can be summarized into two points. First, the transformation advocates often dismissed the fact that war is a human endeavor. Although soldiers might misunderstand the situations due to the human factors, such as hopes, fears, prejudices, and passions that would be inevitable on a battlefield, the transformation advocates asserted that the new information technology would provide full situational awareness.[4]

Second, the transformation advocates put a slight on a synergistic application of all forms of military power – ground, sea, air, space, and information. McMaster explained that each service had different capabilities and thus American strategic might would be most powerful when these capabilities were synchronized. He asserted that U.S. Forces must not be changed to a military which could solely attack with precision-guided munitions

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[1] Tetsuya Kataoka, *Gunji no Jiten [Military Encyclopedia]* (Tokyo: Tokyodo Shuppan, 2009), p. 113; Hiroshi Matsuoka, *Betonamu Shokogun: Chotaikoku wo Sainamu 'Shori' heno Kyohaku Kannen [Vietnam Syndrome: The Obsession with "Victory" that Plagues Superpowers]* (Tokyo: Chuo Koron Shinsha, 2003), p. 252.

[2] In the Gulf War McMaster participated in the "Battle of 73 Easting" as the Eagle Company Commander under the command of the 2nd Armored Cavalry Regiment. In the "Operation Iraqi Freedom (OIF)" he commanded the 3rd Armored Cavalry Regiment and conducted "Operation Restoring Rights" in Tal Afar. In the "Operation Enduring Freedom (OEF)", he served as Deputy to the Commander for Planning of the International Security Assistance Force (ISAF). He served as National Security Advisor in the Donald Trump administration from February 2017 until March 2018.

[3] Richard D. Hooker, Jr., H. R. McMaster, and Dave Grey, "Getting Transformation Right," *Joint Force Quarterly*, Issue 38 (3rd Quarter 2005), pp. 20-21, 27.

[4] Ibid., pp. 21-22. In addition, it has been pointed out that information technology was not a substitute for human judgement, and that technological problems should not be confused with problems that are caused by the limits of human abilities. For example, David Betz asserted that the exercise of judgement would be more challenging as the overall quantity of information would increase, and that information overload would make it difficult for commanders and staffs to separate the important from the unimportant. David J. Betz, "The More You Know, the Less You Understand: The Problem with Information Warfare," *The Journal of Strategic Studies*, Vol. 29, No. 3 (June 2006), pp. 519-520.

via transformation.[5]

This paper aims to reinforce McMaster's assertion by pointing out other issues including what he did not refer. In order to do so, based on previous research, this paper will first clarify why the transformation advocates exaggerate the potential of high technology. Next, by citing examples of U.S. Army reforms from the mid-1970s to the late 1980s, it will disprove the claim that emergent information technology causes historic changes.

Why the Transformation Advocates Exaggerate the Potential of High Technology?

After the Gulf War, "Revolution in Military Affairs (RMA)" theory gained momentum. The RMA theorists often cited the assessment of the Gulf War that U.S. Forces defeated the Iraqi troops one-sidedly and collapsed their morale completely via high-tech weaponry.[6]

However, they exaggerated the potential of high technology. As research progressed since the mid-1990s, its limitations gradually became apparent.

Stephen Biddle[7] shows the reason why U.S. Forces were able to inflict catastrophic damage to the Iraqi Forces in the Gulf War. He asserts that it was because of the Iraqi low tactical skills besides the flexibility, initiative, and insight of U.S. soldiers to exploit the defensive mistakes. He concludes that, if a highly skilled adversary made no mistakes, or if U.S. Forces with low tactical skills were not able to exploit an opponent's mistakes, then there would not be one-sided results even if U.S. Forces were equipped with the high-tech weaponry.[8]

In addition, David Betz[9] points out that high technology does not have as big impact on land warfare as on air and naval warfare which has high technological dependence. Furthermore, he shows that high technology is not so effective in unconventional wars, such as the counter-insurgency and stability operations, as in conventional wars.[10]

The root cause for exaggerating the potential of new technology is the almost self-righteous mindset against a background of excessive expectations for RMA.[11] This mindset can be divided into two parts.

The first is the mindset that disregards factors other than technology, even though it can be inferred that various factors influence the outcome of a battle. As mentioned earlier, McMaster pointed out that the human

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[5] Ibid., pp. 23-27.

[6] The following are representative of RMA Theory in the 1990s: Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (Boston: Little, Brown and Co., 1993); John Arquila and David Ronfeldt, "Cyberwar is Coming!," *Comparative Strategy*, Vol. 12, No. 2 (Spring 1993), pp. 141-165; James R. Fitzsimons and Jan M. Van Tol, "Revolution in Military Affairs," *Joint Force Quarterly*, No. 4 (Spring 1994), pp. 24-31; Martin C. Libicki, *What is Information Warfare?* (Washington, D.C.: National Defense University Press, 1995); Harlan K. Ullman and James P. Wade, *Shock and Awe: Achieving Rapid Dominance* (Washington, D.C.: National Defense University Press, 1996). The Army after the Cold War sought to transform itself into compact but dramatically improved combat-effective Forces through the use of cutting-edge technology.

[7] Stephen Biddle is currently a professor at Columbia University. He participated in the strategic evaluation team under the ISAF. His primary works include *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton and Oxford: Princeton University Press, 2004).

[8] Stephen Biddle, "Victory Misunderstood: What the Gulf War Tells Us about the Future of Conflict," *International Security*, Vol. 21, No. 2 (Autumn 1996), pp. 157-158, 161-164, 166-174.

[9] David Betz is currently a professor at King's College London and a consultant to the research institutes at British Ministry of Defence. His primary works include *Cyberspace and the State: Towards a Strategy for Cyber-Power* (London: The International Institute for Strategic Studies, 2011).

[10] Betz, "The More You Know, the Less You Understand," pp. 506, 511-513.

[11] Kataoka, *Gunji no Jiten*, pp. 115-116.

factors on the battlefield were dismissed, but these were not the only things that RMA theorists dismissed. On this point, Biddle explains that no serious consideration was given to the mechanism for how three factors – offensive skill, defensive error, and advanced technology – interacted and affected the outcome of the Gulf War, and as a result, RMA enthusiasts misunderstood the potential and limitations of high technology.[12] Similarly, Williamson Murray[13] points out that the danger in the belief that high technology will offer U.S. Forces total battlespace dominance in the next century does not lie in the technology *per se*, but in the hubristic view that overestimates their technological superiority and disconnects what adversaries would think, want, and could do from consideration.[14]

The second is the mindset that lacks the historical perspective. In predicting how emergent technology would change battles, it is necessary to generalize as much as possible the potential and limitations of technology through historical research in order not to veer off in a biased direction. However, RMA theorists made little effort in this manner.[15] Biddle points out that RMA enthusiasts confused the thoughtful speculation on the future battles with an analysis of the Gulf War where the new technology was remarkably successful. Biddle criticizes RMA theorists for misreading the experience and misunderstanding the history of this war.[16]

Driving Force behind U.S. Army Reform after the Vietnam War

Technology was not a key driver of U.S. Army innovation after the Vietnam War. In the late 1970s, the U.S. government implemented plans to introduce cutting-edge technology to U.S. Forces. By the mid-1980s, the high-tech weapons utilized in the Gulf War were successively realized.[17] The Army renewed its weapons system. However, GEN Donn A. Starry[18] and COL Huba Wass de Czege[19] concluded that the Army would not be able to win the next war by technology-centric reforms.[20]

As a result of the debates over the "Active Defense" doctrine, the assertion became accepted that new technology would not be useful for solving operational problems, though it would help to solve tactical problems. The "Active Defense" doctrine published in 1976 was based on the idea of overcoming numerical disadvantages against the Warsaw Pact Forces by concentrating the firepower of the high-tech weapons.

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[12] Biddle, "Victory Misunderstood," pp. 174-175.
[13] Williamson Murray is currently an emeritus professor at Ohio State University. He has worked as for the US government and military research institutions. His major works include *The Making of Strategy, Rulers, States, and War* (New York: Cambridge University Press, 1994).
[14] Williamson Murray, *War, Strategy and Military Effectiveness* (New York: Cambridge University Press, 2011), pp. 69-70.
[15] MacGregor Knox and Williamson Murray, *The Dynamics of Military Revolution, 1300-2050* (New York: Cambridge University Press, 2001), p. 5; Kataoka, *Gunji no Jiten*, p. 117.
[16] Biddle, "Victory Misunderstood," p. 179.
[17] At the end of the 1970s, the U.S. government decided to introduce cutting-edge technology to the military, such as precision-guided munitions, GPS, sensors, and stealth aircraft, in order to offset the numerical inferiority to the Warsaw Pact Forces in Europe. Takeshi Fukuda, *Amerika no Kokubo Seisaku: Reisengo no Saihen to Senryaku Bunka [American Defense Policy: Reorganization and Strategic Culture After the Cold War]* (Tokyo: Showado, 2011), pp. 64-65, 77-78.
[18] Donn Starry strongly promoted the compilation of the "AirLand Battle" doctrine as the commander of the Training and Doctrine Command (TRADOC) from July 1977 to July 1981.
[19] Wass de Czege wrote the "AirLand Battle" doctrine from 1980 and supervised its revise from 1984. In addition, he studied on the Command and General Staff College (CGSC) reforms. He became the first director of the School of Advanced Military Studies (SAMS) founded in 1983.
[20] Donn A. Starry, "A Perspective on American Military Thought," *Military Review*, Vol. 69, No. 7 (July 1989), pp. 10-11; Huba Wass de Czege, "How to Change An Army," *Military Review*, Vol. 64, No. 11 (November 1984), p. 33.

However, the disputes about "Active Defense" resulted in the prediction that even if the U.S. Army won the first battle, it would not be possible to withstand the breakthrough of the follow-on echelons in the second battle, and that the U.S. Army would be defeated after all.[21]

The driving force behind the Army innovation was to raise the level of the knowledge and practice of the science and art of war. Czege explained that the fundamental key to controlling and integrating change effectively was to develop the artful practice of war by the officer corps based on a firm foundation of the science on warfighting. Similarly, Starry explained that in order to achieve change, there must be imaginative officers who had trained themselves or had been trained to think logically, and the intellectual prowess must be the cultural commonality amongst U.S. Army officer corps.[22]

Czege showed how the organized body of knowledge on warfighting drove the Army reforms effectively. This content can be summarized into two parts.

First, Czege showed that the body of knowledge would enable soldiers to change methods timely to comply with new conditions. He pointed out that soldiers were so practical that they generally failed to learn and apply the body of knowledge, such as why the current fighting method had been developed, what rationales were behind its uses, and under what conditions had it succeed. Czege explained that organizing this kind of knowledge in an orderly manner would improve sensitivity to detecting changes in conditions that might invalidate current methods, as well as would strengthen judgement and creativity when concretely thinking about methods in response to the new conditions. He concluded that learning and teaching how-to alone would no longer be sufficient to maintain an effective Army as the rate of change in missions, technology, and battlefield conditions would continue to accelerate.[23]

Second, Czege explained that firm theoretical constructs based on the body of knowledge would measure, enlighten, guide, and drive change and action. He added that the future way of war must not be left only to technicians, and that soldiers educated in the underlying combined arms theory must look into evolving technological development.[24] In fact, the operational concept, which was created by Starry from his study on "deep attack" – fighting against the follow-on echelon of the Warsaw Pact Forces from the deep areas far beyond the forward edge of battle area (FEBA), dictated the requirements for organizational reform, training reform, and weapons system development. In particular, the technological requirement that he demanded, which far outstripped the capability of the technology of the time, served as a guideline for the weapons system development and as a measure for evaluating the effectiveness of new weapons.[25]

The basis for raising the level of the knowledge and practice of the science and art of war was the Army's renewal of military professionalism in the 1970s. The new professionalism defined the professional expertise

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[21] Headquarters, Department of the Army, *FM100-5 Operations* (Washington, D.C.: GPO, 1976), pp. 3-5 to 3-6, 5-3, John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982* (Ft. Monroe, Va.: U.S. Army Training and Doctrine Command, 1984), pp. 16-17; William S. Lind, "Some Doctrinal Questions for the United States Army," *Military Review*, Vol. 59, No. 3, pp. 57, 62-64.

[22] Czege, "How to Change An Army," pp. 38, 48-49; Donn A. Starry, "To Change An Army," *Military Review*, Vol. 63, No. 3 (March 1983), p. 27. Additionally, Robert Scales points out that it was the quality of the young soldier and his leaders that proved so overwhelmingly decisive in the Gulf War, and that U.S. Army was would seek to outthink rather than outslug its opponents. Robert H. Scales Jr., *Certain Victory: The U.S. Army in the Gulf War* (Washington, D.C.: Potomac Books, 2006), p. 36.

[23] Czege, "How to Change An Army," pp. 34-35, 39-40.

[24] Ibid., pp. 41-44.

[25] Starry, "To Change An Army," p. 26; Richard Lock-Pullan, "How to Rethink War: Conceptual Innovation and AirLand Battle Doctrine," *The Journal of Strategic Studies*, Vol. 28, No. 4 (August 2005), p. 684.

of the officer corps as the knowledge and skills that were closely related to "the management of violence."[26]

After the Vietnam War, many senior officers insisted that the U.S. Army should never take on a socio-political role as the Army played in Vietnam. They supported return to the conventional war.[27] Additionally, the 1970 study on military professionalism by the Army War College, which was carried out under the direction of GEN William C. Westmoreland, the Chief of Staff of the Army, pointed out that one of the primary causes for the deviation from ideal professionalism was the lack of professional technical competence on the part of middle and senior grade officers.[28]

Under these views, improving combat skills became the urgent task. The U.S. Army had to reshape itself into an all-volunteer Army that was regularly well-trained and highly responsive to "come-as-you-are war."[29] In the mid-1970s, in order to foster technical competence, Department of the Army initiated "Officer Personnel Management System (OPMS)," and Training and Doctrine Command (TRADOC) reformed the training system for officers.[30]

It was the Command and General Staff College (CGSC) that opened the door to raising the level of the knowledge and practice of the science and art of war. Since the mid-1970s, the successive commandant had been trying to complement the skills-focused rebuilding of the Army with an intellectual rejuvenation. MG John H. Cushman, who was a commandant from July 1973 to August 1977, introduced the case study method with small work groups in order to place students in a situation where they had to identify, analyze, and suggest a solution to a problem. In such an environment, the student's thinking and problem-solving ability was developed.[31]

Under the supervision of LTG William R. Richardson,[32] Deputy Chief of Staff for Operations and Plans (DCSOPS), Czege conducted study focusing on an analysis of the CGSC's ability to train and educate the officer corps. He examined what had to be done to increase its effectiveness to meet the challenges facing the U.S. Army in the future until 2000. Richardson and Czege viewed it as a problem that the CGSC curriculum was so crammed with "spoon feeding" of information which was built on an insufficient theoretical foundation that there remained too little time for reflection, resulting in the atmosphere where students were not challenged mentally.[33]

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[26] Donald B. Vought and John C. Binkley, "Fort Apache or Executive Suite?: The US Army Enters the 1980's," *Parameters*, Vol. 8, No. 2 (June 1978), p. 25; Lock-Pullan, "How to Rethink War," p. 681.

[27] Vought and Binkley, "Fort Apache or Executive Suite?," p. 25.

[28] US Army War College, *Study on Military Professionalism* (Carlisle Barracks, PA: US Army War College, 1970), pp. iii-iv, 18-19.

[29] Romie L. Brownlee and William J. Mullen III eds., *Changing An Army: An Oral History of General William E. DePuy, USA retired* (Washington, D.C.: GPO, 1986), p. 183.

[30] William M. Donnelly, "Professionalism and the Officer Personnel Management System," *Military Review*, Vol. 93, No. 3 (May-June 2013), pp. 16-17; David D. Haught, *Officer Personnel Management in the Army: Past, Present and Future* (Carlisle Barracks, PA: US Army War College, 2003), p. 1; John L. Romjue, Susan Canedy, and Anne W. Chapman, *Prepare the Army for War: A Historical Overview of the Army Training and Doctrine Command, 1973-1993* (Honolulu, HA: University Press of the Pacific, 2002), p. 23-26, 32-36; Walter E. Kretchik, *U.S. Army Doctrine: From the American Revolution to the War on Terror* (Lawrence, KS: University Press of Kansas, 2011), p.201.

[31] Robert A. Doughty, "The Command and General Staff College in Transition, 1946-1976," Ft. Leavenworth, KS: CGSC, 1976, pp. 82-83.

[32] Richardson assumed the commandant of the CGSC from October 1979 to August 1981, DCSOPS from September 1981 to March 1983, and the TRADOC commander from March 1983 to his retirement in June 1986. Since his assumption of the CGSC commandant, he led the CGSC's reforms for a total of seven years.

[33] Huba Wass de Czege, "Final Report: Army Staff College Level Training Study," Carlisle Barracks, PA: U.S. Army War

In the mid-1980s, CGSC began to act as a professional university rather than training school. In October 28, 1985, Richardson, TRADOC commander at the time, told the CGSC members that instructors should be the authorities to teach students how to think, not what to think and what to do; instructors should put an emphasis on the quality of student thinking; and the mechanical approaches to instruction that reduce learning to techniques and formula should be halted.[34] By 1986, the prevailing atmosphere within CGSC was dramatically improved. Faculty expertise had grown, and student enthusiasm appeared to be high.[35] In 1988, COL Michael Wyly, U.S. Marine Corps, pointed out that the first-year course (CGSOC) was so markedly improved over what it had been only five years ago, and that it was a course worthy of the name education. He added that the Army's concept of School of Advanced Military Studies (SAMS), which was real education about warfare, set a standard that every American Service ought to adopt.[36]

The U.S. Army innovation after the Vietnam War shows that the assertion of transformation advocates is questionable. It was raising the level of the knowledge and practice of the science and art of war which led the Army innovation. The disciplined body of professional knowledge on warfighting was seen to be effective in bringing reforms in a variety of fields together, making the change timely and opportune, and realizing innovation based on sound judgement. But in contrast, a great leap in technology was seen as a portion of the Army reforms that were driven by the intellectual prowess of the officer corps.

Concluding Remarks

The Gulf War did not only triggered the RMA theory, but also influenced the subsequent developments of world history in many aspects, such as politics, diplomacy, and military affairs. The significance of the Gulf War is by no means small even today.

In March 2021, 30 years after the end of the Gulf War, the National Institute for Defense Studies (NIDS), Japanese Ministry of Defense, published *Aspects of the Gulf War 1990-1991*, which captures the Gulf War from both military and political perspectives. Additionally, in September 2021, the NIDS held the International Forum on War History with the aim of conducting extensive study from both military and political perspective to assess the historical significance of the Gulf War in a broader context.

【Links】

Aspects of the Gulf War 1990-1991, edited by the Center for Military History:
http://www.nids.mod.go.jp/publication/falkland/gulf_war.html

International Forum on War History 2021:
http://www.nids.mod.go.jp/english/event/forum/index.html

College, 1983, p. 46; Kevin C. M. Benson, "Educating the Army's Jedi: The School of Advanced Military Studies and the Introduction of Operational Art into U.S. Army Doctrine, 1983-1994," Ph.D. diss., University of Kansas, 2010, pp. 89-90; Department of the Army, "Professional Development of Officers Study: Vol. 1," Washington, D.C.: GPO, 1985, p. 28.

[34] Michael David Stewart, "Raising a Pragmatic Army: Officer Education at the U.S. Army Command and General Staff College, 1946-1986," Ph.D. diss., University of Kansas, 2010, p. 269.

[35] Stewart, "Raising a Pragmatic Army," pp. 300, 303.

[36] Michael D. Wyly, "Educating for War," *Marine Corps Gazette*, Vol. 72, No. 4 (April 1988), pp. 28, 30-31.

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