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Generalship at the Operational Level
The Challenges of a Rationalistic World

By /par LCol Peter J. Davies

ABSTRACT

The operational level of war and the operational art hold the promise of allowing commanders to use their creative intelligence to shape war in their own terms, to apply force with precision and great effect. The doctrinal expression of the operational art provides for military forces with a broad range of capabilities and a force structure that can be controlled. Yet generalship, which is the essential element for devising and conducting operations, is challenged and in danger of becoming ineffective. The operational level of war is increasingly complex and presents numerous challenges including multi-service and multi-national force structures, a wide variety of types of conflict, a growing number of weapon systems, an intricate Law of Armed Conflict, a communications technology that can overwhelm and an international media capable of rapidly influencing strategic goals. However, the threat to generalship is not so much the complexity of modern conflict but the belief that rational analysis alone can control the complexity. The essential war winning characteristics of originality, inspiration, intuition and imagination are in danger of being subsumed by the rationalistic view. Analytical models of decision-making and a culture that embraces centralized control heavily influence planning and command and control systems. Unless intuition is permitted to influence operational planning and control is decentralized to highly skilled teams working in an adaptive command environment, generalship is in danger of becoming mechanistic and losing its essential human characteristics.

"How are we to begin? By analysing the problem, which a moment's consideration will show, embraces three factors, namely, the general, his staff and the army, or in other words-the brain, nervous system and muscles of any military organization."[1]

Major General J.F.C. Fuller

INTRODUCTION

The problem that Major General Fuller referred to was that generalship had failed during World War I. Because of this, "modern battles …degenerated into saurian writhings between headless monsters."[2] In his view, generalship had lost its essential characteristics of courage, creative intelligence and physical fitness. It had become remote and disengaged, abdicating the responsibility for fighting wars to the most junior of leaders.[3] Fuller considered the root of the problem to be a machine-like response to controlling the complexity of modern warfare. Command had become methodized and dehumanized.[4] It rendered the general staff ineffective and therefore the "brute masses of men"[5] made possible by modern industrial state[6] were incapable of being commanded.[7]

Fuller's sweeping indictment of World War I generalship, is not accepted in all circles, yet when one removes the mythological analogier13:it beinrit cismhen oobservationial ndses,

manoeuvre,[8] or the selected application of strength against an opponent's weaknesses, as an alternative to massed armies matching strength against strength.[9] Moreover, commanders can use their creative intelligence to shape the war in their own terms. They can apply force with increased precision and, hopefully, to greater effect. This use of the "operational art", the "imaginative leadership skills required to campaign successfully on the greatly expanded battlefield of the industrial age", is essential to successful generalship.[10] It provides generalship with what Fuller would recognize as a nervous system and muscles providing a broader range of capabilities and a force structure more readily controlled.

Modern militaries have recognized the importance of looking ahead, of anticipating the changing nature of conflict, then developing and testing doctrine to meet the forecasted needs. Much attention is paid to how we will fight the next war.[11] Yet it is this very perception of "progress" made by systematically filling in the blanks in preparedness that should be of concern. Increasingly there seems a penchant for a systems-based approach for every situation. Hence, Fuller's observation that generalship fails when it becomes methodized and dehumanized becomes extremely relevant to our times. I contend that the traditional characteristics essential to successful generalship such as intuition, originality and creativity are being undermined by current beliefs that reason will conquer all, that surprise in warfare can be eliminated and that centralized control of military forces is of vital importance in the conduct of operations. This paper will describe the qualities of generalship that are threatened, discuss the threats and suggest how they might be countered.

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[8] FM 3-0, section 7-3
[9] Luttwak, 64.
[10] McKercher and Hennessy, 2.
[11] One only need to look at the number of professional journal and staff college papers on the projected nature of conflict in the future to see that the future of conflict is of wide interest. Strategic planning reflected in documents such as the US military *Joint Vision 2020* and the Canadian Forces *Defence 2020*and the interest in defining and exploiting a "Revolution in Military Affairs" point to the institutional interest in anticipating the future.

GENERALSHIP

Generalship has traditionally been defined and studied in the context of being a person: the general or flag officer.[12] This focus is natural given the importance of the individual in determining the success or failure of military operations. The general provides the leadership, shapes the planning, makes the difficult decisions and accepts the responsibility. Many of the characteristics associated with generalship, such as, intellect, energy, selflessness and humanity[13] are individual traits. However, in the modern world, the general does not *exercise* generalship alone. He is integral to a larger structure comprising staff, processes and support systems. Returning to Fuller's biological metaphor, the general may be viewed as the brain, and the larger structure viewed as both the sense organs that relay the outside world to the brain and the nerves that carry commands to the muscle. If either part is flawed or less than fully formed, the other will not function properly. The general is but the captain of a team. Each member of the team has a part to play in generalship. The "brains" and the "nervous system" must function as one if the "muscle" is to work at all. Diseases that strike one part affect the whole. Therefore, initiatives to preserve and enhance generalship must consider the entire team and not focus solely on the captain.

GENERALSHIP AT THE OPERATIONAL LEVEL

It is at the operational level where generalship, in its broadest sense, is practiced. The operational level is where:

> campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives within theatres or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to

[12] See Klepak, particularly 18-19.
[13] Meigs 2001, 5.

> achieve the operational objectives, and initiating actions and applying resources to bring about and sustain those events.[14]

It is at the operational level that campaigns are waged and the "operational art" performed, where the commander will exploit the numerous modern tools for waging war by combining and coordinating them to achieve the strategic aim.

Generalship at the operational level has become increasingly complex since Fuller's day. It is faced with a "spectrum of conflict"[15] from peace keeping to wars of almost infinite variety including guerilla, terrorist and general war. These conflicts often rely on coalitions characterized by shifting political accommodation and utilize military forces with widely divergent capabilities and cultures. They can involve a wide variety of "weapons" ranging from passive resistance to conventional arms to weapons of mass destruction. They are hampered by the growing volume and complexity of the Law of Armed Conflict which both limits options and complicates decisions.[16] Last but not least, today's command must deal with communication and information technology that is capable of creating an overwhelming flow of data and with media coverage that can rapidly influence strategy.[17]

Generalship at the operational level requires the ability to influence and to comprehend the strategic direction, to translate this direction into military objectives consistent with the type of conflict, to formulate a campaign, to integrate coalition partners into an effective force, to imbue common purpose,[18] to respond rapidly to change, to manage stress, and, above all, to lead.

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[14] *B-GG-005-004/AF-000 - Canadian Forces Operations*. 1-5
[15] *B-GG-005-004/AF-000 - Canadian Forces Operations*, 1-3.
[16] See Green, particularly chap.1 for a detailed description of the evolution of the law of armed conflict
[17] Dunn, 3, 4.
[18] Varma, 12.

GENERALSHIP AND THE OPERATIONAL ART

The heart of generalship is the operational art described above as imaginative leadership skills required to campaign successfully on the greatly expanded battlefield of the industrial age. Canadian Forces doctrine states:

> Operational art is the skill of translating this strategic direction into operational and tactical action. It …is that vital link between the setting of military strategic objectives and the tactical employment of forces on the battlefield through the skilful execution of command at the operational level. Operational art involves the design, planning, and conduct of campaigns and major operations. It requires a clear understanding of the consequences of operational level decisions, their tactical results, and their impact on strategic aims. Operational art requires commanders with broad vision, the ability to anticipate, and a careful understanding of the relationship of means to ends. Using operational art, the commander applies intellect to the situation to establish and transmit a vision for the accomplishment of the strategic objective[19]

This definition, that the operational art is a *skill* that requires *vision* to implement, neatly captures both sides of the long-standing debate on whether the conduct of war requires primarily knowledge based skill or creative ability.[20] On one hand, the dictionary defines *art* as "skill in doing anything as the result of knowledge and practice."[21] Conversely, art is also defined as the ability "to break through the limitations of previously codified knowledge, to lead man into his future."[22]

There can be little doubt that great generalship has often exemplified the latter interpretation. Indeed, Napoleon Bonaparte's innovations "may have fathered [the operational level of war] through the masterful maneuver of numerous corps formations on a grand scale."[23] In the study of war, practitioners and commentators repeatedly highlight the need to be creative, to do something surprising or unprecedented. General Sir Ian Hamilton eloquently stated that the

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[19] *Canadian Forces Operations* 3-1
[20] Clausewitz, 148.
[21] Old Oxford Dictionary, Edition 2, 1989
[22] Pitcher, 13.
[23] English, 7.

"impossible can only be overborne by the unprecedented."[24] "Always mystify, mislead, and surprise the enemy if possible" was General Thomas J. "Stonewall" Jackson's succinct view of the need.[25] Basil Liddell Hart seems to concur when he stated, "originality is the most vital of all military virtues."[26] More recently, in reference to the evolution of the operational art, Charles Brower noted "ideas and concepts take meaningful form and shape in specific ways not as a result of great, often unfathomable forces but as a result of human beings who are who are able to step forward and to influence history's direction."[27] But perhaps Fuller said it best:

> Originality, not conventionality, is one of the main pillars of generalship. To do something that the enemy does not expect, is not prepared for, something which will surprise him and disarm him morally. To be always thinking ahead and to be always thinking around corners. To spy out the soul of one's adversary, and to act in a manner which will astonish and bewilder him, this is generalship. … This is the foundation of success.[28]

Despite these testimonials for an operational art that can "break through the limitations of previously codified knowledge, to lead man into his future," there are disturbing trends that have the potential to impede generalship in its ability to astonish and bewilder the opponent. One of these is a rationalism, which treats reason as the sole basis of belief and knowledge and views the concepts of surprise and astonishment as quaintly outmoded. In addition, a linear decision making process threatens to diminish original or innovative thought and to stifle intuition. Finally a growing centralization of control both degrades the freedom of action that is the basis of initiative and reduces the time available for original thought.

[24] Fritton, 69.
[25] Fitton, 70.
[26] Fitton, 70.
[27] Brower, 197.
[28] Fitton, 69.

RATIONALISM

Given the advantage that surprise, astonishment and bewilderment can provide in battle, it is not surprising that considerable effort has been undertaken to limit their use by an opponent. "From Plato to NATO, the history of command in war consists essentially of an endless quest for certainty — certainty about the state and intentions of the enemy's forces…."[29] The view that such certainty is possible is the product of the Newtonian paradigm, which characterizes western culture and may be described as follows:[30]

> The Newtonian paradigm is the mechanistic paradigm: the world and everything in it is a giant machine. …Newtonian war is deterministically predictable: given knowledge of the initial conditions and having identified the universal 'laws' of combat, we should be able to resolve the problem and predict the results.[31]

Fundamental to the Newtonian paradigm is the belief that all things can be controlled once enough information about them is known. From this flows an acceptance that the information dominance provided by emerging technologies will "vastly reduce, if not eliminate the friction and fog of war, providing the commander and his subordinates with nearly perfect situational awareness."[32] This idea easily solidifies into the conviction that where once the commander required "vision to see through the veil in which the enemy's future operations are always wrapped,"[33] technology will ease or eliminate this requirement. Technology will provide vision *to* the commander who will no longer have to rely on intuition or imagination.

Subscribing to the Newtonian paradigm can create the confidence that, while war may appear disorderly and confusing, sufficient command and control can impose order, precision

[29] Van Creveld, 264.
[30] Schmitt, 2.
[31] Schmitt, 55,56.
[32] Hall, 29.
[33] Manstein quoted by Gardner, 29.

and certainty.[34] This implies that no situation is too difficult for rational understanding. Even complexity theory "contends that there are underlying simplicities, or patterns, if we but look for them."[35] The net effect of these beliefs is to diminish the understanding of and respect for that which cannot be rationally explained.

The conviction that nothing is beyond control is exacerbated within a military where few have experienced combat. Williamson Murray suggests that long periods of peace "could well create military cultures that no longer understand the fundamental nature of war, in which planners assume that there will be little friction or that opponents will be unable to interfere with the conduct of operations."[36] A belief that rational solutions exist for every problem can take hold more easily when the circumstances of their failure cannot be imagined.

One consequence of the belief that war is perfectly controllable is to view the operational art as a paint-by-number exercise. The pattern is set by our perfect understanding of the situation and matched to a doctrinal template derived from lessons learned. The colours are chosen and applied by those skilled in technique. The implication is that surprise, astonishment and bewilderment will be less relevant in a future where technology will allow the commander can see and understand the entire battlefield and, "as a result, win the war."[37] This confidence in the predictability of the art of warfare could cause the talents of generalship to atrophy and to be replaced by a reverence of managerial excellence. Patricia Pitcher has observed that modern management theory believes it has "reduced leadership to a task anyone could be taught."[38] There are clear indications that this belief has already gained more than a foothold. Colonel L.D.

[34] Schmitt, 56.
[35] Rokke.
[36] Murray (2001), 121.
[37], Arnold Beichman, quoted in Hall, 28.
[38] Pitcher, 1.

Holder has noted that many officers new to the subject of theater operations are alienated by the impossibility of developing an operational checklist.[39]

There is no question that the application of scientific and rational analysis to conflict provides substantial benefits. It provides a method of comprehending the complexity of war by "successively breaking it down into parts eventually small enough to understand and control with the expectation that this will allow us to understand and control the whole."[40] These comprehensible bits form the basis of military education and allow novice members of the profession to be developed in incremental steps. It readily supports the skill based definition of art by providing the knowledge that combined with practice will produce skill. In addition to personal development, automated information systems can use this rational understanding to sort through previously unmanageable quantities of data to develop the information relevant to decision making.[41] The ability to understand and control battle should allow leaders to use conflict more precisely as an extension of foreign policy and to tailor the use of force in ways that enhance its effectiveness while reducing the risk of failure. However, will perfect situational awareness, aided and abetted by modern technology, combined with precise command and control of personnel highly skilled in tactics supplant originality, insight and revelation?

Rational analysis will do much to raise the veil of uncertainty but it does have serious limits. Pitcher believes that to "imagine, as some do, that modern management techniques eliminate the need for inspiration, intuition, judgment and the careful selection of the best people is not just dangerous for the corporations, national competitiveness and economic prosperity, it is

[39] Holder, 88.
[40] Schmitt, 2.
[41] "Decision making in the digital age", 26.

very dangerous for our societies as a whole."[42] She argues that the wild card in this debate is the "character" of man.

Supporting Pitcher's view, psychoanalyst Elliott Jaques states that the human characteristics of judgment and discretion comprise a mental process that "is not accessible to conscious knowledge and reasoning,"[43] and therefore has no inevitable outcome that can be predicted by rational calculation. The human intellect is capable of adding unpredictable variables to the rational world. This is an important point, for as General Charles Krulak points out, "As long as wars result from two opposing human wills, they will be emotional and chaotic in nature. Technological or scientific solutions alone will not be adequate to resolve these conflicts; nor will they be able to lift the 'fog of war.'" [44]

The true visionary can have a significant impact on the conduct of war. It is exactly when we believe we have a complete understanding of the world that *someone* causes us to face a different reality or, in modern parlance, to "shift our paradigm." Far from being replaced by rational analysis, the potential of humankind to do the unpredictable will define the limits of our ability to comprehend the world by changing it in unexpected ways.[45]

Generalship does have a place for *art* in both senses of the word. It requires craftsmen with a mastery of knowledge-based skills[46] as well as true artists with intuition and imagination. The artist provides the originality that will "astonish and bewilder" the enemy, the vision to see what others cannot and the intuition to make difficult decisions when facts are unclear. In isolation, however, the artist lacks the capacity to plan and prosecute a military campaign. He

[42] Pitcher, 3.
[43] Jaques, 10.
[44] Krulak, 19.
[45] Murray, 34.
[46] Pitcher, 21.

can sketch the outline, but relies on the craftsmen to add colour and substance to the overall work.[47]

In the quest for a rational understanding of conflict we must also take care to nurture the artistic talents within the organization. For the artist, we must ensure that artistic expression is possible, that insight is developed and that innovation and original thought are encouraged. For the craftsmen, Pitcher suggests they possess a "practical understanding of the art," that their knowledge "cannot be reduced to maxims."[48] We must develop a staff possessing a penetrating comprehension of the operational art that transcends rote learning. Failure to do so will leave us with a leadership incapable of seeing beyond the current paradigm and a staff that fails to understand when mechanistic adherence to checklists or procedures is inappropriate. The danger is that the rationalistic view will predominate, and that fascination with technology and the need to "manage" complexity will divert attention and resources from the needs of the artists and the craftsmen.

GENERALSHIP AND THE OPERATIONAL PLANNING PROCESS

Consider the Canadian Forces Operational Planning Process (CFOPP) and how its rationalist approach has the potential to inhibit generalship. The CFOPP[49], like its counterparts in the United States and in NATO, follows a pattern of decision-making akin to that described by TT Paterson,[50] whose continuum of control over the decision process is depicted by the white boxes in Figure 1. The gray boxes, oriented above their place in Paterson's continuum, represent a simplified version of the CFOPP.

[47] Pitcher, particularly the introduction, 19-24.
[48] Pitcher, 23.
[49] B-GG-004-005/AF-000 Canadian Forces Operations, 4-4.
[50] Paterson, T.T. depicted in Mintzberg, 100.

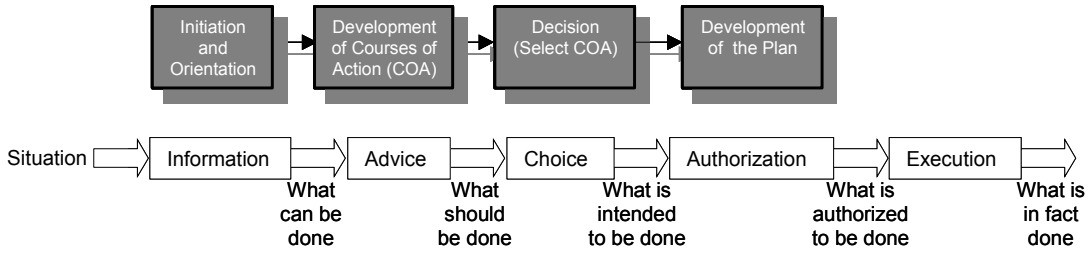

Figure 1 - Paterson's Decision Making Process

This type of decision-making process is termed "analytical" or "rational-choice"[51] because it is based upon the systematic development and analysis of courses of action. A series of stages is followed sequentially to move from identification of the situation to the implementation of the selected solution. The analytical process has the potential of being thorough and less likely than other processes to overlook important information.[52] When correctly used, the product of the process is "a well-integrated, coordinated and synchronized plan articulated via a detailed operations order."[53]

Henry Mintzberg observed that within the decision making continuum the amount of control an individual has over the various steps depends on the degree of centralization or

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having influence over the development and choice of options. He must have a direct personal *involvement* in the entire the process.

It can be argued that unless the commander has *separately* gained an understanding of the situation, his basis for decision-making is limited by a reliance on the staff analysis, which, although professional and detailed, is filtered by their minds and by their methods. This filtering may eliminate or disguise a factor critical to the commander's formulation of a campaign concept or the understanding necessary to select the most appropriate option. The commander and his staff do not need to plan together — indeed it is likely best that the he allow his staff to plan separately lest he stifle *their* creativity — but the commander can only contribute the full range of his artistic talents to the plan if he develops an understanding of the situation and alternate courses of action in his own mind.

Unfortunately, analytical planning processes such as the CFOPP are a poor choice for the commander. They are simply too time-consuming.[55] The pace of modern warfare has reduced "the time in which to exercise coordination and to control to a fraction of what it was only a few decades ago."[56] Time for thinking is in short supply. In war, when time pressures on the commander and the staff reach a peak, the need for artistic leadership is probably the greatest. The challenge is to ensure that the time required to develop situational awareness, to reflect and to innovate is not compromised.

The problem is not easy. The operational commander and his staff are faced with a growing array of tasks and challenges generated by the complexity of conflict at the operational level. The commander has numerous calls on his time: liaising with the strategic level; briefing and consulting with the staff; and performing essential leadership functions with subordinate

[55] Hall, 30.
[56] Van Creveld, 2.

formations. Large headquarters, comprising staff from each military service, from other government and non-governmental agencies and from coalition partners, are required to perform the necessary tasks. As a result, more and more staff time is devoted to coordination and ensuring that each element's contribution is incorporated into the planning. Too often our decision-making processes respond to these time pressures by arbitrarily limiting the commander's input to choosing one of three options developed by the staff. Without an alternative to the CFOPP any additional participation by the commander in the planning process is prevented by a shortage of time.

The inability of the general to fully contribute to the planning process is only part of the problem. Situations arise when the staff lack the time to complete even the basic steps of the planning process. Commenting on the Canadian Government response to the September 11 attack on New York and Washington, political scientist Donald Savoie noted that "[short circuiting the bureaucracy is] the only way to manage a crisis. There's no time for process, consultations, deliberations and weighing options."[57] While his views on discarding process may be extreme, there is clearly a case to be made that a complex staff system is not particularly responsive to time pressure.[58] Technology supporting more efficient processes might provide a partial answer to this dilemma, but it is also part of the problem. In fact, technology has created much of the time pressure by reducing planning cycles and introducing more variables into the planning equation. It also has shown the potential to overwhelm the staff with irrelevant information.[59] A different approach is required.

[57] May, A4.
[58] Goodman, 76.
[59] As part of a course on operational planning at the Canadian Forces College, a speaker noted that during the NATO operations against Bosnia, the air component headquarters staff was challenged by over 18,000 internal e-mails, most of which were distributed to too many individuals who could only determine whether the information was of use after they had read it.

One such approach is the "Recognition-Primed Decision" (RPD) model.[60] The RPD model is based on the fact that human beings are capable of quickly recognizing familiar patterns in new and complex situations and, based on these patterns, immediately understand what is happening and develop courses of action to address the situation. This process has been observed to work in less than one minute.[61]

The RPD model relies on intuition, which can be defined as the immediate apprehension by the intellect alone without the intervention of any reasoning process or as direct or immediate insight.[62] Not only is it fast, there is evidence that intuitive decision-making can be reliable. For example, a study of command in the US Army has shown that by "taking advantage of the intuition gained from previous experience and the powers of battlefield visualization, commanders can make reliable decisions faster than they can under the [military decision-making process.]"[63] Recognizing that for many situations a high level of "[p]recision and certainty aren't achievable", in 1995 the US Marine Corps decided to "emphasize speed and flexibility" by formally integrating intuition into its command and control process.[64] To some, intuition is not simply a tool for rapid decision-making but may be an essential element of the decision itself. For example, Einstein is reported to have "believed that objective reality could only be grasped by an intuitive leap, not by empirical analysis or logic alone." In his view, intuition always has had a part to play in human decision-making. [65] By incorporating intuitive decision-making techniques such as the RPD into operational planning, intuition can be exploited to greatly improve the speed and possibility the quality of the planning process.

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[60] Killion, 66.
[61] Hall, 30.
[62] Old Oxford Dictionary, Edition 2, 1989
[63] Hall, 29.
[64] Goodman, 75.
[65] Tooke and Allen, 14.

Intuitive decision-making shows considerable promise for both the commander and his staff in time sensitive situations, but it is not infallible. There is a possibility that the sudden insight may be wrong.[66] Decision-making based on intuition requires acceptance of risk, and risk may not be a popular option, particularly in military operations where political interests are at stake. Major B.C.W McClean notes, "Commanders' decisions, especially those involving risk to life, are increasingly subject to intense scrutiny and criticism by the public and the media. Decisions not supported by written proof or a sound, rational reasoning process are not likely to be credible."[67] The thrust of the analytical approach to decision-making is to reduce risk as much as possible. The danger is that the risk adverse environment described by McClean will lead to a slavish adherence to the analytical model. This will leave the organization ill-prepared for planning when time is short and inhibit the commander's ability to fully participate in the decision making process.

An alternative is to incorporate intuitive decision-making as a routine part of generalship at the operational level. Intuitive processes such as the RPD would supplement the more analytical tools of decision-making, which in turn would generate the situational awareness on which intuition depends. Research has shown that, with practice, intuition becomes more reliable. Even mistakes serve to improve the subsequent reliability.[68] By making intuition part of the normal decision-making process the commander will have a ready method to participate in and to control the process, and will be better prepared to respond to crisis.

Integrating intuition based decision making into the operational planning process must be done deliberately and practiced to ensure that all levels of the chain of command become familiar with its use and its limitations and that the requirements of intuitive decision making are

[66] See Ball and Morgan for a discussion on how intuition might fail and Schmitt for a rebuttal.
[67] McClean, 97.
[68] Hall, 32.

incorporated into decision support systems. Major-General Paul Van Riper notes that situational awareness is the key to effective intuitive decision making and that systems supporting such decisions "need to present the information in an integrated form — and at a level of detail appropriate to the level of command — that allows for quicker understanding of its meaning."[69]

GENERALSHIP AND CONTROL

Providing generalship with decision-making and planning tools that permit intuitive and innovative thinking to shape the plan are of little use unless the general and his staff have the freedom to act in a timely fashion. Authority for decision-making and acting on those decisions must be *decentralized* to the lowest level possible. Canadian doctrine encourages a command philosophy that emphasizes decentralization noting that it allows "initiative and flexibility" in meeting the needs of the superior commander.[70] At the operational level, decentralization facilitates innovative decisions by freeing the time that would otherwise be spent describing the proposal to higher headquarters and seeking approval. Decentralization provides the operational commander with the authority to make timely decisions.

Despite the apparent benefits and support for decentralization there are pressures that encourage centralization. The first of these pressures is the rationalistic view, described earlier, that control is the main method of ensuring success in war. From this point of view, decentralization adds unnecessary complication to the control process.[71] In a world where the Newtonian paradigm predominates there is a tendency to view control as something the commander *does* to his subordinates. Positive control of each element of the organization becomes the goal.[72]

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[69] Goodman, 76.
[70] *B-GG-005-004/AF-000 Canadian Forces Operations*, 3-8.
[71] Schmitt, 56.
[72] Schmitt, 57.

Positive control is fundamental to the doctrinal principle of *synchronization*, which is "arranging activities in time, space and purpose to mass maximum combat power at a decisive place and time."[73] The synchronization of forces at the operational level is complex, particularly when the component forces are provided by various services, have the potential to interfere or disrupt one another or are expected to coordinate their activities over long distances and periods of time. It can be argued that the Gulf War and Kosovo air campaigns were triumphs of synchronization where centralized control effectively managed large military forces from all environments in coordinated and effective campaigns. Such success feeds the conclusion that control is a war winner.

Central control is also seen as essential for the efficient and effective use of high value or limited resources. This requirement is expressed in the concept of "centralized control, decentralized execution." Canadian doctrine on military engineering support is representative of the intent of the concept:

> The execution of engineer tasks requires careful control and coordination of personnel, equipment and materiel. The most efficient use of scarce resources is generally achieved through centralized coordination at the highest practicable level, with execution delegated to the lowest practical level.[74]

Finally, modern technology facilitates control with almost instantaneous global communication.[75] Doctrine notes the need for commanders to be cautious of using modern technology to direct action at the lowest level just because they can, but, given the pressures for centralized control, restraint may be difficult.[76]

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[73] *FM 3-0 Operations, 4-17.*
[74] *B-GG-005-004/AF-000 Canadian Forces Operations*, 23-1.
[75] Dunn, 4.
[76] *B-GG-005-004/AF-000 Canadian Forces Operations*, 3-8.

Whether the rationale for centralized control involves an overarching belief in positive control, a need to synchronize complex operations or to ensure the economical use of resources, the pressure to impose control is evident. However, the quest for control is not only inconsistent with the need of innovative generalship, it does not reflect reality. As discussed previously, human nature has the annoying habit of introducing unexpected variables into the most carefully studied situation. These random events are beyond control. As John Schmitt notes:

> Complex systems like war simply cannot be controlled the way machines can. We should not think of command and control as a coercive form of mechanistic control. The turbulence of modern war suggests a need for a looser form of influence, something more akin to the willing cooperation of a soccer team than to the omnipotent control of a machine operator or chess player, something that provides the necessary parameters in an uncertain, disorderly, time competitive environment without stifling the initiative of subordinates.[77]

Mintzberg supports this notion by stating that the environment in which the organization operates determines the appropriate level of centralization or decentralization. He uses "coordination" for the processes we would term control and has developed a handy model to illustrate the effects of environment on control. His five coordinating mechanisms include direct supervision, three forms of standardization, and "mutual adjustment." Direct supervision involves one person taking "responsibility for the work of others, issuing instructions to them and monitoring their actions." The three standardization mechanisms include the *standardization of skills* where the training and the competence of the workers is specified, *standardization of work processes* where detailed process instructions are provided, and *standardization of outputs* where the results of the work or the end state are specified. Mutual adjustment involves individuals communicating with each other to coordinate the various aspects

[77] Schmitt, 56.

of their work.[78] Direct supervision represents the greatest centralization of control, mutual adjustment the most decentralized with standardization fitting in between.[79]

The military, like most large organizations, use all five of these coordinating mechanisms both alone and in combination. Each is particularly suitable to specific situations: direct supervision when firm control is appropriate; standardization when supervision is unwarranted or impossible yet predictable behaviour is desired; mutual adjustment when elements of the working environment cannot be precisely defined and individuals must react to changes. Mintzberg suggests that the environmental factors affecting the choice of coordinating mechanism are stability and complexity. Stability, representing a lack of change or slow predictable change, permits the development of detailed, highly integrated standards and procedures. Standardization is an effective coordination mechanism in a stable environment but loses its effectiveness when the environment demands rapid changes in procedures, products or training. The predominance of standardization characterizes an organization that is "bureaucratic".[80]

Complexity is an indication of the number of choices of action available or the number of variables affecting decisions. Organizations can centralize decision making in a simple environment where one person can make all the decisions but will tend to decentralize as complexity increases and one person is no longer able to make all decisions. Mintzberg depicts the effects of the two factors as shown in Figure 2.[81]

[78] Mintzberg, 4 to 7.
[79] Mintzberg, 138.
[80] Mintzberg, 138.
[81] Mintzberg, 139.

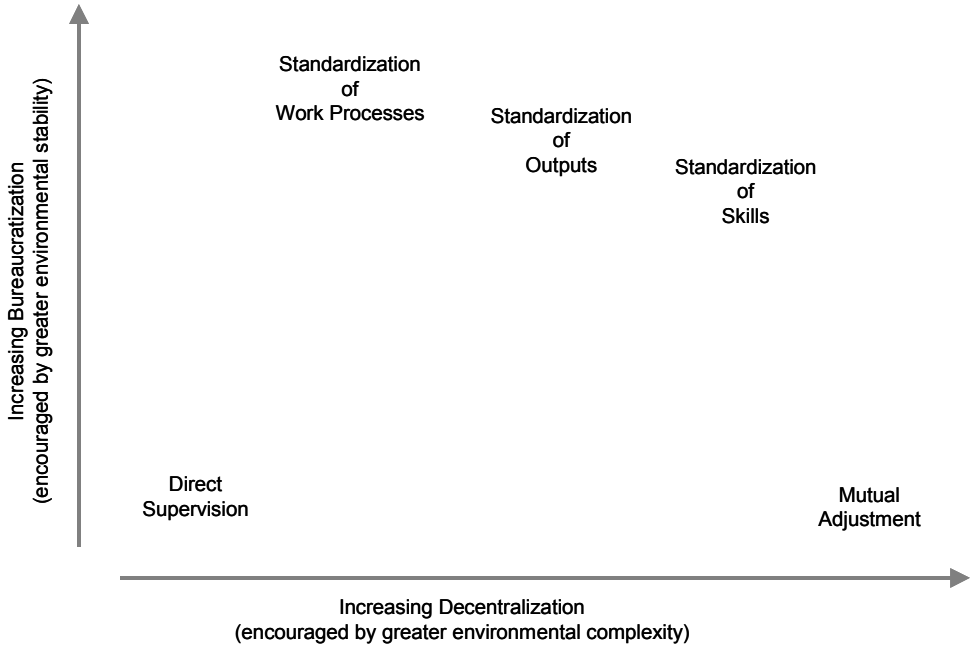

Figure 2 – Environmental Effects on Coordinating Mechanisms

The military environment is neither stable nor simple. A host of influences interact which require constant adjustments to the situation, be they political, issues of resource availability and utilization, or changing goals. This complexity is never more evident than during times of war. Clearly it is an environment where decentralized control mechanisms such as mutual adjustment and standardization of skills are more appropriate than direct supervision and the standardization of work processes. Bureaucracy and control at the highest level need to be replaced by highly skilled teams working in an adaptive command environment.[82]

An increased emphasis in doctrine on the needs of innovative generalship for decentralized control and adaptive command would be a good first step. Yet doctrinal changes are not enough. As Paul Johnson has observed, organizational culture may have a more significant effect on the way the military operates than doctrine. He argues that history shows

[82] See Schmitt page 57.

that where the culture of a military and its doctrine are inconsistent the culture will predominate and effectively control the way the military approaches conflict. When faced with a choice between belief systems and rational arguments supporting new doctrine, the belief systems will guide actions until the doctrine can be internalized and modify the belief systems.[83] As discussed earlier, belief in the analytical approach to problem solving and in the necessity for centralized control is well ingrained. Murray believes that "the American military culture has returned to …[the] notions that we live in a mechanistic world where sufficient computing power will allow not only prefect prediction, but also the ability to control the 'battlespace' absolutely."[84] Without a fundamental cultural shift these beliefs will dominate our organization for and leadership of military conflict.

CONCLUSION

Generalship at the operational level faces many challenges. The "spectrum of conflict", the reliance on multi-service and multi-national forces, modern weapon systems, a growing body of the Law of Armed Conflict and media coverage capable of rapidly influencing the political will for military operations all contribute to the complexity faced by the general and his staff. The Newtonian paradigm, which characterizes western culture, fuels the belief that this complexity can be controlled; that given enough information the fog and friction of war can be eliminated and warfare conducted with surgical precision. Many commentators doubt that such control is possible. They point out that, not only does the very complexity of conflict increase the likelihood that control will breakdown, the human intellect is capable of adding unpredictability to the rational world. This human talent for creating the unexpected and often unimaginable undoes the certain knowledge on which absolute control is based. Those with

[83] Johnston, 32.
[84] Murray (1999), 38.

imagination and initiative will best a generalship that puts its reliance on control; wars are still won by those who can astonish and bewilder the opponent. Generalship at the operational level is not a paint-by-number activity. Success will depend on the ability to create original art: that unique shaping of reality that will break through the limitations of previously codified knowledge.

Despite the recognition that successful generalship requires the artistic characteristics of inspiration, originality, judgment and intuition, there is a danger that the rationalistic fascination with technology and with the need to manage complexity will divert attention and resources from the development and fostering of these characteristics. By default, the artistic characteristics of generalship could be lost.

Countering the influence of the Newtonian paradigm requires that generalship be permitted to contribute its artistic capabilities to the conduct of operations. The operations planning process must permit the full participation of the commander and his staff in developing innovative plans. Analytical decision-making processes alone, such as the Canadian Forces Operational Planning Process, are insufficient to this need. They require too much time to permit the full participation of the commander and often fail the staff when crisis requires urgent decision-making. Intuition based decision-making processes, such as the Recognition-Primed Decision model, are a necessary complement to the analytical planning process because they provide a ready method for the commander to fully contribute to the planning and an alternative method for the staff to use when time is short. However, intuition based decision-making involves risk and requires practice to improve its reliability. In addition, information systems supporting intuition have different requirements from those supporting analytical decision-making. For these reasons, the decision to introduce intuitive decision-making must be made

deliberately so that all levels in the command structure can become familiar and comfortable with the process, can understand its strengths, weaknesses and applicability, can practice the techniques to improve reliability and can influence the performance specification of decision support systems.

A supportive planning process is insufficient if the general and his staff do not have the freedom to act in a timely manner. Doctrine recognizes the benefits of delegated authority. However, the requirement to centrally manage scarce resources, a belief that complex military operations require close synchronization and technology that facilitates control can lead to increased centralization. Centralized control fits the rationalistic view of the world that all things can be controlled. However, centralized control is inappropriate for the reality of military operations conducted in an environment that is neither stable nor simple. The complexity and asynchronous nature of combat demand that bureaucracy and control at the highest level be replaced by highly skilled teams working in an adaptive command environment.

The need for an artistic generalship that brings innovation and originality to the operational level of war is clear. This generalship must be allowed to influence campaign planning and have the authority to act when required. However, recognition of the requirement is insufficient if the organizational culture is one that treats reason as the basis of all belief and knowledge and sees information-based control as the only foundation for future success in war. Without a shift in culture from the rationalistic view of the world, generalship is in danger of becoming methodized and losing its essential human characteristics.

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