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Human Competencies For Command At The Operational Level:

Future Requirements

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Abstract

Until recently, much study and commentary has been devoted to identifying the attributes and characteristics of a successful commander; however, there has been relatively little effort in defining the essence of command and requisite human capabilities. This essay argues that human competencies for command at the operational level will have to be greatly enhanced in order to meet the challenges of the future military environment. The paper examines the current trends and predictions as to the nature of future warfare, the role of the military, and the environment within which the operational commander will apply operational art. The Competency, Authority, Responsibility (CAR) model recently developed by Pigeau and McCann to delineate "command" is used as a framework to examine the human competencies which will be impacted. The author concludes that 3 of the 4 competency areas defined by the model - intellectual, emotional and interpersonal - will require enhancement for effective performance of operational level commanders. Adaptation, intuition and leveraging are identified as key enablers to improved competencies. The paper also comments on the utility of the CAR model and imperative to explore the complexities of command in more detail.

Human Competencies for Command at the Operational Level: Future Requirements

by Lieutenant-Colonel Douglas B. Baker

"The effectiveness of C^2 ultimately depends upon the human commander at the heart of every C^2 process and system. Genghis Khan shaped the fighting formations and established the harsh, effective discipline which made his Mongol forces legendary. Alexander the Great conceived and made work the battle plan which enabled his 30,000 troops to overcome the Persian king Darius' 200,000 plus at Issus. General Douglas Mac Arthur dared to engineer the Inchon landing during the Korean War."

Thomas P. Coakley
Command and Control for Peace and War

History provides many dramatic examples of human strengths and weaknesses having a profound impact on the effectiveness of military command and the application of the operational art. Much study and commentary has been devoted to identifying the attributes and characteristics of a successful commander; however, there has been relatively little effort in defining the essence of command and human capabilities needed at any level - tactical, operational or strategic. The nature of warfare continues to evolve, albeit in a less predicable path than during the Cold War era. Many claim that we are on the precipice of a revolution in military affairs, while others argue that rapid advances in technology, business, and the security environment are part of a natural evolution which is much less dramatic. In either case, given the uncertainty of the future, it is prudent to examine the human element of command since command is first and foremost a human endeavour.[1] At the operational level, command is inherently complex and demanding since the commander, as a practitioner of the operational art, is charged with achieving strategic objectives through the design, organization and conduct of campaigns and major operations.

[1] Canada, Department of National Defence, B-GL-300-003/FP-000 Land Force Command, (Ottawa: DND, Canada, 1996), p. 2-1.

This paper argues that future military operations, and the environment in which they must be conducted, will require greatly enhanced intellectual, emotional and interpersonal competencies for command at the operational level.

Given the fundamental importance of command to military operations it is surprising that the term "command" has not been more precisely defined and with reasonable consistency by the military profession.[2] NATO defines 'command' as the authority vested in an individual for the direction, coordination and control of military forces. In the Canadian context this definition is expanded to include its use as a verb, thereby including "the exercise of that authority and responsibility."[3] "One of the most striking characteristics of the [various] definitions is the extent to which they evoke the personal nature of command itself, especially being vested in an individual."[4] Some authors argue that the fundamentals of command vary with the character of the forces, the nature of the conflict, and the functions required of the people.[5] However, the role of the human is considered at the forefront in almost all discussions of command.

Most of the literature and military doctrine tend to focus on personal attributes desirable in a commander. The problem that this presents is that, even if key attributes could be identified, no one commander could realistically possess them all. Furthermore, those individuals commonly acclaimed as "great" commanders are not necessarily good men. History has clearly demonstrated that it is possible to be morally blemished and still be a highly effective commander.[6]

Pigeau and McCann have conducted considerable research in the area of command and in their most recent paper they have developed a structure to delineate the factors which comprise command. They have defined command as "...the creative

[2] Ross Pigeau and Carol McCann. "What is a Commander?" Paper presented at the Human in Command Workshop & Symposium 58, June, 2000, Breda, The Netherlands, p. 1.
[3] Canada, Department of National Defence, B-GL-300-003/FP-000 Land Force Command, p. 1-4.
[4] Martha Maurer, Coalition Command and Control, (Washington: National Defense University, 1994), p. 64.
[5] Van Creveld, Command in War, (Cambridge, Mass: Harvard University Press, 1985), p 262.

expression of human will necessary to accomplish a mi

COMMAND AND THE OPERATIONAL ART: IN WHAT WAYS WILL THE FUTURE ENVIRONMENT BE SIGNIFICANTLY DIFFERENT?

Over time war has undergone fundamental transitions in scale and scope associated with the fielding of mass national armies and the mass production of war materiel. Finding the formula for success on the battlefield in the age of the industrial war has been the preoccupation of military planners.[10] In a post-Cold War era and with the rapid advance of the information age, several basic questions must be considered: What will be the role of military force in future domestic and international environments? What will the military professional likely be called upon to do? In what sort of world will the military be called upon to do it? What kind of military professional will be needed to employ military force? These questions are the subject of widespread discussion and debate. Although no one can predict the future with reasonable certainty, the projections of academics and military professionals define the likely possibilities. By examining the range of scenarios, some logical deductions can be made regarding the impact on human competencies.

Technology and the RMA

In the past several years there has been much debate on the future of warfare and various aspects of what has come to be called the "Revolution in Military Affairs". The way in which U.S. and Coalition forces defeated Saddam Hussein's forces in 1991 suggests to some that the revolution is now in full swing a decade later and there is intense speculation about its future path. Fearful that the failure to adapt will erode U.S. military superiority as the only global superpower, Joint Vision 2020 seeks major transformation in American doctrine, capabilities, and force structure for the 21st century to achieve full spectrum dominance[11]. Some argue that such an approach will fall victim

[10] M.A Hennessy and B.J.C McKercher, Introduction to The Operational Art: Developments in the Theories of War, eds. McKercher and Hennessy, (Westport, Conn.: Praeger Publishers, 1996), p.1.
[11] United States, Department of Defence, Joint Vision 2020, (Washington: US Government Printing Office, June 2000), p. 2.

to excessive reliance on technology as a result of an overly narrow perspective on the extent to which it will impact warfare. Historically, forces other than technology have been major factors. A.J. Bacevich may well be correct in warning that if "…the 'revolution' glimpsed in Desert Storm has supplanted other sources of change – political, social, and cultural as well technological – that have shaped the character of modern warfare, it is likely to prove dangerously misleading."[12] Perhaps the experience in conflicts such as Somalia and Bosnia should be more relevant in shaping predictions of what warfare will look like in the 21st century.

Some authors argue that the rapid development of technology will allow what previously were strategic capabilities (e.g. spaced-based surveillance) to be used at all three levels of war, thus increasing space and diminishing time. This implies greater complexity, a shorter decision cycle for operational commanders, initiative delegated to lower levels of command, decentralization and an emptying of the conventional battlefield as the battlespace expands in all directions. Technology has enhanced manoeuvrability and ranges transforming the linear nature of the battlefield into a nonlinear or disengaged one. Finally, terrain retention may no longer be the primary objective, but rather, the characteristic of nonlinear combat may put the emphasis on destruction of the enemy.[13]

Soviet debate on the validity of operational art, suggests that there may be a compression of tactical, operational, and strategic levels. One school of thought argues that operational art retains its relevancy in that operational manoeuvre is feasible in virtually every combat context; an other, seriously questions the feasibility of operational manoeuvre and rationale for the operational level given that modern weapons produce such a rapid resolution of strategic missions.[14]

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[12] A.J. Bacevich, "Preserving the Well-Bred Horse", The National Interest, Fall 1994, p. 49.
[13] Stephane Lefebvre, Michel Fortman and Thierry Gongora, "The Revolution in Military Affairs: Its Implications for Doctrine and Force Development within the U.S.Army," in The Operational Art: Developments in the Theories of War, B.J.C. McKercher and Michael A. Hennessy eds., (Westport,CT: Praeger, 1996), pp. 176-177.
[14] David M. Glantz, "The Intellectual Dimension of Soviet Operational Art" in B.J.C. Mc McKercher and Michael A. Hennessy, eds. The Operational Art: Developments in the Theories of War, (Westport,CT: Praeger, 1996), p. 142.

Most believe that, as a major enabling element of the RMA, information technology will provide the commander with almost unlimited amounts of information acquisition, processing, storage and transmission capability.[15] In examining developing technology and warfare, Sullivan identifies five key trends in future war: increased lethality and dispersion, increased volume and precision of fires, increased integration of technology, achievement of greater mass and effect, and refinements in invisibility and detection.[16] However, the greatest military advantage from technology may come from operational concepts and adaptation, not just from sophisticated high-tech systems.

As an example of fundamental change in the way in which military forces will operate, network-centric warfare is seen as a logical extension of fundamental changes in economics, information technology, and business processes. This concept of warfare derives its power from the strong networking of a well-informed but geographically dispersed force. Such changes will cause a shift from platform-centric to network-centric warfighting. Proponents suggest that this will enable a move away from attrition style warfare towards a much faster and effective style characterized by speed of command and bottom up self-synchronization to meet the commander's intent.[17] Conversely, Alan Campen expresses serious doubt about the feasibility of network-centric warfare due to the inherent dependence on commercial technology when he states: "Network-centric warfare sounds impressive until one asks who actually supplies and controls the networks or whether they can be controlled at all."[18]

At the other end of the spectrum, van Creveld predicts that high-tech militaries will face defeat as a result of their own level of sophistication. He argues that future human, environmental and economic factors favour a defence system capable of fighting

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[15] Stephane Lefebvre, Michel Fortman and Thierry Gongora, "The Revolution in Military Affairs: Its Implications for Doctrine and Force Development within the U.S.Army," p. 176.
[16] General Gordon R. Sullivan and Lieutenant Colonel James Dubik. Land Warfare in the 21st Century, (Carlisle: Strategic Studies Institute, US Army War College 1993), pp. 12-25.
[17] Vice Admiral Arthur K. Cebrowski and John J. Garstka, "Network-Centric warfare: Its Origin and Future", US Naval Institute Proceedings, January 1998), pp.28-35.
[18] Alan D. Campen, "Outsourcing Command and Control" in Cyberwar 2.0, eds. Campen and Dearth, (Fairfax, VA : AFCEA International Press , 1998), p. 251.

against smaller guerrilla and terrorist groups, rather than large national armies. He goes so far as to suggest that the failure of high technology to provide real security and stability will lead to a slowing or perhaps to an end of technological progress, since such progress is only possible in a highly stable and secure environment. [19]

Even if a technology-driven RMA is at hand, its nature and implications are open to debate. There is no doubt that technology is advancing at an unprecedented rate and the possibilities for impact at the operational level of command are enormous. Notwithstanding the clear indications that we have entered the Information Age, the most dramatic impact on warfare may come from political, social, and economic changes, rather than just technology. Few specifics can be concluded from the various trends even when placed in the context of similar situations in history. Today we can only define a range of possibilities. Yet numerous examples in history, such as development of the German Blitzkrieg[20], clearly demonstrate that those organizations that are perceptive enough to understand the changes that are occurring and are motivated to exploit the opportunities they provide, will be the most likely to be rewarded with success.

The Security Environment and the Role of Military Force

The world is no longer bipolar as it was for forty years following World War II. The U.S. has emerged as the unchallenged world superpower from an economic, political and military perspective. However, the transition from the bipolar, Cold War period to some new world order seems far from complete. Without a clearly defined threat, political-military consensus must be constructed on a case by case basis as to the role the military will play in shaping the security environment.

Although militaries must be ready to fight, their most important function may in fact be to make war less likely. Donald Bletz believes that militaries can serve this

[19] Martin van Creveld, "High Technology and the Transformation of War Part II," RUSI Journal, December, 1992, pp. 61-64.
[20] Willamson Murray, "Thinking About Revolutions in Military Affairs", Joint Force Quarterly, No. 16, Summer 1997, pp. 74-75.

objective in five ways: deterrence, provide options (flexible response); political and psychological expression of national commitment and determination; military partnerships to improve indigenous self-defence; and as a hedge against uncertainty. He points out that none of these involve combat operations, although all require proven combat readiness.[21]

As demands of the security environment change, the differences between the respective roles of military, law enforcement, government and non-government organizations alike are becoming less distinct. Douglas Dearth argues that the traditional paradigm of a military, as an entity apart from society, being the protective shield of society, will no longer be valid. He highlights the increasing integration of military infrastructure and processes with the civilian sector. As an example, he points to questions concerning the military's responsibility for protecting national infrastructures from informational as well as conventional attack.[22]

At the same time military forces have been increasingly employed in "constabulary" or peace support roles, the territorial security of the state appears to be decreasing in importance relative to the prevention of a wide range of other threats to society. Support to counter such threats as drug smuggling, illegal immigration, and organized crime, as well as use of military capabilities for protection of economic interests, humanitarian assistance and intervention have blurred the raison d'etre of military forces. The increased use of military force in this new security agenda will challenge the operational commander as these activities have the potential to take on campaign proportions in terms of complexities and resources. The use of both lethal force and new forms of non-lethal force, such as information warfare, will provide more options and simultaneously generate more vulnerabilities. State and nonstate combatants who have characterised recent armed conflict will continue to exist; however, in the latter case, combatants may be difficult to distinguish from noncombatants. The nonstate

[21] Donald F. Bletz, "The Modern Major General" in The Challenge of Military Leadership, eds Lloyd Matthews and Dale E. Brown, (Washington: Pergamon-Brassey's: 1989), pp. 157-160.
[22] Douglas H. Dearth, "Imperatives of Information Operations and Information Warfare" in Cyberwar 2.0, eds. Campen and Dearth, (Fairfax, VA : AFCEA International Press, 1998), p. 392.

combatants will represent loose networks of nonstate organizations, some political or ideological in orientation, others seeking profit.[23] This type of conflict will characterize asymmetric warfare.

The Growing Spectrum of Conflict

Van Creveld asserts that while war has always changed and evolved, it is now changing in surprising and radical ways: becoming smaller not larger, less sophisticated not more, increasingly by low technology not high. War is more likely to be waged by and against organizations vice states (e.g. Chechnya, Somalia, Lebanon). Like Metz, he believes that: "The traditional form of war is being overtaken by wars between or against organizations which are not states and which do not have conventional armed forces.... In these kinds of intrastate conflicts, armed forces with all the high technology, warships, aircraft and so on are simply not suitable. Almost the only part of the forces which are suited for dealing with this type of conflict are light infantry with helicopters and armoured personnel carriers." He goes on to assert that: "…regular armed forces whose exclusive function is to fight forces belonging to other states like themselves... are dinosaurs belonging to a period before nuclear weapons. They will disappear like the dinosaurs did." In van Creveld's view, future forces will probably have some combination of special forces, transport, intelligence and logistics together with a form of home guard.[24]

Citing the failure of high-technology military force in Somalia, Dunlap challenges four myths that are common in current thinking: our most likely future adversaries will be like us; smaller, highly trained forces equipped with high-technology weapons will be

[23] Stephen Metz, Armed Conflict in the 21st Century: The Information Revolution and Post Modern Warfare, (Carlisle,PA: Strategic Studies Institute, 2000), p. 24.
[24] Martin van Creveld, "Present and future war" in Preparing Future Leaders, Officer Education and Training for the Twenty-first Century, ed by Hugh Smith (Canberra: Australian Defence Studies Centre, 1998), pp. 29-33.

totally effective; information superiority and even dominance can be achieved in future conflicts; and modern technology will make warfare more humane if not bloodless. [25]

Coalitions vice Major Alliances

Despite the U.S. military vision of full spectrum dominance, the Gulf War and Kosovo conflict indicate that a political imperative will be essential for multinational forces to intervene in unstable situations in order to provide legitimacy in the eyes of the international community. While formal alliances like NATO may diminish due to the lack of a realistic threat, it is likely that all theatre-level operations will require some form of coalition, albeit with strong U.S. leadership and influence. The most contentious aspect of coalition operations is command and control, since participants are sensitive as to who will have command over their forces and what authority the operational commander will have.[26] Most Western armed forces today recognize the operational level of war in training and in doctrine. This is increasingly true of smaller nations, like Canada, who are incapable of waging war alone at the operational level, so they have been compelled to prepare to integrate with the larger allies. "Some may never be committed to the dance but they must know the steps…For these lesser powers to remain credible allies, capable of contributing to the "first team," they must come to terms with the American conception of the operational art."[27] It follows then that these powers must also understand the human dimension of operational-level command and the competencies required for success.

The Increasing Importance of Perception vs Reality

While military forces need to be prepared for the variability of future warfare, some constants shall remain with respect to the environment in which operations will be

[25] Charles Dunlap, Jr., "21st Century Land Warfare: Four Dangerous Myths", Parameters, Autumn 1997, p. 27.
[26] Anthony J. Rice, "Command and Control: The Essence of Coalition Warfare," Parameters, Spring 1997, p.152.
[27] M.A Hennessy and B.J.C McKercher, "Introduction" to The Operational Art: Developments in the Theories of War, p. 4.

conducted. One is that everything the military does will appear on television or other forms of mass media. If events are not portrayed from one side, then they will undoubtedly be portrayed from the other. As witnessed in recent conflicts, tactical incidents have had the potential for strategic impact. Dearth suggests that we have been remiss in recognizing and acknowledging that the real threats in places like Somalia, Bosnia and Iraq are not, in all cases, military threats. Highly effective deceptive practices and psychological warfare campaigns have thwarted military and political effectiveness in protecting Western interests. It is evident that others have been more adept at shaping and managing perceptions of international publics and the decision structures of national and international communities.[28] This new and dynamic dimension of exerting influence will require commanders to consider the real impacts of perception, not only on the military forces, but on the strategic-political level which ultimately judges the success of the military campaign.

HUMAN COMPETENCIES FOR THE FUTURE OPERATIONAL-LEVEL COMMANDER

From bloodless cyberwar to savage asymmetric low-tech warfare, from massive application of precision weapons to humanitarian intervention, the future operational-level commander will likely be faced with planning and executing campaigns across the entire spectrum of conflict. The modern military force commander will have a vast array of lethal and non-lethal weapons at his disposal, instant vertical and lateral communications within the organization, and enormous quantities of information to define the problem space. The strategic intent derived through political consensus will likely be ambitious, multi-facetted and contain many implicit or explicit constraints. The complexity from a command perspective is reflected in van Creveld's observation that: "The available data processing technology and the nature of armaments in use; tactics and strategy; organizational structure and manpower systems; training, discipline, and what might be called the ethos of war; the political construction of states and the social

[28] Douglas H. Dearth, "Imperatives of Information Operations and Information Warfare," p. 393.

makeup of armies - all these things and many more may impinge on command in war and are in turn affected by it."[29]

At this point in time, it seems clear that fundamental change is underway but we can only guess at its eventual outcome. Hence, it is impossible to precisely define the complete impact on the set of human competencies for command at the operational level; however, some reasonable deductions can be made regarding the areas that will represent the greatest challenges. Since human endeavour underlies the essence of military command, exploiting change in this evolutionary, perhaps revolutionary, process requires a structured examination of the competencies required for command. The intent is to demonstrate that the future will demand enhancements in at least some areas of the four classes of competencies defined by the Pigeau & McCann model: physical, intellectual, emotional and interpersonal.

Physical Competency

At the operational level, physical competency is probably the least impacted, if at all, by changes in the future. Perhaps the one indirect impact is the link between psychological and physiological health. A number of successful commanders have espoused the essentials of rest, quiet thought and reflection.[30] Montgomery refused to sit up late at night conducting the business of his army and stressed that it was vitally important that a commander keep mentally fresh.[31] This sage advice provides an interesting premise for today's peacetime commander, let alone tomorrow's wartime commander. The explosion in the availability of information and increasing complexity of the operational level environment may challenge Montgomery's tenet, particularly if the intellectual, emotional and interpersonal competencies are not enhanced as discussed later.

[29] Martin van Creveld, Command in War, p. 261.
[30] John M. Vermillion, "The Pillars of Generalship" in The Challenge of Military Leadership, p. 65.
[31] Montgomery of Alamein, Bernard Law Montgomery, High Command in War, (Germany: Printing and Stationery Services, 21 Army Group, June 1945), p. 12.

Intellectual Competency

Two aspects of intellectual competency, although they have always been relevant to command, are particularly important in the modern world. The first is the scientific method that is at the heart of academic inquiry. Such an approach is necessary to prevent repeated mistakes or wrong lessons being learned. The second is management of information. Both academics and soldiers alike have long understood the importance of information; the former processing it into knowledge, the latter turning it into military intelligence. What has changed in recent times is the greater need for knowledge of the wider circumstances in which military action occurs. The challenge is to turn information into a form relevant to the military purpose. Therefore, the future commander will need to absorb large amounts of information relevant to the decision at hand, process the information in a way that responds to the problem, test theories, concepts, and ideas against that information, and finally, present the findings in a way that makes complex and difficult problems understandable to others. [32]

Visualizing the Expanding Battlespace

Our traditional concepts of three-dimensional battlespace are likely to become inadequate because increases in the physical dimensions of a battlefield cannot account for new dimensions of warfare associated with the RMA. Robert Bunker argues that the Western mode of warfare is breaking down because the conventional battlefield has become too lethal for most adversaries. Hence, potential adversaries will attempt to avoid the 'human-sensing' dimension of 'humanspace' and attempt to exploit the refuge of 'cyberspace', which includes combatants who are not visible or detectable. Current concepts of manoeuvre, range, and force protection will need to be refined. For example, a terrorist in civilian garb who is standing five meters from a soldier and whom the

[32] Hugh Smith, "The Education of Future Military Leaders", in Preparing Future Leaders, Officer Education and Training for the Twenty-first Century, ed. Hugh Smith (Canberra: Australian Defence Studies Centre, 1998), p. 149-150.

soldier views as a non-combatant, is at a much greater battlefield range than a hostile tank that is visible 1000 meters away.[33]

Although information operations have always been a part of modern warfare, the explosion of information systems, connectivity, and reliance on this technology for both economic and military system will become a critical part of the warfare continuum. Asymmetric threats may be difficult to counter using direct combat power, thus "military planners should never be lulled into complacency by presuming physical force alone equates to combat power."[34] The extension of the battlefield into a nonlinear one, in which distinctions between deep, close, and rear battles are absent, is a subject of intense debate. Without such distinctions, assignment of battlefield areas to component commanders becomes problematic.[35]

The commander of the future will have to be capable of seeing all aspects and forces that are in play within the battlespace. In his examination of the Gulf War, Stephen Biddle asserts that a nonlinear, synergistic interaction between a major skill imbalance and new technology caused the radical outcome. Technology alone did not result in a quick decisive campaign with minimal casualties, but it simply made it possible to exploit Iraqi mistakes with unprecedented severity. His broader hypothesis is that technology magnifies the effects of skill differentials, but in itself does not account for decisive outcomes. He warns that the reliance on information and technological supremacy, as the decisive factor of future warfare, is misguided.[36]

Clearly enhanced skills and knowledge will be required to visualize a complex , multi-dimension battlespace. Without this capability, the future commander will not

[33] Robert J. Bunker, "Advanced Battlespace and Cybermaneuver Concepts: Implications for Force XXI," Parameters, Autumn 1996, pp. 108-120.
[34] Maj Daniel E. Liddell, "Operational Art and the Influence of Will," Marine Corps Gazette, Feb 1998, p. 51. Maj Liddell argues that the strength of will, the will to fight, is not given enough consideration in evaluating an opponent's resistance since the current planning process is focused on physical force.
[35] Stephane Lefebvre, Michel Fortman and Thierry Gongora, "The Revolution in Military Affairs: Its Implications for Doctrine and Force Development within the U.S.Army," p. 184.
[36] Stephen Biddle, "Victory Misunderstood: what the Gulf War tells us about the Future of Conflict", International Security 21:2, Fall 1996, pp. 139-179.

have adequate situational awareness to direct the planning and execution of theatre operations.

Creative Thinking - Dealing with Complexity

In commenting on the eventual impacts of the current RMA, Douglas Dearth states that the "distinctions formerly possible because of time, distance, and first-order function will no longer be possible. This is an age when everything is related to everything else."[37] Major-General Romeo Dallaire believes that the new generation of senior officers must be capable of adjusting their thinking and grasp of command to new threats and challenges more quickly. More than ever, they must understand their own people. They must be adaptable and understand why things are happening – not merely respond by habit to certain stimuli. His assessment is that we are increasingly aware of the technological leap that is upon us, but we are struggling to adapt conventional war-fighting. He feels we are simply moving Cold War doctrine to a higher technological plane, an environment that will most probably never occur again. In essence, we do not yet understand the new complex, gray, morally challenging conflict environments that we will be faced with in the future.[38]

Sullivan and Dubik observe that the industrial age saw military organizations that were preoccupied with standardization, specialization, professionalization, synchronization, concentration, and centralization. In contrast, the information age is defined by a less hierarchical learning organization, with the network as the 'model' and knowledge as the 'capital'.[39]

Van Creveld reminds us that historical advances in command have often resulted less from any technological superiority that one side had over the other than from the

[37] Douglas D. Dearth, " Imperatives of Information Operations and Information Warfare," p. 392.
[38] MGen R. A. Dallaire, "Future War and the Development of Agile Leadership in Admiral/Generalship Programme Anthology", (Advance Military Studies Course, Canadian Forces College, Toronto, 1998), pp. 150-151.
[39] General Gordon R. Sullivan and Colonel James M. Dubik, War in the Information Age, (Carlisle Barracks, PA, 1994), pp. 2,7-8.

ability to recognize those limitations and to discover ways - improvements to training, doctrine, and organization - of going around them. Instead of confining one's action to what available technology can do, the point of the exercise is precisely to understand what it cannot do and then proceed to do it nevertheless.[40] Yet, the new security environment will be so broad and complex that traditional approaches to examining a situation will likely be inadequate. "…planning can hardly be effective in the information age if it relies on threat analyses rather than on capabilities necessary for uncertain future environments. Put simply, one should look at what probable opponents could do since one cannot know what they will do."[41] Thus, new innovative ways of approaching campaign planning and use of military capabilities will be required.

In applying complexity theory to war, John Schmitt suggests that war is fundamentally uncertain and that, given our current understanding of control, war is uncontrollable. The conventional Newtonian paradigm assumes that the complexity of war can be understood by successively breaking it down into parts eventually small enough to understand and control, which in turn allows understanding and control of the whole. He states that: "uncertainty is not merely an initial environmental condition that can be reduced by gathering information. Rather, uncertainty is a natural and unavoidable product of war." The application of complexity theory to modern war leads him to conclude that the single most important quality of effective command and control for the future will be adaptability. [42]

As the military has traditionally looked to doctrine as a universal solution to the complexities of operational planning, this may be less true in a future of rapid change. Doctrine is not and was never meant to be prescriptive. It tells us, "this is what usually worked best in the past," but this in no way frees commanders from the need to form their

[40] Martin van Creveld, Command in War, p. 275.
[41] Stephane Lefebvre, Michel Fortman and Thierry Gongora, "The Revolution in Military Affairs: Its Implications for Doctrine and Force Development within the U.S.Army," p. 181.
[42] Major John F. Schmitt, USMCR, Command and (Out of) Control: The Military Implications of Complexity Theory, Marine Corps Gazette, Vol 82, No. 9, September 1998, p. 57. Complexity theory deals with the study of systems that exhibit complex, self-organizing behaviour. A complex system is not only structurally complex, but the parts of the system act freely in interconnected and unanticipated ways. In

own judgement in any given situation. "If the study of war tells us anything, it is that the only constant of war is war's inconstancy – that it is filled with surprises, contingencies, and unknowns."[43] To meet this challenge, commanders will have to be highly innovative and less conservative in their thinking, while at the same time tempering "out of the box" ideas with good judgement.

Rapid and Decisive Decision-making

Speed in virtually every aspect of theatre operations - planning, deployment, manoeuvre, fires - will clearly be one of the most important factors for success in 21st century militaries. Stephen Metz predicts that for nations that undertake long-range power projection, speed will also necessitate faster decision-making. While this will clearly challenge the operational-level commander, he may also find it all the more constraining because strategic and political decision-making will remain a time consuming process of consensus building.[44]

Sullivan believes that commanders in the information age will have to think differently than those in the industrial age. They will have more information made available to them over more compressed spans of time. Decisions will have to be made more quickly and will have to be executed over greater distances and in decreasing timeframes. Commanders will have to orchestrate fire and manoeuvre under more diverse conditions, while maintaining cohesion among more dispersed units. "Success in the information age will go to those who have the courage to challenge themselves, who constantly innovate, and who learn to adapt as they go."[45] This type of fluid and dynamic environment may drive a fundamental re-thinking of campaign planning.

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contrast Newtonian science, as applied to war, assumes that a direct and proportional connection can be established between each cause and effect.

[43] Maj Gen I.B. Holley Jr., "Fifty Questions for Doctrine Writers: Means are as Important as Ends," www.airpower.maxwell.af.mil.airchronicles/apj/apj97/fal97.

[44] Steven Metz, Armed Conflict in the 21st Century: The Information Revolution and Post-Modern Warfare, p. 75.

[45] General Gordon R. Sullivan and Colonel James M. Dubik, War in the Information Age, p. 19.

Van Creveld suggests that the massive amounts of information available and the imperative to cope with uncertainty will drive command systems either to centralize or decentralize decision-making, with the latter being superior.[46] This aspect is explored in more detail later in the paper. In either case, a commander's decisions are judged more harshly because mistakes can cost people their lives. Thomas Coakley points out that an overemphasis on decisiveness, often cited as a virtue of a strong commander, can make a commander slow to rescind an order once it has been issued.[47] The balance between speed and making the best decision will present a formidable challenge to future commanders as the timeframes decrease and complexity increases. Risk tolerance and interpersonal competencies become major enablers, particularly if decentralized information processing and decision-making are widely adopted by operational commanders to cope with complex, dynamic environments.

Emotional Competency

Risk Management/Tolerance

More frequently than in the past, the level of risk tolerance may be imposed on the commander, rather than by the commander, through implicit or explicit constraints from the strategic level, coalition partners, or the general public. For example, in Western countries the tolerance for casualties, particularly non-combatants, may be lower than the commander's personal tolerance given the imperative for success, or risk to his own forces. The idea that civilians should not be killed in war is relatively modern; however, many countries and organizations are abandoning this principle.[48] In spite of the low risk tolerance, the politicians and public will expect quick, decisive results from military intervention.

[46] Martin van Creveld, Command in War, pp. 270-273
[47] Thomas Coakley, Command and Control For War and Peace, (Washington, DC: National Defense University Press, 1992), pp. 100-101.
[48] Martin van Creveld, "Present and future war,"p. 29.

"Though modern technical means undoubtedly enable present day command systems to transmit and process more information faster than ever before, regardless of distance, movement, or weather, their ability to approach certainty has not improved to any marked extent." Van Creveld argues that the quest for certainty will never be successful since " the nature of war brings out the most powerful emotions which impact the rationality of the quest, war consists of two opposing wills." Further, the more information is available, the more time is needed to process it, and the greater the danger of failing to distinguish between the relevant and the irrelevant, the important and the unimportant, the reliable and unreliable, the true and the false information. "During the last four decades command personnel within a typical Western Army has risen fivefold." Van Creveld believes that there is no way out of this dilemma except through what Napoleon called "a superior understanding" – one based on training and practice but ultimately relying on intuitive judgement vice rationale calculation.[49]

This suggests that the ability to deal with risk is closely linked to intellectual competency. Further, this may result in an untenable paradox for the commander. Increased uncertainty of the future environment will require increased risk tolerance which in turn could facilitate decentralization to cope with the complexity of the operational situation. However, risk tolerance may be constrained by the strategic level, leaving the commander limited options to achieve the objective.

Resilience and Resolve

Since the end of the Cold War, the military profession has been more closely scrutinized. The policies and practices have been called to account across a full range of issues from individual rights and integrity of the military justice systems to access to information, from gender equality and ethnic representation to investments in core war fighting capabilities. In many cases, the fundamental value of military forces have been questioned in an environment where there is no clear military threat to the nation.

[49] Martin van Creveld, Command in War, p. 266.

In addition to the different goals of the organization's personnel, there are several other imperatives causing stress such as authority, accountability, responsibility, co-operation, change and uncertainty. Some of these are particularly difficult to achieve in a coalition, and hence potentially more stressful.[50] History is full of senior leaders, civilian and military, who when badly affected by an event, responded erratically or who consequently suffered a psychological, emotional or physical disorder.[51] One only has to look at MGen Dallaire's experience in Rwanda to see the potential for collision between the values, loyalties and resolve of a professional military commander and the political reality of the moment.[52] Military intervention in complex, fast moving situations will become more common in the future according to most experts. Many situations will require unprecedented levels of resilience and resolve to cope with the moral dilemma between what is right and what is directed by the political authority.

In order to cope, a commander must understand the make-up of the society he serves, or is operating in, and understand its strengths and weaknesses. He needs to be aware of the major social and political issues in the nation. However, Donald Bletz suggests that "we do not need military professionals who are politicians but we do need military professionals who fully understand the dangers inherent in politicizing the military profession of a democracy." Finally, the military professional must fully understand the concept of civil control for the military.[53]

Recent studies indicate that today's military commanders are faced with an enormous variety of stressors.[54] The future demands of command will exacerbate this reality and present a formidable challenge. To maintain objectivity and balance, as a way of mitigating this trend, the modern commander must better understand the world he

[50] Martha Maurer, Coalition Command and Control, p 67.
[51] Roger Beaumount, The Nerves of War: Emerging Issues in and References to Command and Control, Washington, D.C.:AFCEA International Press, 1986), p. 42. The author cites numerous examples of top military and civilian leaders who suffered nervous breakdowns, heart attacks, hysteria, etc., following major surprise attacks.
[52] MGen R.A. Dallaire, "Command Experiences in Rwanda" in The Human in Command, McCann and Pigeau,eds. (New York:Kluwer Academic/Plenum Publishers), pp. 29-50.
[53] Donald F. Betz, The "Modern Major General," p. 155.
[54] G. Breakwell and K. Spacie, "Pressures Facing Commanders," Occasional Paper No. 29, Strategic & Combat Studies Institute, 1997.

lives in – to the extent anyone can – and realize that it is not the same world in which he served as a junior officer.

Interpersonal Competency

Interacting and Communicating Effectively

Perhaps the biggest challenge of any commander, past, present or future, is the imperative to communicate not only effectively but inspirationally, both vertically and laterally within the command structure. Although technology will clearly bring unparalleled connectivity in terms of speed and bandwidth, interpersonal communications will require an equally impressive level of skill by the operational commander to create and maintain unity of purpose amongst his forces, the strategic level and the public via the media.

Combat operations depend on personal relationships that are sustained by electronic methods of communications, even though such methods might diminish the impact of personal leadership.[55] Van Creveld highlights several examples where there is a danger of formal communications reducing command to trivia. He points out that the virtues of formal communication, standardization, brevity, and precision, limit the number of ways things can be put together and, therefore, prevent new ones from arising – the basis of creativity. As noted previously in this paper, improved creativity will be essential to enhancing intellectual competency. In order to maintain effective interpersonal communication, he argues that commanders must deliberately leave room for face-to-face, unstructured interaction among people who know each other well enough so as not to limit their exchanges entirely to business. This also requires stability and homogeneity in the organization. Such exchanges represent the best way both of cutting down the total communications that take place and of improving the quality of communications.[56]

[55] Frank Synder, Command and Control: The Literature and Commentaries. (Washington DC: National Defense University, 1993), p. 73.
[56] Martin van Creveld, Command in War, p. 273.

Early in the process of campaign planning, often the initial political objectives provided are vague or incomplete in defining the desired end state. In such cases, the operational-level commander must be prepared emotionally (resolve), and possess the interpersonal skills to challenge or press for clarification of the strategic-level objectives. As well, he must be able to mould the views of his component commanders to ensure that the objectives are clear, achievable though military means and that there is common understanding of the constraints. Commanders have always had to consider how the enemy will respond to the execution of a course of action, particularly in situations where the objective is to contain a situation or influence enemy action. With increased use of coalitions to provide legitimacy for military intervention, the commander will also have to closely consider the allies and how they view coalition actions.[57]

Leveraging Intellect

The expanding battlespace, highly trained forces, the vast array of precision lethal and non-lethal weapons, real time full spectrum intelligence, tremendous manoeuvre and range, and instant communications to every level of command will provide the commander with more options than he has ever had in the past. To achieve strategic objectives through both the planning and execution of military operations he will be faced with a staggering number of options, each with respective benefits and uncertainties. Obviously, no single man, unaided, can do this properly. He must have a close circle of functional assistants. Such a requirement is not new. From the middle of the last century, the tasks of the general in command have been too numerous and too complex for any one man to manage effectively, and the general staff system thus gradually emerged.[58]

There is much debate concerning the impact of increasing complexity on command (and control). The are two basic ways of dealing with the uncertainty and

[57] Martha Maurer, Coalition Command and Control, p. 66.
[58] John M. Vermillion, "[redacted] nn

complexity of command, centralization and decentralization. Centralization raises the decision thresholds and reduces the initiative of subordinates in order to increase the certainty at the top. However, this results in the subordinates being limited to cope on their own, thereby increasing their immediate risk. In other words, centralization strives for less risk at the top, but generates more risk at the bottom. Conversely, decentralization increases acceptance of more uncertainty at the top allowing reduction of uncertainty at the bottom; hence, certainty of the parts assures security of the whole. Both ways of coping with uncertainty will remain open to commanders at all levels. However, van Creveld asserts that if twenty-five centuries of historical experience are any guide, decentralization will be superior.[59] Although this is not revolutionary thinking, the psychological impediment to *auftragstaktik* (in the U.S.) is the fear on the part of the commander that his subordinates' mistakes, resulting from their loosened rein, would make the commander look bad and thus jeopardize the commander's own success.[60]

The antidote to such insecurity is a top-down command climate that deliberately tolerates the possibility of greater tactical errors in confident expectation that the resulting explosion of initiative at all tactical echelons will provide a massive multiplication of combat effectiveness at the operational level. This would require "… thinking, tough minded, self-reliant, confident and courageous leaders who can respond to friction, the fog of war, and unexpected enemy actions with initiative and grim determination but with no guarantee of success."[61]

Will increased availability of information lead to greater or less centralization? If a decentralized, *auftragstaktik*-type command doctrine is widely adopted, will changes in command Authority and Responsibility axes of the Command Capability Space create an imbalance with Competency? *Auftragstaktik* or mission-oriented command requires uniformity in the way of thinking, sound judgement and initiative, as well as responsible

[59] Martin van Creveld, Command in War, pp. 274.
[60] John T. Nelsen II, "Auftragstaktik" in The Challenge of Military Leadership, ed. by Lloyd J. Matthews and Dale E. Brown, (Washington: Pergamon-Brassey's International Defense Publishers, 1989), p. 36.
[61] John T. Nelsen II, "Auftragstaktik", p. 36.

actions at all levels."[62] Without these skills, commanders will be tempted to use the unprecedented connectivity afforded by new information technology to control as opposed to manage risks from the top. Decentralized command also suggests that similar competencies must exist at lower levels of command. Subordinate commanders and staff must understand the mind-set and perceptions of the commander to provide information that is useful and easy for the commander to assimilate.[63]

As seen in other competencies, there are obvious and complex interactions between the competency areas. Furthermore, assessment of the competencies required for the operational commander should logically be extended to the entire "command team" to ensure that any limitations of the single human commander are offset by the collective skills of the team. Such an extension would have to carefully delineate those competencies that are unique to the commander who is ultimately accountable for the application of lethal force and its consequences.

Common Threads as Seen through the CAR Model

If there are some unifying threads to the examination of human competencies, one of them is the importance of adaptation. Just as the German military acknowledged that war was inherently chaotic, and used *auftrastatik* as a means to exploit it, the same philosophy should be adopted in coping with the uncertainty of the post-Cold War era and transition to the heart of the information age. Independent decision-making, unity of thought, progressive doctrine led by agile thinking, creative commanders who are capable of taking risks to achieve the desired end state would seem to hold the best chances for success. In any environment characterized by unpredictability, uncertainty, fluid

[62] Charles Sutten Jr., "Command and Control at the Operational Level" in The Challenge of Military Leadership, ed by Lloyd J. Matthews and Dale E. Brown, (Washinton: Pergamon-Brassey's International Defense Publishers, 1989), p. 78. The German Army term 'Auftragstaktik' is defined as a command and control procedure within which the subordinate is given extensive latitude, within the framework of the intention of the individual giving the order, in carrying out his mission. The missions are to include only those restraints that are indispensable for being able to interact with others, and it must be possible to accomplish them by making use of the subordinate's forces, resources, and the authority delegated to him.
[63] Synder, Command and Control, p. 152

dynamics and rapid change, the commander who can adapt the best and most quickly will be the one that prevails.

Intuition also emerges as a key enabler. Even though it is associated with judgement under Intellectual competency, the intuitive aspect transcends many of the competencies as a critical tool in dealing with enormous amounts of information, uncertainties and intangibles. As Paul Harig observes, despite the tremendous advancements in technology, organizations, intelligence and doctrine, Schwarzkopf faced the same questions before the Gulf War ground offensive as Eisenhower did prior to D-Day.[64] Not only is it possible to suffer paralysis by analysis, he argues that intuitive skills give commanders an important advantage in ambiguous situations.

Finally, leveraging competency through interpersonal skills or team building appear to offer the best approach to dealing with the complexity of the environment that the commander will face. No matter how highly skilled and talented, a single commander cannot match the collective skill of a well-orchestrated command team comprising of staff and subordinate commanders. This suggests that a high level of interpersonal competency could offset limitations in the other competency areas and that selection of the command team may be as important as choosing the commander. In doing so, however, the unique and immutable accountability that the commander holds must be respected.

Using the competencies defined by the CAR model does not result in a direct examination of leadership, which is a mainstay of traditional examinations of command requirements. While this may be intentional, and in fact valuable, further analysis using this model should consider 'personal authority', which is often associated with leadership, and 'intrinsic responsibility', the degree of self-generated obligation, since they both are closely interrelated with competencies. The framework is useful in isolating and examining specific competencies for command; however, the existing

[64] Paul Harig, "The Digital General: reflections on Leadership in the Post-Information Age," Parameters, Autumn 1996, p. 133.

model does not easily account for the complex interrelationships between the competencies or with the responsibility and authority dimensions. For example, aspects of emotional competency (e.g. risk tolerance) is very dependent on aspects of intellectual competency (e.g. visualization of the problem space).

CONCLUSIONS

From the wide range of future possibilities, it is clear that the nature of warfare and the environment in which it is conducted will change profoundly even if the rate is unclear. No one can predict the eventual outcome of the rapidly changing technology and security environments, but there is ample evidence that command at the operational level will require enhanced human competencies. It could be argued that these competencies are not new; however, without a doubt, the breadth and depth of the skills will need to be increased. Though the scope of the paper is limited, it is important to note that many of the enhancements required are in the emotional and interpersonal areas which, as Pigeau and McCann point out, receive less time than intellectual competencies in the current military training and education system.[65] The current study programs for the National Security Studies Course and Advanced Military Studies Course conducted at the Canadian Forces College support this assertion.[66]

Until recently, studies of human competencies for command have been based on historical experience and focused on defining personality traits of successful commanders. Pigeau and McCann highlight the inherent weaknesses of limiting the examination to traits in attempting to isolate the key attributes that will ensure successful performance in command. The need to move away from virtues and focus on defining requirements of command is recognized by some, but is not being actively pursued on a wide front.[67] The CAR model is a promising tool for structured analysis of command

[65] Ross Pigeau and Carol McCann. "What is a Commander?" p 5.
[66] Canadian Forces College, Advanced Military Studies Course 3 Syllabus, National Security Studies Course 2 Syllabus, www.cfc.dnd.ca/info.en.html.
[67] John M. Vermillion, "The Pillars of Generalship," p. 72.

despite its inherent complexity. Further development of this and other models is critical to understanding the requisite skills needed in the future. To date, the military profession has relied on historical experience to establish competencies for command. Although this experience will remain an invaluable tool, given the time delay required to develop new competencies, the current rate of change may not allow adequate time to respond. Development of a more rigorous, scientific approach to complement historical experience would provide a more forward-looking assessment of the requirements.

Obviously, success in such a complex endeavour can not be guaranteed, so courage and tolerance of failure will be required to resist over-centralization, bureaucratic and micro-management in an attempt to use technology to control uncertainty from the top. Unfortunately, for most contemporary Western militaries, without a profound institutional shock, it is unlikely that any large change will occur in organizations that are inherently very stable. In the Canadian context, notwithstanding the plethora of reforms that have followed in the wake of Somalia, " the Canadian Forces have not [yet] experienced that vital intellectual search for first principles."[68] It will take visionary leadership and unrelenting commitment to develop the competencies required for commanders to be successful in the future. While it is unlikely that Canada will ever lead a theatre-level campaign in a major conflict, recent history suggests that we will have an opportunity to participate in the operational-level command process. Just as we fear we will not be invited to the dance if we do not have modern weapon systems and highly trained personnel, we will also have to know the steps (i.e. senior officers with the requisite competencies) to have an influential role in operational level decisions. If information technology leads to a centralization of command and compression of the operational levels, smaller nations like Canada will be forced to follow scripted operational taskings with no appreciation of the big picture and little influence on the campaign plan. In a mission-oriented command system, we may not even be able to

[68] William McAndrew, "Operational Art and the Canadian Army's Way of War," in The Operational Art:Developments in the Theories of War, McKercher and Hennessy, eds., (Westport, Conn.: Praeger Publishers, 1996), p. 97. McAndrew examines the Canadian Army's experience in World War II and the application of the operational art. He argues that Canada, in order to preserve it's national sovereignty and military autonomy, must conduct a serious examination of first principles and not just arbitrarily adopt operational art.

participate without a national task force commander possessing a full array of operational-level command competencies.

Although this paper focuses on enhancements to specific competencies, it is important that in our enthusiasm to embrace change and develop new skills, we do not improve areas at the expense of other core competencies such as professional military knowledge and war-fighting expertise. As in the past, a balance of right skills will characterize the most successful military commanders. In their examination of future warfare, General Sullivan and Colonel Dubik conclude "only the highest quality soldiers, leaders, staffs, and organizations who understand the importance of speed and precision in information processing and applications will be able to succeed in the information age." However, "...even in the information age, war will remain a human endeavour, subject to emotion and characterized by the shedding of blood and the effects of chance."[69]

[69] General Gordon R. Sullivan and Colonel James M. Dubik, War in the Information Age, pp. 13,15.

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