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Command, Control, and the Information Age of Military Operations

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"The instruments of battle are valuable only if one knows how to use them."

- Charles Ardant du Picq
- *Battle Studies*, 1870

INTRODUCTION

The study of "command" in military operations has traditionally focussed on the qualities and attributes that are exhibited by the few senior officers that have had the responsibility to command large forces in war. The impact of technology on the conduct of war has, as well, been an equally well-studied field. However, while it has also been suggested that "technology is not enough" in warfare,[1] these qualities of command may not be enough if the commander misuses, or does not understand, the instruments of battle that he has been given. More frequently, however, the focus has been on systems or the technological impact on warfare, not on the impact on "command." Nevertheless, various authors have demonstrated how otherwise capable commanders failed in their duties as a result of their misuse or misunderstanding of technology. In his influential study of World War I, J.F.C. Fuller notes negatively that "the general … relied for contact not upon the personal factor, but upon the mechanical telegraph and telephone."[2] The study of the American debacle in Vietnam also spawned numerous studies into the failure of the generals to win the war (if indeed such blame can be laid at their feet). The impact of technology has been cited as a factor in the American defeat; for example: "Generals and lower-level commanders hovered above the action in their helicopters, tuning in on the radio frequencies,

[1] Barbara W. Tuchman, Practicing History (New York: Alfred A. Knopf, 1981), 281.
[2] J.F.C. Fuller, Generalship: Its Diseases and Cures (Harrisburg: Military Service Publishing Co., 1936), 61.

landing in the midst of firefights, knocking out tanks, directing artillery fire, staging rescue missions, winning air medals, and functioning more as emotionally involved participants than as detached directors of the action below."[3] Yet in spite of the many studies that have looked at ***command*** and the many studies that have examined the technological future of command and control ***systems***, only a limited body of writing exists on the link between the principles of command, the methods of control, and the application of them in the modern information age. In order to benefit from the recent revolution in information technology, modern militaries must zealously and innovatively advocate a revolution in the understanding and application of traditional command principles and control mechanisms.

PRINCIPLES OF COMMAND

The existence of ageless principles of command is a controversial and uncertain concept. Even the well-known expert on "command", Martin van Creveld, has views on the subject that appear contradictory, claiming both that "the functions of command … are eternal" and also that "command being so intimately bound up with numerous other factors that shape war, the pronunciation of one or more 'master principles' that should govern its structure and the way it operates is impossible."[4] On the other hand, what van Creveld may be expressing is the belief that command principles can be eternal whereas the methods of effecting the will of command, i.e. control, may have to be more flexible. Other well-known scholars of military art, nevertheless, suggest that there is "a certain historical continuity in the nature of command, regardless of changes in weaponry, communications, and styles of wielding power."[5] While

[3] Maureen Mylander, The Generals (New York: The Dial Press, 1974),194.

[4] Martin van Creveld, Command in War (Cambridge: Harvard University Press, 1985), 9, 261.

[5] Roger H. Nye, The Challenge of Command (Wayne: Avery Publishing Group Inc, 1986), 24. Describing J.F.C. Fuller.

there does not exist a unanimous view on the immutable principles required for effective command of large military forces, there is a definite thread of consistency throughout the various works on the subject.

Clausewitz, the oft-quoted and influential authority on war, places courage at the top of his list of qualities required by the commander, followed by physical strength and then intellectual qualifications.[6] He further defines some of these intellectual attributes as intuitiveness, wisdom, and mental vision.[7] These three main concepts are shared by Marshal Saxe,[8] Jomini,[9] and by Fuller, who also emphasizes that the general must share with his men in the danger inherent in war, where "there is a clear possibility of the struggle ending in death"[10] – the frequent argument for front-line leadership versus rear headquarters leadership. Amongst the writers in this field there is an almost understood acceptance of the requirement for courage, both physical and moral, and physical health. Yet the ***art*** of the commander is more deeply rooted in the intellectual capacities that he exhibits and, by extension, the manner in which he deals with people. How does the commander ensure the application of his intellectual capacities? Marshal Saxe suggests that "on the day of battle . . . the General should do nothing. He will then see the better what needs doing, he will preserve his power of judgment."[11] In Wellington this was characterized by "transcendent common-sense,"[12] by Napoleon as a "cool head"[13] and by Sun

[6] Karl von Clausewitz, On War (New York: The Modern Library, 1943), 32.
[7] Clausewitz, 45.
[8] Marshal Saxe, The Art of War in Vice-Admiral Sir Herbert W. Richmond, Command and Discipline (London: Edward Stanford Ltd, 1927), 15.
[9] Jomini, Précis de l'Art de Guerre in Richmond, 19.
[10] Fuller, 28.
[11] Saxe in Richmond, 17.
[12] Fortescue, Wellington in Richmond, 27.
[13] Napoleon, Military Maxims in Richmond, 29.

Tzu as a "perception of what is expedient."[14] Field Marshal Montgomery stated that the commander must "spend a great deal of time in quiet thought and reflection."[15]

Beyond the intellectual domain, however, there are two main human relations factors of "generalship" that are common themes. The first is the interface between the commander and his troops and the second is the degree of decentralization, or initiative, that the commander encourages. Fuller's views on leading from the front, stated in the context of World War I trench warfare, were noted earlier in this paper, although it is clear from most great leaders that one must not necessarily take that concept too literally. Field Marshal Slim emphasized the need to be known by your men. While acknowledging that you cannot get to know all of them, or vice versa, it is nevertheless imperative that you be known by sight. As well, Slim, a World War I veteran, was as concerned as Fuller about the perception that the rear headquarters, and the commander, were living in conditions better than the front-line troops – essentially a concept that they were not sharing in the dangers and rigour of the war. As a result, he ensured that if the front-lines were on half rations then so would the rear staffs.[16] General Ridgway held similar views to Slim and was insistent that "the commander . . . be where the crisis of action is going to happen. He does not belong back at his command post."[17] Field Marshal Wavell expressed identical sentiments.[18] It should be noted, however, that the historical precedent in the Navy is somewhat different owing to the nature of the environment in which naval warfare is conducted. It is not necessarily the case that the oper67 Tm0 0 cTm06116d-bw1 23612.29993 37l oe15cwi49.brIt is th1 Tw

headquarters ashore.[19] Most importantly, there is hardly any modern military commander who has not expressed the view that you must trust your subordinates and decentralize your command.

The lists of the specific qualities of a good commander are wide and varied. For while the first three criteria of courage, physical health, and intellect are almost universally accepted, and the concepts of trusting subordinates and leading "from the front" frequently cited, other writers have added additional qualities, such as the will to win (resolute), judgement, knowledge, responsibility, and integrity. Yet out of these maze of differing views comes a common theme that is manifested in the ability of a commander to be intellectually creative, a "responsibility to think, to 'look out the window'."[20] Liddell Hart was less equivocal on this subject and has captured the essence of what others have stated, for he believed that "creative intelligence is and always has been the supreme requirement in the commander."[21] At the core of this quality is the requirement to stand back, to contemplate, to be innovative, and to be visionary. This, in itself, presupposes an obligation to avoid getting over-involved in the details of the war that is being fought under your leadership, and therefore a degree of reliance on decentralization and trust in your subordinates. This is not to deny, of course, as pointed out by John Keegan, that "in the last resort a commander must act."[22] These factors have a significant impact for the modern commander on the conduct of war or conflict in the information age. Can today's commander afford to exhibit such traditional leadership styles?

[19] Rear Admiral W.J. Holland, "Where Will All the Admirals Go?," US Naval Institute Proceedings May 1999:40.
[20] MGen Aubrey S. Newman, What Are Generals Made Of? (Novato: Presidio Press, 1987), 229.
[21] Basil H. Liddell Hart, Thoughts on War (London: Faber and Faber Ltd,1944), 223.
[22] John Keegan, The Mask of Command (Harrisonburg, VA: Penguin Books, 1987), 325.

CHANGING FACE OF INFORMATION TECHNOLOGY IN MILITARY OPERATIONS

The pervasiveness of computers, and information technology, throughout all arms of military forces is an irrefutable result of the information age that we are currently living through. The speed of information flow, both intelligence on the "enemy" and updates on the current battle, has increased dramatically. Not only are faster decisions the result,[23] but they have become a necessary requirement.[24] Overall, the impact is to increase the operational tempo.

The information age has enabled the commander to better synchronize his battlespace and share information through all levels of the military hierarchy, in what has been referred to as network-centric warfare. This common database of information should also result in a reduced requirement for direct communication between individuals at the different levels of command. Because the balance between information gathering and decision making has been changed by the faster flow of information, it therefore follows that decision making can also be faster. However, the enemy's OODA loop (observe, orient, decide, act) has also been improved and therefore "as speed is increased, reaction times will decrease."[25] – the pressure for commanders to act quickly to keep up with the enemy's decision cycle will be tremendous. A word of caution, however, for it may be that in some circumstances technology has allowed "intelligence to outpace the movement of armies,"[26] and although this may not affect the imperative for speedy decisions, it may nevertheless affect the ability to see these decisions acted upon. Equally important to the commander will be his ability to analyze the information inputs under such pressures, for not only will time be a factor, but accuracy will also remain vital. Although

[23] Gregory A. Roman, "The Command or Control Dilemma: When Technology and Organizational Orientation Collide," Maxwell Papers. Air War College Paper No 8 (February 1997): 9.
[24] Holland, 36.
[25] Maj Harry J. Hewson, "Leadership for the 21st Century Marine Corps: Six Ideas for Success During Radical Change," Marine Corps Gazette 82:12 (Dec 1998): 39.
[26] Keegan, 326.

the information age has significantly increased the volume of information available to the commander, there remains the expectation that more information is available, or could be, in order to make the best, most accurate, decision. The modern commander need only ask for it or be prepared to wait for it. The temptation to both demand more information and to wait for further information before making a decision will be significant. While a commander has always had to determine whether he has all the necessary information with which to make a decision, the conflicting pressures of both time and accuracy will have a greater and more demanding influence on the decision-making cycle.

These factors resulting from the information age revolution have prompted many writers to suggest that we are now in, or about to enter, a Revolution in Military Affairs (RMA). Whether this information age has ushered in a Revolution in Military Affairs is not certain, for some scholars would argue that this most recent technology is only the latest "tool" for use by the commander and that this will not "negate the fundamental nature of war. Friction together with fog, ambiguity, chance, and uncertainty will dominate future battlefields as it has in the past." [27] Like the wireless telephone, or radar, or satellite imagery, the advancements in information technology could be viewed solely as part of an evolutionary cycle. However, such a view inappropriately diminishes the impact the information age is having on warfare and the potential requirements to change doctrine, organizations, and perhaps methods of command. The combination of technology plus these other changes may be what is required to conceptualize the overall impact as revolutionary. A historical perspective is also useful, for when considering the many centuries of warfare, it is evident that the military profession "has

[27] Williamson Murray, "Thinking About Revolutions in Military Affairs," Joint Force Quarterly 16 (Summer 1997): 76.

faced continuous technological changes since the mid-nineteenth century"[28] and that the growth in electronic developments since World War II has been exponential, significant, and unprecedented. In the end, whether the information age is viewed as a revolution or evolution, the modern commander must still adapt to make best use of the new technology and today that requirement to find the best solution is very pressing.

THE DYNAMICS OF MODERN WARFARE AND OOTW

It is important to also understand the unique challenges that are occurring in today's military environment. The modern battlefield is not the classical general war, for today's armed forces are more frequently involved in smaller, regional conflicts and in Operations Other Than War (OOTW). These modern operations have brought new challenges for the military commander, both in his ability to practice the "traditional" principles of command and in his ability to use, and possibly control, the application of information technology. These operations, which are usually joint, and almost certainly combined, are being conducted under considerable political control, both at the national level and the international level (UN or NATO). For the United States in particular, the current trend towards conflicts on foreign soil that may be morally justifiable, but less frequently of vital national interest, has resulted in a growing public and governmental intolerance for casualties and the expenditure of limited financial resources. The impact of losses in Vietnam, coupled with more recent losses in Lebanon and Somalia, has contributed to this view. The loss of American lives in the defence of someone else's country has no appeal to the public. This particular national phobia is spreading throughout other potential coalition nations, who bring to an operation their own constraints on military action. These may include a repugnance of civilian casualties or collateral damage, or a fear of so-called

[28] Mervyn Berridge-Sills, "Computers and Strategy: It's the Thought That Counts," The Changing Face of War: Learning From History. Allan English ed. (Kingston: RMC, 1998), 185.

"mission creep." Coalition cohesion in the face of such national or international pressures is fast becoming an accepted centre of gravity for such operations.

The other frustrating aspect of current operations, at least to the traditional military thinker or warfighter, is the apparent violation of warfighting planning doctrine. These are not the types of wars that were planned for throughout the Cold War and do not reflect the past experience in Korea, World War II, or World War I. Instead, missions can be characterized as follows: they are often ill-defined, or, worse still, defined by the limit placed on the number of forces; political or diplomatic pressures dictate half-measures that, to the military planner at least, will not achieve the desired end-state; missions are not war but are instead a state of tension, with its own rules; end-states are not known or change as the operation develops; and missions change significantly and not in concert with the initial deployment of forces.[29] The military commander is no longer given a clear mission and then left to conduct the operation with relatively little interference. Indeed, the opposite is true. The traditional view that such operations should unfold in accordance with the accepted operational planning process is not the case. Starting at the beginning with the initiation of the mission from the political/strategic level, the traditional planning process has been corrupted. Throughout the entire process, leading up to the point where the operational commander provides his subordinate commanders with a complete concept for the operation, ambiguities and uncertainties are commonplace. Although plan review has always been a feature of any operational planning process, in OOTW it has taken on an entirely new meaning and significance! Of greater importance, however, is the effect such operations have had on the concept of decentralization of command and the ability of the senior commander to leave his subordinates alone to conduct the operation.

[29] Wray R. Johnson, "Warriors Without a War," Military Review, 78:6 (Dec 98/Feb 99): 68.

The relationship of this modern form of conflict to the information revolution is multi-faceted. Firstly, the ability to give up-to-date images of the operation, including live-feed of missile strikes, coupled with the desire to enhance national "buy-in" for the operation, is both a result and a function of new technology. Secondly, higher levels of command, including the political level, have been given the ability to control the "battle" to the smallest detail. The recent air battle in Kosovo (1999) is a superb example of the level of control exerted by both strategic military and political levels of command, with targeting selection being discussed between the joint force commander, and, in the US case, with the Pentagon, and occasionally the White House.[30] Thirdly, the very nature of the changing operation almost necessitates frequent and intrusive intervention from the senior military levels of command down to individual units in order to counter all the unique factors of OOTW and to keep up with the changing direction. Can this impact of technology on OOTW be ignored or must we in the military adapt our methods or even change our principles?

THE CHALLENGE TO COMMAND PRINCIPLES

The introduction of any new technology, either as a revolution or by evolution, is bound to create controversy. There will always be those who view any new technology with skepticism. For example, in 1908 writers expressed great fear that the introduction of wireless communication would lead to the loss of independent action by fleet commanders, who would be receiving direction from far away on the end of a wireless telephone.[31] A similar paranoia exists today with the revolution in information technology, and while it is a fear not to be ignored, there are means by which it can be rationalized. Equally so, there are the zealots who perceive the introduction of new technology as the panacea for warfare. No longer will the commander be

[30] Michael Ignatieff, "The Virtual Commander," The New Yorker (August 1999): 34.

searching for information because the new systems will provide everything he needs. As well, it is suggested that the inaccuracy of warfare will decrease and the prospect will exist to eliminate human error. The study of history and the introduction of previous technological advances would certainly suggest that nothing will change some of the basic features of warfare; uncertainty, the fog of war, will continue to dominate conflict, and as far as eliminating error, one historian has noted that it "has about the same degree of probability as the return of the dinosaur."[32] The answer, therefore, is to treat this new technology with skeptical enthusiasm, and to ensure that it helps the commander in warfare rather than hinders him.

But can the modern commander be truly creative and innovative when he has machines that will do most of the work? Computers will overwhelm him with information, and some of them will have pre-programmed responses. More importantly, will the mass of information be so great that the commander is unable to properly digest the data, analyze it, and then make appropriate and timely decisions. As previously noted, there will be massive pressure for the commander to react quickly in order to keep up with his enemy's decision cycle. There is a great fear that the flood of information will be so great that there will be decision-making paralysis. As well, this wealth of information will potentially generate an expectation for answers to all questions – a sense that if one waits long enough the right answer will arrive. In other words, the amazing abundance of information will actually create a climate where there is a belief that not enough information is available. How then can the commander exercise his battlefield courage and demonstrate his will to win? The answer is perhaps eternal: the commander must do what he has always done, that is to make a judgement call as to what information is useful, what is not, how much is enough, and, finally, when to act. As noted by one writer, "the modern general has

[31] Captain James R. FitzSimonds, "The Cultural Challenge of Information Technology," Naval War College Review 51:3 (Summer 1998): 12.

state-of-the art technology light years ahead of what Eisenhower had available to him, yet both faced the same questions – Is it time/ Has enough been done to ensure the success of the attack? … the decision to commit forces to the offensive in the end was largely intuitive, personal, and private."[33] This is the responsibility that the commander must exercise and while it may be more difficult in the information age, it is nevertheless timeless. But he must also ensure that he uses the technology to assist him, so that once he makes a decision his organizational and technological structures will get his message (or his "intent" as a commander) out to his subordinates. The modern commander must know how to use information technology in a manner that contributes to his ability to influence the conduct of the battle and he must examine his war-fighting organization to ensure that it reflects the requirements for speedy passage of information, guidance, and direction.

One of the greatest advantages of the information age, and potentially one of its greatest disadvantages, is that all levels of command will, for the most part, now share the same database of information. What is available to the highest level commander will potentially be available as well to the unit commander, and vice versa. This will have the consequence of permitting the higher level commander to interfere in the details of the battle at a lower level. The willingness of military commanders to over-control is already engendered in a strong personality trait of "dominance," as demonstrated in US research.[34] The shared information picture now makes it easier for the over-controlling leader to swing towards his dominant features and to reach down to the lowest level and get "into the weeds." This fear of seniors over-controlling their subordinates is, of course, nothing new.

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[32] Tuchman, 283.
[33] Paul T. Harig, "The Digital General: Reflections on Leadership in the Post-Information Age," Parameters 26:3 (Autumn 1996): 133.

Some researchers have suggested that the sheer volume of information that will be presented to the commander and the complexity of the battlefield, rather than forcing the commander into the weeds, will necessitate greater empowerment of lower level commanders. The US Army's key doctrinal document, FM 100-5 Operations, states that to ensure initiative and independent action, "requires the de-centralization of decision authority to the lowest practical level" and requires "superiors who are willing to take risks."[35] The fact that the same database of information will be available to all levels of command also suggests that lower level commanders, and unit commanders, will be more apt to involve themselves in decision making. There may be a tendency for lower level commanders, having a seemingly complete picture of the situation, to take decisions that might more rightfully belong to a superior commander, i.e. the display of initiative but potentially an over-extension of one's authority. The crucial point, however, is that decentralization of decision making cannot become the easy way out of a difficult situation or complex information environment. The senior level commander must not abrogate his command to a lower level, as responsibility, or accountability, is an essential component of command that rests with him in the hierarchy of command.[36]

The interface between the commander and those that he leads will be strained by the dynamics of the future information environment. It has been suggested that because ownership of information is now both broader and plentiful, the "leader-follower relations" will be affected "in ways yet unseen."[37] How can the modern commander lead from the front, or become known to his troops if he is being overwhelmed with information that he must analyze and if his means

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[34] Lecture by LCol Paul Bradley at the Canadian Forces College, 13 Oct 99, based upon research done by the Center for Creative Leadership comparing BGen and civilian executives.
[35] Col Lloyd J. Matthews, "The Overcontrolling Leader," Army 46:4 (April 1996): 32.
[36] Ross Pigeau and Carol McCann, "Clarifying the Concepts of Control and of Command." Proceedings of the 1999 Command and Control Research and Technology Symposium (Newport, RI: US Naval War College, June 1999), 9.
[37] Bernard M. Bass, "Leading in The Army After Next," Military Review, 78:2 (March/April 1998): 47.

of communications is growing increasingly more electronic? The fear that the commander will become a slave to technology is a very real concern. But the essence of this problem goes back to the discussion on decentralization and the ability to stand back and contemplate the broader picture. Technology has made this more difficult, but nevertheless the requirement to do so has not diminished. Equally so, therefore, the commander must not lose sight of what may be the eternal constant of command, to be seen or known by the troops and to be perceived, at least, to be at the centre of the action.

RETAIN THE PRINCIPLES, ADAPT TO THE TECHNOLOGY, ADJUST THE MECHANICS

The ultimate question, therefore, is how to adapt our current methods to cater to the rapidly changing information environment. Specifically, do the principles of command continue to have relevance in today's warfare climate? How does one balance the traditional military hierarchical structure with the commonality inherent in information databases and should the higher level commander directly interface, electronically, with lower level units?

One of the key principles of command has been to trust your subordinates and to leave them alone to conduct their operations, hopefully within the limits set out in the commander's intent or guidance. This principle is at the heart of western military's belief that initiative is a key leadership quality at all levels. There was never any thought that initiative would be left only to the highest levels of command. Indeed, it is clear that higher level commanders would have no cultural tendency towards the exercise of initiative if throughout their entire career they had been precluded from demonstrating it. But the military also has a solid cultural attachment to the military chain of command, or hierarchy. Any attempt to break or amend this chain will be strongly resisted, as have other changes in the past that have been attributable to technological

revolutions.[38] Historically, the military's rank structure developed from the realities of the battlefield. Yet today's battlefield has changed and the military rank structure, and the accompanying organizational models, have not.[39] If the information age is providing us with an opportunity to improve our decision-making cycle, then we must strip away the bureaucratic layers that put roadblocks in the way of rapid decision-making. In particular, not only do we have the ability to speed up the decision-making cycle, but we must do so if we are to keep up with the enemy and retain the initiative on the battlefield.

The stripping away of bureaucratic levels in organizations is a philosophy that has been championed in the business community. In their case the imperative is to improve productivity, or the "bottom line." The methodology used to achieve this is to reduce the number of managers and reduce the hierarchical structures. In the military's case the bottom line should be viewed as the mission. To more effectively meet that mission in the information age we must be equally zealous at reducing inefficiencies and unnecessary overlap. An article on this subject titled "Where will all the Admirals go?"[40] in itself highlights half of the problem – our historical rank structure perhaps has too many built-in layers. The essence of the argument is the need to have only as many layers as is absolutely necessary. As the author put it, "the value added by an intermediate level of command will have to be obvious for that command to be a participant in a high-visibility operation. In many cases in the past 20 years, that value added has been marginal or even negative."[41] The reference to the last 20 years is an important point for it emphasizes that current warfare is not the same as the past model, and therefore our solutions must reflect that thinking.

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[38] Adm William A. Owens, in Col Mackubin T. Owens, "The Use and Abuse of Jointness," Marine Corps Gazette 81:11 (Nov 1997): 54.
[39] Keegan, 335.
[40] Holland, 36.

One of the US Army's key operational tenets, which is widely accepted elsewhere around the world, is the importance of initiative.[42] This tenet is expressed organizationally by the concept of decentralization. This philosophy has been adopted as a result of the volume of information that is available and the more complex nature of the battlefield in the information age. One must wonder, however, whether decentralization is the escapist model of coping with information overload. Does this ensure the accountability and responsibility of the senior commander or does it embrace the philosophy of so much decentralization that no one person is responsible?[43] One must not ignore the obvious contradiction: surely the greatest degree of experience and knowledge rests in the most senior officers. Equally so, it is the senior officer who has or should have been, chosen for his "genius" – his ability to bring to the battle his creative intellect and ability to lead. Juniors have throughout history always believed that they can conduct the battle as well as, or even better than, their superiors. This self-confidence is not to be discouraged, but nevertheless it does not reflect the reality of history and experience. It is the writings and successes of the generals or commanders-in-chief that we eagerly read, not of their second or third in command.

Therefore if it is imperative that the bureaucratic layers be stripped away to ensure rapid decision making, and if the most knowledge and experience rests at the top, then clearly the obvious solution is not decentralization but greater centralization of command. From an ethical and military professionalism vantage point this also seems to be the ideal solution. The senior commander is now, as a result of the sharing of databases and the rapid flow of information, more intimately in tune with the picture at the lower level. How could he absolve himself of his

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[41] Holland, 40.
[42] Robert W. RisCassi, "Principles of Coalition Warfare," Joint Force Quarterly 1 (Summer 1993): 60.
[43] Bass, 4.

accountability for lower-level actions when he has the same picture and knowledge? Greater centralization of command would therefore seem to be the answer to this dilemma as well.

Any solution to this command conundrum must also take into account the applicability of any new doctrine in both OOTW and general war. Most of the theorizing on the impact of the recent information age advances is being waged without a clear distinction between the requirements of OOTW as opposed to general war. Perhaps there is no difference, but the problem must not be left unexamined or unstated. As well, the solution must also distinguish between command and control. Too often arguments in favour of either decentralization or greater centralization deal in theoretical models without considering the exercise of command and the methods of control as separate sides of the same coin.

Van Creveld notes that history has shown that "armies have been most successful which did not turn their troops into automatons, did not attempt to control everything from the top, and allowed subordinate commanders considerable latitude."[44] At the same time he states that "monitoring should be close enough to secure reliable execution, but not so close as to undermine the authority and choke the initiative . . . of subordinate commanders at all levels."[45] What these statements highlight is that the solution to command and control in the information age does not hinge primarily on the concepts of decentralization versus centralization, but on the issues of command and control.

If we rely solely on centralization as the means to achieve efficiency in the information age then we risk overwhelming the senior commander with the sheer volume of information, stifling his creative thinking, and creating, instead, decision-making paralysis. At the heart of the

[44] Van Creveld, Command in War, 270.
[45] Van Creveld, Command in War, 8.

problem is not decentralization versus centralization but the reduction of the layers of bureaucracy. What we must go back to, therefore, is our organizational structures.

Our thinking is now based on rank and battlefield structures, all of which are too numerous and complex to function effectively in today's age. Instead, we should look towards the model of the levels of warfare to help us reduce this bureaucratic hierarchy. If we structure on the basis of the strategic, operational, and tactical levels of war we may be more successful at reducing our bureaucratic structure.

The solution, therefore, is to reduce layers of bureaucracy but retain decentralization within the context of the three levels of war. This will help preserve the important leadership and war-fighting skill of initiative. It must be accepted, however, that in certain OOTW environments, to ensure efficiency, the separation of strategic and operational levels, or operational and tactical, may be less distinct. As well, we must be less territorial in our protection of the layers in the chains of command. It may well be imperative that strategic or national leaders will have to provide direction to individual units, in particular those that have strategic weapons or semi-autonomous roles. This will entail a flexibility of command, that would, preferably, be espoused in a well-articulated doctrine in a general sense, and a concept of operations in the specific sense. This flexibility must also accept that information is not an instrument of power to be held close and compartmentalized. In the new era of flexible command structures, information, and the speed of information, is essential to the efficient conduct of warfare and the retention of the initiative. This concept applies equally in both directions. Indeed it will be essential, in an environment with a reduced hierarchy, for all lower levels to fully understand their commander's intent or guidance.

Without trying to be contradictory, a system of decentralization with reduced layers of bureaucracy would in itself achieve a degree of centralization, for it would entail the joining together of various levels of command and staffs into more efficient, and potentially, smaller organizations. This will permit the senior commander to take the time to reflect, be creative, and work on that "genius" factor that will win wars.

As well, it will permit the commander to partake in periodic and timely exposure with the units or formations under his command. This is one aspect of command whose importance has not changed in the information age. Keegan has answered this dilemma of whether to lead "from the front" in his concept of "sometimes" being better than "never" or "always." He expressed this as follows:[46]

> *"Sometimes a commander's proper place will be in his headquarters and at his map table, where calm and seclusion accord him the opportunity to reflect on the information that intelligence brings him, to ponder possibilities and to order a range of responses in his mind. Other times, when crisis presents itself, his place is at the front where he can see for himself, make direct and immediate judgements, watch them taking effect and reconsider his options as events change under his hand."*

Wars and conflicts are still conducted with humans, not just machines, and humans need to be motivated in the same manner today as in the past. It might even be argued that motivation of the warfighters is even more crucial in today's OOTW missions with volunteer professional armed forces. John Keegan described this factor as the "imperative of prescription – the need of every commander to convey an impression of himself to his troops through words, to explain what he wants of them, to allay their fears, to arouse their hopes, and to bind their ambitions to his own."[47] To be able to do this the commander cannot be over- burdened with detailed

[46] Keegan, 328.
[47] Keegan, 319.

information to analyze or be concerned with exercising total centralized command and control over his forces. Of course the advantage of the information age is that modern systems will permit the commander to keep informed almost as easily when he is "at the front" as when he is back in his headquarters.

To ensure that he is also able to exercise his responsibility and to be accountable for the actions of his subordinates, the senior commander will have to put into place specific control measures. These may include a greater reliance on a second-in-command, or a chief of staff, to monitor key elements of the information domain. With fewer echelons of bureaucracy the senior commander should have lots of very senior officers to be his prime staff officers, even if they are considerably more senior than today's staffs. To ensure the commander's positive, but not stifling, control over the action we must also examine the applicability of our staff planning tools. These areas require further study in an information age context.

Of course the staff officer's strategy is to have a plan prepared for every eventuality. Then all the commander must do is execute the plan, ponder a few variables, and leave the initiative to his subordinates. This is a dream conceived in staff colleges or in "between wars" peacetime headquarters, and not in the realities of war, either in the past, and certainly not in the present or future. "The essence of good strategy is what it has always been -- insecurity and uncertainty. The staff officers seek security and certainty. They build carefully laid-out attack and defence schemes."[48] Both the current experiences in OOTW and the future of warfare generally in the information age, will require a greater degree of flexibility. The commander's intent or guidance will likely be much more short-lived or specific to only certain scenarios. In other words, warfare in the future may have to be viewed in smaller, more flexible chunks. It will be the senior commander's job to not only provide a vision based upon the overall strategic

intent, but to provide timely updated guidance throughout, as changes occur. This could be viewed as straying from the traditional concept of allowing subordinates the freedom to exercise initiative; however, it should instead be viewed as adapting the concept of initiative to the current realities of warfare in the information age. With an increased operational tempo the reliance on all-inclusive plans may not only be impossible in either OOTW or general war, but could in fact be a disastrous example of military inflexibility. The information age will not allow such stagnant practices.

CONCLUSION

In spite of changes to the technology and methods of war-fighting, the overall nature of war is unlikely to be anything other than uncertain and confusing. The information age, or RMA, will only serve to make warfare more complex. Success will continue to depend on commanders who demonstrate the traditional command principles of courage (both moral and physical), physical health, and more importantly, creative intellect. The human dimension factors will also still be required. The commander must still motivate the troops and he must continue to instill initiative and trust in his subordinates. But to achieve all of this the commander must be unshackled from the fetters of the information age in order to have the time necessary to stand back, contemplate, and be creative. This must not be achieved through the abrogation of his command responsibility and authority, but through a change to control mechanisms, planning doctrine, and organizations. Uncontrolled decentralization is as dangerous as ponderous centralization. Instead the modern commander must shrink and flatten the decision making and command hierarchy by realigning his organization. Information may be power, but such power must not be territorially protected or the decision making cycle will be adversely affected, at considerable cost. The commander must be prepared to issue amplifying guidance as frequently

[48] John Ralston Saul, Voltaire's Bastards (Toronto: Penguin Press, 1992), 232.

as necessary to cater to the rapidly changing situation, for the new op tempo in the information age will not permit inflexible adherence to traditional planning cycles. The modern war-fighter must be more flexible, for it must be expected that certain taskings may go directly from the senior commander to the war-fighting unit. Equally so, the senior commander, now with a more complete picture of the battle at the lower levels, may have to exercise his prerogative and provide guidance or direction when he sees the battle developing contrary to his intent or guidance. To provide him with the necessary control mechanism and to keep his mind focussed on the broader vision in this faster-paced era, the commander must place greater reliance on a new, more senior staff, culled from dissolved lower echelons in the hierarchy. The result of these responses to the information age will truly be a revolution in military affairs.

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