The Canadian Army Journal

Vol. 7 No. 1 Spring 2004 ISSN 1712-9745

Published Quarterly

National Defence Défense National

The Canadian Army Journal
Canada's Professional Journal on Army Issues

This is an official publication of Land Force Command and is published quarterly. The Canadian Army Journal is dedicated to the dissemination and discussion of doctrinal and training concepts, ideas, and opinions by all army personnel and those civilians with an interest in doctrinal, training, and other military matters. Articles on related subjects such as leadership, ethics, technology, and military history are also invited. Considered, reasoned debate is central to the intellectual health of the Army and the production of valid doctrine and training policies. Articles promoting thought and discussion are therefore welcome. All ranks and personnel from other environments are encouraged to contribute. Opinions expressed in the articles remain those of the author and do not represent departmental or Canadian Forces policy. The doctrine, training, and other updates do not represent authority for action on that particular topic.

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Articles of any length will be considered for publication, the ideal length being 3,000 to 6,000 words. Articles can be submitted in either official language. Usage and spelling are in accordance with The Canadian Style: A Guide to Writing and Editing (Minister of Supply and Service 1997) and Le guide du rédacteur de l'administration fédérale-both are available via the Internet and at libraries or bookstores and The Concise Oxford Dictionary or Le Petit Robert. Supporting tables, charts, and images must be provided by the author and should not be embedded in the text. Articles must include endnotes. Contributors must include a brief biography citing their academic background, noteworthy military or other experience, key courses and current position. Articles can be submitted via e-mail or regular mail (a disc copy must be included). All submissions will be reviewed by an Editorial Board, and contributors will be notified by the Managing Editor on the status of their submission. The Managing Editor reserves the right to make minor editorial changes to grammar or style. Authors will be contacted should their submission require revision.

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Contributions to the Book Review section should be between 1,000 and 2,500 words. Guidelines for the preparation of book reviews can be obtained from the Managing Editor. Where possible, an electronic copy of the dust jacket of the book being reviewed should be provided.

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EDITING AND LAYOUT

The final editing, layout, and proofreading of each issue is performed or contracted by the Army Publishing Office, Land Force Doctrine and Training System, Kingston, Ontario.

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Troops from the 3rd Canadian Division board ships in preparation for the D-Day Landings, 6 June 1944. (Painting by Canadian War Artist Tom Wood, Canadian War Museum Collection CWM 10618)

Canadian Troops wade ashore onto JUNO Beach as part of OPERATION OVERLORD. Sixty years ago this summer, the Canadian Army played a significant role in what has been called "the most important single event of the Twentieth Century." (Photo Courtesy National Archives)

A MESSAGE FROM THE EDITOR IN CHIEF

As the Editor in Chief of The Canadian Army Journal, it gives me a great deal of pride to announce its re-birth on the sixtieth anniversary of the D-Day Campaign. *The Canadian Army Journal* is rising, Phoenix-like from the ashes of the esteemed *Canadian Army Journal* of the 1960's, and its more immediate and highly successful antecedant, *The Army Doctrine and Training Bulletin*.

Two persons in particular need to be recognized for their hard work in the stand-up and eventual success of *The Army Doctrine and Training Bulletin*. The first is Major John Grodzinski, the first managing editor and impetus behind the journal's creation five years ago. Credit also needs to go to Major-General Jan Arp, who, as then Commander LFDTS, believed and supported John Grodzinski in his quest to re-establish a legitimate and relevant professional journal for the Canadian Army. Their efforts have paid off magnificently, and they should be thanked for their foresight and efforts on behalf of the Canadian profession of arms.

The name change from *The Army Doctrine and Training Bulletin* to *The Canadian Army Journal* reflects not just a nod to the past but also a look to the future. As the Canadian Land Forces undergo a process of transformation in order to make them more responsive and relevant in a significantly changed and continually changing world, so too must the Army's professional journal transform. The name change was a deliberate decision in order to inspire and reflect the intellectual demands and expectations made upon the profession of arms. While we have made a renewed commitment to the health of *The Canadian Army Journal*, in the final analysis, the success of the journal is largely up to you, the reader and potential contributor. I encourage all members of the Army constituency to continue to support *The Canadian Army Journal* by reading and contributing their thoughts and views.

I hope that *The Canadian Army Journal*, like its forebears, will continue to provide an open, relevant and enlightened forum for exchange and debate which will reflect the views of the military profession and constituency at large to a wider audience, our public and partners alike. Vigorous and informed debate is a sign of a healthy and open-minded profession. I hope that *The Journal* generates the same type of debates that two future Canadian Corps commanders, Guy Simonds and E.L.M. Burns, had over mechanization in the 1920s or the excellent debates held over the meaning and myths of manoeuvre warfare held in this very journal in the late 1990s.

Herb Petras
Brigadier-General
Editor in Chief

DIRECTORATE OF ARMY DOCTRINE UPDATE: TOWARDS A FORCE EMPLOYMENT CONCEPT FOR THE INTERIM ARMY

Lieutenant-Colonel Al Morrow

A few years ago, the Army divided force development into three time frames represented by the Army of Today, the Army of Tomorrow and the Future Army. Essentially, the Army of Today was concerned with "what is," the Army of Tomorrow with "what will likely be" and the Future Army with "what could be." Combat development work was concentrated in the Army of Tomorrow timeframe with the aim of having force employment concepts developed well in advance of fielding new vehicles and weapon systems. This split was effective for the most part, but a few very significant issues began to surface, which needed immediate attention and simply could not wait for the longer term, Army of Tomorrow development process—hence the birth of the Interim Army.

In June 2003, the Director Army Doctrine (DAD) was tasked with the development of a force employment concept for this Interim Army. A discussion paper on the subject was released in September 2003. Although the paper covered a wide range of issues, the Chief of the Land Staff (CLS), LGen Hillier, directed that particular attention be paid to four issues that he considered to be priorities: command and command support, ISTAR (with an emphasis on the "R"), the organization and employment of our infantry, both mechanized and light, and the integration of fires, both integral and coalition, and direct and indirect. These four issues were hotly debated at a CLS-led strategic planning session in late November 04, 2004 and a broad axis of advance developed. Feedback on the aforementioned discussion paper, combined with input from the strategic planning session, was used to refine the evolving force employment concept. The concept paper itself, entitled "Purpose Defined—A Force Employment Concept for the Interim Army," outlines the broad axis of advance that the Army will pursue in the very near future. For example, the paper speaks to the use of a direct fire "system" integrating the effects of the Mobile Gun System (MGS), Tow Under Armour (TUA) and Multi-Mission Effects Vehicle (MMEVv1). How these systems will be grouped and employed is yet to be determined. The first cut at this will come from a series of seminar war games conducted by the Director General Land Combat Development (DGLCD) and by computer supported analysis at the Army Experimentation Centre. The intent is to have this effort coalesce into draft doctrine that will hit the streets by this summer. The goal is to assess and validate this doctrine and supporting TTPs and SOPs at the Canadian Manoeuvre Training Centre (CMTC) in late 2005 or early 2006. Ambitious to say the least—but absolutely critical if we are to achieve the transformation that the CLS has spoken of so often.

The Force Employment Concept paper will be issued in the near future and may in fact be out before this issue of *The Canadian Army Journal*. Readers must remember that is just the tip of the iceberg in a complex process. For those who have not seen the paper yet, the following is the preface by the CLS. As we all should note, "transformation has begun."

> *Our Army must be prepared to fight and win in the 21st Century land battle. Indications are that the future security environment will continue to be volatile, lethal and ambiguous, with more operations being conducted in an urban environment. Political and societal expectations are for operations that inflict the minimum number of friendly, civilian, and even enemy*

casualties. There is a growing expectation that operations can be accomplished relatively quickly, and with little tolerance for error.

We must also be prepared to simultaneously conduct domestic operations that span the realm from natural disasters to counter terrorism. In any case, domestically or internationally, we cannot fail. In order to achieve strategic relevance, the Army must at all times provide the nation with decisive land-power as a vital element of the joint team. It must make a meaningful, timely and recognized contribution to Canadians, as well as to like-minded allies and coalition partners. Above all, the Army must be tactically decisive.

As demanding as this goal may appear, it is achievable. The Canadian Army has an enviable record of success and excellence. This legacy has been built upon the abilities and achievements of our soldiers who continue to be our credentials no matter where they are deployed.

To secure continued success, we must ensure that Canadian soldiers have the proper knowledge, leadership, equipment and skills. The enclosed force employment concept articulates how Canada's Army will undertake operations over the next few years. Specifically, it describes the evolving capabilities of the Army and how they will be applied. It explains how the Army will fight.

This force employment concept provides a conceptual foundation for the Interim Army. It highlights the significant changes in capability or concepts from those of today's Army and provides the basis for "unity of thought" across the Army and its supporting elements. In addition, it provides a tool for communication, professional military education and training. Finally, the concept reflects the vision of our Army as being knowledge-based, command-centric and soldier-focussed.

This force employment concept provides a conceptual foundation for the Interim Army

Although some elements of the concept will take longer to mature, we must begin to embrace change immediately. Our timeline is compressed. Battle group level doctrine, based on this conceptual approach, will be published in draft in June 2004. Supporting doctrine across all five operational functions will follow shortly. By late 2005, the concepts discussed in this publication will have undergone experimentation and shortly thereafter will be validated in field trials at the Canadian Manoeuvre Training Centre. As the concepts are validated they will be incorporated into our doctrine—including tactics, techniques and procedures—directly affecting how we conduct operations and what is taught in our training and educational institutions.

Clearly, there are many changes taking place now and in the very near future. We must take full advantage of these changes. Transformation has begun.

Chief of Land Staff
April 2004

DIRECTORATE OF ARMY TRAINING UPDATE: THE BRIGADE TRAINING EVENT: MANAGED VERSUS OPERATIONAL READINESS

Lieutenant Colonel André Harvey

INTRODUCTION

The Brigade Training Event (BTE) concept was introduced in 2003 to check the loss of war fighting expertise in the Army, with a view to raising our collective learning experience in an institutional sense. Today, the BTE represents the only properly structured, formation level, combined arms, collective training activity conducted by the Army. The BTE is critical to institutional learning. Without it, collective training remains a series of stand-alone and inconsistent events, lacking the systematic, Army-directed approach of the BTE aimed at producing the synergy and focus required to optimize training value.[1]

The BTE was introduced as an annual institutional event, but in 2003 the Army directed two BTEs, in part as a result of operational necessity. The aim of BTE 2003 was "to confirm the capability of a SABRE brigade group to conduct operations in a future operating environment with a view to preparing selected units for high readiness tasks."[2] When Canadian participation to Afghanistan materialized, a second BTE was introduced later in the year (dubbed BTE 3.5), and the aim of both BTEs became "to prepare HQ 2 CMBG and HQ 5 CMBG, along with designated units for ISAF [International Security Assistance Force], while at the same time providing war fighting training for units identified for Op PALLADIUM ROTO 13 and 14."[3] This modification to the aim of the BTE arose from the Army's new operational commitment in Afghanistan, which "forced a fundamental restructure of the Army collective training construct."[4]

This article discusses the role of the BTE, along with the fundamental reasons for implementing the BTE as the principal collective training activity of the Army. Further, this article relates the construct of the BTE to the training requirements preceding the deployment of Army troops on operational missions, using our recent experience with BTE 03 and BTE 3.5 as a basis for the discussion.

ABOUT ARMY READINESS

> *Operational readiness is the CLS' [Chief of the Land Staff's] first priority … [and] is the state of preparedness of a unit to perform the missions for which it is organized or designed. It is closely associated with operational effectiveness-that is, the degree to which forces are capable of performing their assigned missions in relation to known enemy capabilities or specific mission requirements. The level of operational readiness and effectiveness of units will have great bearing on their ability to launch and successfully conduct operations.*[5]

The above quote could infer that operational readiness stops just short of theatre- and mission-specific training (TMST) and only includes training related to one unit's standard operational configuration. (For example, the operational readiness of an Armour unit would be gauged against its capability to operate in its traditional Armour role.) Nonetheless, units deemed oper-

ationally ready must also complete TMST in order to adjust their focus for the conduct of operations in the theatre for which they are destined. Yet, in the Canadian Army, the declaration of operational readiness currently follows TMST.

The essence of operational readiness, in Canadian training terms, is described in Canadian Forces Publication 300-8 (*CFP-300-8)*, entitled *Training Canada's Army* as "the military ability to make a timely and appropriate military response to any threat. A pivotal requirement is that operational readiness must be measurable. There exist several performance indicators that determine operational readiness. The training indicators to be used are the levels of training, the levels of capability (LOC) and theatre- and mission-specific training (TMST)."[6] This definition is consistent with established Army practice and satisfies the requirement for a common understanding of the term "operational readiness."[7] We now need to consider how we manage operational readiness.

A few years ago, the Land Force came to the realization that it could not continue to keep all of its forces at a uniform high-level of readiness as it had for decades. The solution, allowing the Army to meet its operational commitments while respecting the resource limitations imposed, was the concept of managed readiness. Planning for the implementation of the Army Training and Operations Framework (ATOF) was launched in 2001,[8] and in 2002 the CLS announced that a managed readiness system would be put in place within five years.[9] Since then, an implementation plan explaining the execution of this strategy has been published, and we already have a relatively good understanding of its implications on the training system. In fact, even before the CLS announcement, the Army had officially adopted the tool that would represent the cornerstone of Army managed readiness.

The goal of the ATOF is straightforward: "to bring order and deliberation to the readiness process."[10] In concept it is equally simple: the force, divided into three equal parts, rotates through three training cycles of various length and scope.[11] The cycles are designed to impose predictability in the provision of resources to training tasks. While explaining the subtleties of the ATOF falls outside the purview of this article, it is important to understand that, from a training perspective, the ATOF is the Army's reference point.[12]

"The cyclical nature of ATOF reflects the cyclical and graduated nature of training. It is incumbent upon all of us that we ensure we remain disciplined towards the training methodology imbued within ATOF. Each ATOF phase clearly details the corresponding training activities. Low training levels are equally as important to the overall managed readiness challenge as high readiness levels."[13] This is important to remember because the progressive and structured training framework associated with the ATOF is key to the success of managed readiness in the Army. This training philosophy directs that only one third of the Army trains to a defined set of battle task standards (BTS) at the levels and intensity required to safeguard the combat capability of theses forces. This requirement is completed during the training phase of ATOF and culminates with the BTE.[14]

So far, we have seen that readiness relates to the Army's capability to perform its primary function and that readiness must be managed. In fact, the Army has just begun the process of establishing, through the use of the ATOF, a system of managed readiness, whereby only one third of the Army is at high readiness at any one time, while another third trains up to that level and the remaining third trains to achieve a low level of readiness. The associated training

scheme guaranteeing the success of this system centers on the achievement of a chosen set of BTS to varying levels, known as the MLOC (minimum level of capability), in accordance with the required level of readiness of the different groups of forces. We now need to explore in detail the significance of the BTE as the converging training piece of the training phase of the ATOF.

THE BRIGADE TRAINING EVENT

The BTE represents the culmination of the ATOF training phase and is strategically oriented towards the confirmation of the war fighting capability of the Army at level 7. This is significant in itself because it depicts the general orientation of the Army collective training framework, based on the institutional reasoning that the Army must preserve an acceptable war fighting skill level, based on the main contingency force (MCF) concept of operations.[15] The institutional nature of the BTE is central to this discussion and has been captured in the following words of the Commander Land Force Doctrine and Training System (LFDTS):

> *The culmination of the training phase will include participation in an Army-directed Brigade Training Event-the end-state of which will be the confirmation of individual and collective war fighting skills. Key to the success of the Brigade Training Event is the emphasis on the long-term, institutional benefits of conducting the training. The Army-directed Brigade Training Event caps the training phase of each Army Training and Operations Framework cycle and will serve to focus the Army's resources to optimum effect. The scope of the training will facilitate a common institutional understanding of our tactics and procedures-even as we adopt new procedures and equipment suites; and, in an evolutionary manner, allow us to return to formation-level field training, so vital in promoting war fighting professionalism.*
>
> *The primary training objective of the Brigade Training Event must be to provide a challenging and realistic training environment to confirm individual and collective war fighting skills. It will also allow us to accomplish a wide variety of secondary institutional goals and objectives-including assessing the impact of modernization, experimenting with new force structures and testing new vehicles and equipment. The Brigade Training Event is not simply a brigade-level exercise, or field training exercise. It goes well beyond that in terms of providing the focus for Canada's Collective Training Framework. The challenge is to strike a balance between the needs at the tactical, operational and strategic levels to gain maximum institutional learning, while underlining the importance of maintaining the war fighting focus, consistent with the Army's assigned, operational tasks under the Defence Plan.*[16]

the BTE is meant as a recurrent strategic learning tool, precisely aimed at enabling the Army to retain its war fighting skills over time

Collective training at the brigade level in a challenging and realistic training environment is the first level at which a true synergy of all arms co-operation is realized. The Brigade Training Event will instill confidence, foster cohesion and deliver combat readiness. It is the venue for Canada to demonstrate its military competence as an Army, while producing experienced commanders and staff, comfortable in the exercise of command and control of significant forces, capable of utilizing the full range of intelligence resources, communication suites, and decision-support tools.[17]

Clearly then, the BTE is meant as a recurrent strategic learning tool, precisely aimed at enabling the Army to retain its war fighting skills over time through the accomplishment of a series of

gateway training activities, ultimately leading to the yearly achievement of set formation-level BTS. The ATOF, of which the BTE is a subset, systemizes this process by permitting the management of the readiness state of the whole Army through the cyclical training methodology of its component parts. The BTE is the prime vehicle by which the Land Force manages readiness and serves as a "reference point for … operational readiness."[18]

THE BTE AND OPERATIONAL READINESS

The challenge of balancing the institutional goals and objectives of the Army and the need to meet recurring, specific operational demands is a difficult one. In essence, the role of the BTE is more akin to sustaining the force rather than to readying the force. This challenge is addressed—somewhat—in *CFP 300 8*.

The Army capstone manual on training describes well how operational readiness is achieved and what role training plays in it by stating that "the Army conducts four categories of training—individual, collective, continuation and TMST … that, when combined, prepare forces for operations."[19] It continues to elaborate on the relationship between training and operational readiness by stating that "while operational readiness is a result of deliberate Army and CF planning, Army force generation and sustainment is founded upon the Army's individual and collective training systems. Individual, collective, continuation training and TMST are conducted systematically to produce ready forces and sustainment forces. It is, therefore, a cyclic systems approach that is the guarantor of operationally ready forces and their sustainability over time."[20] In this manner, *CFP 300 8* identifies that the role played by training applies to the two elements of that concept: in short, the Army trains to get forces operationally ready for the short term and to sustain the force in the long term.

However, *CFP 300 8* suggests that these roles are indeed distinct, stating that "one must always keep in mind that the Army's training systems continually attempt to satisfy two, sometimes opposing, imperatives: the need to meet current and projected operational commitments, and the need to ensure that the professional development of the Army is focused on war fighting."[21] Nonetheless, for the Land Staff planners, achieving the necessary balance between the BTE's role as a means to ensure operational readiness and its role as a strategic training tool devoted to long-term objectives related to the managed readiness of the Army remains an interesting challenge.

To better appreciate the BTE's link to operational readiness and the work yet required to implement managed readiness fully at the same time, we can benefit from the following paragraphs. In these paragraphs, CFP 300 8 establishes that institutionalized, warfighting-focused, collective training precedes pre-deployment training and contributes to maintaining combat capability:

♦ Upon being confirmed as competent at one level of training under MLOC, [a] tactical group is considered combat capable at the confirmed level … and is ready to progress to higher level training or is ready to undergo TMST before being declared operationally ready for deployment at that level.[22]

♦ It is the responsibility of the Land Staff at NDHQ, particularly the Directorate of Land Force Readiness (DLFR), representing the Joint Staff and the DCDS, to conduct mission analysis of ongoing and forecasted operational missions in order to determine pre-deployment training

requirements—including the TMST required to ensure mission success. DLFR, in conjunction with the Directorate of Army Training (DAT), will identify exact TMST for international operations and the associated resources required to achieve these TMST. Units earmarked for operational missions will be assigned this TMST in pre-deployment training directives.[23]

♦ Confirmation of TMST will lead to a declaration of operational readiness for deployment.[24]

The preceding paragraphs serve to highlight the requirement for conducting TMST during pre-deployment training and before being declared operationally ready, even after having participated in a BTE in the previous phase of ATOF, which was conducted to confirm the general combat capability of the force. The BTE, in other words, provides a steady reference point from which operational readiness can be attained through further specific training. The sustainment training—of which the BTE is also the culmination—is a separate but complimentary training activity to pre-deployment training

THE CASES OF BTE 2003 AND BTE 3.5

The original Army intent was to conduct only one BTE in 2003, with the aim being "to confirm the capability of a SABRE brigade group to conduct operations in a future operating environment with a view to prepare selected units for high readiness tasks."[25] This is, as we should have expected, exactly in-line with the managed readiness objective of ATOF and the BTE as expressed since 2001. Planning for BTE 2003 continued accordingly until 28 February 2003. As soon as the Army learned of its potential deployment to ISAF in Afghanistan, it modified the aim and objectives of BTE 2003 to more effectively support the preparation of troops designated for ISAF Rotation 0 and for Operation PALLADIUM Rotation 13. Later, the Army recognized that a second BTE was required, and, as planning for BTE 3.5 commenced, the Army Commander allowed further modifications in recognition of the lack of preparation time available to the contingent deploying from LFQA (Land Force Quebec Area) for Rotations 1 of Operation ATHENA and Rotation 14 of Operation PALLADIUM.

As the Army training authority, Commander LFDTS established a number of institutional objectives to be met at BTE 3.5. These were defined at the outset of the planning and were later expressed in the LFDTS exercise directive. It stated that the exercise "is the venue through which commanders will confirm individual and collective war fighting skills against assigned war fighting battle task standards … [and] also provides a venue for achieving a number of institutional objectives."[26] This direction was clearly consistent with the stated strategic and institutional goal of the BTE program. However, he allowed considerable latitude in the design of the master event list and in the design of the scenario in order to support the training requirements of the elements from LFQA destined for Afghanistan.

As officer conducting the exercise, Commander LFQA produced his own directive. His immediate reference point was the stated training aim from the LFDTS exercise directive, which was "to confirm the collective war fighting training of SQFT designated units in preparation for their employment on international operations in early 2004."[27] Commander LFQA's interpretation of that aim logically led him to focus the training more precisely on their employment on Operation ATHENA. In fact, his direction went further in stating that "l'entraînement non-conventionnel en terrain complexe sera favorisé afin de bien préparer les troupes à faire face aux menaces asymétriques identifiées pour le théâtre d'opérations (TO)."[28]

Nonetheless, the focus for both BTE 2003 and BTE 3.5 remained general purpose combat capability, rather than operational readiness training, while allowing the training audience to regroup in a manner more closely reflecting its Rotation 0 configuration. In fact, BTE 3.5 was planned to "confirm HQ 5 CMBG in level 7 warfighting, and prepare designated units for ISAF and OP PALLADIUM ROTO 14."[29] In fact, this time both training tool functions of the BTE were worked into the stated aim, causing some friction as various staffs worked through the details in an attempt to satisfy the many training objectives of the exercise. Unquestionably, the staff experience of the two BTEs conducted in 2003 will serve to more effectively blend the training objectives in the future to achieve a more widely and readily accepted overarching exercise aim for future BTEs.

CONCLUSION

Both BTE 2003 and BTE 3.5 were successes from an institutional learning perspective. The lessons learned will be extremely valuable to the future development of the BTE. Both exercises have also served the cause of operational readiness well, although the pre-deployment training construct remains to be validated in the near term. Clearly, BTEs are inextricably linked with the managed readiness concept and can serve as the platform for pre-deployment training leading to operational readiness. However, as these concepts mature, we will do well to keep in mind the lessons arising from the experiences of the two BTEs conducted in 2003.

From this author's perspective, this issue is directly related to the most important of the principles of war: maintenance of the aim. The BTE is a key feature of the Army's quest to become a learning organization. It also plays a role in the managed readiness cycle. Its purpose is strategic and speaks to the institutional sustainment of the force. Pre-deployment training is complementary, but in some ways quite different. Its goals are operational, not strategic. It is tailored specifically to a mission, and it is conducted by troops who have already undergone general-purpose combat training and been declared combat-capable troops at a high state of readiness. To what degree the BTE can successfully and efficiently attain both goals remains to be validated over time. Certainly, we must always strive to maintain the overarching aim, while making sure the training goals are clear to all concerned and that the exercise design is carefully crafted to meet the many demands placed upon it.

ENDNOTES

1. In Land Staff 4500-4-2 (DAT 7), Review of Financial Pressures-—Army Collective Training—a draft letter prepared for the CLS signature, October 2002—the rationale for the creation and maintenance of the BTE as an institutional tool is well explained. BGen G.W. Nordick's presentation to Army Council of 25 September 2003 entitled "Training the Force" also explains this rationale in similar tones.
2. LFDTS 4500-4-2-1/RW-03 (Comd LFDTS), Exercise RESOLUTE WARRIOR—Exercise Directive, 4 September 2002, Serial 7, p. 2/19.
3. Land Staff 3350-165/A29DGLS, UNCLAS DGLS 281625Z FEB 2003.
4. Ibid.
5. DND, B-GL-300-000/FP-000, Canada's Army: We Stand on Guard for Thee (Ottawa: DGPA Creative Services, 1998), pp. 90-91.
6. DND, B-GL-300-008/FP-001, Training Canada's Army, p. 142.
7. Major M.R. Voith, "Military Readiness," The Army Doctrine and Training Bulletin 4,2 (Summer 2001), pp. 41-48. Major M.R. Voith writes on military readiness to explain the Army's difficulties with understanding the meaning of operational readiness and its requirement to "come to terms with the concepts of readiness" through the use, among other things, of an adequate performance measurement system. Although the Army is making rapid progress in this field, a lot of work remains to be done. Notwithstanding, operational readiness is mostly well understood in the Army, even if some particularities such as LOC and TMST are still misunderstood by too many people.

8. Land Staff 3000-8 (DLFR), Planning Directive 010/01—Army Training and Operational Framework (ATOF), 27 July 2001.
9. DND, Advancing With Purpose: The Army Strategy, One Army, One Team, One Vision, pp. 22-23.
10. Ibid., p.1.
11. The reader should not confuse this structure with the area structure of the Army, which is divided into four unequal entities. The force described here includes all the manoeuvre units of the four areas and each of the three existing CMBG headquarters.
12. To satisfy readers' curiosity, one of the best description of the ATOF can be found in LFDTS 4500-4-2-1/RW-03 (Comd LFDTS), Exercise RESOLUTE WARRIOR—Exercise Directive, 4 September 2002, Serial 3, "Commander's Guidance," p. 1: "The Army Training and Operations Framework is comprised of three tiered phases; a training phase, consisting of approximately ten months, during which time units will be assigned priority for training resources and protected from external tasks, a high readiness phase of twelve months duration during which time units may be assigned operational missions, and a reconstitution phase during which time postings and individual training and support will receive priority." The only keystone doctrine manual containing explanations of the ATOF is B-GL-300-008/FP-001, Training Canada's Army, pp. 3 and 101. This publication is merely a reflection of the updated nature of our capstone manuals, CFP 300-8 being one of the most recent (2001). Even so, the definition of ATOF in that publication would require a good review in order to clarify it.
13. Land Staff 3000-8 (DLFR), Army Training and Operations Framework (ATOF)—Master Implementation Plan, 2 April 2002.
14. LFDTS 4500-4-2-1/RW-03 (Comd LFDTS), "Commander's Guidance," Exercise RESOLUTE WARRIOR—Exercise Directive, 4 September 2002, Serial 3, pp.1-2.
15. This is clearly stated in Land Staff 3000-8(DLFR), Planning Directive 010/01—Army Training and Operational Framework (ATOF)—AL#2, Annex A, 28 September 2001. The retention of the MCF Sabre Bde operational task is presently being questioned at the Land Staff; however, the institutional brigade training focus is still very much alive.
16. LFDTS 4500-4-2-1/RW-03 (Comd LFDTS), "Commander's Guidance," Exercise RESOLUTE WARRIOR—Exercise Directive, 4 September 2002, Serial 3, pp.1-3.
17. Ibid., p. 4.
18. Land Staff 3000-8 (DLFR), Army Training and Operations Framework (ATOF)—Master Implementation Plan, 2 April 2002, p. 2.
19. DND, B-GL-300-008/FP-001, Training Canada's Army, p.17.
20. Ibid.
21. Ibid., p.16.
22. Ibid., p.21.
23. Ibid., p.61.
24. Ibid., p.63.
25. LFDTS 4500-4-2-1/RW-03 (Comd LFDTS), Exercise RESOLUTE WARRIOR—Exercise Directive, 4 September 2002, Serial 7, p. 2/19.
26. LFDTS 4500-4-2-1/LR-03 (Comd LFDTS), October 2003, Serial 7, p. 2.
27. Ibid., pp. 1-2.
28. SQFT 3350-33 (G5), Plan de campagne d'entraînemen t— OP ATHENA et PALLADIUM, 12 septembre 2003, p. 3
29. Ibid., p.4.

LOOKING BACK ON CANADIAN GENERALSHIP IN THE SECOND WORLD WAR

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Military Command has always required technical skill and spiritual power and quality; both are essential. The great commanders in history have been those who had a profound knowledge of the mechanics of war and the stage-management of battles, and who were able to focus and call forth the spiritual qualities of their soldiers.

—Field-Marshal the Viscount Montgomery of Alamein[1]

Commenting on one of his wartime bosses, Major General Chris Vokes once said that Guy Simonds was, "the finest Canadian general we ever had." He also said that, as a leader of men, Simonds, "wasn't worth a pinch of coonshit."[2] It was a crude comment—Vokes was like that—but it was not contradictory. In his own weird way, Vokes said something subtle about the nature of command: that it is a combination of human and technical abilities. As the above quotation from Field Marshal Montgomery alludes, the exercise of command is a combination of the abilities to direct and to inspire, to lead and to manage, to coordinate and to motivate, to think and to feel. In Vokes' opinion, Simonds was good at one, not so good at the other.

Both are important. The human and technical dimensions of command are not only inter-related, they are inter-dependent. All the charm and influence in the world, for example, cannot guarantee the success of a poorly conceived and inadequately managed plan. Conversely, even the most brilliant of plans flounders if not executed by enthusiastic, willing and well-trained subordinates. Montgomery understood this. In his 1961 book, *The Path to Leadership*, he explained that a leader needed:

the exercise of command is a combination of the abilities to direct and to inspire, to lead and to manage, to coordinate and to motivate, to think and to feel

> [A] thorough knowledge of his job, of his profession is an absolute pre-requisite; and then a never-ending study to keep himself up-to-date….
>
> A leader must also have a genuine interest in, and a real knowledge of humanity—which will always be the raw material of his trade. He must understand that bottled-up in men are great emotional forces and these must have an outlet in a way which is positive and constructive and which will warm their hearts and excite their imagination. If this can be done and the forces can be harnessed and directed towards a common purpose, the greatest achievements become possible. But if the approach to this human problem is cold and impersonal, little can be achieved.[3]

Such complexities should remain foremost in any analysis of command.

Few works capture fully the dichotomy of command; many confuse them. Martin Van Crevald, for example, consciously excluded "moral forces" as a function of command to give rigour to his analysis of the organizations, systems and technology that commanders have used throughout the ages.[4] In a more theoretical vein, Ross Pigeau and Carol McCann have offered an over-intellectualized perspective based on the relationship between the components of *competence, responsibility* and *authority* while Lieutenant-Colonel Peter Bradley has boiled the matter down to the twin activities of *leadership* and *management*.[5] Some, such as Martin

Blumenson and James L. Stokesbury, have rejected such abstract approaches: "Since man is the only creature who defies wholly quantifiable terms, since each historical event, no matter how similar to one of the past, is still unique, there is no formula, and therefore no science."[6]

If all the memoirs, histories and analytical studies illuminate anything, it is that command is neither wholly science, nor wholly art; hence the underlying dichotomies. What Montgomery termed "technical skills"—tactical analysis, decision-making, planning, direction, monitoring, supervision—can be gauged or measured in some degree, and are therefore more "scientific". These more rational aspects of military command can be analyzed through consideration of battle plans, doctrine, weapons' capabilities, command structures, force ratios, or schemes of manoeuvre. Such things are more easily weighed in the documentary evidence of written battle estimates, orders and correspondence and, therefore, offer at least some quantifiable criteria by which to study the commander. However, the less rational aspect of "calling forth the spiritual forces" of soldiers, because it implies willing, even emotional, compliance on the part of the follower, cannot be quantified with any certainty. And most often, the sources for that sort of thing—diaries, memoirs, interviews and other reminiscences—are inaccurate in terms of timing or sequence. Still, they must be consulted. This is why: while the commander may undertake certain actions to enhance his ability to "harness" those "great emotional forces," his capacity to do so can be qualified only in the performance of the followers, and the reason for this is plain—leaders do not exist without the followers. Oftentimes, the decision of the soldier to follow is rational. Just as often, however, it is non-rational. For example, on a rational level, the follower may do what a leader tells him because he realizes that the consequences of inaction, be they disciplinary or the result of enemy action, are so grave. On a non-rational level, the follower may take a certain action because he feels an attachment to his leader, or because he does not want to let his leader, his peers, or his country down. It is what Field Marshal Sir William Slim referred to as,"that intangible force which will move a whole group of men to give their last ounce to achieve something, without counting the cost to themselves; that makes them feel they are part of something greater than themselves."[7] This is a key element to success in command, something the best commanders cultivate.[8] Thus, in analyzing how a commander commanded, consideration must be given to *how* and *why* his subordinates did what they did.

Not many studies of Canada's Second World War generals have done that. While there has been some exceptionally good work done on the technical side of command, we have only scratched the surface as far as the human aspect is concerned. This article looks at why.

Regarding the history of Canada's Second World War experience, all Canadian military historians owe a debt to Colonel C.P. Stacey. During the war, his prescience and perseverance as the Historical Officer General Staff ensured that future historians would have information—in the form of interviews, official documents, orders, war diaries, operation's logs, even art—from which to piece together historical narratives and analyses.[9] After the war, Stacey headed the Army Historical Section and supervised the production of the Canadian Army official histories for the period 1939-1945. Meticulous documentation and an abundance of useful maps were the hallmarks of his work. His *Arms, Men and Governments* (1970) carefully chronicled the political and strategic story of Canada's Second World War, while his *Six Years of War* (1956) and *The Victory Campaign* (1960) filled in the operational and tactical picture of Canadian Army operations.[10] G.W.L. Nicholson's complementary official volume, *The Canadians in Italy*, 1943-1945 (1956) was cast in the same mould.

Yet, despite the wealth of information they contain, these official histories provide little meaningful critique or analysis of Canada's wartime generals. This was not because Stacey and

Nicholson failed to understand fully the importance of wartime leadership. Not at all; Stacey was well aware:

> Success in war comes as a result of effective leadership at many levels. The lowest is that of the noncommissioned officer who carries half-a-dozen men forward to take out an enemy position. The highest is that of, for example, the famous Duke of Marlborough…. Both the NCO and the statesman general play essential parts.[11]

The crux of the matter was that these first operational narratives were massive undertakings of research and writing that left little room for analysis. As Stacey commented, "I thought it my job to elicit and state the facts rather than to interpret them."[12]

There is also the perennial problem of what W.A.B. Douglas called the "great weakness of official accounts:" proximity to the events and the protection of reputations.[13] Stacey was close to and friendly with many of the most senior commanders, a fact that made it difficult to be objective. In his memoir, *A Date With History*, Stacey admitted as much:

> It is not easy to write pontifical comments about one's friends, especially those who ran risks and carried responsibilities that one did not share. I was so fond of General McNaughton that I should have found it very difficult to tell the story of his dismissal from the command of the army while he was living, especially as I could not have avoided discussing my draft with him. In the end, I told it only in *Arms, Men and Governments*, published after he was dead.[14]

But time does grant a certain historical freedom. Some forty years after the war, and more detached from the events and the key players, Stacey wrote more objectively, without "fear or favor."[15] In 1985, he described the First Canadian Army Commander, General H.D.G Crerar as, "a competent commander though certainly not an inspired one." Lieutenant General Charles Foulkes was, "not better than an acceptable corps commander." And Lieutenant General G.G. Simonds was a, "most genuinely brilliant field commander" though not, "loved by his officers, let alone the rank and file." As a group, Stacey found senior Canadian commanders to be lacking in, "forcible personalities" and, "as grimly cold as codfish on a slab."[16] Not only did these comments render his earlier lack of praise damning, they well illustrated how an official historian's pen could be freed with the passage of time.

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Proximity to the events was not the only roadblock to any serious historical inquiry into Canadian generalship; military and diplomatic history simply became unpopular with Canadian scholars.[17] As Marc Milner lamented in 1989: "Political-diplomatic history fell out of favor in the 1970s, and the idea that war and military affairs have been a major formative influence on the nation has less currency today."[18] The rise of social history during the 1970s and 1980s also thinned the ranks of those looking into matters military.[19] Restricted access to classified documents, most of which only became available in the 1970s, only exacerbated the situation. With fewer historians toiling in the military-diplomatic field, there were simply fewer available for analysis at the operational and tactical level of war. Consequently, those that persisted in the study of military affairs tended to focus their efforts on policy level histories, not command studies.[20]

The drought of operational histories ended in the mid-1980s. William J. McAndrew's 1987 article, "Fire or Movement: Canadian Tactical Doctrine, Sicily—1943" examined the influence of the Canadian predilection for firepower, at the expense of maneuver, in military operations.[21] Using the battle for the Sicilian town of Nissoria as an example, McAndrew illustrated how, when faced with a tough task, Canadian commanders often reverted to the security blanket of the British tactical doctrine they had been taught: "The command mind-set that stressed firepower and rigid control over maneuver and initiative characterized British and Canadian tactical doctrine throughout the war."[22] "Better to spend shells than lives" ran the logic of this method, the most prominent and successful practitioner of which was Montgomery.[23] However, McAndrew argued that slavish adherence to this somewhat deliberate approach, because it resulted in many missed opportunities, often had the opposite effect, costing more lives than should have been the case. That was what happened to the 1st Canadian Infantry Division (1CID) at Nissoria, and that was why McAndrew criticized division commander, Guy Simonds, and his management of the battle. Simonds was not alone though; there were many senior Canadian and British commanders who did the same. Most of them fought as they had trained. Making that point clear was the point of McAndrew's article, and its significance.

John Allan English's *The Canadian Army and the Normandy Campaign: A Study of Failure in High Command* (1993) also turned the microscope on the performance of Canada's army during the Second World War. In a nutshell, English attempted to explain why the First Canadian Army failed to achieve a reputation comparable to that of its First World War predecessor, General Sir Arthur Currie's Canadian Corps. In so doing, he moved beyond the facile explanations of German fanaticism, inferior Allied tanks and inexperienced troops for Canadian frustrations in Normandy.[24] The problem ran deeper than that. Like McAndrew, English highlighted the "imprint of doctrine," but he also expanded his scope to take into account the neglect of the inter-war period, the training in England, the staff structure, and the "cast of commanders." In the end, English's collective *j'accuse* hit squarely at the high command for the First Canadian Army's disappointing performance from the Caen bridgehead to the closure of the Falaise Gap during the summer of 1944. The army was simply unprepared to fight a modern war. During the interwar period, A.G.L. McNaughton, and the other generals of the 1920s and 1930s, "shamefully forgot that the main purpose of a peacetime military establishment is to prepare for the day when armed force might have to be used against a first-class enemy."[25] By concentrating on strategic-political matters and finding non-military roles (to secure funding for the fledgling Permanent Force), they forgot both how to fight—and how to train for a fight.[26] The logical and predictable outcome of such negligence, English argued, was Canada's inability to produce competent commanders at either the tactical or the operational level. That the Canadian Army produced only one truly able senior commander (Simonds, in English's opinion) further testified to the failure of Canada's high command.[27]

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The same doctrinal slant characterized Michael P. Cessford's doctoral dissertation, "Hard in the Attack" (1996). Using the Canadian battles for Sicily, the Moro River and the Hitler Line as case studies, Cessford dug deeper into the influence of tactical doctrine and training on Canadian military operations. As formations of the Eighth Army, 1 Canadian Infantry Division (CID), and later the 1st Canadian Corps and 5 Canadian Armoured Division (CAD), felt the mighty stamp

of Montgomery's method: comprehensive planning, overwhelming firepower and rigid command and control. Much like McAndrew, Cessford criticized Montgomery's tactical approach, believing it to be too deliberate and, therefore, incapable of exploiting opportunities. Yet Cessford also argued that, given the deficiencies of inter-war funding and training and the initial paucity of battle experience among Canadian commanders, it was only natural for Canadian formations to default to what they had learned and what they had practiced for three years in England: "British doctrine determined how the Canadians prepared and executed military operations."[28] Only after the Canadians became battle-hardened did they deviate from the Eighth Army manner of getting the job done, and develop a more flexible tactical doctrine. This was Cessford's main contribution to the historiography: the army got better, but it took time and some painful battlefield experience for the transformation to occur. No analysis of a Canadian commander can ignore this argument.

Indeed, the doctrinal inquiries of McAndrew, English and Cessford all have something to offer. As logical extensions of the historiography, they built on the official accounts of *what* Canadian soldiers did during the Second World War to probe *why* and *how* they did it. This is useful. But, it must also be recognized that these works have offered collective glances at the Canadian Army, and commanders at all levels, not nut-and-bolt examinations of individual commanders.

The study of individuals is the stuff of biography. As a tool for the study of military history it has both strengths and pitfalls. To the positive, because war is a very human phenomenon, biography can well convey the character and the circumstance of the leaders, as well as the led. As one commentator has suggested: [it] "helps us gain a sense, unconscious as well as conscious, of what leadership is all about."[29] That is true, but there is more to it than that. Generals, like their subordinates, are human beings; and human beings are influenced by a complex combination of their own life experiences, education, family background, institutions and training. In other words, to understand what commanders did, it is useful to understand who they are. On the negative side, myopia can attend a study centred on an individual. Complete pictures can be missed. The historiography of generalship reflects both the positive and negative aspects of biography.

John Swettenham's 1969 *McNaughton*, the first biography of a Second World War Canadian general, reflects both the good and the bad of biography.[30] Based on an extensive collection of personal papers, Swettenham compiled much in his three-volume work that helps us understand the man and his remarkable career. The author wrote compellingly, for example, of McNaughton's upbringing in Saskatchewan, his education at Bishop's College School and at McGill University, his First World War experience, his interwar years, his Second World War service, and his tenure as Minister of National Defence—all very interesting, all very useful. But Swettenham fell far short of presenting an unbiased assessment by which to gauge McNaughton's abilities as a commander. In part, this was a problem of timing. Printed before many valuable sources became available, Swettenham relied too heavily on McNaughton's personal papers. This blinkered his analysis. It was also a problem of scholarly neglect. For example, Swettenham commended McNaughton's "superior generalship" on the March 1943 test exercise SPARTAN, but that is not how his military superiors saw it. At the time, the Chief of the Imperial General Staff (CIGS), General Sir Alan Brooke, recorded his disappointment with McNaughton in a diary entry: "he [McNaughton] is quite incompetent to command an army. He does not know how to begin the job and was tying up his forces into the most awful muddle."[31] Others shared Brooke's poor opinion of McNaughton's generalship. In his later years, Montgomery echoed Brooke's remarks: "If ever a man was unfit to command an Army

in the field it was Andy [McNaughton]."[32] Had Swettenham had access to, or consulted, a wider array of sources, even the Alanbrooke Diaries alone, he might not have been so convinced of McNaughton's suitability as an army commander and been less inclined to believe that McNaughton had been unjustly removed from command of the First Canadian Army.[33] The current abundance of documentary evidence on the Second World War—public and private—leaves no excuse for falling into such traps.

Bill Rawling's 2001 article, "The Generalship of Andrew McNaughton: A Study in Failure" showed what could be done with a broader look at sources. Moving beyond the general's own papers, Rawling concluded that, despite McNaughton's devotion to duty and his popularity with subordinates, he failed because he neglected the most fundamental task of any general: "to prepare himself … to lead a formation in battle."[34] As the senior Canadian commander until his removal in 1943, McNaughton jammed his days full of burdensome political and strategic-level responsibilities that detracted from his fighting focus. There was really nothing new in that. McNaughton had been disposed that way since the end of the First World War. Like English, Rawling argued that during the inter-war years, McNaughton struggled within the Canadian political establishment to find roles and revenues that would preserve the tiny Permanent Force as an entity. At the other extreme, the self-professed "soldier-scientist" could also become captivated by any item of military equipment, particularly if it had anything to do with new technology. Thus, as Rawling's updated biographical sketch clarified, McNaughton was a general who knew much about Imperial defence and a lot about gadgets, but little in between. This was a vastly different picture from Swettenham's general unjustly removed.

In a different vein, W.E.J. Hutchinson's 1982 M.A. thesis, "Test of a Corps Commander: Lieutenant-General Guy Granville Simonds, Normandy 1944," although it had biographic elements, was not biography. Hutchinson attempted systematically to analyze command. He set for himself the task of answering several simple but key questions. Was Simonds qualified for the appointment of Corps Commander? Did he possess the requisite personal qualities for high command? Was his rise in rank attributable to luck, ability, connections or a combination thereof?[35] Based on his study of Simonds' progression and training prior to his appointment of corps commander, Hutchinson's answered "yes" to the first two questions, while his response to the last was "all of the above." Most importantly, however, Hutchinson asked if Simonds was a great general—"a master craftsman." To answer this, the author judged Simonds' performance as a corps commander in Normandy during the summer of 1944. Curiously, Hutchinson drew the criteria from the general's own corps directive of February 1944, "Efficiency in Command:"

Moral Qualities
Character—resolution, determination and the drive to get things done.
Loyalty
Self-confidence
Sense of Duty

Mental Qualities
Knowledge
Judgment
Initiative
Mental Alertness

Physical Qualities
Physical Fitness
Skill at Arms
Youth[36]

With his evaluation based on criteria set by the general himself, Hutchinson concluded that Simonds was indeed a "Master Craftsman."

Simonds' criteria interestingly reflected a bias toward technical skills and personal traits of the commander. Noticeably absent from Simonds' list was anything to do with subordinates—the importance of *their* contribution in the "efficient" execution of missions, the importance of motivating them to perform beyond expectations, or the importance of providing for their welfare. This was strange for a protégé of Montgomery, and for one who so tried to emulate his mentor, but it is understandable given Simonds' make-up. He was like Montgomery in that he possessed a powerful intellect, but Simonds was aloof and lacked the charisma that endeared "Monty" to his troops. Hutchison's lopsided analysis allowed him to sidestep this point. Thus, he attributed the difficulties of Operations SPRING, TOTALIZE, and TRACTABLE to deficient division commanders who failed to grasp and implement Simonds' innovative plans. Brilliant though these plans may have been, they do not tell the whole story. Surely Simonds was at least partially responsible for failing to prepare subordinates for the tasks he gave them. Like so many Simonds admirers, Hutchison missed what was probably the general's greatest failing as a commander: he did not adequately consider what his subordinates were capable of doing.

Dominick Graham, in his 1993 biography of Simonds, dismissed any standardized basis for judging generalship: "A critical method that starts by judging actions in light of doctrine and theory, criticizing either the doctrine itself or the way it has been applied, is starting at the wrong end."[37] Instead, Graham invoked Clausewitz, proposing that the proper method for analysis should begin with an examination of results at the lowest levels of combat then work its way back up the chain of command. A first-rate general would use the same approach in after action analyses, learn from mistakes, and improve future performance. According to Graham, Simonds did exactly that following the disasters of Operation SPRING and the difficulties of Operations TOTALIZE and TRACTABLE. He learned from his mistakes, and the result was a noticeably improved performance in the battles of the Scheldt estuary.[38] Although he took a wider biographic look at his subject than did Hutchinson, Graham, too, failed to acknowledge the role of subordinates in the process of effective command. He did not discuss how the experiences of Normandy forged better battalions, brigades and divisions, giving Simonds better tools with which to exploit the fruits of his agile mind in later battles. Thus, Graham concluded that despite difficulty relating to subordinates, Simonds, by virtue of his innovative mind and his ability to learn from his mistakes, was a truly great general.[39] Whether or not he was a great commander is open to debate. He was effective; there is little doubt about that. He did learn from experience, rarely repeating mistakes. But in the very broadest sense, Simonds' weakness as a commander was his inability to motivate his subordinates—"to call forth those spiritual forces"—and secure their devotion. That said, Simonds was aware of this personal shortcoming and compensated for it through his formidable abilities as a planner and manager of battles. Both Graham and Hutchinson missed some of these subtleties.

Another attempt at using biographic narrative to analyze generalship was Paul Dickson's 1993 PhD dissertation, "The Limits of Professionalism: General H.D.G. Crerar and the Canadian Army, 1914-1944." Dickson traced Crerar's military career to explain why Canada's highest-ranking battlefield general became the general that he did. Central to his analytical framework was Samuel P. Huntington's concept of "professionalization," which purported that one's environment—organizational, cultural, bureaucratic—shaped one's development.[40] In Crerar's case, Dickson found that a number of influences related to his profession of military officer affected him. First, his experience as an artillery officer in the Great War yielded a penchant for

precision in staff work and a methodical approach to problem solving. Second, as in McNaughton's case, service in the cash-starved Permanent Force of the inter-war years attuned Crerar to the necessity of bureaucratic acumen within Canadian government circles. And last, his experience with the politics of being a junior ally fostered a lifelong preoccupation with matters of national or political interest.[41] In all, Dickson provided much that is useful for understanding a general who, by all accounts, was an adroit political operator, but a mediocre field commander. However, because the focus of the study was not command, and because it ended prior to Crerar's assumption of command of the First Canadian Army in March 1944, Dickson imparted an excellent picture of the general's bureaucratic and management skills, but nothing of his abilities as a battlefield commander.

Fortunately, Dean Oliver's article, "In the Shadows of the Corps: Historiography, Generalship and Harry Crerar" (2001) shed some light on the subject.[42] Without Dickson's cumbersome analytical framework, Oliver explained that Crerar's reputation has suffered because, unlike the Canadian Corps of the First World War, the First Canadian Army did not have accomplishments comparable to the storming of Vimy Ridge or the hard pounding of The Hundred Days. Moreover, the negative comments of such notable contemporaries as Montgomery, Chris Vokes and Simonds muted Crerar's accomplishments. Crerar's peers did not particularly like him; his unbridled ambition and his liking for bureaucratic and administrative order assured that. Those faults notwithstanding, Oliver argued that Crerar was a competent, if somewhat bland, commander, one who made few mistakes on the battlefield and even fewer in the corridors of political power. Oliver agreed with Dickson; Crerar was prepared for and peculiarly well suited to the responsibilities of his post of Army Commander: "Crerar was builder, administrator, liaison officer, chairman of the board, and more, all the while fulfilling both operational and political roles with great competence."[43] Evident in Oliver's statement was a broader, if not explicitly stated, definition of generalship that included some very burdensome political responsibilities. Also implicit in Oliver's text was the notion that Crerar's shortfalls in the human field, like those of Simonds, were compensated for by his technical prowess.

The only real examination of Canada's Second World War generals as a group remains J.L. Granatstein's *The Generals* (1993). In what Granatstein called a "collective biography," he examined who our generals were, where they came from, how they developed, and why some succeeded while others failed.[44] Not an operational history, The Generals attempted to fill a gap in historical knowledge. Granatstein put together updated analyses on McNaughton, Crerar and Simonds. He also penned the first scholarly narratives on E.L.M. Burns, A.B. Matthews, Kenneth Stuart, Maurice Pope and Bert Hoffmeister. Through the various biographical sketches, Granatstein effectively assembled a compendium of command strengths and weaknesses. Like Stacey, Granatstein found Canadian commanders to be an unspectacular lot. Burns he depicted as a highly intelligent tactical thinker, but owing to a difficult personality, utterly lacking the ability to inspire his subordinates.[45] McNaughton was personable and technically skilled, but unsuited to battlefield command.[46] And Crerar was bureaucratically adroit, tactically competent, but ambitious to a fault.[47] Hoffmeister was the only real exception. Bold, brave and technically skilled, his troops adored him. The approach was definitely more human than technical. Granatstein discussed very little fighting. However, *The Generals* complemented well the more clinical and doctrinally grounded operational analyses of McAndrew, English, and Cessford; but was just a start.

As the preceding survey demonstrates, there really has not been a lot written about Canada's Second World War generals in sixty years. There are several reasons for this relative dearth of

scholarship. First, the proximity of the official historians to the events, and the personalities that shaped them, discouraged critical analysis. This is most evident in the detailed, yet decidedly uncritical, official histories produced by both Stacey and Nicholson. Second, because access to classified material was restricted to all but the official historians for thirty years, serious scholarly inquiry from outside the Directorate of History was minimal. And last, a broader historiographical trend in favor of social history drew attention away from the military-diplomatic field. All of these factors explain the pause between the publication of the official histories and McAndrew's, "Fire or Movement?" article.

Most of what we have tilts heavily towards the technical dimension of command. Part of that is the nature of the men themselves. With the exception of Hoffmeister, McNaughton, and possibly Vokes, most of them were technically competent, but uninspiring individuals. Part of it is a scholarly reluctance to step away from the more measurable technical aspects of command to consider the amorphous nature of relations between the leader and the led. As soldiers and as scholars, we are much more comfortable with the clarity of written orders than we are with the fuzziness of time-dimmed and emotional reminiscences. Whatever the reasons, we are left with an unbalanced view of command, one that is preoccupied with the tactical planning, decisions and actions of the commander. Until now, this has been the focus of most of the historical inquiry. Indeed, there has been much good work on the influence of doctrine and training in this regard. But the actions of a military formation are the sum of all its parts, none of which are unaffected by the human abilities of the commander. How those abilities affected the outcome of battles has yet to be subject to the same rigorous investigation. Herein lies the current historiographic challenge.

About the Author...

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ENDNOTES

1. Field-Marshal the Viscount Montgomery of Alamein, K.G., The Path to Leadership (London: Fontana Books, 1961), p. 20.
2. Tony Foster Papers (Halifax) Interview with General Vokes 5 April 1984. Quoted in J.L. Granatstein, The Generals: The Canadian Army's Senior Commanders in the Second World War (Toronto: Stoddart, 1993), p.159.
3. Montgomery, The Path to Leadership, pp.15-16.
4. Martin Van Crevald, Command in War (Cambridge, Mass: Harvard University Press, 1985), pp. 1-16.
5. Ross Pigeau and Carol McCann, "What is a Commander?" in Generalship and the Art of the Admiral: Perspectives on Canadian Senior Military Leadership, Stephen J Harris and Bernd Horn, eds. (St Catherine's: Vanwell, 2001), pp. 79-104. Lieutenant-Colonel Peter Bradley, "Distinguishing the Concepts of Command, Leadership and Management," Generalship and the Art of the Admiral, pp.105-120.
6. Martin Blumenson and James L. Stokesbury, Masters of the Art of Command (Boston: Houghton Mifflin, 1975). 1. A common sense and anecdotal work on what makes a good commander is Maj. Gen. Aubrey S. "Red" Newman, What Are Generals Made Of? (Novato, CA: Presidio Press, 1987).
7. Field-Marshal Sir William Slim, Defeat into Victory (London: Cassel, 1956), p. 182.
8. Blumenson and Stokesbury, "Patton and Montgomery," Masters of the Art of Command, pp. 230-239. Blumenson and Stokesbury have argued that, despite vastly different personas, both Montgomery and the American, General George S. Patton, understood the importance of a commander's personal appeal to their subordinates.
9. W.J. McAndrew, "Recording the War: Uncommon Canadian Perspectives of the Italian Campaign." Canadian Defence Quarterly (Winter 1988): 43-50.
10. C.P. Stacey, Arms, Men and Governments: The War Policies of Canada, 1939-1945 (Ottawa: Queen's Printer, 1970); Six Years of

War (Ottawa: Queen's Printer, 1956); The Victory Campaign (Ottawa: Queen's Printer, 1960).
11. C.P. Stacey, “Canadian Leaders of the Second World War,” Canadian Historical Review, 66 (March 1985): 64.
12. C.P. Stacey, “The Life and Hard Times of an Official Historian,” Canadian Historical Review, LI, 1 (March 1970), p.45. Quoted in W.A.B Douglas and B. Greenhous, “Canada and the Second World War: The State of Clio's Art” Military Affairs, XLII (February 1978):. 26.
13. W.A.B. Douglas, “Filling Gaps in the Military Past: Recent Developments in Canadian Official History” Journal of Canadian Studies, 3, (Autumn 1984): 118.
14. Stacey, Date with History, p. 233. See also C.P. Stacey, Arms, Men and Governments.
15. Stacey, Date with History, p.122.
16. Stacey, “Canadian Leaders of the Second World War”, pp. 64-72.
17. Marc Milner, “Reflections on the State of Canadian Army History in the Two World Wars,” Acadiensis, 2, Spring 1989, p.136; See also W.A.B Douglas and B. Greenhous, “Canada and the Second World War”, p. 25.
18. Milner, “Reflections on the State of Canadian Army History in the Two World Wars”, p. 136.
19. While there has been some attempt to blend the trends of social and military history, the so-called “new military history” has mostly yielded studies on the Great War. See for example Desmond Morton's study of the life of the average soldier, When Your Number's Up: the Canadian Soldier and the First World War (Toronto: Random House, 1993); or Jean Pierre Gagnon's study of the Royal 22nd Regiment in the Great War, The 22nd (French-Canadian) Battalion, 1914-1919: Socio-Military History (Ottawa: Supply and Services, 1986).
20. James Eayrs' five-volume In Defence of Canada and J.L Granatstein's Canada's War were two of the few Canadian military-diplomatic studies published in the 1970s and the 1980s. See James Eayrs In Defence of Canada: From the Great War to the Great Depression (Toronto: University of Toronto Press, 1964); Appeasement and Rearmament (Toronto, 1970); Peacemaking and Deterrence (Toronto, 1972); Growing Up Allied (Toronto, 1980); and The Roots of Complicity (Toronto, 1983). See also J.L. Granatstein, Canada's War: The Politics of the Mackenzie King Government, 1939-1945 (Toronto: Oxford University Press, 1975).
21. William J. McAndrew, “Fire or Movement?” Canadian Tactical Doctrine, Sicily -1943. Military Affairs (July 1987), pp. 140-145.
22. Ibid., 145.
23. For a discussion of the rationale behind Montgomery's method of efficient attrition, see Brigadier S. Bidwell and D. Graham. Firepower: British Amy Weapons and Theories of War, 1904-1945. (London: Allen and Unwin, 1982): 245.
24. English, The Canadian Army and the Normandy Campaign, 1-7. For a more positive opinion on the Canadian record during the Normandy Campaign, see R.H. Roy, 1944: The Canadians in Normandy (Toronto: Macmillan, 1984).
25. English, The Canadian Army and the Normandy Campaign, p. 313.
26. Ibid., xiv.
27. On the deficiencies of officer training during the interwar period see Stephen J. Harris, Canadian Brass: The Making of a Professional Army, 1860-1939 (Toronto: University of Toronto Press, 1988): 141-209. On the training of Canadian army officers after the outbreak of war, see Geoffrey W. Hayes, “The Development of the Canadian Army Officer Corps, 1939-1945” (Unpublished PhD Dissertation. University of Western Ontario, 1992).
28. Cessford, “HARD IN THE ATTACK”, p.8.
29. Henry S. Bausum, ed. Military Leadership and Command: the John Biggs Cincinnati Lectures, 1987 (Lexington, Virginia: The VMI Foundation, 1987), ix. Quoted in Dickson, “The Limits of Professionalism,” p. 17.
30. Swettenham, McNaughton, Vol. 2, p. 283.
31. Alex Danchev and Daniel Todman, eds., War Diaries 1939-1945: Field Marshal Lord Alanbrooke (London: Weidenfeld and Nicholson, 2001), p. 388.
32. Imperial War Museum (hereafter IWM), Papers of Lieutenant-Colonel Trumbull Warren, Montgomery to Warren, 1 January 1969. Montgomery was commenting on Swettenham's biography.
33. See J.L Granatstein, The Generals, pp. 71-73.
34. Bill Rawling, “The Generalship of Andrew McNaughton: A Study in Failure,” in Bernd Horn and Stephen Harris Eds., Warrior Chiefs: Perspectives on Senior Canadian Military Leaders (Toronto: Dundurn Press, 2001), p. 88.
35. Hutchinson, “Test of a Corps Commander,” pp. 248-250.
36. Ibid., pp.272-3. The full text of Lieutenant General G.G. Simonds' “Efficiency in Command” is attached as Appendix Six: 383-397.
37. Graham, Price of Command, p. 282.
38. Simonds was actually Acting commander of the First Canadian Army during the battles of the Scheldt October-November 1944.
39. Roman Jarymowycz reaches much the same conclusion. See his “General Guy Simonds: The Commander as Tragic Hero” in Horn and Harris, Warrior Chiefs, pp. 107-142.
40. Dickson, “The Limits of Professionalism”, pp. 7-9.
41. Ibid., pp. 474-489.
42. Dean Oliver, “In the Shadows of the Corps: Historiography, Generalship and Harry Crerar” in Horn and Harris, Warrior Chiefs, pp. 91-105.
43. Ibid., pp. 101-102.
44. Granatstein. The Generals, pp. xi-xii.
45. Ibid., pp. 116-144.
46. Ibid., pp. 53-83.
47. Ibid., pp. 83-115.

TECHNOLOGY, DOCTRINE AND DEBATE: THE EVOLUTION OF BRITISH ARMY DOCTRINE BETWEEN THE WORLD WARS

Captain A.J. Duncan, M.A.

Armies, like many institutions, have always struggled with the concept of change. Caught between the necessity to adapt to technological changes on the battlefield and the temptation to avoid catastrophic risk through recourse to old tried-and-true methods, nowhere is change debated as passionately as in armies, navies and air forces of the world. Today, as the Canadian Army attempts to plot a course for its future development (which is always an ongoing project), it may be of some use to look to past examples for either inspiration or warnings on how other armies dealt with the subject.

For one such example, one need not look back more than the interwar period. During that time, the British Army was trying to adapt to revolutionary technological changes on the battlefield, specifically in the form of the tank. While some theorists argued that the impact of this new weapon of war required a radical rethinking of strategic doctrine, others attempted to fit this technological innovation into existing Continental attrition-based theories of war instead. The success of the latter group and the dominance of their "cavalry concept" of tank employment is one of the major reasons for the losses suffered by the British Army during the early stages of the Second World War. As the Canadian Army of today looks toward redesigning itself for the future, it would be wise to pay attention to cases such as that of the interwar British Army in order to avoid like mistakes which could cost it dearly on the battlefields of tomorrow.

There existed many professional journals and forums within the British Army where tactics and doctrine were openly and intelligently debated

Up until the death of Sir Basil Henry Liddell Hart in 1970, the predominant view in military history circles was that the British Army's defeat in 1940 was due to a large and highly influential cavalry lobby that fought against mechanization and modernization in the British Army from the end of the First World War on. As Liddell Hart wrote in his *Memoirs*:

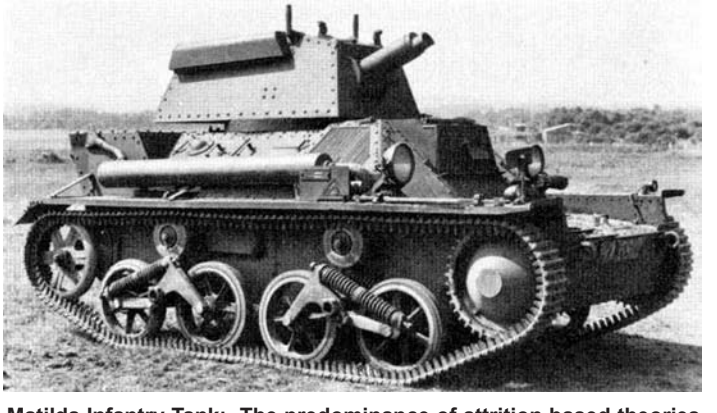
> *Cavalry circles loathed the idea of giving up the horse, and thus instinctively decried the tank. They found much support in the War Office and in Parliament. Wellington's reputed saying that the Battle of Waterloo was won on the playing fields of Eton is merely a legend, but it is painfully true that the early battles of World War II were lost in the Cavalry Club.*[1]

This cavalry lobby was supported by an institutional inertia that was supposedly the result of a largely unprofessional, lazy, amateurish officer corps drawn from the reactionary British gentry. However, this was far from the truth. By 1930, only about 11% of British officers were drawn from what could be called the British gentry, with the vast majority of officers being from what can best be called Britain's "middle" class. As for the charge that the Army was largely unprofessional, there existed many professional journals and forums within the British Army where tactics and doctrine were openly and intelligently debated. In addition to the arm-specific journals, articles on change flooded into *The Journal of the Royal United Services Institute, The*

Army Quarterly and even conventional newspapers such as *The Times*, while in service clubs and the staff colleges, debates on issues such as mechanization were encouraged. The Army constantly revised its *Field Service Regulations* often to the detriment of the cavalry. Far from being an intellectually stagnant institution, the British Army was constantly re-examining itself and suggesting change.[2] Unfortunately, while the British Army debated and adopted new technologies into the business of war, what they did not do was radically rethink their overarching strategic doctrine to take full advantage of these changes.

Before the Boer War, the British Army paid little attention to developing a coherent, unified strategic doctrine. Its role was mainly confined to policing the Empire, while the Navy saw to home defence by dominating the sea. This atmosphere changed after 1906 when British military failures in the Boer War prompted a series of reforms under the secretary of state for war, Richard Burton Haldane. In preparation for the deployment of the Army to the Continent, Haldane opened a number of talks with the French general staff regarding future military cooperation.[3] Lacking any strategic doctrine for a Continental war, the British slowly began to adopt French views, especially those of Ferdinand Foch. By 1909, statements indicating the adoption of a strategic doctrine of attrition found their way into the *Field Service Regulations*. One passage in particular is quite revealing: "The defeat of hostile troops is, however, only a means towards the subsequent destruction of the enemy's main force on the battlefield, and this ultimate objective must be held in view." Another passage, mirroring Foch's view of war and the role of willpower, stated that "half-hearted measures never attain success in war and lack of determination is the most fruitful source of defeat." In this way, not only did attrition find its way into British military thought, but so too did the "cult of the offensive."[4]

Although the *Field Service Regulations* of 1909 went on to emphasize the role of firepower to a greater extent than the French did (and in doing so, added a British "twist" to their newly adopted doctrine), it laid out a sequence of battle derived from Continental attrition theorists. In short, the manual stated that once the enemy was found, aggressive offences had to be launched in order to wear down his reserves while gathering one's own. Then, when the enemy was worn down enough, a "decisive attack" could be launched and the enemy's army shattered.[5]



Matilda Infantry Tank: The predominance of attrition based theories during the interwar years led to the design of "infantry tanks" such as the Matilda, considered by many as too slow for rapid strategic manoeuvre. (Photo courtesy of the author)

Despite the huge losses suffered by the British Army over the course of the First World War, the British military establishment still maintained that the strategy of attrition was valid. In fact, to some British officers, the course of the war had demonstrated its validity. Many military conservatives argued that only difference between the Western Front and earlier Continental wars was the length and scale of the First World War, and this was due to factors outside of the military's

control such as the increased size of armies, the power of modern defences and the withdrawal of Russia from the war. One officer, writing in the *Journal of the Royal Artillery*, wrote that: "Indeed, if we should ever have the misfortune to take part again in a great war we shall have grounds for congratulations if we find ourselves as well prepared in point of doctrine and training as we were in 1914."[6]

The First World War threw Europe into a state of confusion and turmoil due to its destructive nature. Political and social assumptions that had been considered secure since the French Revolution began to be questioned in light of the horrors of the Western Front. While some staunchly defended the European political and social institutions that had existed prior to the war, others believed that the war had exposed fundamental flaws underlying those institutions and that the time was ripe to replace them with a new order.[7] This trend of questioning the basic assumptions of European thought also extended to the area of military affairs. While it has already been mentioned that the British military authorities felt that the First World War had verified the strategic doctrine of attrition, a very vocal group emerged within the British military establishment that believed the doctrine of attrition had failed. This group, led by men such as Basil Liddell Hart and John Frederick Charles Fuller, advanced a new theory of warfare that viewed the tank and mechanization as a revolutionary instrument that would push aside the doctrines of attrition and replace them with a more rational way to conduct war.[8] In the words of Fuller:

> *Today every organized army is faced by the greatest revolution that has ever taken place in the history of land warfare, a revolution which will parallel and perhaps exceed that accomplished by steam-power as applied to warfare at sea. It is true that steam-power led to a vast increase in the size of armies…. but it did not radically change their organisation, for in spite of weapon improvements their tactics remained much the same.*
>
> *…As during the fifteenth and sixteenth centuries the changes in military organisation and equipment were due to gunpowder, and those during the nineteenth century to steam-power and chemical science, so in the present century the radical changes must be sought in gasoline and electric power, which, coupled with high explosives, steam-power and chemistry, cannot fail so completely as to establish a new military dispensation.*
>
> *It cannot be doubted, therefore, that today we are faced by so rapid a development, or evolution, in administration, strategy, and tactics, and through these in organisation, command and discipline, that this development constitutes a revolution which renders our existing art of war obsolete, so obsolete that unless we can grasp what it portends, to rely on it in another war is likely to prove a greater danger than to enter it totally ignorant of military values.*[9]

Instead of the old way of warfare, Fuller and Liddell Hart sought to establish a new model of warfare that would minimize the costs to all those concerned. This new model, known amongst its supporters as the theory of armoured warfare, was characterized by new and different viewpoints regarding the nature and object of war, the goals and principles of strategy, and the ideal composition of an army.

The goal of a state, according to Liddell Hart in *Paris, or the Future of War*, was to guarantee its citizens "an honourable, prosperous, and secure existence." The need for war arose when another state's policies interfered with this primary goal.[10] To this end, Liddell Hart believed that

"The aim of a nation in war, is, therefore, to subdue the enemy's will to resist, with as least possible human and economic loss to oneself."[11] This meant that the "total" or "absolute" wars advocated by traditional military thinkers were to be avoided, as they interfered with everyday life to such an extent that civilization itself was threatened:

> *The Great War caused the direct sacrifice of eight million lives…So ineffectual was the treatment prescribed by the military practitioners who were called in that the illness took over four years to run its course, during which the financial temperature mounted daily… Our total war expenditure was nearly ten thousand million pounds; our National Debt has increased tenfold. Moreover, these long years of strain and want so impaired the health of the peoples that they fell easy prey to epidemic diseases, and the influenza scourge of 1918 and 1919 cost, among the civilian population of the world, more than twice as many lives as were lost in battle.*
>
> *It is surely clear that any further wars conducted on similar methods must mean the breakdown of Western civilization.*[12]

Liddell Hart, however, saw no remedy for war in the immediate future. War was the result of the imperfections of man and therefore permanently engrained within humanity. Fuller went even further, stating that war was not only rooted in the inherent imperfections of man, but also had economic foundations over the struggle for resources.[13] Both men, therefore, viewed war as a permanent phenomenon that, if unchanged, threatened to overthrow civilization.

As the goal of war was to change another state's policies with minimal cost to one's own state, it therefore followed that the objective of strategy was to subdue the enemy's will to pursue these policies. This could be done in two main ways. First, the enemy could be attacked in such a way as to undermine the morale of the civilian population. Liddell Hart believed that if the everyday life of the enemy's population was adequately disrupted, popular outcry and fear of revolution would collapse the enemy government's will. Naval blockade was one means to do this, as it would interfere with the enemy's food supply and trade.[14] However, Liddell Hart, borrowing from Giulio Douhet's writings and his own experiences of Zeppelin attacks, believed that air attacks employing chemical weapons would be the most effective means of collapsing civilian morale. Gas, Liddell Hart believed, while incapacitating the civilian population, would leave intact the factories and other industrial resources necessary to resume normal activity after the completion of a war.[15] This, in turn, was necessary to help restore peace and normality in the international system to the benefit of both the victors and losers.

A second method of attack on an enemy's will to resist was through neutralizing his armed forces. Ideally, in accordance with his belief that war should impact as little upon the friendly civilian populace as possible, Liddell Hart felt that the best possible way to do this was not by attacking the enemy's force head on in a battle of attrition but by employing a strategy of dislocation. By striking the enemy in such a way as to upset his mental and physical equilibrium, Liddell Hart hoped to reduce the overall number of casualties by destroying the enemy's will to fight without having to risk a force-on-force attrition-based battle.[16] In practice, his indirect approach involved operations like rapid turning manoeuvres that forced the enemy to change frontage, movements that paralyzed the enemy's supply lines, and fast advances that threatened two or three objectives simultaneously. In other words, Liddell Hart believed that armies should move along the lines of least resistance and expectation so that the enemy would have difficulty concentrating his strength at any one point.[17] In this way, armoured warfare theorists hoped to paralyze the enemy and wear out his will to fight.

In the opinion of both Liddell Hart and Fuller, the best way to enact this new strategy of dislocation was through the use of an army built around the strengths of the tank. Although the tanks of the First World War were limited to slow speeds and were prone to mechanical breakdown, it was believed that these technological problems would be overcome with time. Once the tank's speed, radius of action, and shock effect were improved, it could be used to break through or move around the enemy's frontage and attack the command and logistical structures behind the enemy's front. This would cut off front line commanders from their chain of command, paralyzing military structures from the top down.[18] Fuller summarized the system as follows:

> *An army is an organism, comparable, like all organisms, very closely with the human body. It possesses a body and a brain; its fighting troops are the former, its headquarters and staffs the latter. In the past the usual process of tactics has been to wage body warfare: one body is moved up against the other body and like two boxers they pummel each other until one is knocked out. But suppose boxer 'A' could by some simple operation paralyze the brain of boxer 'B', what use would all boxer 'B's' strength be to him, even if it rivaled Samson and Goliath's combined? No use at all, as David proved!*
>
> *Now apply this to the battle of 1923. The tank fleets… move forward…their objectives… the billets of the General Headquarters Staffs. These they capture, destroy, or disperse; what then is the body going to do, for its brain is paralyzed?*[19]

Due to the speed and mobility required to break through and destroy an enemy's command and supply networks, Fuller and Liddell Hart believed that in the future the traditional arms such as the infantry, cavalry, and artillery would play a lesser role on the battlefield. Both men and their advocates, however, disagreed as to what extent the roles of the traditional arms would be diminished. Fuller and the advocates of the "all tank" school viewed infantry and artillery as being reduced to a mainly defensive role, guarding the bases from which tanks operated.[20] Meanwhile a more moderate school, exemplified by Liddell Hart, thought that the traditional arms, if properly mechanized and employed, could assist the tank in its mission. Liddell Hart envisioned "land marines" dismounting from carriers to help clear fortifications and "tank-proof" areas such as forests.[21] Both schools, however, agreed that the airplane was to become an essential weapon of war as it would provide tank forces with both a reconnaissance element and a form of fire support.[22]

Light Tank Mark III: The majority of British tanks at the start of the Second World War were light machines, too lightly armoured to apply the theories of the armoured warfare enthusiasts. (Photo courtesy of the author)

Not only would the creation of a "New Model Army" based on tanks provide nations with an effective means to wage war, but it would also provide two further positive effects. First, a

mechanized army built around tanks would be better able to deal with new weapons of war, specifically aircraft and poison gas. The protection offered by armour rendered the machine-guns mounted on aircraft ineffective, and tank crews could be protected from gas through the use of air filtration systems mounted on their vehicles.[23] Secondly, and perhaps more importantly, was the impact mechanized forces would have on the conduct of war as a whole.

Because of its highly technological nature, a mechanized force would be expensive to maintain and therefore small in size. This, in turn, would reduce the complexity and size of the logistical networks required to maintain an army. Free from the logistical problems posed by the deployment of the mass conscript army, commanders could now turn their full attention to tactics, ultimately saving lives. The large expenses involved with mechanized forces would also mean the end to conscription, an institution which Fuller and Liddell Hart viewed as detrimental to the application of reason to war. The large conscript armies, they reasoned, required the use of propaganda that in turn aroused emotion. This emotion made maintaining rational wartime objectives next to impossible, shifting the basis for decision-making from reason and logic to anger and hatred. Finally, because of their reliance on light infantry conscripts, mass armies were large and immobile instruments of war. This impelled commanders to adopt the strategy of attrition, as manoeuvre was next to impossible.[24] Once these armies had been done away with and replaced by small, mechanized forces, the strategy of attrition and hence the causes of the horrors of the First World War would melt away as commanders would be free to implement deep, strategic offensives that could paralyze their opponents by threatening their headquarter and logistical networks. This would create enough chaos that any resistance from the enemy's main army would simply melt away. It was this emphasis on strategic penetration, in addition to their emphasis on tactical penetration, which would set the theorists of armoured warfare apart from their attritionist peers.[25]

While debate raged over the subject of mechanization and the tank in the service journals, experimentation occurred with tanks on exercises. In 1925, a series of large-scale manoeuvres were held on Salisbury Plain, the first such exercises since the end of the war. During the final exercise, one of the force commanders, Lieutenant-General Sir Alexander Godley, used his tanks as a manoeuvre force. Combining his tank battalion with a battalion of motorized infantry and some artillery elements, Godley moved this force around his enemy's western flank and attacked his enemy's rear area. Although the attack was deemed a failure by umpires due to the fact the infantry and artillery components of the force had fallen behind, Godley's attack was commented upon during the Army's official after action report on the exercise. The report stated that in comparison to Godley's "mechanized" force, the remainder of the units employed in the exercise had demonstrated a disturbing lack of mobility. It also stated that while Godley's attack had failed, this failure was not due to any mistake of principle but due to the state of development of Britain's tank forces. "[W]hen our tanks have been improved in type and the numbers have been increased, it is more likely that their employment for action of this type may become an accepted axiom." Until that time, tanks were still to be employed as an infantry support weapon, leading them in on attacks and not operating independently.[26]

Thus, tanks were an accepted weapon within the British Army. They were not viewed, however, as necessitating a transformation of the Army's strategic doctrines. The *Field Service Regulations* of 1924 verify this: "[The] main object… to which all other operations are merely preliminaries, is to close with the enemy and destroy him by killing or capture."[27] While accepting the tank as a new weapon of war, the *Field Service Regulations* still subordinated it to

other arms: "the duties of tanks in the attack are "(i) To assist the advance of infantry. . . (ii) Destroy hostile tanks. . . (iii) To exploit a success."[28] In his book *In the Wake of the Tank*, Lieutenant-Colonel Le Q. Martel confirmed this subordination of the tank to infantry by stressing the need to have tanks cooperate with infantry at all times.[29] Despite evidence to the contrary during the war, the *Field Service Regulations* also held that the cavalry was still a significant force on the battlefield: "Armed with lance or sword, it can attack mounted or dismounted, while its armament… enables it to act dismounted; thus it can combine fire with mounted action, and exploit either in attack or defence, the advantages inherent in its mobility."[30] The British Army, therefore, accepted the tank, but as of 1925 was not prepared to release it from its combat support role or use it to replace the cavalry.

In October of 1925, the secretary of state for war, Sir Laming Worthington-Evans, announced that the British Army would be creating a special mechanized force in order to find the ideal form of a mechanized division. To this end, a mixed mechanized force of two battalions of the Royal Tank Corps (RTC), a brigade of field artillery, a battalion of light artillery, a company of the Royal Engineers, and a machine-gun battalion were assembled at Tidworth under the command of Colonel R.J. Collins, an infantry officer.[31] Although Fuller had originally been considered for the post, his somewhat outrageous demands of his superiors led to a scandal where he was reassigned after threatening to resign from the Army.[32] The Experimental Mechanized Force (EMF) began training as a whole on the 27th of August 1927 after completing conversion training on its new vehicles. The first series of exercises, designed to ascertain the qualities of the force, led military commentators to conclude that mechanization allowed the EMF to perform tasks more efficiently. The proponents of armoured warfare, however, were frustrated by what they saw as the inability of commanders to harness the full capabilities of the force. Covering the exercises for the *Daily Telegraph*, Liddell Hart wrote "it is questionable whether it [the EMF] has attempted anything that would not be done by ordinary troops of the same pattern." Therefore, while mechanized forces could fight more efficiently, they were still employed in accordance with the strategic doctrine the armoured warfare theorists felt was detrimental to the nation.[33]

The successes of the EAF during these exercises led the British Army to adopt what became known as the "cavalry concept" of armoured forces.

The next year, the EMF, renamed the Experimental Armoured Force (EAF), participated in more exercises designed to test its abilities. One exercise in particular caught the attention of observers, when the EAF was assigned the task of striking at the opposing force's lines of communications while the main body of its army fixed the main body of the enemy. The exercise was extremely successful, with the EAF even performing an opposed river crossing in very difficult conditions. However, once again the proponents of armoured warfare were frustrated by what they perceived as the lack of vision of the force's commanders. Liddell Hart complained that Collins, by describing the operation as a "raid," had underrated the effectiveness of such operations.[34] Had the EAF been more aggressively employed and larger, Liddell Hart declared that, far from being an inconvenience to the enemy, this raid would have been decisive. "[T]he armoured force must be expanded to effective proportions. If it is kept a mere toy, training in proportion to the whole, it will not have the power to achieve more than raids, damaging, but hardly decisive."[35] This was in direct opposition to Lieutenant-General Burnett-Stuart, whose

memorandum on the subject (and later the Army's official conclusion) concluded that the EAF was essentially restricted to the role of a raiding force and not a decisive force in its own right.[36]

The successes of the EAF during these exercises led the British Army to adopt what became known as the "cavalry concept" of armoured forces. This concept viewed tanks and tank forces as merely the heirs to mounted cavalry and not as a decisive force in themselves. According to the concept, heavy tanks were best employed as heavy cavalry was during the Napoleonic era: as a shock force used primarily for raiding and assisting infantry assaults. Light tanks, like the light cavalry, were to be employed as a screen or for reconnaissance. Although the cavalry concept did accept the possibility of using tank forces to flank an enemy and strike at his rear areas, this was only done to cause damage, not as a means to reach a decision. Decision, conservatives argued, would come from tank-supported infantry attacks on the enemy's main force.[37]

Despite the spread of the cavalry concept within the Army, converts to the theory of armoured warfare still put forward their ideas. In 1929 Charles Broad, a career soldier, published what became known as the "Purple Primer," a manual describing Liddell Hart's and Fuller's theories while putting forward his own ideas regarding the organization of an armoured force. The Primer also proposed a series of battle drills for armoured units, many of which are still recognizable today.[38] Broad was given an opportunity to test his theories in 1931, when he was given command of the newly formed (and temporary) First Brigade RTC. After drilling his brigade in battle drills at the battalion level, Broad conducted a brigade exercise that was very successful. Unfortunately, very few people took notice of his success.[39]

In 1934, P.C. Hobart, an experienced tank commander and proponent of the theory of armoured warfare, was given command of the now permanent First Brigade RTC. After a series of successful training exercises near the end of 1934, the brigade was combined with mechanized units of the 7th Infantry Brigade and designated the "Mobile Force" for a final exercise under the command of George Lindsay. Convinced that the tank brigade's recent successes had blinded it to its own weaknesses and concerned about the morale of the non-mechanized units involved in the exercise, Lieutenant-General Burnett-Stuart, the exercise director, decided to place a number of restrictions on Lindsay's plans which deliberately

Mark II Tanks prior to war: While the tank was accepted into the British Army, more radical ideas regarding how these machine could transform warfare were not. (Photo courtesy of the author)

highlighted the mobile force's weaknesses. Lindsay had the added disadvantage of having just assembled his staff for his new force only a few days earlier. The end-result of the exercise was a negative one for armoured warfare enthusiasts. Lindsay's force, compelled to move during daylight hours because of Burnett-Stuart's restrictions, was discovered by aerial reconnaissance and attacked on its way to its objectives by aircraft. When ordered to withdraw, Lindsay encountered further difficulties as the opposing force commander, using his few mechanized units, blocked Lindsay's line of retreat based on information available to him from aircraft.[40]

In his critique of the exercise, Burnett-Stuart criticized Hobart and Lindsay for being too dismissive of the enemy's abilities and for not dispersing their formations in light of the threat of air attack. He also chided them for being too tied to a vulnerable supply tail. He did, however, congratulate them for doing their utmost in the face of his difficult restrictions.[41] Unfortunately, Burnett-Stuart's debrief was not made public and led to two results. First, it led to accusations that Burnett-Stuart had deliberately sought to sabotage all chances of success for the mobile force due to his own personal beliefs. The long-term effect of this action, according to Liddell Hart, was that he created a negative attitude in the Army towards mechanization and armoured formations just as Germany was beginning to expand its own armoured forces. This interpretation seems to be somewhat exaggerated, as it is doubtful that even if the Army had wholeheartedly adopted the idea of the Mobile Division (based on Lindsay's Mobile Force), it would not have been able to match Germany armoured division to armoured division by 1939. The second effect of the exercise, known as the "Battle of Hungerford," was that in the eyes of many it had proven that an armoured force operating in enemy rear areas was vulnerable and that therefore the theory of armoured warfare was fundamentally flawed. How could one attack an enemy's "brain" when the very instrument of that attack was vulnerable to non-mechanized forces? The cavalry concept of the employment of armoured forces as well as the strategy of attrition were therefore strengthened just as Britain began to embark on a project of limited rearmament.[42]

In November of 1933, realizing that the international situation was deteriorating, the British government established a Defence Requirements Committee (DRC) consisting of numerous military, treasury, and Foreign Office officials. The committee was tasked to examine the deficiencies of all three services and to establish programs designed to remedy them. The General Staff of the Army proposed to the committee a plan involving further mechanization and modernization within the Army at a cost of £40 million.[43] This figure, based on what the General Staff thought the War Office could realistically provide and not on the cost of what was actually needed, was opposed by numerous cabinet ministers. Earlier that year the British government had decided on a general policy of defence and deterrence that left the Army in a less than advantageous position. Should war break out on the continent, the Royal Navy and the Royal Air Force would provide a wall between Britain and the continent, while the RAF would threaten any potential enemies with strategic bombing. The Army, meanwhile, would provide anti-aircraft defences and garrisons for overseas possessions.[44] Although soldiers argued that the Low Countries, if lost, would provide any potential adversary with a base from which to launch air attacks and eventually a cross-channel invasion, their warnings went largely ignored. In light of its limited role within this policy, the Committee only granted £20 million to the Army in order to improve itself.[45] Therefore, despite the fact that 1933 and 1934 represented the beginning of a period of rising budgets for the Army, these increasing budgets were still inadequate to meet all of the Army's needs.

By 1936 more funds were granted to the Army in light of the growing threat of Nazi Germany on the continent. The majority of these funds, however, went to programs designed to complete the mechanization of the infantry, signals corps, and artillery instead of upgrading Britain's tank force. Exercises held within the RTC, meanwhile, demonstrated the need for new tanks, as mechanical problems due to wear and tear began to impact upon training. Thus in October 1936 the Chief of Imperial General Staff, General Sir Cyril Deverell, put forward a proposal designed to update Britain's armoured forces. Four specific types of tanks were requested: a light tank for the cavalry (which was in the process of mechanizing), a "cruiser tank" for the RTC designed to replace the old light tanks within the RTC, a new medium tank exclusively for the RTC, and an "infantry tank" designed to be employed in the RTC's infantry support battalions. In total, the proposal called for the production of 2030 vehicles.[46]

Deverell's plan still did not signify a victory for armoured warfare enthusiasts. Cruiser and medium tanks, the only vehicles with the range and striking power required to break through the enemy's lines and strike at his command and logistical systems, only accounted for one-quarter of the vehicles requested and even then were replacement vehicles and not reinforcements. Light tanks, which were too lightly armoured and armed to perform this task, and heavy infantry tanks, which were too slow and logistically dependent to move around in the enemy's rear area, accounted for the remaining three-quarters. Deverell's plan was not to move the Army from the strategic doctrine of attrition, but to supplement it with up-to-date equipment.[47]

To Liddell Hart, Britain threatened to slip back into the same mass army mentality that had cost it so dearly in the First World War

In May 1937 a young and energetic politician by the name of Leslie Hore-Belisha was appointed secretary of state for war. Although he had been a major in the First World War, he had little prior experience with military matters and came to rely heavily on the advice of Liddell Hart, whom he met just after his appointment. Taking advantage of this opportunity, Liddell Hart began to lobby the new secretary to appoint like-minded men to positions of influence within the War Office, putting the secretary into conflict with Deverell.[48] After purging Deverell over his opposition to the policy of "limited liability," which stressed the need for Britain to avoid any land-based military commitments on the Continent, Hore-Belisha, becoming self-conscious over his reputation of being a puppet of Liddell Hart, began to distance himself from the commentator.[49] Thus, on the eve of the Second World War, advocates of the theory of armoured warfare found themselves scattered throughout the Army and not in positions of high command as Liddell Hart had hoped.

As Liddell Hart was lobbying the new secretary, difficulties began to arise in the area of tank procurement. Problems with the Treasury over the costs of Deverell's procurement proposal, combined with the complex process of retooling factories to build the new tanks, led to production problems. Although the light tank model quickly came into service and began arriving at units, the manufacture of the cruiser tanks had to be halted. This left the British Army with a large number of light tanks but very few medium or cruiser tanks. This imbalance of equipment led to the decision to keep exercises during the 1938 training year at the brigade level and lower, as tanks for the tank brigade and the infantry support battalions had not arrived.[50]

The Munich crisis, along with Hitler's occupation of the whole of Czechoslovakia in early 1939, led to the abandonment of the policy of "limited liability" and to the formulation of definite plans

for a Continental expeditionary force, as it was determined that the loss of Czechoslovakia, a French ally, left France at greater risk of invasion.[51] Much to the horror of tank advocates, plans were also made to vastly increase the size of the Territorial and Regular armies and, to this end, conscription was introduced in April 1939. Liddell Hart viewed the move as a first step backward to the creation of a mass army and as a threat to the further modernization. "Britain's military and industrial effort was now geared to the production of a mass army instead of to a high quality mechanized force."[52] To Liddell Hart, Britain threatened to slip back into the same mass army mentality that had cost it so dearly in the First World War, undoing all the progress that the tank advocates and armoured warfare supporters had made since 1919.

The mass expansion of the Army had a number of detrimental effects. First, it impaired the improvement of the mechanized forces already in being as it pushed Deverell's already tardy procurement plan onto the back burner of equipment acquisitions. By the beginning of the war, none of the cruiser tanks and only 196 of the new light tanks had arrived. The British Expeditionary Force's (BEF's) armoured component left for France ill-equipped to meet the more modern forces of the German Army despite the fact the British had tried to modernize their tank forces over the previous three years.[53] The second result was that a series of large-scale manoeuvres designed to introduce a new generation of high-level officers to mechanized warfare (albeit of the attritionist mould) had to be cancelled due to a lack of resources. Changes in equipment since the last large-scale exercise held in 1935 had radically altered British capabilities. Unfortunately, senior officers never got a chance to test or experience these new capabilities. Instead, they were restricted to a series of map exercises of questionable value. Months later, those officers would find themselves in command of the BEF in France, fighting a war against an army whose capabilities they did not fully understand.[54]

The story of Britain's failure to adopt the theory of armoured warfare as operational doctrine was not one of enlightened reformers fighting a close-minded and reactionary chain of command. Nor was it a story of tank versus anti-tank factions arguing over whether tanks should be employed at all. Instead, it was a story of an open-minded army that, through experimentation, arrived at a conclusion regarding tanks and mechanization that fit well into what it perceived as the sound doctrinal lessons it had validated during the First World War. The British Army's error was not due to a lack of a pioneering spirit but rather to a lack of boldness in the area of doctrinal thinking. It refused to take a leap of faith with a new weapon of war and, by doing so, found itself beaten in 1940. Prior to his victory at Gazala in 1942, Rommel wrote that "It is my experience that bold decisions give the best promise of success."[55] Had the British Army held such an opinion, its performance in May 1940 might have been very different. As we today struggle with how to transform our army to deal with the wars of the future, it behooves us to remember this.

About the Author...

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BEYOND THE NEXT BOUND: ONE CAPTAIN'S VIEWS ON THE ARMY OF TOMORROW

Captain Christopher Hunt

INTRODUCTION

Army transformation is about evolving the Army out of its Cold War structure into a more strategically relevant expeditionary force. This paper will examine Canadian and American Army transformation initiatives in their effort to create strategically relevant field forces.[1]

Advancing with Purpose: The Army Strategy states the Canadian Army will be a strategically relevant, tactically decisive, knowledge-based, command-centric, medium-weight, information-age army. A medium-weight force exploits technology to achieve high levels of lethality and protection formerly provided by mass (both of firepower and armour), to enhance strategic responsiveness and operational and tactical agility and combat power. Mass in weapon systems and sustainment requirements is reduced through the use of a technologically advanced communications and information system that enables precision of effort and effects.[2] Transformation of the Army of Today into the Army of Tomorrow[3] will be an increasingly complex process as the strategic direction provided by *Advancing with Purpose: The Army Strategy* is translated into operational reality. This translation must recognize three major considerations.

First, the Canadian Army's experience since the end of the Cold War and the anticipated nature of the future security environment suggest it is likely that the majority of future missions will be stability operations characterized by View 2 conflicts vice warfighting View 1 type conflicts.[4] Thus, the Canadian Army's force employment concepts should be primarily directed towards stability operations while maintaining a secondary capability to effectively participate in mechanized warfighting operations. Second, the uniqueness of the Canadian Army's force generation and employment concepts require that the Canadian Army continue to be doctrinally independent; however, we should collaborate with our allies in terms of technological development as much as possible. Finally, Army of Tomorrow concepts must support force generation in such a way that balances the requirements for trade-specific specialty training (and economies found therein) with the requirement for combined-arms training, meaning that the regimental system will have to evolve.

The Canadian Army's force employment concepts should be primarily directed towards stability operations while maintaining a secondary capability to effectively participate in mechanized warfighting operations

CANADIAN OPERATIONS IN THE 21ST CENTURY

Intellectually, the Canadian Army has had a hard time leaving the Cold War behind, despite our operational experience over the last decade plus. Our doctrine, training, and perception of our 'true role' were focused on warfighting motor rifle regiments and divisions, and largely that remains as the focus today. We have focused on preparing to fight 'the big battles' while the missions we have conducted have largely been low intensity conflicts and stability operations. It is generally accepted that the future security environment will most likely continue to primarily

generate stability missions and low-intensity conflicts while large mechanized warfighting operations will remain rare.[5] The Canadian Army of Tomorrow must be structured and trained for this environment rather than primarily for its Cold War role of large mechanized warfighting operations.[6] An often quoted maxim is that if soldiers are trained for war, they can be quickly trained to perform peacekeeping and operations other than war (OOTW), but the reverse is not true. I agree with this maxim, but I believe that more of our combat training should be focused on lower level tactical actions against a wide range of threats, rather than the dreaded and largely traditional mechanized combat reconnaissance (recce) patrols and forward security detachments of the Fantasians, Krasnovians, GENFORCE, and the newly formed Triple Compact.

Historically, armies are engaged in stability operations the vast majority of the time, with relatively short but intense periods of warfighting filling the remainder of their histories. The nature of stability operations today is remarkably similar to the nature of imperial policing done by the British Army during the 19th and early 20th century. While the political goals of Canadian missions today are vastly different from the British imperial policies of yesteryear, the military mission of assisting political authorities establish and maintain a safe and secure environment is largely the same for the Canadian Forces (CF). The change in mindset and roles that the Canadian Army is experiencing today might be compared to that required of the British Army when it transformed from its Napoleonic era army to one focused on imperial policing. The analogy also applies to the interwar years of the 1920's & 1930's as long as one sets aside the threat posed by 'the gathering storm'[17] of Nazi Germany.

The Canadian Army's major international operations since the Cold War have had several common characteristics that seem likely to continue into the future. These operations have been strategic deployments that have required significant air and sealift to mount and sustain. Belligerent forces operating in Canadian areas of operations (AOs) have constituted credible and often significant threats to Canadian forces. Canadian AOs have largely consisted of complex terrain such as mountains, woods, and built-up areas. Combat has been a distinct possibility on many operations even if it was not within the mandate. In these missions, combat events were most likely to occur at the patrol, section, and sub-sub unit level. Infrastructure in theatres of operation was often shattered and forces had to be independently sustained. Operations were largely conducted by ad-hoc battle groups. It should also be noted that despite dozens of Canadian casualties suffered on View 2 operations since the end of the Cold War, belligerent forces have rarely directly targeted Canadian forces,[8] given that tens of thousands of Canadians have served overseas during this same period. It would be extremely dangerous to assume this trend will continue into the future, and allow this assumption to affect to affect doctrine, equipment procurement, and especially training.

The characteristics of these previous operations and General Krulak's "three-block war"[9] construct, that will persist in the future security environment, demand that the Army produce robust combined-arms battle groups optimized for complex terrain, with a reduced sustainment burden. These battle groups must be task-tailored for the assigned mission, remembering that 'the rule of three' should only be considered as an administrative guideline for unit establishments, it should not be factored into force generation and force employment for specific missions. Sections, platoons, and occasionally sub-units will most likely fight tactical 'battles' during stability operations. Battle groups often have more of an operational than tactical level focus, and even small formations such as brigades are operational level units in the context of most stability operations. Given the dispersed nature of the 21st century battlespace and the

nature of most stability operations, intelligence surveillance target acquisition reconnaissance (ISTAR) and fire effects capability must be pushed down to increasingly lower level tactical elements through combined-arms groupings and a 'bottom-up' procurement strategy. A 'bottom-up' procurement strategy focuses priority on capital projects designed to increase the integral combat capability of elements at the lowest tactical levels. Capital projects designed to network tactical elements into capabilities retained at higher levels should also be acquired.

Despite a focus on stability operations, the Army must also maintain a secondary capability to deploy a combat formation for View 1 operations for the main contingency force (MCF) brigade as there have been numerous crises since the Cold War that could have developed in such a way that the Canadian government may have chosen to employ it: the 1991 Gulf War, the extraction of UNPROFOR from Bosnia, forced entry into Kosovo, and the 2003 Gulf War. These types of largely conventional conflict, though far less common than View 2 operations, are likely to continue to occur in the future. The current regional tensions in the Korean Peninsula and the Indian sub-continent provide two examples of potential major conflict. In a true collective defence scenario or if Canadian forces are committed to a major warfighting campaign, it is very unlikely our allies would be satisfied with a Canadian commitment of less than a brigade. Potential exists for a non-elective war, from a Canadian perspective, to occur. Once again, Korea provides an obvious example. In addition, there are capabilities normally associated with View 1 operations, such as the direct fire system or tanks, medium artillery, or air defence that could be assigned to battle groups deploying into missions that required them. While an advanced draft copy of Directorate of Army Doctrine's (DAD) *The Interim Army: A Force Employment Discussion Paper* stated that operational level risk may be mitigated by the attachment of a Canadian force to capable allied or coalition formations that possess assets across the five operational functions,[10] for a Canadian force to be tactically decisive, it must possess sufficient capability that it is not tactically dependent on coalition assets to accomplish its missions successfully and without adverse casualties.

US ARMY INTERIM BRIGADE COMBAT TEAMS

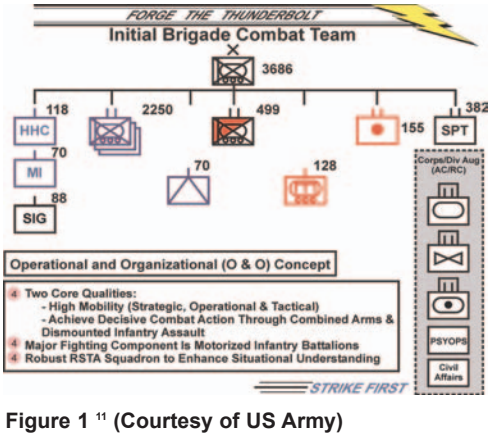

Figure 1 [11] **(Courtesy of US Army)**

In designing a force structure for the Army of Tomorrow, it makes sense to analyze the transformation efforts of our primary ally, who is also the world's pre-eminent military power. The United States (US) Army has recognized a gap in capability between its rapidly deployable but lightly armed light divisions and its powerful but strategically ponderous heavy divisions. It is establishing seven interim brigade combat teams (IBCT), also known as Stryker brigade combat teams (SBCT), by 2007, that are designed to bridge this capability gap. Each IBCT is organized as per Figure 1.

The US Army IBCTs are designed, as a formation, to conduct the missions that Canadian battle groups have participated in since the end of the Cold War, albeit on a larger scale. There are a few characteristics of the IBCT that are worth noting here. IBCT tactical doctrine is that the dismounted infantry assault is their decisive form of combat. The turret-less light armoured vehicles (LAVs) are viewed as armoured personnel carriers (APCs) rather than infantry fighting vehicles (IFVs) and are equipped as such.[12] The

'Stryker' LAVs are equipped with a .50 cal heavy machine gun (HMG) or Mark (Mk) 19 automatic grenade launcher (AGL) that is remotely controlled from within the vehicle. Each infantry battalion has ten heavy mortars and the IBCT has an ISTAR battalion equipped with unmanned aerial vehicles (UAVs), unmanned ground sensors (UGS), Javelin anti-tank (AT) missiles, six 120mm mortars, and nuclear, biological, and chemical (NBC) reconnaissance capability.[13]

The US Army's goal is to be able to establish an IBCT in theatre within 96 hours and a division within 120 hours. However, a study by the RAND Corporation has found these goals to be unrealistic. The study analyzed several scenarios requiring an IBCT to deploy from the continental United States (CONUS) to various hotspots around the world using airlift or sealift. It was found that sealift and airlift deployment times were close or at least comparable for most scenarios. It took approximately 15 days using airlift or sealift to move an IBCT from CONUS to Kosovo, and approximately 23 days to airlift an IBCT to Rwanda from CONUS, as opposed to 29 days using a combination of sealift and road move. Likewise, deployment of an IBCT from CONUS to Korea was found to take 12.8 days by airlift and 12.9 days by sealift. Generally, sealift was found to be marginally faster when deploying to a littoral destination, and airlift was faster to interior destinations. Pre-positioning equipment in regional bases at locations such as Diego Garcia, Guam, and Germany was found to be the most effective way of reducing deployment times.[14] The airlift figures were calculated using a fleet of sixty C-17s flying 24 hours a day. Another study concluded that it would be possible to move one Stryker battalion almost anywhere in the world in 96 hours; however, it would still take 80 C-17 equivalents.[15]

The vast strategic resources required to move one IBCT serves as an example of the enormous resources that would be required to rapidly airlift a Canadian battle group that is even a quarter of the size of an IBCT. The goal of fielding medium forces that can be transported by a C-130 Hercules is questionable. The advantage of having the flexibility of using C-130s for theatre or tactical level transport of small numbers of vehicles needs to be balanced against the increased capability for medium weight armoured vehicles that could be gained from allowing them to weigh a few more tons. A clear distinction that could be used to differentiate light forces from medium forces would be that light forces should be optimized for transport on C-130 sized aircraft, and medium forces should be designed for transport on C-17 sized aircraft and sealift.

CANADIAN STRATEGIC LIFT

If Canada decides to develop integral strategic lift capability for the CF, it would be wise to focus on sealift, with airlift as a secondary priority. As described earlier, enormous airlift assets are required to move a LAV-based force. Even if these assets are available, restrictions on airhead throughput make sealift a competitive and often superior option to airlift. Pre-positioning of equipment, in Montreal and/or Vancouver in the Canadian context, along with maintaining high readiness battle groups, is

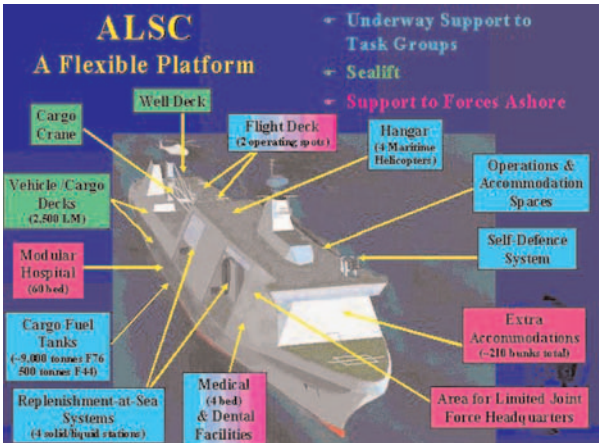

Figure 2: Afloat Logistics and Sealift Capability[17] (Courtesy DND)

the best way to reduce deployment timelines for any given mission. The Afloat Logistics and Sealift Capability (ALSC) concept being developed by the Canadian Navy envisions a fleet of at least three multi-role ships that would have that capability to transport 85% of the vanguard mechanized battle group with the remainder of the battle group (the advance guard) moving by strategic airlift.[16] This capability would give true integral strategic lift to the CF for the first time in decades and should be fully supported by the Army. In addition, the ALSC has many other capabilities that would be extremely useful for any joint force.

THE OBJECTIVE FORCE

The IBCTs are the vanguard in force development for the US Army's Objective Force. The Objective Force is designed to combine the rapid deployability of the IBCTs with the lethality and survivability of heavy formations. The two programmes at the centre of the Objective Force concept are the Future Combat System (FCS) and the Objective Force Warrior (OFW).

The FCS is a 'system of systems' that networks sensors to shooters recognizing that the soldier is the centrepiece of the system. The FCS consists of over a dozen variants on a common chassis including APC, command variant, mortar, Non-Line Of Sight (NLOS) cannon, Beyond Line of Sight (BLOS)/Line of Sight (LOS) high velocity cannon (also known as Mounted Combat System [MCS]), reconnaissance and surveillance, and Netfires. NetFires is a "missiles in a container" system that combines LOS and NLOS surface to surface and air to surface missiles in one package. The FCS program, the highest priority program in the US Army,[18] also incorporates armed reconnaissance robots that will be controlled by a command vehicle and used in high threat reconnaissance tasks. American plans to develop the Objective Force are contingent on the FCS program which incorporates an extremely aggressive research, development, and procurement funded for $22.7 billion (US) from 2004-2009, with an additional $3.1 billion (US) from the US Army science and technology research budget being allocated to FCS enabling technologies.[19] This funding is primarily focused on the FCS Block 1, which incorporates technology that is relatively mature today. FCS Block II will incorporate technologies that have been developed conceptually, and are currently being designed and engineered, such as rail guns and active protection systems capable of defeating kinetic energy rounds. Block II upgrades will likely enter service in the 2015-2020 timeframe.[20]

Figure 3: The Objective Force Warrior (Courtesy US Army)

The OFW program is the dismounted equivalent to the FCS program. It seeks to integrate dismounted soldiers into the system of systems of the FCS while improving their individual lethality and survivability. The OFW soldier suite includes networked communications and integration with sensors and shooters including UAVs, physiological monitoring, and an embedded situational awareness system. Block I is scheduled to begin fielding in 2008. Block II improvements, to begin fielding in 2015, will likely include active camouflage, active microclimate conditioning, and an armoured exoskeleton.[21]

The Objective Force will be composed of units of employment (UE) and units of action (UA). UE are operational level headquarters (HQ)that combine the functions of division HQ with those of a national

command element. UE can control multiple UA. UA are brigade-sized combined-arms teams based around theFCS. The US Army plans to field three UAs and one UE each year beginning in 2010.[22] All 62 US Active Component and Reserve Component combat brigades are scheduled to be transformed into Objective Force UAs by 2031.[23] Despite the ambitious goals for rapid deployment stated for the Objective Force above, it still suffers from the same strategic deployability problems as the IBCTs. Namely, a shortage of strategic airlift, and the fact that most airports and ports in the developing world, where operations are likely to take place, are spartan and have limited throughput capacity. Using a mix of sea, land, and air movement, coupled with pre-positioned stocks, will mitigate deployability problems somewhat; however, the challenges will still be daunting. Design concepts for the UAs are displayed in Figure 8.

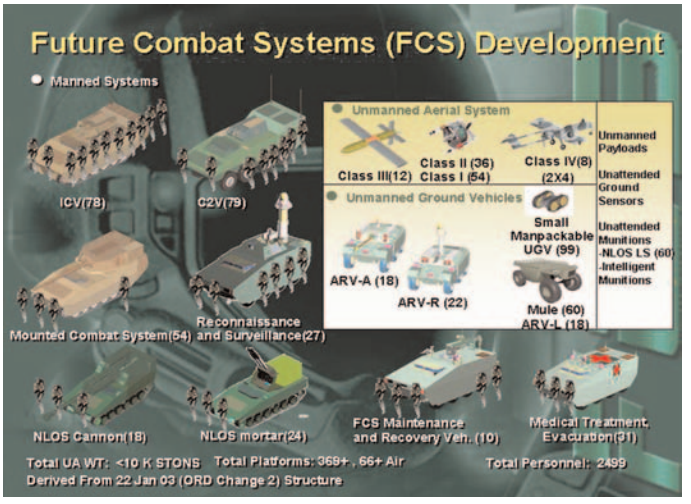

Figure 4: FCS allocated to a Unit of Action [24]

It should be noted that personnel figures vary somewhat from the previous diagram; however, design of the force structure for UAs is still in development and will be subject to change for some time.

FINAL THOUGHTS ON THE US OBJECTIVE FORCE

The staggering amount of resources committed to the FCS project belies its importance to the US Army, and promises that significant technological breakthroughs are likely to come from this program. Canada should maximize its collaboration with the US Army in the FCS program in order to reap some of its benefits. The Canadian Army of Tomorrow should be designed to be interoperable with the Objective Force because they are in the same time horizon. The Canadian Interim Army should be viewed as the US Army views the IBCTs, as the first step in a much larger process of transforming into an information-age expeditionary medium-weight army. The continuous evolution of the FCS through its block increments emphasizes the requirement for Canada to continually upgrade its weapon systems due to the rapid pace of technological development, if the Canadian Army is to *be able to fight against the best alongside the best*.[25] Army transformation is not fixed: it is a continuous process that requires never-ending effort and resources. Equipment purchased today will need to be upgraded every five to ten years to remain relevant and interoperable with our allies.

Canada should maximize its collaboration with the US Army in the FCS program in order to reap some of its benefits

The FCS and the Objective Force are the centrepieces of the US Army's transformation initiatives. The problem is that the Objective Force is viewed as the silver bullet. It is perceived as a force structure that is so flexible it can deal with any threat across the spectrum of conflict,

despite the fact that its strong emphasis on unmanned technology may not be the most effective means of conducting stability operations. Rather than rely on a single type of medium-weight unit to accomplish any mission assigned from humanitarian relief to warfighting, it would be far more sensible for the US Army to continue to field a mix of light, medium, and heavy forces and create hybrid task forces structured for the requirements of specific operations and campaigns as they arise. The wisdom of maintaining some light and heavy forces in addition to a core of medium weight forces has received more attention by American military and political leadership since the 2003 Gulf War, and is one of the key conclusions of the RAND Corporation's study on The US Army and the New National Security Strategy.[26] The Canadian Army's approach is different as it intends to create task-tailored forces of medium and light forces for specific missions, and rely on coalition partners to provide heavy forces. The Canadian decision to rely on others for heavy forces is not a rejection of their value, but a hard decision due to resource choices made within the Department of National Defence (DND) and by the Canadian government; capabilities such as tactical medium lift helicopters, attack aviation, rocket artillery, and amphibious forces have not been pursued for similar reasons. This paper will now discuss some key capability initiatives being pursued by the Canadian Army but will avoid specific recommendations on Army structure as those have been addressed elsewhere.[27]

THE CANADIAN INTERIM ARMY

The Director General Land Combat Development (DGLCD) is attempting to synchronize the development of the Army of Tomorrow. DAD is currently drafting Information Operations Manoeuvre Doctrine that is designed to "increase agility by moving to a command-centric, knowledge-based doctrine that achieves integration of information with manoeuvre at lower levels and devolves decision-making authority."[28] As an initial step, DAD released *The Interim Army: A Force Employment Discussion Paper* that was designed to initiate discussion towards developing a force employment (FE) concept for the Interim Army.[29] Much of this discussion took place at the Chief of the Land Staff 's (CLS') Strategic Planning Session (SPS) held in November 2003.

The Interim Army "constitutes a blueprint or more concrete description of what the Army will look like in about five years, when authorized plans and equipment acquisitions are implemented."[30] *The Interim Army: A Force Employment Discussion Paper* presents the projected capabilities of the Interim Army, it suggests how those capabilities will be applied, and it asks what are the major issues and questions that must be answered in order that a detailed FE concept can be articulated.[31] The major theme of the Interim Army's FE concept is that the operational functions: command, sense, act, shield, and sustain will be synchronized to enable a Canadian force to achieve its missions. This synchronization will be achieved by *sensing* through a robust ISTAR network, thereby providing the force, and especially commanders, with the situational awareness to make

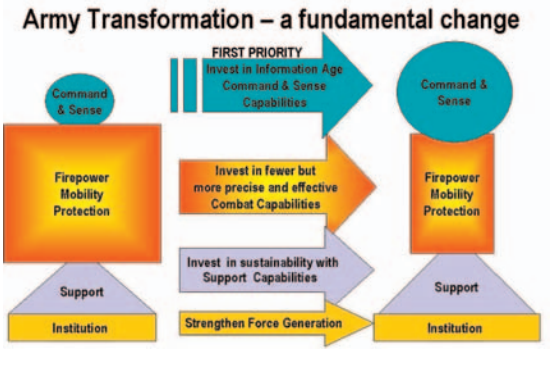

Figure 5: Army Transformation—A Shift in Priorities [32]

informed decisions and *command* their forces more effectively supported by robust command support and communication technology. More emphasis will be placed on *sense* than in the past to ensure an understanding of the enemy to be engaged. We will then *act* on the enemy by shaping him using long-range precision fires and to seriously degrade his will and capability before we engage in close combat. Throughout, increased situational awareness will also enable us to *shield* our forces more effectively, and *sustain* them more efficiently. The concept seems relatively straight-forward for View 1 operations but becomes more problematic in View 2 operations, particularly those in urban areas. Figure 5 outlines the force generation/capability shift from the Army of Today to the Interim Army.

The investment in fewer but more precise and effective combat capabilities referred to in Figure 5 is focused on modernizing the Army's medium direct and indirect fire capability (Figures 6 & 7).

It should be noted that the Future Indirect Fire Capability (FIFC) for the Interim Army is designed to replace the M109 self-propelled howitzers currently in service. Light guns and mortars will still be retained by the Interim Army to provide indirect close support for manoeuvre forces.[35]

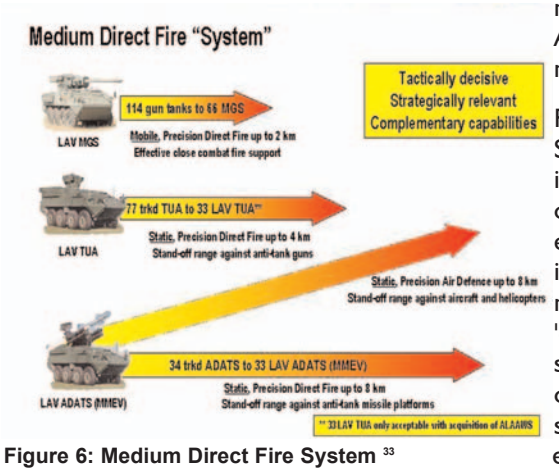

Figure 6: Medium Direct Fire System [33]

Plans for the Medium Direct and Indirect Fire Systems demonstrate that the Canadian Army is committed to retaining an effective combat capability for View 1 tactical operations in extended terrain. The utility of these systems in urban terrain is less clear. In particular, the mobile gun system's (MGS') ability to provide 'effective close combat fire support' and survive in the close quarters of urban terrain as compared to main battle tanks (MBTs) raises serious operational concerns about its employment. Any shortcomings in the MGS will make the infantry's job of 'closing with and destroying the enemy' much more difficult and potentially costly. It was exactly this concern that led the Australian Army to recently announce it has recommended a purchase of 60 Abrams MBTs for $ 600 million (AUS) (approximately $ 510 (CDN)) to its government.[36] Nevertheless, it is the infantry that are key in View 2 operations. General Dennis J. Reimer, former US Army Chief of Staff, once declared, "You can bomb a nation into oblivion but if you want to save it you have to have soldiers on the ground."[37] Plans for the Interim Army see the infantry also receiving significant upgrades and new equipment as outlined in Figure 12. The acquisition of an AGL in the form of the Company Area Suppression Weapon (CASW) and the Advanced Lightweight Anti-Armour Weapon System (ALAAWS) that will consist of a man-portable fire-and-forget anti-tank missile with a range of over 2 km will greatly increase the firepower of the infantry and indeed the whole combined-arms team.

DEVELOPMENT OF THE ARMY OF TOMORROW

In addition to current plans for the Interim Army, the US Army's investment of $ 25.8 billion (US) in FCS research and development (R&D) and acquisition during 2004-2009 in an unprecedented effort to begin transformation into the Objective Force[39] will likely have significant

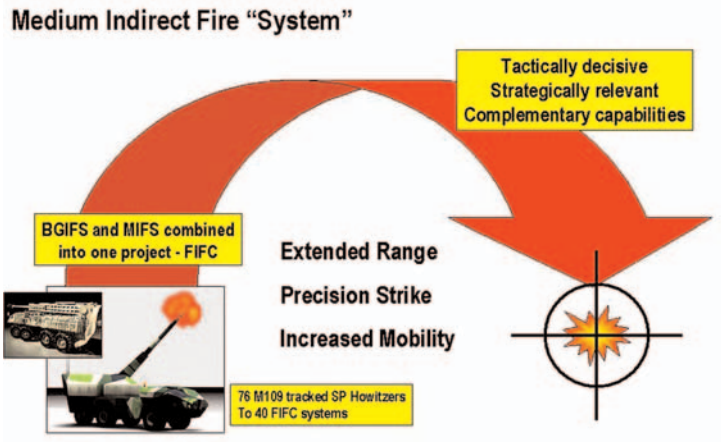

Figure 7: Medium Indirect Fire System [34]

impacts upon force development for Canada and other American allies. Recent Canadian equipment procurement programs and those for the Interim Army will certainly influence Army of Tomorrow development. For example, no one disputes that the LAVIII will almost certainly remain in service for at least the next 20 years. By having a second look at the major Interim Army procurement programs it is possible to recommend the next bound of evolution which should take place by 2015.

The most important upgrades for the Medium Direct Fire System are ammunition. New advanced ammunition is being developed for the FCS program in the form of gun ammunition and missiles.[40] As the US Army develops this new generation of ammunition, Canada should buy it to enhance combat capability and interoperability with the US and our other allies. Some upgrades to fire control systems may be required; however, these should be relatively minor. More ambitiously, MGS should be upgraded to incorporate new firepower and protection technology developed from the FCS MCS. Indeed, a strong argument can be made that the MGS will not offer equal or superior tactical performance to the Leopard C2 until FCS upgrades improve its survivability, firepower, and ammunition capacity. The LAV multi-mission effects vehicle (MMEV) should be employed primarily in an air defence and NLOS missile attack role as better direct-fire missiles become available for the LAV anti-tank (AT). All LAVs could benefit from FCS upgrades to engines, suspension, and protection. The Indirect Fire System proposed in Figure 14 would also take advantage of FCS ammunition and technology in the case of the FIFC and LAV MMEV.[41] Further infantry enhancements could be achieved through incorporation of technology developed from the US Army OFW program.

In addition to technological advances, many other factors will shape the Army of Tomorrow. Canadian demographics and geo-political realities demand an army presence right across Canada. Army culture, even as it is 'shaped', will still have an impact on force development as Army of Tomorrow models attempt to incorporate at least some aspects of the regimental system and better integrate reserve forces. Fiscal resources, backed by political will, also shape the scope and pace of army transformation. A defence policy review will hopefully be held in the near future that gives clear direction on the Army's tasks and roles and guidance on how to accomplish its missions. The uniqueness of the Canadian Army's experience and culture demands a doctrine and force generation concept different from the United States, even if we are equipped with similar equipment and intend to be interoperable with their formations.

The Canadian regimental system will evolve as new generations of systems enter Canadian service; however, it should remain very recognizable to those serving today, even 10 years from now. The increased complexity of weapons and other soldier systems will require more time and effort for trade-specific specialty training to prevent skill fade and prepare for combined-

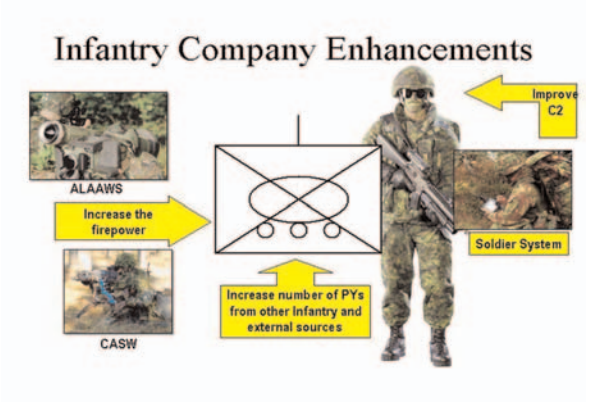

Figure 8: Infantry Company Enhancements [38]

arms training. This factor will affect both dismounted and mounted troops. There may be a requirement to specialize trades more than in the past in order to maximize training effectiveness and reduce costs. For example, LAV crews may become armoured crewmen or a distinct trade, as development of crewmen skills takes increased training, especially once modular weapon pods are fielded that can be employed by LAVs.[43] LAV crews could even be grouped into a dedicated LAV platoon within each infantry company. Dismounted infantry will face the same increased training bill as they train to use increasingly complex systems with more emphasis on urban and night operations. In this scenario, these soldiers would still all be members of the infantry regiment they serve with and would wear that cap brass and a green beret. Culturally, the Army must adjust to the idea that your Military Occupation Code (MOC) number may not necessarily determine the cap brass you will wear. On the other hand, the Armoured Corps could fragment into two branches along regimental lines, especially if MGS and LAVs are concentrated in one unit, and Coyote and light reconnaissance are concentrated in others. The logical evolution for air defence artillerymen is to become MMEV crewmen, especially as the MMEV is likely to have an increased NLOS fire role in the future. This NLOS fire role is very complementary to the air space coordination expertise possessed by air defenders, and their close links with the field artillery. In summary, the regimental system will likely survive into the Army of Tomorrow; however, regiments will likely look different.

The Army Strategy introduced the concept of the Tactically Self Sufficient Unit (TSSU), which is a grouping that varies from sub-unit to formation size capable of carrying out an assigned mission. The building block of the TSSUs will be sub-units of approximately 100 personnel rather than the traditional 500 strong personnel unit. The shift to the sub-unit as the building block for force employment still allows sub-units to be administered by unit HQ's similar to today, and to remain under the current unit (regimental) system. This is an important factor as it allows for the sustainment of an essential part of our Army's culture, and it will help manage change fatigue among soldiers, and more specifically, senior NCO's and officers. To paraphrase one commanding officer's (CO's) comments: during times of fundamental change, the Regiment (unit) is a constant source of stability and security for soldiers that are apprehensive about their future in the larger picture.[44] In addition to generating sub-units, unit HQs would either be tasked to provide a battle group headquarters (BG HQ) for operations, or a specialist cell as part of brigade HQ. Examples are the Fire Support Coordination Centre (FSCC) and the Engineer Support Coordination Centre (ESCC). Sub-units are then combined together to form battle (or battalion) groups for operations. Sub-units must have strong affiliations with designated battle groups and they must conduct all training above level four (pure sub-unit) with their battle group (Figure 10). Battle groups are the most likely grouping to be employed on expeditionary operations based on the Army's experiences for the last decade. However, Canada's appetite to lead international missions, such as the current International Security Assistance Force (ISAF) in Afghanistan, requires a formation level capacity as well. The MCF Brigade is the largest TSSU formation the Army can field (unsustained) for operations without

Figure 9: Army of Tomorrow Indirect Fire System [42]

national mobilization being ordered.[46] Essentially, the first task of any level of the chain of command is first to generate and train its sub-units, and secondly to prepare itself to function as a headquarters.

Managed readiness also implicitly constrains force structure options. The current system of managed readiness that (conceptually) has one brigade in each phase of the Army Training and Operations Framework (ATOF) cycle implicitly means that each brigade must be capable of forming the basis of the Rapid Reaction Unit (Light), the vanguard battle group, and the MCF when it is in the high readiness phase. Hopefully, this framework will eventually allow units to break out of the pattern of "alert, train, deploy"'and instead "train, alert, deploy." The Canadian Manoeuvre Training Centre (CMTC) will perform a vital role in confirming TSSU training and validating readiness and doctrine. Despite the impressive technology Canadians soldiers will be receiving over the next decade, the most important factor in assuring their success on operations is realistic challenging training. In my view, the most important change that needs to be made in our training culture is to shift the emphasis to training for night operations. The excellent optics and communication systems entering and currently in service maximize our advantages over most of our potential adversaries; however, we will never realize these advantages if we avoid night training and operations as too difficult, too confusing, and too dangerous.

CONCLUSION

Managed readiness also implicitly constrains force structure options

This paper was meant to generate discussion and debate about the Army of Tomorrow. Decisions that are being made today, particularly with regards to equipment procurement, directly influence tomorrow's force structure. There has been growing interest in the subject of the Army of Tomorrow, however, the majority of debate has been internal to various corps or has been from a strictly regimental or corps perspective. This paper discussed Army transformation from a broad field force perspective and will hopefully generate new debate and spur subsequent examination of transformation in more detail.

Most of our allies are also in the process of Army transformation and we should pay close attention to their efforts, collaborate with them whenever possible, and incorporate the best ideas into our own efforts. The ongoing war in Iraq provides strong arguments for a mix of light, medium, and heavy forces and has forced the US Army to re-examine its Objective Force plans. The characteristics of light, medium, and heavy forces must be assessed and balanced against the requirements of specific missions, be they View 1 and/or View 2 operations, and an appropriate (mixed) force deployed. Plans for the Interim Army and Army of Tomorrow demonstrate that the Canadian Army will retain capability for both types of operations; however, we must remember that future View 2 operations may be even more vicious than in the past, our enemies will try to engage us in ways that minimize our technological advantages, and engagements will most likely be fought at the lowest tactical levels. In developing the Army of Tomorrow, the Canadian Army must reinforce its strengths (outstanding soldiers and leaders,

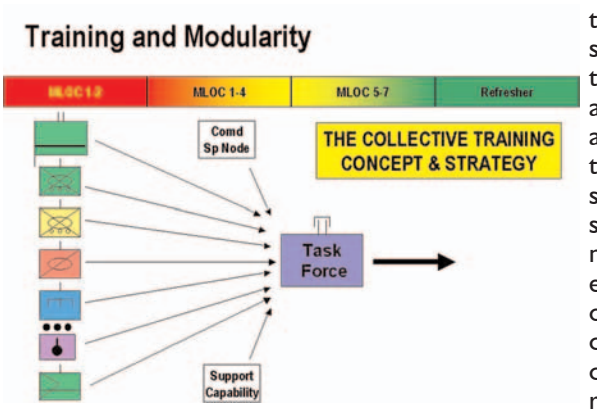

Figure 10: TSSU Training Concept [46]

the esprit de corps created by the unit system along with the cohesion developed through sub-unit/unit/formation training and teamwork, and our strong command and control capability), recognize and utilize the technology that is available to assist soldiers in doing their jobs, and address our shortcomings (direct/indirect firepower, mobility support, lack of personnel), especially in the context of View 2 operations. We must, in short, modernize carefully and under a program of our own choosing based on careful study of our true requirements, rather than having technology overtake us and force a reinvention of our existing and highly effective organizational characteristics.

The revolution in military affairs that began with the integration of digital computers, satellite communications and navigation, and precision weapons in the 1990s will continue to accelerate and will fundamentally change the way conflict is fought. The toppling of Saddam Hussein's regime, a mere three weeks after invasion by the US-led Coalition is evidence of this change. The degree to which the Canadian Army successfully transforms itself into a 21st century information-age army will determine the extent to which it will be able to defend Canada, promote international security and Canadian values, and thereby maintain credibility with our adversaries, our allies, and most importantly, Canadians.

Figure 11: The Next Bound (Photo Courtesy DND Combat Camera)

ENDNOTES

1. While I recognize that the implementation of the Army Support Review's plan will be a key part of army transformation, the review process was still ongoing at the time of writing this paper, and I've chosen to focus on transformation issues facing the field force. |
2. Canada, Department of National Defence, Land Force Command, Advancing With Purpose: The Army Strategy (Ottawa: Director Land Communications, May 2002).
3. The army in the past had difficulty focusing its effort. As a result, army leadership directed that development work in the army be divided into planning for the Armies of Today, Tomorrow, and the Future. They are delineated as follows:
a. The Army of Today is managed in the present and is projected out to a period of four years. It is primarily concerned with the allocation and management of resources.
b. The Army of Tomorrow is designed and built to exist within the window from five to approximately 10 years. The Army of Tomorrow planning process is concentrated on the development of a programme that will realize a new army, within imposed policy and resource constraints.
c. The Army of the Future will always be conceptual, and will therefore never actually exist. The Army of the Future planning process is concerned with the window beyond the Army of Tomorrow time frame (10 years) to approximately 25 years. This window is beyond current fiscal and policy constraints, but within the time period when some technological developments can be predicted. The Army of the Future is concentrated on the relatively unconstrained development of a conceptual model of a future army, including personnel, doctrine and materiel. The product of this process forms the intellectual underpinning for the Army of Tomorrow.
Quoted from: Canada, Department of National Defence, Land Force Command, Directorate of Land Strategic Concepts, The Future Security Environment (Kingston, Ontario: Fort Frontenac, August 1999), p. i.
4. NATO has adopted a vision of the future operational environment that posits two forms of conflict:
a. View 1 conflict is conventional conflict between national entities. In essence, established military forces engage in high-tempo operations that involve the application of complex technologies. It is the least common form of conflict. Since 1945, two View 1 conflicts have occurred each decade, the most recent being the 2003 Gulf War.
b. View 2 conflict is asymmetric conflict. This type of conflict envisions the nation state opposed by armed bodies that are not necessarily armed forces, directed by social entities that are not necessarily states. It is the most common form of conflict. An example of this form of warfare is the Chechen conflict. Dozens of these conflicts are on going today.
The above definitions are slightly updated from those offered by: Canada, The Future Security Environment, p. iv.
5. Ibid.
6. In the Canadian context, “large” is meant to refer to brigade and other formation-sized operations; it is recognized that this definition does not apply to other countries' contexts, particularly the United States.
7. Term attributed to Sir Winston Churchill.
8. There are obvious exceptions to this observation, most notably Medak Pocket and numerous other engagements during UNPROFOR missions in Bosnia. However, Canadian casualty rates were extremely low compared to British casualty rates in Northern Ireland or American casualty rates in Iraq today.
9. General Charles Krulak, US Marine Corps Commandant 1995-1999, is credited with the term “three-block war.” He recognized that on many operations, troops could find themselves engaged in a spectrum of operations, from humanitarian missions, through peace keeping and peace enforcement-type actions, to full-blown combat, sometimes within the space of three city blocks. The success of such operations will rest largely with the “strategic corporal” (another “Krulak-ism” as the prescient observations of their former chief are sometimes referred to in Marine Corps circles) - the junior leaders whose actions and orders have, partly due to the exponential growth of the mass media, significantly increased in their geo-political influence.
Mark Burgess, “Navigating the Three-Block War and the Urban Triad,” Center For Defense Information, 4 April 2003. Available from: http://www.cdi.org/program/document.cfm?DocumentID=883&StartRow=1&ListRows=10&appendURL=&Orderby=D.DateLastUpdated%20deSC&programID=69&IssueID=0&Issue=&Date_From=&Date_To=&Keywords=navigating&ContentType=&Author=&from_page=documents.cfm.
10. The five operational functions are:
a. Command. This is the critical operational function that links all the functions into a single comprehensive, tactical, operational or strategic level concept. It is the nexus of all activities, integrating all functions towards the attainment of specific operational goals.
b. Act. This operational function integrates manoeuvre, firepower and offensive information operations to provide a concentration on the desired strategic, operational or tactical effect. In essence, there is a shift in focus from method (manoeuvre, firepower, information operations) to the desired physical and moral end state (or effect from both lethal and non-lethal means)-the results gained from the synchronized application of each capability. The concept is relevant across the continuum of operations, from domestic and humanitarian missions to combat.
c. Sense. This function integrates sensor and sensor analysis capabilities into a single concept. This initiative breaks previous sensor/information stovepipes, allowing comprehensive sensor fusion and all source analysis within a single system. This concept moves beyond the simple collection of data or information to provide commanders with timely and relevant knowledge.
d. Shield. Shield is a layered, integrated and full dimensional operational function that seeks to prevent any impact on friendly forces across the physical, moral, electromagnetic or cyber planes, that could affect survivability or freedom of action.
e. Sustain. This function addresses issues of sustainment on the physical and moral planes. It integrates the provision of materiel and personnel support to ensure the sustainment of combat power. It fully integrates all levels towards the attainment of this objective, linking combat activities to the national base.

Canada, Department of National Defence, Land Force Command, Directorate of Army Doctrine, The Interim Army: A Force Employment Discussion Paper (Kingston: Directorate of Army Doctrine, 2 September 2003). Word Document. Available from the DWAN at http://armyonline.kingston.mil.ca/Common/AllDocs.asp?UnitID=143000440000706.
11. United States, Department of Defense, United States Army, US Army Armor Center, "Transforming the Army: Brigade Combat Teams," Powerpoint Presentation. Available from:
http://www.knox.army.mil/center/mwfi/Draft%20Brigade%20Organization/Brigade%20and%20Squadron%20Organization_files/frame.htm.
12. Major General P.D. Eaton, "Army Transformation—The Infantry Perspective," Infantry Magazine (Spring 2002), p. 4.
13. Colonel K.C.M. Benson and Lieutenant Colonel D.J.H. Pittard, "Armor, Cavalry, and Transformation: "New" Cavalry for the Interim Force," Armor Magazine (March-April 2001), pp. 9-10.
14. Sealift was accomplished using the Fast Sealift Ship (FSS) that has a displacement of 55, 350 tons, and a sustained speed of 27 knots. Airlift was calculated using sixty C-17s, a throughput of 2 C-17s per hour departing Aerial Port of Embarkation (APOE) and Aerial Port of Disembarkation (APOD) 24 hours a day, with a maximum aircraft on the ground (MOG) of 3.5 to 4.5 at each airport. Alan Vick, David Orletsky, Bruce Pirnie, and Seth Jones, The Stryker Brigade Combat Team: Rethinking Strategic Responsiveness and Assessing Deployment Options (Washington: RAND, 2002), pp. 13-53. Portable Document Format. Available from: http://www.rand.org.
15. John Gordon and David Orletsky, "Moving Rapidly to the Fight," Chapter Nine, The U.S. Army and the New National Security Strategy, edited by Lynn E. Davis and Jeremy Shapiro (Washington: Arroyo Centre, RAND 2003), p. 204. Portable Document Format. Available from: http://www.rand.org.
16. Lieutenant-Commander S. Jorgensen, A Viable Fleet for the Future, Command and Staff Course paper (Toronto: Canadian Forces College, CSC 28, 6 May 2002), p. 21. Word Document. Available from: http://wps.cfc.dnd.ca.
17. Lieutenant-Commander B. Irvine, "Afloat Logistics and Sealift Capability Project" Powerpoint Presentation. Available from DWAN at: http://admmat.dwan.dnd.ca/dgmepm/special/alsc/start.htm.
18. Honorable Claude M. Boltan Jr., Assistant Secretary of the Army (Acquisition, Logistics and Technology) and Army Acquisition Executive, "Keynote Address," AUSA Winter Symposium and Exhibition Science & Technology Seminar, 26 February 2003. Powerpoint Presentation. Symposium proceedings are available from: http://tradoc.monroe.army.mil/sig/project_links/ausa/.
19. Ibid.
20. Ibid.
21. Phillip Brandler, Director Natick Soldier Center, "Objective Force Science and Technology Focus: Soldier," Association of the United States Army Winter Symposium Science and Technology Seminar, 26 February 2003. Powerpoint Presentation. http://tradoc.monroe.army.mil/sig/project_links/ausa/.
22. United States, Department of the Army, Objective Force Task Force, "Concept Summary," The Objective Force in 2015 White Paper, Final Draft, 8 December 2002, p. 1.
23. David Kassing, "Resourcing the Twenty-First Century Army," Chapter Twelve, The U.S. Army and the New National Security Strategy, edited by Lynn E. Davis and Jeremy Shapiro (Washington: Arroyo Centre, RAND 2003), p. 277.
24. Boltan, "Keynote Address."
25. Canada, 1994 White Paper on Defence, Chapter 3. Available from:
http://www.forces.gc.ca/site/Minister/eng/94wpaper/white_paper_94_e.html.
26. Thomas L. McNaugher, "Refining Army Transformation," Chapter Thirteen, The U.S. Army and the New National Security Strategy, edited by Lynn E. Davis and Jeremy Shapiro (Washington: Arroyo Centre, RAND 2003), p. 306.
27. This author generally concurs with the recommendations in Major L.R. Mader's paper "Shifting Paradigms" which offers an excellent argument for a Canadian Army structure that can handle various conflicts across the spectrum of conflict and details his views on the minimum structure required. This author's view is that the minimum structure required is three brigades optimized for stability operations and low intensity conflict that can rotate through the cycles of ATOF, with a core warfighting capability of direct fire and indirect fire units that train with each brigade as they pass through CMTC and can add elements or their whole to missions that require them. Major L.R. Mader, "Shifting Paradigms: Be Careful of the Grails You Consider Holy (Some Thoughts on the Army's Future Force Structure)," The Army Doctrine And Training Bulletin, Vol. 6, No. 2, Summer 2003.
28. Canada, Department of National Defence, Land Force Command, 3000-8 (DLSP) dated 12 August 2002—STAFF PLANNING DIRECTIVE (SPD) 012/02 DESIGNING THE ARMY OF TOMORROW.
29. Canada, The Interim Army: A Force Employment Discussion Paper, p. 14.
30. Ibid, p. 1.
31. Inid, p. 2.
32. Colonel M.D. Kampman, Director of Land Strategic Planning, "The Face of Change: Implementing Army Transformation," Powerpoint Presentation to 1 CMBG, 10 December 2003.
33. Lieutenant-General Rick Hillier, Chief of Land Staff, "Keynote Address," Presentation to the Canadian Infantry Association, Vancouver, 13 June 2003.
34. Colonel Kampman, "The Face of Change."
35. Ibid.
36. The following quotes by General Leahy in the Australian press detail the reasons for the Australian tank purchase and raise more significant questions about the MGS:
General Leahy said tanks were essential to "harden" the army as part of its transition to a more mobile, flexible force. Iraq and other recent conflicts had shown that tanks were essential to protect troops.

He also said “It would be irresponsible to the point of immorality to risk the lives of Australian soldiers by exposing them to this threat in the complex and ambiguous environment which will now prevail on the battlefield without adequate protection.”
Over the next decade, Australia's military was more likely to face Iraqi-style insurgent opponents than a conventional army, General Leahy said. “The most efficient and safest way to enhance our combat weight and protect our soldiers is through the replacement of the ageing Leopard tank by a more robust main battle tank which will rebalance the combined arms team.”
Mark Forbes, “Army set to get 60'big,ugly tanks',” The Age, 10 February, 2004. Available from: http://www.theage.com.au/articles/2004/02/10/1076388365763.html.
Author's comment based on emails with Majors Drebot, Senft, and others: Canada uses the same terms (“more mobile, flexible force”) to justify the purchase of LAV-type vehicles and specifically preclude the purchase of tanks and other 'heavier' vehicles; however, we have the same problem with deployability as the Australians. So who is right? It appears Canada has placed 'political deployability' as the paramount characteristic of our vehicle procurement, while the Australians have gone with 'adequate protection' for their soldiers. The paradox of the MGS is that if it is employed in a situation that requires a 105mm solution, it will likely require better protection than is currently available for it. One thing is clear from recent experiences in Afghanistan, the Canadian public is concerned about the safety of its soldiers and wants them well protected. Our troops have experienced a suicide bomber attack already. All it will take is one RPG attack that destroys a fully loaded LAV infantry section carrier and the question of LAV survivability (and the whole concept of a LAV-based Army) will become very public indeed.
37. “Digital Army No Silver Bullet, Cautions Chief,” National Defense, December 1996, p. 34.
38. Colonel M.D. Kampman, Director of Land Strategic Planning, “The Face of Change: Implementing Army Transformation,” Powerpoint Presentation to 1 CMBG, 10 December 2003.
39. Boltan, “Keynote Address.”
40. BLOS ammunition is being developed for tank guns that would allow a forward observer to designate a target to be engaged. A Common (modular) Missile is being developed that will replace both TOW and Hellfire.
41. For a photo and description of technology that could be incorporated into the Canadian FIFC see United Defense, “United Defense Successfully Fires First Round from Non-Line of Sight Cannon Demonstrator,” press release 8 September 2003. Available from: http://www.unitedddefense.com. FCS NetFires technology and ammunition such as the Precision Attack Missile and Loiter Attack Missile would be ideal for incorporation into the MMEV. More is available from: http://missilesandfirecontrol.com/our_products/firesupport/NETFIRES/product-NETFIRES.html.
42. Created by author by modifying Colonel Kampman's “Face of Change” slides.
43. Video of US Army experiments with LAV weapons pods was shown at the Combat Development Board meeting held on 14 May 2002 in Ottawa. This video is available in the CD Board online archives at: http://cls0013i.ottawa-hull.mil.ca/Common/BigDoc.asp?SIZE=99394&URL+HTTP://CLS0013I.OTTAWA-HULL.MIL.CA/CLS/143000440000391/FUTURE_COMBAT_DEMO.MPG.
44. Remark attributed to Lieutenant-Colonel Cade, Commanding Officer LdSH(RC), February 2003.
45. Canada, Department of National Defence, Land Force Command, Directorate of Land Force Readiness (DLFR), “Mobilization Sp Data for ATWG Mar 02.” Powerpoint Presentation to Army Transformation Working Group 22 Mar 02. Available from: http://armyonline.army.mil.ca/CLS/D21482.asp.
46. Lieutenant-General Hillier, “Keynote Address.”

"THE COME AS YOU WANT" WAR[1] SOME THOUGHTS ON FORCE STRUCTURING IN THE ERA OF DISCRETIONARY CONFLICT

Major L.R. Mader, CD

INTRODUCTION

In a recent message to all ranks of the Army, the Chief of the Land Staff (CLS), LGen Hillier, spoke about the Army Transformation process.[2] Among his comments, CLS stated that "[t]he transformed Land Force will be credible with our friends and allies and capable of being overwhelmingly successful, no matter the mission given it, while reducing the risk to those soldiers actually executing the operation."[3] Such a vision for the transformed Army is a very ambitious one. Canada's soldiers will all have to work hard in their respective duties to be able to achieve it. It is my concern that some of the things that need to be done are not being discussed or addressed properly. In this article I will be discussing some of my concerns and making suggestions about ways to ameliorate them.

BACKGROUND

The weaknesses of the Army's Leopard C2 tank in modern conflict situations are self-evident and well documented.[4] These include:

♦ a 105 mm cannon that cannot penetrate the armour of modern main battle tanks, except in the flank and rear, at other than suicidal ranges;

♦ armour protection, even with its add-on armour pack, that will not stand up to the fire of any good tank gun or chemical energy (HEAT) anti-tank round;

♦ a relatively low maximum road speed of 65 kph,[5] which hampers its operational mobility; and

♦ advancing age that will make its maintenance harder and more costly and availability more uncertain.

In addition to these irrefutable weaknesses, the Leopard C2 tank has also been noted for having the following (more subjective) flaws[6] :

♦ **It is called a tank**. This name, and the underlying vision it brings to mind, provokes a significantly negative and nearly unthinking reaction in some parts of the Army and the Canadian public.

♦ **It is tracked**. This mode of moving over the ground has become of such concern in Canada that any discussion of the merits of tracks and wheels takes on a near-theological tone. Some people on each side of the debate are convinced that they are following the "only true faith" and that those who show any inclination to the other view are "heretics" whose beliefs are unworthy of any consideration.

♦ **It is large and heavy**. This makes it nearly impossible to deploy rapidly by aircraft. Such a deployment capability is seen by some as essential for all of the Army's equipment. This enthusiasm endures even though the weakness of such an argument has been highlighted most

cogently by Major Hammond, in an earlier edition of *The Army Doctrine and Training Bulletin* (ADTB),[7] and others.[8] Further reason to question the primacy of such a capability imperative for all army equipment is raised by Australia's decision to purchase modern main battle tanks to replace the Australian army's Leopard 1s.[9] If Australia, which shares a similar history and strategic situation as ours, is going in exactly the opposite way to us, we should wonder who has their strategy correct.

♦ It represents earlier technology and an outmoded way of war that do not fit in with the Revolution in Military Affairs (RMA) and post-industrial age warfare.

The first four weaknesses alone, and our long-standing belief in the importance of military forces operating as a combined arms team, would lead one to conclude that our Leopards need to be replaced. The emphasis placed by the Army in its writings over the past ten+ years on new technology and RMA would further lead one to assume that the replacement for the Leopard would need to be a very capable system. In fact, *The Army Strategy* clearly indicates that such a system should be the product of an army "… that target(s) leading-edge doctrine and technologies relevant to the battlespace of the 21st century"[10] in order "… to be more agile and lethal."[11]

The purchase of a Leopard C2 replacement would have been relatively straightforward under the Army's two-tier equipping strategy of the early 1990s. This strategy foresaw the Cougar direct fire support vehicle (DFSV) being replaced in due course by a wheeled 105 mm-armed armoured combat vehicle (ACV) for operations other than war (OOTW) missions,[12] while a capable tank would be retained for more dangerous warfighting-type missions. Beyond the tanks and ACVs, the strategy called for various other differences between the OOTW and warfighting equipment suites—one such area being the use of lighter or heavier howitzers depending on the level of risk our troops might encounter. Following this strategy, we could choose from one of the very capable tank designs used by our allies to find a replacement for the Leopard C2. It is even possible that some of our allies would give us used modern tanks at "bargain basement" prices.

The two-tier equipping strategy could even be pursued, in a modified form, if we felt that in due course the RMA would make current tank designs obsolete. Such an approach would be a conservative, interim measure that enhanced the survivability of our soldiers in high-risk missions while we waited for RMA technologies to attain some of the promise postulated by their advocates. Two ways of implementing such an interim solution are:

♦ Procuring a limited number (perhaps 20-30) of used modern tanks from Germany or the USA. These vehicles would allow us to send a tank squadron overseas with a tactically self-sufficient unit (TSSU).

♦ Developing a creative arrangement with the USA that would allow us to train on M1A1 tanks in peacetime with a degree of assurance that the USA would loan/rent us a similar number of these tanks in an emergency. Such an arrangement would have to include provisions for the transport of such vehicles to a theatre of operations.

These two ways of implementing such an interim solution notwithstanding, the Army has resolutely rejected the idea of owning tanks, except perhaps for retaining the Leopard C2s as a residual capability, since 1996.[13] The type of army sought under the new vision has been described using various terms such as "primarily wheeled,"[14] "medium-weight, information-age"[15] and "not a niche force." During an appearance before a parliamentary committee over a year ago, the then-CLS, LGen Jeffery, described the type of very technologically advanced and

capable (full spectrum of conflict) DFSV that he thought would replace the Leopard C2 in some 20 years.[16] This vehicle would combine the shock action and firepower of a modern M1A1-like tank in a chassis about the weight of the LAV III armoured personnel carrier (APC) by, among other things, using defensive aides suites (DAS) to replace traditional and heavy passive armour. Such a vehicle, even if fielded in a version that was technologically and financially achievable, would greatly increase the deployability of the Army while at least maintaining its current combat capability and providing a key system that could help keep its soldiers alive.

The recent announcement of the planned purchase of 66 Stryker mobile gun systems (MGS) to replace the Leopard C2 means, however, that we will not be able to send either a modern tank or the very capable DFSV envisioned by LGen Jeffery on high-risk missions. The Stryker MGS is wheeled and lighter than the Leopard C2 and has a higher maximum road speed. However, in comparison to the Leopard C2, it is weaker in key areas (firepower and protection) that are critical to combat missions.[17] Additionally, the ease of its strategic deployment and sustainment by air are not certain.[18] The army leadership has, in fact, publicly recognized that the Stryker MGS is optimized for peace support operations [9] and that its key performance benefit is the fact that we can deploy it to mission areas.[20]

In effect, the Stryker MGS is the ACV foreseen by the two-tier equipping strategy rather than the full-spectrum DFSV described by LGen Jeffery. While it should meet the Army's needs for many of the missions that we are routinely called upon to carry out, for the more dangerous missions, it will be of limited utility.[21] This raises the likelihood that the Army will no longer be able to field effective mechanized combined arms teams except against very weak enemies. This has been recognized by the Army, which stated, in discussing a possible purchase of the Stryker MGS, that "… where there are (enemy) tanks, our good friends to the south will be there with their tanks."[22]

Thus, other than providing a DFSV whose overseas deployment will be acceptable from a purely "optics" viewpoint, the purchase of the Stryker MGS will not represent a step forward in our overall armoured fighting vehicle (AFV) capability, unless its limitations are dealt with by other means. This will make it harder to implement the CF Concept of Operations that "advocates multi-purpose forces with combat capability … (and) promotes self-sufficient tactical units/formations as 'task-tailored packages.'"[23] This purchase also raises doubts as to our commitment to The Army Strategy.

Most seriously, in some ways, is the fact that the cost of the Stryker MGS purchase will probably prevent the Army from purchasing a full-spectrum DFSV, such as described by LGen Jeffery, for at least a generation after it has entered Canadian service. We will end up with an interim, low-performance OOTW ACV at the cost of delaying a longer-term, full-spectrum capability. The cost of the Stryker MGS purchase and the CF's other equipment needs will likely make it inappropriate for DND to propose replacing the Stryker MGS until:

- the vehicle's age justifies its disposal; or
- some relevant Canadian event, as shocking to the "normal order of things" as the 11 September attacks on the USA or the Somalia Affair, forces such a reassessment of needs and priorities.

Faced with the Stryker MGS' limitations, the Army has tried to address the implications of fielding it with a Directorate of Army Doctrine (DAD)-produced draft force employment concept for the interim army.[24] This concept paper goes beyond the simple question of the

Stryker MGS to discuss many of the issues involved in the employment of the Army's interim structure. This essay will not discuss what I consider to be some very optimistic concepts and assumptions found in the force employment paper. The case for valid, coherent doctrine to drive our equipping and training programmes to provide flexible and capable forces has been made elsewhere[25] and will not be repeated here. Instead, this paper will look at the type of force we should be able to deploy as part of a TSSU, no matter what the mission given, where we have the Stryker MGS as our DFSV.

World in Which Canada is Likely to Deploy Forces

Looking at the forces that Canada has deployed overseas since 1991,[26] it seems clear that any contingents we contribute to future missions will be designed using a task tailoring (ad hoc) approach that employs mainly company-sized elements as the basic building blocks. The force of existing commitments[27] and the unlikelihood that the Army will become significantly larger means that Canada will probably continue to send, at most, battalion group-sized (800-2,000 personnel) contingents to crisis situations. Only an international crisis that involved a clear threat to vital Canadian interests would realistically call up a larger effort. In most, or all, cases the contingents we will send will be part of a coalition force from a number of currently unidentified countries.

The places to which these contingents may be sent will most probably be states that are suffering from internal strife and/or which are seen to offer a potential refuge for al Qaeda. Deploying against the forces of a sovereign state, as in the Kosovo War of 1999, or between the forces of two sovereign states, as in the Former Yugoslavia (1992-1995) and Eritrea (2000-2001), cannot, however, be discounted. In fact, such discounting would go against the CF's own force structure focus, as enunciated by the Directorate of Defence Analysis (DDA).[28] Furthermore, Canada's lack of super/major power status and colonizing past may make CF participation attractive for some missions between hostile states where the permanent members of the UN Security Council hesitate to get involved for reasons relating to their super/major power status or history.[29] Deployment on such missions, including one against *al Qaeda*, will probably be seen as discretionary by the Canadian government as no immediately visible, vital Canadian interests will likely be at risk. Thus, participation in any single crisis resolution force is uncertain. For those missions to which the government chooses to send forces, the emphasis will probably be on the following:

♦ Carrying out our duty in support of internationally credible mandates (probably from the UN) to reduce the suffering of the civilian populations in an area and to make the world safer.

♦ Being seen to participate. The nature of the chaotic situations to which we are likely to be sent may defy easy or early resolution. Thus, the accomplishment of the mission may not be of primary importance, as the mission may not be seen to be accomplishable in less than a decade or two.

♦ Suffering the minimum casualties absolutely possible in order to maintain Canadian public support for the mission. This imperative may become the most important consideration after being seen to do something.

The threat to the deployed Canadian forces is more likely to be from guerrilla/terrorist attacks than from large conventional forces. This is particularly true in any mission that has an *al Qaeda* aspect to it. Looking back, though, only eight years to 1995, one cannot discount the possibility that Canadians will be caught between conventional forces (the Krajina in 1995) or ordered to

defend an enclave against the threat of attacks on defenceless individuals (the Dutch at Srebrenica in 1995). Regardless of the threat, our recent experiences, from the advance on Sarajevo in June/July 1992 through to the current operations in Afghanistan, convince me that our forces will be more effective and safer if they have, and are clearly seen to have, a very strong capability to hurt their (potential) adversaries. The ability to undertake effective combat operations has a deterrence value all of its own.[30]

Our contingents are very likely to find themselves in urban settings, where the flashpoints of many crises are found and/or where a significant population mass exists as a "prize" for one or several of the opposing forces in a conflict. Such population centres cannot, however, survive without resources from, or passing through, their hinterlands unless they are enclaves that are completely, or mainly, cared for by an airlift by the intervening coalition. This means that our forces must be able to perform effectively in urban operations and in more traditional (rural terrain) operations.

In comparison to only a year ago, it is less certain that our contingent will benefit from the support of an overwhelming coalition force. The USA and UK have committed significant resources to winning the guerrilla war in Iraq and developing internationally acceptable national structures in that country. The USA also has a continuing division(-)-sized military commitment in Afghanistan.[31] These long-term missions mean that these countries will be less able and willing to "carry" a weak Canadian contingent in some future crisis. Once the Iraq situation is finally resolved, it is likely that the USA and UK will be hesitant to take on other international commitments; their populations will probably be drained by their extraordinary exertions since 11 September 2001. At the same time, one cannot be sure that countries such as Russia, China, Germany and France will want to contribute the necessary forces to make up for any shortfall in missions to which Canada contributes. This reduced availability of supporting forces means that we could have to face a conventional or semi-conventional threat with little or no outside support, as was our experience in the Balkans in the 1990s. Therefore, we have to be able to look first to our own strength to protect ourselves from both conventional and non-conventional threats in any mission where the USA and UK are not forced by their own vital interests to contribute.

Capabilities Deployed Forces Should Have

General

In the following paragraphs I would like to make the case for the types of integral capabilities required by Canadian contingents facing the range of situations discussed above. Clearly, not all of these forces will be required for every mission. However, all of them could be part of a TSSU and would certainly be needed in Canada to support the training of such units.

Where appropriate, I will be supporting my observations with concrete examples from our own experiences and those of our closest allies. In some cases, I will be using the results of work carried out by the Operational Research Division (ORD) in NDHQ, the Army Experimentation Centre (AEC) in Kingston, Ontario and the Defence Research and Development Canada (DRDC) laboratories. This analytical work complements and amplifies actual field experience. Some of the capabilities that I will be proposing already enjoy a general consensus as to their utility. The value of others is not so well recognized, and I will direct my comments more heavily towards them.

Readers might argue that the list of capabilities below includes items that are brigade and divisional assets. Such traditional thinking does not consider the implications of the changes that have occurred since the end of the Cold War. The deployment of unmanned air vehicles (UAVs) and counter-battery (CB) radars with a single battalion in Afghanistan in 2003 confirms what some have been saying for years: resources should be placed where they are needed and not be limited by an organization chart.

As will be discussed below, some of the possible equipment choices that the Army can make are not very appropriate for high-risk missions. By raising those choices, I will perhaps be seen as arguing against points that I have made in an earlier edition of the ADTB.32 This seeming contradiction does not mean that I reject my earlier comments. Rather, it reflects my belief that it will not be possible to obtain some of the equipment needed for such high-risk missions. The conflict between the capabilities required of equipment for OOTW and high-risk missions is one that the Army will have to face honestly and directly. One can only hope that either the right choices will be made or our soldiers will not be placed in harm's way in the future by circumstances that force us to do what we say we will never do.

Infantry

Any consideration of the types of missions that the Canadian Forces have carried out during the past 12 years since the irrefutable end of the Cold War highlights the frequency with which Canada has sent infantry-based contingents overseas. The nature of many OOTW missions places an emphasis on having "boots on the street" to provide security and observation and to win and keep the support of the local population. This fact and the need to be able to fight leads to the requirement for good quality infantry who are trained for OOTW but who are able to carry out combat operations at, as a minimum, the company level. The less hostile a mission area is, or becomes, the more it will be possible to use dismounted armour and artillery forces to replace the infantry. Whichever units are deployed must be able to defend themselves. They will also require the mental preparation and training needed to carry out such offensive operations as are within their capability.

These forces must be able to protect themselves from the likely immediate threats of long-range anti-vehicle fire, sniping, mines, booby traps and roadside bombs and indirect fire. Infantry units do not usually have integral to them all of the capabilities needed to meet these threats. Thus, the infantry sub-units will have to be supported by specialist elements to a greater or lesser degree depending on the specifics of each mission. The basic infantry skills, Coyotes, LAV IIIs, and tube-launched, optically-tracked, wire-guided (TOW) under armour (TUA) and Eryx anti-tank guided missile (ATGM) launchers of the Canadian battalions will, however, provide some protection against small arms and anti-APC weapons fire. They will also have a dissuasive effect on many hostile elements that are out-gunned by the above combination. Such dissuasion would be enhanced if we provide our infantry units with a 4 km range man-portable anti-tank weapon, like the Israeli Spike, and a capable 40 mm automatic grenade launcher to complement existing equipment.[33]

While they are among the best vehicles we have ever owned of their types, our current light AFVs carry only limited armour and are vulnerable to the fire of most anti-armour weapons. They will require more passive armour and/or a DAS able to defeat kinetic energy rounds and short-range anti-tank rockets. Furthermore, the LAV III has no anti-tank capability, and the TOW missile is out-ranged by the weapons carried by many readily available tanks. Additionally, the TOW cannot maintain the rate of fire needed to deal with tank guns and APC cannons at

shorter ranges.[34] One option for addressing these weaknesses would be to provide the LAV III with add-on ATGMs. Some initial work done by DRDC-Valcartier indicates that providing this vehicle with a high-energy missile (HEMi) could greatly increase the losses suffered by a vehicle-mounted adversary.[35] Such a potential to inflict losses should indirectly offer increased protection and survivability to Canadian units and an improved dissuasive capability to units deployed on a mission where deterrence is still possible.

Direct Fire Support Vehicle

Even HEMi-armed LAV IIIs would not be able to deal with all situations. They would likely be at a disadvantage in short-range, no-notice battle situations such as ambushes if their targets were resistant to 25 mm cannon fire. Furthermore, their use in long-range firefights would needlessly increase the risk to their passengers. In both circumstances, a large calibre cannon on a well-protected DFSV offers rapid, accurate, fire-and-forget firepower that allows an appropriate, immediate and sustained reaction to hostile elements. The draft DAD force employment paper talks about four vehicles providing direct fire: the LAV III, a wheeled ADATS (the "Multi-Mission Effects Vehicle"), a TUA on a wheeled chassis and the Stryker MGS.[36] The problems of the LAV III and TOW missile have already been discussed. The ADATS is a very capable and long-range weapon. However, a wheeled ADATS carrier will likely carry relatively few missiles and would have problems with the type of short-range ambush/engagement described above. This then means that we will really only have the Stryker MGS as a DFSV to respond to such situations.

If we insist on sending the Stryker MGS into harm's way, we must improve its survivability by providing it with a DAS and/or additional passive armour. Providing it also with a 105 mm through-the-barrel-missile (TBM) would significantly increase its lethality and, by extension, its survivability.[37] These two changes, if technically feasible on a Stryker MGS, would give the Army some of the capability foreseen by LGen Jeffery in his SCONDVA comments. They should also reduce the tactical problems caused by having to use two or three relatively-narrow-capability AFV types to provide direct fire support.

ISTAR Support

General. A fundamental tenet of the DAD-foreseen Canadian way of war is that "…information will be dominant. Digitization and automation, in connection with information superiority will be critical factors in success."[38] The efforts undertaken to procure and deploy CB radars and UAVs to Afghanistan indicate that DND is serious about improving our deployed forces' ability to find an adversary early.[39] A Canadian intelligence, surveillance, target acquisition and reconnaissance (ISTAR) system could employ the following information sources: allied or coalition forces, ground forces, ground recce forces, airborne systems and systems that make use of signatures given off by the enemy. The allied and coalition forces' ISTAR contribution to any mission is currently unknown. Thus, I will not spend any more time discussing it, except to mention that such uncertainty, in an area that we consider crucial, means that we have to be able to provide a robust capability of our own.

Ground Forces. The infantry and armoured forces deployed to carry out a mission can provide significant amounts of information about what is occurring near and to them on an hourly basis. This is one of the reasons that OOTW missions require many "boots on the ground" to observe and learn about the daily events occurring around the Canadian contingent. However, since these forces have a security/enforcement mission as well, they need to be supported by specialized ISTAR elements.

Recce Forces. Even in an era of UAVs, satellites and aircraft with high performance sensor suites, there is still a need for recce forces on the ground to investigate contacts and observe activities that are undetectable or unrecognizable by other ISTAR systems. Operational research[40] and the documented experience of the Royal Canadian Dragoons (RCD) Recce Squadron[41] have provided some valuable insights into the required shape of recce units. The Coyote is a capable but relatively expensive recce and surveillance platform. It would benefit from various improvements, particularly with respect to the time required to put its mast-mounted surveillance suite into and out of action.[42] The cost of the Coyote and the unlikelihood of obtaining more of them mean that recce units will never have enough of them to do all that needs to be done. They need to be supported by specialized counter-recce vehicles and low-signature scout cars.[43] Depending on its specific capabilities, the counter-recce vehicle could also play a useful role in most OOTW missions.[44] The scout cars can also make a valuable contribution in an OOTW mission but must be more than simply an Iltis-like vehicle. In combat operations and any but the most benign OOTW tasks, the scout cars must offer some armour protection and be equipped with weapons that can destroy light and heavy armoured vehicles.[45] The use of unmanned ground vehicles (UGVs) might be a way to meet some, or all, of the scout car requirement.

Airborne Surveillance Systems. The decision to procure UAVs for the battalion group in Kabul implements (perhaps unknowingly) lessons learned during three ORD operational research studies and an experiment carried out by the AEC. In these studies/experiments, UAVs were found to have made at least some contribution to the ISTAR picture without Canadians risking their lives or they were recommended as being a useful addition to the force being examined.[46] In one study, the UAVs had over a 50% mission success rate in determining the location and/or route of an enemy main body of battalion(-) size.[47] Due to their circumscribed fields of view, remoteness from supported ground troops and sensor and operational limitations, UAVs cannot, however, meet all the airborne surveillance requirements. Analysis by the ORD and AEC has shown that helicopters equipped with high performance sensors like the ERSTA can make a valuable contribution to a supported ground force's accomplishment of its mission.[48]

Sensors that Target Enemy-Generated Signatures. The above ISTAR systems all depend solely on us finding our opponent's forces and activities. Some sensors use the enemy's own activities to find his forces. The two obvious examples of these sensors are electronic warfare and counter-battery target acquisition (CBTA) (CB radars, sound ranging and flash spotting) systems. These sensors not only provide information about an enemy but can also make that enemy think twice about making use of any capability that can be detected. This hesitancy can provide unquantifiable benefits to us by causing the enemy not to employ all of his resources. Electronic warfare is the stuff of many a novel and movie and thus there should not be any need to prove its utility. CBTA is less well documented but extremely capable. It not only provides information on the enemy's indirect fire systems but, when linked to a means of retaliating, permits us to destroy those weapons or cause them to expend time and effort carrying out survivability moves.[49] Such enemy-prompted sensor systems cannot be used against all enemies. An adversary who is not generating the proper signatures will never be bothered by electronic warfare or CBTA. Furthermore, enemy flaws may reduce the benefits obtained from electronic warfare.[50]

Command and Control

Having a capable ISTAR system is of little use to a comparatively lightly equipped force like ours if we cannot collate and disseminate the acquired intelligence quickly. Therefore, our forces require a very capable command and control system to guide their efforts. Having emphasized information dominance, we need to be able to pass information and orders promptly to our affected forces. Otherwise, our limited capability forces will not be able to get where they are required in time to avoid a running battle—a battle we cannot risk as our scant armour and weak firepower mean that we cannot manoeuvre safely in the presence of a capable enemy.[51]

Indirect Fire Support

The indirect fire provided by field artillery and mortars has been an integral part of the Canadian combined arms team since at least World War I. During the Korean War, indirect fire superiority helped a relatively small UN front-line force face larger numbers of Chinese and North Korean soldiers. Canadian defensive battles in that war frequently involved one or two companies of infantry, supported by indirect fire, fighting off major enemy attacks.[52] The Main Contingency Force (MCF) study conducted by the ORD in 2001 and 2002 reconfirmed the importance of indirect fire. The improved M109 howitzer used in the study was the most effective and lethal system available to the MCF commander.[53]

The MCF study used a warfighting scenario that might not seem pertinent to the "modern Canadian defence reality." However, the basic tactical situations in which Canadian troops found themselves in that study are still directly relevant to smaller missions where we cannot depend on the USA and UK to make up for our shortcomings. Further, changing world situations, different governments and new foes can easily create unforeseen circumstances.[54] On 10 September 2001, there were not very many people seriously predicting the two US-led wars that have occurred since the events of the next day. For those who still remain sceptical, the deployment of Canadian howitzers to Bosnia and Afghanistan highlights the value of being able to deploy systems overseas that allow us to "send projectiles rather than bodies." Much of the value of having an ISTAR system to tell you what an adversary is doing is lost if you cannot respond easily, effectively and promptly to the information obtained.

In addition to the MCF study, at least four other recent ORD studies[55] provide us with valuable insights into the shape of the indirect fire system that we require. From them and an analysis of the current world situation, it can be seen that our deployed indirect fire systems need high lethality, long range, a high rate of fire, the ability to use "shoot and scoot" tactics, easy strategic deployability and operational flexibility. The need to avoid casualties among the nearby civilian population means that our fire, in at least OOTW missions, has to be "surgical" as well as lethal. This argues for the positive control offered by laser-guided munitions.

The experience of fighter-bombers having to bring back laser-guided bombs during the Kosovo War due to obscuration over the target area confirms that even laser-guided munitions have their limitations. They require an observer able to see and designate the target in a timely fashion and within the constraints of an exacting geometry between the observer, the target and the launcher. However, the success of these weapons in the 1999 war (aircraft launched) and the results of an ORD study and an AEC experiment (both using ground system-fired rounds) highlight how effective they can be.[56]

The need to fire laser-guided munitions will probably push us to employ 120 mm mortars and/or 155 mm howitzers, as these calibres are already supported by the necessary ammunition.[57]

Operational research[58] indicates that a self-propelled 120 mm mortar should be able to offer much of the required performance. Such a system would, however, suffer from a comparatively short range (its range with HE ammunition is roughly equal to that of the obsolete L5 105 mm pack howitzer).[59] Buying such a system as our only close-support indirect fire system, as has been proposed by some,[60] would reduce our tactical capability. This lost capability would likely reduce our flexibility in OOTW missions where our contingent has a large area of operations and endanger Canadian lives in higher-risk missions through the loss of massed protective covering fire. Therefore, the decision to replace our current 155 mm howitzers with self-propelled mortars would be a watershed event that indicated we were building an army for OOTW missions rather than one that could operate in more exacting situations. It would be further confirmation of how far the Army has moved away from the two-tier equipping strategy.

Whatever indirect fire system we choose to retain must be capable of supporting the training of very proficient forward observers. Even if we do not send our own indirect fire launchers to a particular mission, we will want Canadian observers working closely with our contingent who are able to call in and co-ordinate friendly indirect fire support. We must also provide our contingent with a large number of laser target designator equipped observers in order to benefit by the strengths of laser-guided ammunition and overcome the difficulties of guiding such munitions.[61]

Air and Aviation Support

General. The provision of air support to ground contingents is not an army responsibility. However, one cannot discuss the deployment of forces to hostile areas without considering the joint aspects of the mission's accomplishment. Thus, I will say a few words about such support over and above my earlier comments about the use of helicopters as ISTAR systems.

Fighter-Bomber Support. The experience of the 1st and 2nd Gulf Wars, the 1995 humbling of the Bosnian Serbs, the 1999 Kosovo War and the overthrow of the Taliban all highlight the power of modern air forces. All of these conflicts also highlighted the limitations of airpower. In no case was it able to win a war by itself.[62] This experience is consistent with the contribution of fighter-bombers in a recent operational research study.[63] It is not certain that we will deploy CF-18s to support Canadian ground contingents. If we do not, we will still want to be sure that we can send well-trained forward air controllers (FACs) able to call in and co-ordinate coalition/allied air support. It would be helpful if these FACs were also trained as indirect fire forward observers, as this would increase tactical flexibility.

Armed Helicopters. Depending on the size of our contingent's area of responsibility and the nature of the mission, there are real benefits to having access to armed, preferably attack, helicopters. Such systems offer a rapidly deployable force/reserve that combines high lethality, rapid movement (in non-hostile skies) and a valuable ability to overwatch an area. A recent AEC experiment also found that armed helicopters sped up the rate of advance of recce forces and allowed them to withdraw more slowly.[64] Thus, it would be useful to be able to deploy armed or attack helicopters to missions with large areas of operations. If we are not able to procure such helicopters, we should at least be able to send air liaison staff who can co-ordinate the employment of such helicopters with our forces. At the same time, we must be cognizant of the fact that armed helicopters have their own operational and support limitations. The non-use of US Army Apaches during the Kosovo War and their problems during the 2nd Gulf War highlight some of these weaknesses.[65]

Engineer Support

The frequent deployment of contingents over the past 12 years to ravaged parts of the world has made heavy demands on Canada's field engineers. They have been called upon to provide a broad range of services from general engineer support to mobility maintenance to explosives education and disposal. It seems very unlikely that future missions will be able to forego this support.

Engineers have an essential role to play in force protection. It is they who will probably have to deal with the mines, booby traps and roadside bombs mentioned earlier as being threats to deployed Canadian soldiers. Our tragic experiences in the former Yugoslavia and Afghanistan leave us in no doubt that our soldiers can be killed and injured by mines, either leftovers from earlier conflicts or freshly placed to attack our personnel and will. The engineers' explosive/mine warfare work includes both route and area surveys and marking and removing explosive devices whose presence infringes on our operations or safety. This type of operation can be very demanding on the engineers involved. This leads to the need for a sizeable engineer element to cover all the tasks requiring timely attention while allowing the sappers doing the most dangerous and demanding tasks, such as mine recce and removal, to be rotated often to stay fresh and alert. The force protection task also includes assistance in the digging of protective works such as bunkers, trenches and ditches.

The requirement to carry out mobility and counter-mobility tasks is not only physically demanding but also fraught with danger if an adversary objects to what the engineers are doing or simply wants to create casualties. Common sense and a recent operational research study tell us that static, unprotected personnel working on an engineer task are very vulnerable to an enemy armed with no more than small arms and mortars firing basic HE ammunition.[66] These risks raise a fundamental concern about how to protect engineers while they are working as part of a force that has to be wheeled and airtransportable. The provision of engineer support to the field force is a third area where the Army faces a decision as to the type of operation, OOTW or high-risk, for which it is preparing.

Air Defence

The deployment of the wheeled ADATS carriers mentioned above should meet our probable air defence needs.[67]

Logistics and Medical

The requirement for adequate support services for our contingents has been recognized for many years. I do not intend to discuss it further other than to make the point that the amount of resources and fuel/energy that can be procured in ravaged countries will likely be inadequate. A dependence on air resupply only can leave us exposed to any cutting of our lifeline.

Non-Traditional Support

CIMIC. The need to win local support for the efforts of our forces means that capable civil-military (CIMIC) affairs staff will be important to our success. These personnel should be specifically trained for their duties.

Psychological Operations (PsyOps). The efforts of our contingent and its CIMIC staff will at times require the support of PsyOps personnel who are able to shape the local perceptions of our efforts. These staff will also be important to counteract any propaganda put out by

elements hostile to our work. Our PsyOps personnel will have to be skilful in their duties. One has only to look at the Somalia affair to see how badly things can go when the communication of a message to the public is seen as not credible.[68] Once our spokespersons are seen as inept, ill-informed or deceitful, we will have a very hard time winning and retaining the trust and support of the population living near our contingent.

Special Operations Forces. What little that has become known in the open literature highlights the potential benefits of deploying Special Forces elements with a larger, more conventional contingent. Such forces' stealthy operations and high quality can provide increased capabilities to our contingent out of all proportion to the number of Special Forces soldiers deployed. The presence of such elements can also open up new sources of information to our contingent headquarters.

Nuclear, Biological and Chemical (NBC) Defence. The ability to deploy an NBC defence capability with our contingents should meet our protection requirements. It will also have a dissuasive effect on those who might wish to use weapons of mass destruction against them. This capability would require recce, surveillance and decontamination components.

CONCLUSION

Recent CLS comments have set a very high standard for the Army to meet in terms of operational capability. Even prior to these comments, the Army had officially espoused a high technology approach to shaping its future force structure. This concept replaced the earlier two-tier equipping strategy that foresaw different key equipments being used to cover the full spectrum of mission risks.

The recently announced decision to purchase the Stryker MGS to replace the Leopard C2 tank appears to indicate that we will actually be taking a lower technology approach to providing new equipment to our soldiers. The Stryker MGS represents one part of the two-tier strategy; it should be able to meet most of the tasks foreseen for an OOTW ACV. However, its purchase to replace the Leopard C2 means that we will likely not be fielding either modern tanks or a full-spectrum DFSV suitable for high-risk missions for at least a generation after it enters service.

Thus, for several or more decades, we will be contributing contingents to crisis management missions that will have the Stryker MGS as their DFSV. For low-risk missions this should not be a problem. However, we face three choices for dealing with high-risk missions.

In the first, we face up to the Stryker MGS' weaknesses directly and make international agreements to procure more capable DFSVs as required. These agreements could involve the peacetime purchase or lease of a small quantity of modern tanks or a pre-arranged, as-required deal with the USA to lease, deploy and use some M1A1 tanks. Either approach would require the Army to go back on its categorical rejection of the utility of Canada using tanks. A turnabout of this magnitude does not seem conceivable.

In the second choice, we develop the capabilities of our forces such that the effects of the Stryker MGS' current weaknesses are minimized. Required new capabilities include:

- Automatic grenade launchers and a 4 km dismounted ATGM for the infantry.

- Addressing the LAV III's self-defence, anti-tank firepower weakness, possibly by providing it with HEMi missiles. This particular solution would also allow the LAV III to defend itself at longer ranges.

- Providing the Stryker MGS with a DAS and through-the-barrel missile capability.
- A robust UAV and CBTA capability.
- Supporting the Coyote with stealthy scout cars and/or UGVs.
- Improving the Coyote's performance in areas such as the time into and out of action of its sensor suites.
- An airborne surveillance system with capabilities similar to those simulated for the ERSTA Griffon during various experiments and operational research studies.
- Improved indirect fire systems and sufficient laser target designator equipped forward observers to guide the fire of these systems and those belonging to our allies.
- Ensuring that we can support our contingent with Canadian or allied air support and armed helicopters.
- Capable, protected field engineer equipment.
- Robust non-traditional supporting forces (such as PsyOps, CIMIC, etc).

In the third choice, we hope or arrange for other countries to cover for our weaknesses. Given the uncertainties of coalition warfare, such an approach might end up as an abdication of Canada's fulfilment of its part of the reciprocal expectations that it has with its soldiers.[69]

Regardless of the type of mission to which they are deployed, our contingents' participation will probably be seen as discretionary by our government; no vital Canadian interests are likely to be at stake. This means that force protection will be among the most important considerations in designing any contingent, in order to maintain popular support for the deployment. This imperative may even be more important than actually accomplishing the mission. The threat to our contingents will likely come from conventional and/or guerrilla/terrorist forces participating in intra- or inter-state conflicts. These conflicts will require our troops to operate in both urban and non-urban settings.

Due to the commitment of our closest allies to the War on Terror, we will have to depend, more than had been recently expected, on our own resources to carry out our operations. Even though we are likely to deploy as part of a coalition force, we will have to maintain the basic capability to keep our forces effective and safe. This safety will come, in part, from our ability to undertake combat operations and the deterrence that such a capability provides.

This need for self-sufficiency means that the Army requires a full suite of capabilities for its TSSUs. These include all the elements of the combined arms team as well as a broad range of traditional and non-traditional support services. Our forces must be well equipped to compensate for their limited numbers and to reap the sought-after benefits of the RMA. Some of the required assets have been thought of in the past as being formation-level resources. Using them with battalion group-sized contingents will require flexibility of thought to avoid needed resources being excluded due to the dictates of out-dated organization charts.

Finally, the capabilities of our forces will be directly affected by the wish for them to be airtransportable. Many of the most capable systems available today are not transportable and/or sustainable by aircraft. Developing airtransportable forces in the near-term for our highly likely, lower risk missions will conflict with the provision of the equipment needed for more dangerous

missions. Three areas of conflict are the fielding of a non-upgraded Stryker MGS as our DFSV, the provision of adequate indirect fire support and the fielding of protected, capable field engineering support. Fundamental choices will have to be made for all three areas with the clear understanding of what the choices mean in terms of the capabilities gained or abandoned.

RECOMMENDATIONS

Given all of the above, this author recommends that the Army:

- provides our forces with the best equipment possible to allow them to survive a broad range of potentially hostile missions—Various suggestions for new or improved capabilities are found in this paper;
- realizes the limitations of whatever forces it builds;
- articulates clearly and honestly to ourselves, the government and Canadian population what our forces can and cannot do; and
- if the government calls on the Army to meet its "no matter the mission given it" objective by participating, in a meaningful way, in high-risk missions, advise that such missions require a funded version of the two-tier equipping strategy in the interim or firm commitments from our allies to compensate for our weaknesses and reduce the risk to our soldiers.

About the Author...

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ENDNOTES

1. During the Cold War, a common expression used to describe NATO's preparations in West Germany was that the next battle would be a "come-as-you-are" war-there would be no time to deploy forces from elsewhere to stop the advancing Warsaw Pact forces. Thus, forces deployed in Europe had to be ready in all respects to fight at a moment's notice. This article comments on force structuring and development in a different era-one of discretionary military operations where some countries send what they want rather than necessarily what is required.
2. See the four page insert, A Message from the Commander—Army Transformation Punching Above Our Weight (hereafter Punching Above Our Weight), enclosed with the Canadian Forces' newspaper, Maple Leaf Vol 6, No. 42 (12 Nov 03).
3. See Punching Above Our Weight, pg. 1.
4. See the author's articles in The Army Doctrine and Training Bulletin, "Light Punching: The Case for an Improved 105 mm Tank Round" (hereafter "Light Punching"), Vol 4, No. 4 (Winter 2001-2002) and "Manoeuvrist Operations: Some Thoughts on Whether We Have Got it Right" (hereafter "Manoeuvrist Operations"), Vol 3, No. 4 / Vol 4, No. 1 (Winter 2000/Spring 2001), and ORD reports—M.K. Ormrod, P.R.S. Bender and Maj J.J.L.C. Noël de Tilly, PR 9817 QUARRÉ de FER: Analysis of the ACV in Warfighting Tasks, hereafter the QUARRÉ de FER report (Ottawa: Department of National Defence 1998); M.K. Ormrod, P.R.S. Bender and Maj D.T. Davison, PR 9905 IRON RENAISSANCE: Evaluation of the LAV III Combat Team in Conventional War Operations, hereafter the IRON RENAISSANCE report (Ottawa: Department of National Defence, 1999); Maj L.R. Mader, P.S. Ladouceur and P. Bender, PR 0002 BRONZE SHIELD: Evaluation of the Threat From Volumetric Munitions in a Combined Arms Battle (U) (Ottawa: Department of National Defence, 2000) (SECRET AUSCANUKUS); Maj J. De Carufel, M.K. Ormrod and P.R.S. Bender, PR 2001/06 IRON UNGUIS: An Examination of Proposed Anti-armour Weapon Options for the Infantry, hereafter the IRON UNGUIS report (Ottawa: Department of National Defence, 2001), and Maj J.A. Summerfield and M.K. Ormrod, R 2003/01 Main Contingency Force Brigade Group Combat Capabilities Study (BRONZE ZIZKA), hereafter the BRONZE ZIZKA report (Ottawa: Department of National Defence, 2003).
5. See the entry on the Leopard 1 in Jane's on the Defence Intranet (DIN) as at 10 Sep 03.
6. This listing is a personal summary based on the comments heard in NDHQ and made in, alluded to, or apparently underlying, ADTB submissions such as the following: Guest Editorial: "You Tell Me—What is Our Centre of Gravity?" Vol 2, No. 4 (Winter 1999), by Col M.G. Macdonald; "A Proportion of Their Cavalry Might Be Converted-Light Armoured Force Development in Canada's Army,

1952—1976," Vol 2, No. 4 (Winter 1999), by Sean M. Maloney; "Tank: The Canadian Army's Four-Letter Word" (hereafter "Four-Letter Word"), Vol 4, No. 4 (Winter 2001), by Maj Lee J. Hammond; "The Corporals' Report," Vol 5, No. 3 (Fall 2002), by Cpl W.C. Gomm and Cpl R.K. Moran; "Leopards in Kosovo—The Solution for an Armoured Combat Vehicle?" Vol 3, No. 1 (Spring 2000), by Capt Don Senft and the following letters to the Stand-up Table: "How Far Can You Throw a Black Beret?" Vol 5, No. 1 (Spring 2002), by Capt Steve Giberson and Untitled, by 2Lt Wade Peters, Vol 5, No. 1 (Spring 2002). The commentary by Martin Shadwick, "The Tank and Asymmetric Choices," Canadian Military Journal Vol 4, No. 1 (2003) also alludes to these sentiments.

7. See "Four-Letter Word," p. 76.

8. See Ezio Bonsignore, "Armour Deployment Common Sense, Anyone?" Military Technology Vol XXVII Issue 11 (2003), pp. 62-66, and William K. Suttie, "Integrated Survivability for Land Platforms," pp. 57-61.

9. See Ian Bostock, "Australia pushes the boat out to boost defences," Jane's Defence Weekly 12 Nov 03, pg. 2.

10. See the Canadian Army's strategy paper Advancing with Purpose—The Army Strategy (hereafter The Army Strategy), as found on the Internet early May 02, pg. 10.

11. See The Army Strategy, pg. 12.

12. For an overview of the types of missions the Army envisioned an ACV carrying out in OOTW, see Maj D.C. Wilkinson and M.K. Ormrod, ORD PR 9607 IRON NOBLE: Armoured Combat Vehicle Study, hereafter the IRON NOBLE report (Ottawa: Department of National Defence, 1996), Annex A.

13. See "Four-Letter Word," pg. 74.

14. See the Canadian Forces' Defence Planning Guidance 2000, Section 303, paragraph 1 (5 August 1999).

15. See The Army Strategy, pg. 20.

16. See the transcript of LGen Jeffery's comments to the SCONDVA Parliamentary Committee, as found on the Internet on 12 Apr 02.

17. Specific areas of reduced performance for the Stryker MGS include: it carries the same (relatively weak) gun as the Leopard but with less than half of the ammunition carried by that vehicle (18 main gun rounds compared to the Leopard 1's 60 rounds) and its armour is even less capable than that of the Leopard 1—the Leopard C2 with add-on armour has a chance of resisting the fire of light-AFV-mounted medium calibre cannons and rocket-propelled grenades, while the Stryker MGS' add-on armour will only stop heavy machine gun ammunition and rocket-propelled grenades. Information was extracted from Jane's on the DIN for the Leopard and Stryker MGS and "Army Selects LAV III Variants to Equip New Interim Brigades," the US Army Armor magazine, January-February 2001, pp. 13-15, and provided by the Army staff.

18. The Stryker MGS has had trouble meeting the weight requirement for transport by the C-130 Hercules aircraft (See Scott Gourlay, "Stryker Brigade Passes Latest Milestone," Jane's Defence Weekly 4 Jun 03, pg. 8). Even when it becomes so deployable, it is not clear how easy it will be to "fling" the Stryker MGS by air into a crisis area. With a fuel consumption of about 2.24 kilometres per litre, a squadron of 14 Stryker MGS would burn 624 litres of fuel, even in an ideal world of no idling and peak engine performance, during a 100 kilometre road move (Jane's on the DIN of 10 Sep 03 indicates that the Stryker MGS has a range of 482 kilometres with a 215 litre fuel tank). Considering the amount of fuel "lost" due to idling, spillage and evaporation and the mass of the Stryker MGS' basic ammunition load and spare parts, it is likely that even only a squadron of Stryker MGS would be a heavy logistic burden to a force supported solely by air. More logically, such a force would use ships to carry the bulk of its logistics package as close to the mission area as possible, thus minimizing much of the importance of air transportability.

19. In a television interview on 30 Oct 03, LGen Hillier emphasized that the Stryker MGS is a "snake killer" that is exactly the "kind of vehicle we need for those [peace support operations] situations." See the transcript of LGen Hillier's remarks on the DIN as at 03 Nov 03.

20. See LGen Hillier's comments during the 29 Oct 03 press conference that announced the Stryker MGS purchase, as reported on the DND Web Site on 30 Oct 03. In these comments, LGen Hillier stated that the Stryker MGS gave us "a direct fire capability in a system and on a platform which we can and will deploy." The CLS continued his comments by talking about the lack of capability offered by Leopards "parked in Valcartier or Edmonton." Since we could have sent equipment by sea to most recent operational areas, it is not clear what prevented the deployment of the Leopards.

21. See the QUARRÉ de FER report, pg. 41.

22. See the David Pugliese, "Morally Wrong," Ottawa Citizen, 23 Oct 03, pages 1 and 2, as found on the DIN on 23 Oct 03.

23. Adapted from the DDA briefing on Capability Based Planning, as found on the DND Web Site on 07 Oct 03 (hereafter the DDA Capability Based Planning briefing).

24. DAD draft discussion paper "A Force Employment Discussion Paper—Draft V1" (hereafter "DAD Force Employment Paper"), Jul 03, pg. 11 and Annex C.

25. See for example the author's ADTB articles "Manoeuvrist Operations" and "The 1967 Sinai Campaign: Some Lessons About the Manoeuvrist Appoach to Operations," Vol 5, No. 3 (Fall 2002) and "Shifting Paradigms: Be Careful of the Grails You Consider Holy (Some Thoughts on the Army's Future Force Structure)" (hereafter "Shifting Paradigms"), Vol 6, No. 2 (Summer 2003).

26. Leaving aside disaster relief and observer missions, and in addition to the necessary logistics and command elements, these forces have ranged from two mechanized infantry battalions with a DFSV squadron (in UNPROFOR) to a light infantry battalion(-) with a mechanized infantry company, an armoured recce squadron, a brigade headquarters, an ad hoc surveillance and target acquisition battery and a small field artillery battery (in Afghanistan in 2003) to an infantry battalion with an armoured recce squadron, a helicopter squadron, a field engineer squadron, and a tank troop (in Kosovo) to an infantry battalion with helicopter squadron (in Haiti) to a light infantry battalion and an armoured recce squadron (in Afghanistan in 2002) to a light infantry company with a construction engineer troop and a naval supply ship in support (in East Timor) to a signals troop (in the Central African Republic) to an armoured recce troop, an engineer troop and a mechanized infantry company (in Eritrea) to six (later 18) CF-18s to enforce no-fly zones around, and later

attack, Yugoslavia. Most information is from the DND Web Site as at 21 Sep 03.
27. For over half of the past 12 years, the Army has had at least two battalion-sized contingents deployed overseas simultaneously. This effort has completely consumed the Defence White Paper requirement for the Army's stand-by forces. See Canadian Government, 1994 Defence White Paper (Ottawa: Department of National Defence, 1994), pg. 35.
28. The DDA Capability Based Planning briefing specifically states that the CF's Force Structure Focus is in the middle of the range of potential operations where both intra-state and inter-state conflicts can occur.
29. The original deployment of UN forces to Cyprus is an example of a mission designed to limit the broader international damage that a small conflict can cause.
30. This theme is amplified in the IRON NOBLE report, pages 12 and 13.
31. See the US Army rotation plan for Afghanistan, as presented in a briefing on 23 Jul 03. The information was taken from the US DOD Web Site on 28 Sep 03.
32. See "Shifting Paradigms."
33. See the IRON UNGUIS report, pages 40 and 41, for a discussion of the benefits of a 4 km range missile system and the BRONZE ZIZKA report, pg. 95, for further confirmation of these benefits. Page 86 of this latter report and Maj S.E. Dominico and M.Y. Bernier, ORD PR 2003/06 Company Area Suppression Weapon (CASW) Study in Urban Operations (IRON BOMBARD), hereafter the IRON BOMBARD Urban Operations report (Ottawa: Department of National Defence, 2003), pg. 49, highlight the benefits offered by an automatic grenade launcher. These conclusions are supported by Maj James S. Denford, Roger L. Roy and Dr John Steele, AEC-R 0301 Limited Objective Experiment 0201 Combat Support Weapons Mix (Kingston: Department of National Defence, 2003).
34. See the BRONZE ZIZKA report, pp. 87 and 88, for a discussion of the optimum engagement range for the TOW Under Armour system.
35. See M.C. Straver, DRDC Valcartier Technical Memorandum TM 2003-076 Evaluation of the HEMi's Potential Battlefield Impact (Valcartier: Department of National Defence, 2003).
36. See "DAD Force Employment Paper," pg. 11.
37. See "Light Punching" for the benefits offered by a TBM.
38. See "DAD Force Employment Paper," pg. 8.
39. The original identification of the Army's need for a UAV capability was articulated in 1975/76. The Sperwer was bought as an interim measure for Operation Athena in 2003—some 28 years later.
40. Maj R.J. Round and F.W.P. Cameron, ORD PR 9708 BRONZE PIKE—LAV Recce Vehicle (Coyote) Study, hereafter the BRONZE PIKE report (Ottawa: Department of National Defence, 1997).
41. See Maj Jeff Barr, "Let's Have Another Look! Employment Options for the Equipment Redistribution Plan Reconnaissance Squadron" (hereafter "Let's Have Another Look!"), The Army Doctrine and Training Bulletin Vol 2, No. 4 (Winter 1999), for a description of the RCD Recce Squadron's early experience with the Coyote.
42. Based on timings recorded over some 21 traces during the RCD Recce Squadron's Exercise COYOTE CUTLASS, time into action for the mast system is estimated as some 30 minutes, while the time out of action is about 20 minutes. Telephone conversation Maj J. Barr, OC RCD Recce Squadron during this exercise, and the author, 26 Jun 00. The BRONZE ZIZKA report, pages 35 and 67, alludes to the use of Coyotes in a fast moving battle.
43. See the BRONZE PIKE report, pages 63, 68, 78 and 79 and Tables II and III, for a discussion of the benefits of including counter-recce vehicles and scout cars in an armoured recce squadron. In "Let's Have Another Look!" Maj Barr clearly highlights the benefits of deploying scout cars to support the Coyote.
44. See the IRON NOBLE report for the contributions that an ACV-like counter-recce vehicle could make in numerous OOTW tasks.
45. See "Let's Have Another Look!" pg. 135, and the BRONZE PIKE report, Table III. Note: this text was written before the tragic events in Kabul of 02 Oct 03.
46. See the BRONZE PIKE report, Table IV; the BRONZE ZIZKA report, pages 35, 63, 67, 68 and 69; L. Willner and Maj L.R. Mader, ORD PR 2000/11 IRON QUARREL: An Initial Investigation Into the Use of Unmanned Air Vehicles and Griffon Helicopters for Battlefield Surveillance and Target Acquisition, hereafter the IRON QUARREL report (Ottawa: Canadian Government Publications, 2000), Figure 8, and Maj James S. Denford, Roger L. Roy, Dr John Steele and Yvan Gauthier, AEC-R 0302 Army Experiment 7B Armed Griffon In Support of Reconnaissance, hereafter Army Experiment 7B (Kingston: Department of National Defence, 2003), pg. 35.
47. See the IRON QUARREL report, Figure 8.
48. See the BRONZE PIKE report, Table IV; the BRONZE ZIZKA report, pages 26, 35, 63, 67 and 68; the IRON QUARREL report, Figure 8; Army Experiment 7B, pg. 34 and Captain Bruce Chapman and Roger L. Roy, AEC-R 0102 Army Experiment 7A Electro-optical Reconnaissance Surveillance and Target Acquisition (ERSTA) Employment in a Helicopter Reconnaissance Section, hereafter Army Experiment 7A (Kingston: Department of National Defence, 2001), pg. 23.
49. See the BRONZE ZIZKA report, pg. 89, for an indication of the effect of CB on indirect fire systems.
50. See Anthony H. Cordesman and Abraham R. Wagner, The Lessons of Modern War Volume III: The Afghan and Falklands Conflicts (Boulder and San Francisco: Westview Press, 1990), pages 272 and 274, for how the Argentine officer corps' propensity to lie limited the value of British electronic warfare capabilities in the Falkland Islands War.
51. At least three operational research studies have specifically commented on our difficulty manoeuvring with our current key vehicles in the presence of an enemy. See the BRONZE ZIZKA report, pg. 91, the QUARRÉ de FER report, pg. 40, and the IRON RENAISSANCE report, pg. 57.
52. See David J. Bercuson, Blood on the Hills: The Canadian Army in the Korean War (Toronto: University of Toronto Press, 1999), pages 158-160, 205-207 and 216-217, for descriptions of defensive battles by 2 R22eR, 1 RCR and 3 RCR.

53. See the BRONZE ZIZKA report, pages 43, 52, 67, 75, 80, 89, 96 and 98.
54. I believe that there will be speculation for years as to what combination of UN Security Council manoeuvrings, Canadian federal cabinet dynamics, evolving popular opinion and actions by Saddam Hussein could have led to Canada sending a ground combat force to participate in the 2nd Gulf War. See the National Post newspaper article, "Ottawa offered to join the Iraq War," by Chris Wattie, 27 Nov 03, pg. A1, as found on the National Post Web Site on 30 Nov 03 for a sense of how close Canada came to sending ground troops to fight in the 2nd Gulf War.
55. The IRON UNGUIS report; the IRON BOMBARD Urban Operations report; Maj M. Lavallée and J. Offiong, ORD draft Project Report PR 2003/?? Evaluation of Options for the Land Force Battalion Level Indirect Fire System (BLIFS) (IRON ESTOC), hereafter the IRON ESTOC report (Ottawa: Department of National Defence), in production, and M.K. Ormrod, P.R.S. Bender and Maj J.C. Stewart (Ret'd), ORD PR 2003/09 Evaluation of Options for the Land Force Indirect Fire Support System (BRONZE ONAGER), hereafter the BRONZE ONAGER report (Ottawa: Department of National Defence, 2003).
56. See Army Experiment 7B, pg. 34, and the IRON ESTOC report, Figures 7 and 21.
57. Developing laser-guided munitions for our 105 mm howitzers would force us to duplicate existing work in a new calibre and cause us to be limited by the range and payload constraints of this calibre.
58. See the IRON ESTOC report.
59. See the BRONZE ONAGER report, pg. 27, for the benefits of having long-range systems. The range of modern 120 mm mortars is about 7-9 km with HE and smoke ammunition. Some specialized munitions can reach further—10 km for the Israeli M100 extended range HE round, 12 km with the M984 DPICM round and 15 km with the US PGMM laser-guided round. All information as found in Jane's on the DIN on 10 Nov 03.
60. See "The Corporals' Report," pg. 70 and Annex C.
61. See the IRON ESTOC report, pp. 22 and 49, for the effect of having insufficient laser-target-designator-equipped observers.
62. In Bosnia, the NATO air power was supported by the ground operations carried out by Croatia and its Bosnian Croat clients and the Bosnian Muslims. In Afghanistan, the Taliban had to face US air power and its local rivals supported by coalition special forces. In Kosovo, the Serbs had to face the Kosovo Liberation Army and NATO air power.
63. See the BRONZE ZIZKA report, pages 66 and 75.
64. See Army Experiment 7B, pg. 34.
65. See Kim Burger, "US Army Reviews the Way it Operates the Apache," Jane's Defence Weekly 21 May 03, pg. 6.
66. See M.K. Ormrod, P.R.S. Bender and Maj P. Hewitt, ORD PR 2001/16 IRON XINETE: Land Force Battle Group Mobility Support Study (Ottawa: Department of National Defence, 2001), pages 16, 19, 26-29 and in particular Figures 1 and 2, for examples of the damage that can be done by small arms and mortars to unprotected personnel.
67. See Shifting Paradigms, pg. 47, for a discussion of the most likely air threats.
68. See the CDS' comments on the effect of the Somalia Affair on the CF's public credibility in A Time for Transformation-Annual Report of the Chief of the Defence Staff 2002-2003 (Ottawa: Department of National Defence, 2003), pg. 15.
69. See Canadian Forces Leadership Institute, Duty with Honour The Profession of Arms in Canada (Ottawa: Department of National Defence, 2003), pp. 44-45.

THE URBAN WEB: AN OPERATIONAL CONCEPT FOR OFFENSIVE OPERATIONS IN THE URBAN SPRAWL OF THE 21ST CENTURY[1]

Lieutenant-Colonel Wayne D. Eyre, CD

In the same way as the breakthrough of the defence in depth was the primary operational problem of the last century, offensive operations in urban terrain promises to provide a similar challenge for this century. Humanity is migrating to cities as never before, with predictions that almost three-quarters of the world's population will live in them by 2025.[2] Cities and their suburbs are merging, creating conurbations—large, continuous tracts of urban sprawl. This is nowhere more noticeable than in the developing world, where government programs such as infrastructure and public security have not kept pace, causing many of these sprawls to degenerate into shantytowns of disease and crime infested jungles of cardboard, concrete and steel.

Combat in cities has never been easy. Historical examples such as Stalingrad, Ortona, Hue City, Beirut and Grozny, to name a few, have proven that the costs of urban combat, when compared to fighting in relatively open terrain, are extreme. Friendly casualties greatly increase, non-combatant casualties and refugee problems are magnified, collateral damage to infrastructure is immense, and operations take much longer. Currently, as a legacy of the Cold War, Western armed forces are marvellously structured and equipped to fight any other extant military force in relatively open terrain, where their sensor performance, weapons' stand-off and precision capability and tactical manoeuvre overmatch are fully exploited, allowing for a relatively sterile and politically acceptable war, where casualties and collateral damage are minimized. The emerging urban sprawl, however, presents an obstacle to these strengths. Potential foes realize this, and as never before will make cities their preferred battleground of the future, where the opportunity for inflicting casualties and causing a protracted conflict are the greatest. They see cities as the great equalizer, where Western militaries enter at their peril.

Care must be taken not to disregard hard-won lessons from past conflicts

The focus on urban operations is now widespread, and many groups are applying intellectual horsepower to research and develop capabilities to overcome this challenge. In doing so, care must be taken not to disregard hard-won lessons from past conflicts. Over time, doctrine has evolved to encompass three stages for offensive urban operations: isolation, lodgment and clearing.[3] In all likelihood isolation of an entire urban sprawl will not be practical or realistic, but it is still a key ingredient to success. The urban web is an operational concept that will isolate and dominate selected key areas within a city and, in doing so, will achieve overall victory in the urban sprawl.

In developing new operational concepts for warfighting, one must reconcile the tension between the chicken and the egg: do future operational concepts drive technological developments, or, conversely, do technological developments drive operational concepts? Perhaps they are derived through an iterative process:

> Innovation is more than incorporation of equipment and technical change into doctrine, practices, and tactics. Innovation in tactics and operational concepts can prove as important on the battlefield as changes in equipment.[4]

The urban web concept is a fusion of a new operational concept, with a basis in historically sound methods, and new technology and will thus be reflected in the methodology of this paper. The enduring lessons of history will first be discussed, then the new operational concept, and finally the emerging technological trends that support that concept will be examined.

ISOLATION-THE KEY

"Isolation of an urban defender affords the attacker a significant, often decisive advantage."[5]

There is a reason why the isolation of the defender in urban combat has evolved to be an almost necessary precondition to success. Cut off from reinforcement, supplies, evacuation, information and moral support, isolation generates considerable physical and psychological effects in a defending force. A US Army report, in studying 22 selected urban battles between 1942 and 1982, found that:

> Isolating the defense is apparently very effective. The attacker won all four cases in which the defense was totally isolated. Even partial cut-off of the defenders resulted in attackers enjoying a success rate of 80%. Conversely, attackers won only 50% of the battles in which defenders were not significantly cut off. No single variable appears more consistent than isolation.[6]

There is no reason to believe that isolation will lose its importance in future war. Noted future war theorist US Army Major-General Robert Scales has proposed a concept based completely on isolation in his "indirect approach." This concept would have friendly forces "establish a loose cordon around the city and control of the surrounding countryside. The cordon would eventually result in complete isolation of the city from the outside world." Through a combination of time and precision engagements on key nodes, conditions would be created that "lead to collapsing the enemy's will to continue the struggle."[7] Borrowing from Scales concept, US Air Force Lieutenant Colonel Peter Hunt has likewise suggested a concept for aerial isolation that relies solely on airpower.[8]

These concepts may have merit in some circumstances and are attractive in that destruction and casualties are reduced but, in general, have significant drawbacks, especially for a large urban sprawl. In the case of aerial isolation, "air interdiction alone in complex terrain cannot find, fix or finish an adversary or secure non-combatants without ground support."[9] Given the vastness of modern mega-cities, it may not be practical or possible to form a cordon completely around them. Refugee flows are another problem. In the "indirect approach," the city's population would be encouraged to leave and occupy protected camps established by humanitarian organizations.[10] In smaller cities this may be practical, but by 1993 there were already 286 cities worldwide with populations over one million.[11] By 2015 that number will swell to 516,[12] and, moreover, the population in 27 cities will exceed ten million.[13] Clearly, these numbers are beyond the scope of any humanitarian organization or group of organizations to manage. Furthermore, the enemy may deliberately punish the city's population and/or be able to hold out for a long period once isolated.[14] Political, strategic and humanitarian considerations may dictate a more rapid victory.

In a large urban sprawl, the defender will also face a set of unique problems. It will be difficult to defend everything, so the enemy would likely concentrate in key areas, either around points critical for the control of the city or where maximum damage can be inflicted on the attacker. The population may or may not support the defender, and in any case, the degree of support will probably vary, causing seams ripe for exploitation. According to noted military futurist

Ralph Peters, "few populations are ever exclusively hostile, or truly indifferent, or unreservedly welcoming."[15]

If the key areas where the enemy has concentrated can be identified, then they can perhaps be selectively isolated within the city. Enemy forces within them can be then engaged and defeated, without subjecting the entire city to combat. This is the basis of the urban web concept.

THE URBAN WEB

The urban web concept focuses on the selective domination of key city areas based on an intelligence assessment of where the enemy has concentrated and what is deemed critical for controlling the city. It is made with the assumption that the enemy is not a peer competitor—we will have superiority, if not supremacy, in advanced weapons and sensing technology. If not, there are fewer reasons for the enemy to attempt to neutralize this asymmetrical advantage by taking the fight into the city.

Not forgetting the traditional method of offensive urban operations-the three stages of isolation, lodgement, and clearing—this concept would rearrange the order without fundamentally changing the philosophy. During insertion (lodgement), forces insert and establish mutually supporting nodes[16] at selected locations within the urban area. Next, during isolation, the nodes are linearly connected using sensors, barriers and lethal and non-lethal fires to effectively seal the area. Finally, the area is cleared using a variety of options. Simple in theory, this concept is akin to a conventional cordon and search operation.

The nodes to be established resemble something of the character of forts or strongpoints. They are points which can be linearly connected together, are suitable for defence, but are not necessarily critical areas themselves for the control of the city. Linear connectivity is essential as target acquisition means are probably going to remain line-of-sight into the foreseeable future. In some cases, intermediate or sub-nodes might prove to be a solution. To achieve this linear connectivity, something along the lines of a medieval castle caponier[17] may be appropriate, where the node extends into the street to enable coverage. Insertion of forces into the nodes must be rapid and may occur through ground transportation, ground or subterranean infiltration or air insertion or a combination of all three. Covert insertion may be an option as well. These nodes may change frequently if required.

Mexico City, Imagery source: INTEC Americas Image Gallery website.
URL: http://www.intecamericas,com/gallery.htm. Accessed on Internet 11 January 2003

The next stage is to isolate the selected area by linearly connecting the nodes with sensors and fires perhaps as well as

physical barriers. Sensors will detect, identify and acquire targets and may comprise manned and/or unmanned reconnaissance and surveillance assets. They will detect attempts by both enemy and non-combatants to leave or enter the selected area. Fires and barriers will accomplish the actual physical isolation of the area by interdicting all would-be transgressors. Direct lethal and scalable non-lethal effects from the nodes create an impassable barrier which none may cross. Indirect fires may assist by engaging concentrations of enemy attempting to enter or escape. In extreme cases, artillery may be positioned to fire with its beaten zone in enfilade along the street. This fire barrier may be augmented with physical barriers such as wire or foam to further enhance the isolation. The three dimensional aspect of the urban environment must always be considered with isolation measures addressing elevated and especially sub-surface avenues of movement.

Additionally, electronic and psychological isolation will further cut off the selected area and allow for information dominance therein. Telephone and Internet connections can be disabled and the population within the area subject to psychological operations from a relatively close distance.

At this point, several options are available to deal with the isolated area. It can be cleared using traditional urban combat methods of fighting through or it can be subject to precision attack based on enhanced intelligence now available from the nodes. The population can be left in place or, once screened, be permitted to leave.

The detailed clearing of the isolated area would prove necessary when the enemy is determined and dispersed throughout the area. This fighting through would entail thorough clearing of every structure and have the potential to increase collateral damage and friendly casualties within the isolated area. The use of non and less lethal weapons to incapacitate all people in the area as a precursor to clearance would be a great benefit. As an option and a last resort, and depending upon the prevalent construction, the isolated area could be levelled through the use of controlled high explosives, incendiaries or thermobaric weapons.

Precision attack would be a preferred option due to reduced casualties and collateral damage. Once isolated, the area would become much more vulnerable to intelligence exploitation due to the increased availability of human intelligence (HUMINT).[18] Once greater definition of the enemy is obtained, the relocation of existing nodes or establishment of new nodes could further reduce the isolated area. Using the mantra of the modern reconnaissance-strike complex—if it can be seen, it can be hit and if it can be hit it can be killed—enemy elements could be engaged with stand-off precision munitions from a variety of sources. Direct action raids could be conducted on key enemy locations, perhaps using the urban web concept on a micro-scale, with infiltration, isolation and finally attack. The aim of these precision attacks would be to eliminate centres of gravity, resulting in the collapse of the enemy's will. With this, a detailed clearance of the isolated area may not be necessary.

The non-combatant civilian population presents several options. They could be kept in place, consuming non-renewable resources that will hasten the collapse of the enemy's ability to support itself. Public opinion would probably not support a policy of the deliberate starving out of the population, so all or part of it could be allowed or enticed to leave. Screening procedures could be set up, and the non-combatant civilian population could be moved, following HUMINT screening, immediately to protected humanitarian camps for the duration of the fighting in their part of the city. These population displacements would be on a much smaller scale than if the entire city fled.

Once the area has been cleared, the nodes can focus on isolating a different area, and/or the area can be left isolated to deny its reoccupation to the enemy. If possible, adjacent cleared areas can be combined with the elimination of internal nodes.

The enemy is expected to have a say in the execution of this concept as well. A logical course of action would be to attack one or more of the nodes in order to break the isolation. In fact, allowing an attack to begin on a node causes the enemy to uncover and thus become susceptible to engagement. This may be desired, as results from a recent urban exercise show:

> *In the rare instances that the OPFOR counterattacked, the force ratios that had worked in their favour were suddenly reversed, and the counterattacks were inevitably absorbed and destroyed. This would suggest that one tactical alternative…[that] may be more efficient in the future [would be] to try to infiltrate small, highly trained "storm groups" into the building, and then allow the enemy to "destroy itself" by forcing it to counterattack, thereby turning the force ratios against it.*[19]

Enhanced intelligence will give warning of these attacks, but even so, a degree of automated targeting may be necessary. Throughout the operation, the integrity of the nodes and the isolation must be kept intact. In many ways, this concept has some of the same characteristics of a medieval siege, where lines of circumvallation and contravallation were used to keep the enemy from attacking both from inside and outside the isolated area; however, in this case, one line does both. To defend a node, many of the same capabilities will be required as discussed above: sensors to detect approaching enemy, precision weapons to engage and protected infantry to complete the defeat. Establishing a cordon around each node similar to that employed to isolate the selected area will keep non-combatants away and reduce the potential for terrorist attack.

ENABLING CAPABILITY AND TECHNOLOGICAL TRENDS

Although the urban web concept may sound impractical given today's limitations, new and potential developments in several fields provide promise for the execution of this concept over the coming decades. In other cases, research and development must be focused on creating certain capabilities. For simplicity, these enablers will be grouped by the corresponding stage of the operational concept they best support.

The first challenge in the insertion stage is how to get forces into location to establish a node, especially in a hostile environment. Ground insertion, using high speed, heavily protected vehicles is one option. Advances in lightweight and electromagnetic armour may give the vehicle the protection it needs without making it so heavy as to be unwieldy. Spoofing techniques may be used to complicate enemy target acquisition and engagement before rounds impact. Sprint capability and agility in circumventing obstacles is also required. Adding great flexibility to the urban web, heavily armed and armoured vehicles could become mobile fortresses, and, in effect, become nodes themselves or, as mentioned earlier, become add-on caponiers for the node. Then again, unmanned robotic vehicles could manoeuvre through high danger areas and link up with air-inserted soldiers at the node.[20]

Air insertion would perhaps be the quickest of the methods, but given the inherent vulnerabilities of aircraft, especially rotary-wing, it may also be overly fraught with risk. Covert insertion by precision parachute is an option, especially when linking up with unmanned vehicles. Stealth helicopters or helicopters incorporating some of the protective measures discussed above for ground vehicles may reduce risk. Even without further physical protection:

> *Optical dazzling devices, smoke, and acoustic nonlethal weapons are a few of the possible protective options that might disable opponents long enough for rotary-wing aircraft to land, take off, and leave the area. Three-dimensional maps and GPS pseudolites…have the potential to allow rotary-wing pilots to safely navigate between buildings [in limited]*

visibility.[21]

Ground infiltration using infantry equipped with powered human exoskeletons would provide extraordinary capability. Akin to the "mobile infantry" of Robert Heinlein's classic *Starship Troopers*[22] (the book, not the movie), these exoskeletons would give the individual soldier incredible protection, mobility and carrying capacity. The US Defense Advanced Research Projects Agency (DARPA) has led the way with their Exoskeletons for Human Performance Augmentation (EHPA) program. "The overall goal of this new program is to develop devices and machines that will increase the speed, strength, and endurance of soldiers in combat environments."[23] This exoskeleton may be lighter and smaller than previously imagined, if current nanotechnology research at the Massachusetts Institute of Technology (MIT) Institute for Soldier Nanotechnologies bears fruit.[24] Even without a powered exoskeleton, the "2025 Urban Warfighter System" described by Hahn and Jezior incorporates many emerging capabilities with quality personnel and training to make a soldier system that would be quite capable in an urban operation.[25] Equipped and trained as such, soldiers could quickly and relatively safely infiltrate the city and establish their designated nodes.

Once the nodes are established, the next problem, and the crux of the urban web concept, is how to effect the isolation of the selected area. Given the expected preponderance of a non-combatant population, the use of lethal fires (such as direct fire weapons firing on fixed lines), although still an option in the worst case, generally will not be preferred. Non-lethal capabilities are the solution. Much work is currently being done in this subject area, and to forecast developments is difficult, but some concepts that may hold promise involve directed energy to include acoustic, microwave and laser systems. Plasma beams and "wireless Tasers"[26] are others. In order for the concept to work, they must be able to deter and prevent people and equipment from fleeing or entering the isolated area.

Physical barriers are another method. Quickly emplaced wire, anti-traction agents, foam barriers and quick hardening "wire in a can"[27] are all options. These may be particularly useful for sub-surface avenues of approach such as tunnels and subways that may be effectively blocked with new barrier forms. However, obstacle emplacement principles would not change, and coverage by fire, or observation as a minimum, would still be necessary.

Electronic and psychological isolation go hand in hand. The severing of electronic links through physical and electronic attack will cut communications with the isolated area, greatly facilitating the effectiveness of psychological operations. With more sophistication, incoming electronic signals could be selectively altered or replaced, ensuring the friendly message is imparted. Information dominance is the intent.

Essential for the isolation task would be the ability to detect and identify threats before they manifest themselves. This is easier said than done as the characteristics of the urban environment significantly reduce line of sight and the utility of overhead imagery. Furthermore, the laws of physics reduce the theoretical potential of sensor technology,[28] although through-the-wall radar may offer some limited promise.[29] Platforms to mount sensors, however, show much potential. Unmanned aerial vehicles (UAVs) and micro-UAVs could provide platforms for horizontal and oblique cueing as well, with micro-UAVs having the potential of entering enemy-controlled buildings to act as or emplace remote sensors.[30] Robotic technology is rapidly advancing and may well provide for outstanding sensor platform capability.[31] Related to sensors, given the reduced reaction time for the sensor-to-shooter link in urban terrain, a form of automated targeting may become necessary. This would prove very useful, especially for linking to developments in sniper detection technology.[32]

Once the area is effectively isolated, the task of clearing it commences. This should begin with enhancing the available intelligence to further define the enemy. The sensor platforms described above can be similarly used here. Moreover, the acquisition of HUMINT is greatly assisted by the nodes' proximity to the indigenous population. Emerging translation technology would allow soldiers to question locals without the need for an interpreter, and advances in link-analysis software will make this information much more exploitable.

Precision engagement of enemy concentrations is becoming much more possible, despite the limitations imposed by urban terrain geometry on delivery angles and weapons trajectories. Depending on attack angle, existing air-delivered laser guided bombs and joint direct attack munitions (JDAM) are able to engage many urban targets, and this will only become better with improved lasers that avoid the glass reflection problem and the use of GPS pseudolites (see above). Armed UAVs, glide bombs and non-ballistic artillery ammunition[33] may also increase the precision capability. The use of inert bombs as kinetic energy weapons, the "laser guided hand grenade" and miniature glide bombs could all be used against interior targets when great precision is required.[34]

Similarly, precision raids could be launched against these enemy sites. Soldiers equipped with powered exoskeletons could employ swarm tactics to surprise and quickly overwhelm an opponent.[35] Robotic weapons platforms or future urban combat vehicles could be used to engage the enemy and transport soldiers to the objective in order to close with and destroy the enemy. Thermobaric weapons, which are becoming pervasive in urban combat, could be used to overpressure the inside of structures to crush the occupants.[36] Conversely, all personnel in the targeted area could be subdued with non-lethal effects followed by a detailed clearing by infantry. Likewise, once the area has been cleared, non-lethal area denial systems could be used to ensure that the enemy does not reoccupy it.

Technology is not a panacea for the problems encountered in urban operations

Finally, one of the greatest enablers will be the ability to network all forces down to the lowest level, linking soldiers, commanders, sensors and shooters. This will provide a common operating picture and unprecedented situational awareness, exponentially increasing agility and the tempo of operations.

Technology is not a panacea for the problems encountered in urban operations. Clausewitz's theories will still reign supreme, with fog, friction and chance wreaking havoc. Friendly casualties and collateral damage will still occur when employing the urban web, and the enemy will adapt to our methods, to which we will respond by further adaptation. Still, the strengths of technologically advanced nations must be used and incorporated into war-winning operational concepts.

CONCLUSION

Military institutions not only need to make the initial intellectual investments to develop visions of future war, but they must continue agonizing over such visions to discern how those wars might differ from previous conflicts due to changes in military technology and weaponry, national purposes, and the international security environment.[37]

The urban web is a vision of future war with wide arc markers and an aiming point two decades away. Like all visions, it will not achieve fruition as initially described. It must be validated through debate, experimentation and finally the test of combat. Unexpected developments, or lack of anticipated developments, may render the concept unworkable or impractical. Likewise, the concept may not always be a viable course of action. The enemy density may by

high throughout the urban area, making isolation of the entire city necessary; the enemy centres of strength may not be found; or we may not have the capability to effectively insert the nodes in a given situation. The reasons may be many and convoluted. Conversely, the reasons to employ the concept may be strong, especially if the enabling capabilities exist.

Looking out from the dawn of the 21st century, it would be folly not to recognize that the urban sprawl will be the primary battlefield for the foreseeable future. Likewise, it would be folly to ignore the hard-won lessons of the past-that isolation is generally a precondition to success in offensive urban operations. The urban web maintains the principle of isolation by focusing it to where it matters-the centres of the enemy's strength. Properly employed, it will allow for rapid domination of selected urban areas with a smaller force than what would traditionally be required, which has the concomitant advantage of reduced casualties. Concurrently, it will reduce collateral damage and the potential for large-scale refugee flows. The urban web concept will enable us to incorporate emerging capabilities into an operational framework that will achieve relatively rapid victory at lower cost than has historically been the case.

It would be folly not to recognize that the urban sprawl will be the primary battlefield for the foreseeable future

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ENDNOTES

1. This paper was initially written as the future warfighting concept paper requirement for the United States Marine Corps School of Advanced Warfighting. It does not include observations from Operation IRAQI FREEDOM. The author wishes to acknowledge the support of Dr Brad Meyer from the School of Advanced Warfighting faculty.
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15. Ralph Peters, “The Human Terrain of Urban Operations,” Parameters (Spring 2000): p. 4.
16. The use of the term 'node' should not be confused with other emerging concepts for urban operations where a node is considered to be key terrain or a facility critical for the function of the city.
17. A caponier was a protrusion from the wall of a fortification, designed to allow enfilading fire along the ditch in front of the castle walls.
18. The importance of HUMINT in gaining situational awareness in recent urban operations is discussed in Sean Edwards, Mars Unmasked: The Changing Face of Urban Operations (Arlington, VA: RAND, 2000), pp. 79-83.
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33. Sean Naylor, “U.S. Chief Aims to Shift Role for Armor Branches: Artillery Commander Studies Nontraditional Battle Tools,” Defense News (October 21-27, 2002): p. 50.
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35. For a detailed explanation of swarm tactics, see Sean Edwards, Swarming on the Battlefield: Past, Present, and Future (Washington: RAND, 2000), and John Arquilla and David Ronfeldt, Swarming and the Future of Conflict (Washington: RAND, 2000). Swarm tactics and the powered exoskeleton would make a formidable combination on the battlefield and are the potential subject of another future operational concept.
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THE NEW REGIMENTAL SYSTEM

Major Harry Bondy

"Soldiers and organizations will do in war what they do in peace. Tactical organizations that have not lived and trained together before they deploy cannot be transformed overnight on the basis of a single exercise into a fighting force.… These comments apply with equal force to logistics."

Colonel (USA) Douglas A. Macgregor,
Breaking the Phalanx[1]

WHY ARMY TRANSFORMATION?

In post-Cold War security operations, often described as fourth generation warfare, Anglo-Western armies engage in high-speed interventions, irregular warfighting, autonomous deployments in hostile regions, and more frequent political-military operations.[2] Forces must be balanced and flexible for a broad spectrum of conflict ranging from conventional warfare to asymmetric attacks to stability engagements.[3] Colonel Macgregor argues that the battle group and combat team best exploit the flexibility and balance available from all-arms co-operation, improved information, and precision targeting.[4] Advances in doctrine and technology "must be exploited at lower levels of command…"[5] and with "higher level battle group cohesion and training readiness…."[6] The US Army's Objective Force's Future Combat System, for example, is based on the brigade as its "unit of action."[7] Macgregor goes further, recommending combat and logistics formations of about 4000 to 5000 persons with no *branch-pure* sub-units. He describes how combined arms formations have become smaller over the decades as doctrine and technology improve. Functionally specialized units became an anachronism as early as the end of WWII.[8] Macgregor warns against attempting "to graft large-scale technological change onto old thinking and old structures"[9] and adds that "new organizations—not just technology—will revolutionize warfighting."[10] British Major General J.F.C. Fuller, who helped develop armoured warfare, wrote that the fighting power of an army lies in its organization.[11]

Unconscious cultural assumptions shape and limit the thinking on doctrine and technology

Since WWII, the Canadian Army's smallest tactically deployable formation has been the combined arms battle group. Every operational deployment since 1992 has been an all-arms team. Although the *branch-pure* regiment has not been deployed as a self-sufficient formation except for classical peacekeeping rotations, it dominates the order of battle of the Canadian Army. It is time that we restructured for the full range of post-Cold War security tasks.

Many assume that Western armies are in a revolution in military affairs affecting doctrine and technology.[12] There is a compelling argument, however, that military culture determines the pace and ultimate success of army transformation.[13] Unconscious cultural assumptions shape and limit the thinking on doctrine and technology. This culture is largely sustained by personnel policies underlying the selection, promotion, and posting system. Posting and promotion lists, controlled by regiments, branches, and occupations, lead to personnel turbulence, distrust, and careerist ticket-punching. Research has shown that individual performance appraisal and

selection systems are inaccurate, unscientific, and prone to factionalism.[14] More than half of any appraisal variance is due to "idiosyncratic rater effects,"[15] such as how much the ratee likes the rater; similarities in their personality; their personal views on performance; stereotypes on gender, race, and ethnicity; self-interest; unit politics and unit factionalism; and wide variations between deployments and unit climate. The annual promotion "tournament"[16] shifts people between units, as if robbing Peter to pay Paul, primarily to reward the winners. Since individuals do not have a measurable effect on productivity,[17] this method only undermines unit cohesion and performance. Legitimacy and commitment also suffer because most not promoted to senior officer and senior non-commissioned ranks are dissatisfied.[18]

This paper proposes a new regimental system (NRS) built on the battle group and combat team and new personnel policies aimed at cultural transformation. This NRS draws upon the traditional sources of Western military strength: *cohesion, discipline, organization,* and *professionalism*. These strengths arise from deep-seated Western social habits: *social capital, societal discipline, modern bureaucracy,* and *innovation*. Social capital is the quality of human relationships that generates trust and makes possible modern, large-scale military forces, corporations, and market-oriented, democratic societies. Individuals develop reputations for reliability within stable communities that stretch short-term self-interest into longer term co-operation.[19] This environment leads to the trust and co-operation essential for social cohesion and task cohesion in military units.[20] Cohesion strengthens primary group morale and combat effectiveness.[21] Social capital and military *cohesion* depend on stable relationships, informal communication loops, and realistic, repetitive training.[22] Today's battlefield is no place for "transient strangers."[23] The complexity of post-Cold War joint military operations requires skilled, experienced military professionals. Former Vietnam War commander Richard D. Hooker Jr. argues that "perhaps the only way, [sic] to build the kind of morale, esprit and cohesion needed to employ manoeuvre warfare is to stabilize soldiers and leaders in units through a working regimental system."[24]

The NRS, at the same time, must avoid *dark side social capital*, which is trust and co-operation limited to self-interested factions.[25] Any large organization—especially an army, where trust is essential—must control for counter-productive behaviour by government, executive category officers, and the rank and file.[26] In Anglo-Western armies, this behaviour results in unsustainable operational tempo, politicized equipment acquisition, service and branch factionalism, careerism, and reduced retention and commitment.[27]

Former US Army Chief of Staff, General (ret) Sullivan, and Colonel (ret) Harper, his chief strategic planning officer, recommend "in-depth, serious thinking by a leader and his or her team—that results in the creation of an intellectual framework for the future."[28] They advise "not to be surprised to be surprised [sic]… when the unexpected occurs…."[29] After recent wars in Afghanistan and Iraq, another US Army Chief of Staff, General Peter J. Shoomaker, warned, "We must be prepared to question everything. What is best for the Nation? What must endure? What must change?"[30]

THE NEW REGIMENT

The New Regiment (NR) is a combined arms, brigade-sized battle group, including logistics and administration, and is the smallest tactically viable and sustainable formation in the Canadian Army. Sub-units vary in size from battalions to sections that are custom-sized for taskings, training, and detachments. For multi-year requirements to rotate all-arms, self-supporting

battalion-sized peacekeeping contingents, for example, a group this size remains intact for as long as necessary. At the same time, company-sized combat teams or section-sized building blocks remain for minor deployments and small unit exchanges. Smaller groupings also remain intact over the longer term for specific capabilities, such as parachuting, UAV teams, and aid to the civil power. New Regiments provide troops for national and international joint forces and their headquarters and contribute formation commanders to the rank of Lieutenant General. Teams of officers and soldiers, whatever the size, are kept together as long as possible before re-grouping.

Officers and soldiers belong exclusively to the NR. Each regiment is known by a single name, one set of insignia and regalia, and a unified history. The NR sub-groupings can bear temporary names for a tasking. A battalion-sized peacekeeping contingent, for example, may be identified by the deployment's name, such as Task Force Palladium. Company-sized groupings may be called Combat Team Alpha, and so forth. There are no permanent units, branches, corps, occupations, or other affiliations to subdivide the NR. There are no units based on branch or corps specializations, such as infantry, armour, artillery, engineering, signals, logistics, and so forth. This will reduce resistance to doctrinal and technological change arising from permanent, lionized units tied to an historic role or weapons system. Although our military history should strive to record the truth, warts and all, the new names of the NRs should recognize Canada's growing diversity and home-grown identity and traditions.

Officers and soldiers spend their entire service lives with the same NR. They are recruited from the surrounding region to take advantage of existing social cohesion and to reduce moves for personal reasons. Although Canadian regions may be vast (such as a region based on the Western provinces), it remains worthwhile to build upon regional psychological similarities and reduced travel time. Officers and soldiers do not follow the generalist's route of rotating at regular intervals inside or outside the NR to accumulate credentials without fully mastering any role. They remain in key positions, especially command, longer than is currently the case to ensure a reasonable period of optimum performance and to allow enough time to train successors and complete improvement projects.[31] Officers and soldiers do not take tours within the civilian bureaucracy or at non-operational headquarters. Everyone is deployable and civilians provide all non-deployable bureaucratic and technical support. Vacant positions and promotions are filled through internal competitions open only to members of the same NR. New Regiment officers and soldiers enjoy uninterrupted service of field training and operational deployment. In the NR, the profession is clearly focussed on the "organized application of coercive force (war, peace enforcement, peacekeeping)."[32]

This stability enables everyone to master skills, tactics, and theatre operations and to maintain state of the art currency. The NR also adopts the rigorous thought process developed at von Moltke's *Kriegsakademie*.[33] This includes a culture of "independence of thought and freedom of decision" in accordance with a broad outline of a commander's objectives, now known as *mission command*.[34] This way of thinking facilitates multi-purpose deployments and continuous innovation. The stability and unity of the NR also build social and task cohesion and reduce sub-group exclusivity and factionalism. Trust among peers and the relationship between follower and leader solidify. Individuals make, lose, and regain personal reputations within long-standing, intimate markets of reputation.

Conditions of service are enhanced to compensate for the rigours of full deployability. These

enhancements include richer deployment allowances, limits on perstempo, guarantees for quality of life, and additional pension credits toward earlier retirement. Distinctions between executive category officers and others disappear except for rank-based pay ranges. Everyone in the NR shares the same psychological contract supporting the soldier's life.

US Army analysts, such as Vandergriff, Hooker, Macgregor, Kagan, and Laquement, and former Chief of Staff General Shinseki have argued for units similar to the NR. They want "unbreakable units" that implement lessons learned from US cohesion experiments, such as COHORT, General Gray's efforts in the USMC (United States Marine Corps), General Meyer and Lieutenant General Ulmer's reforms at III Corps, Fort Hood, and other Inspector General and TRADOC (training and doctrine command) projects.[35] The Australian Officer Professional Effectiveness Strategy advocates similar specialization by military role and improvements to personnel stability.[36]

NEW SPECIALIST CORPS AND THE NEW GENERAL STAFF

To complement and support the NRs, a series of new specialist corps (NSC) are formed around traditional professions and the social and human sciences. A separate NSC exists for military law, chaplainry, complaints and inspection, personnel selection, social work, social science, counselling, family services, medical and dental care, bioengineering, and so forth. NR commanders continue to discipline their troops in the traditional military sense, while the NSC focus on acculturating officers and soldiers using the old and new "social" and "human" professions. These professions greatly increased societal discipline in the West and facilitated the rise of modern armies. The chain of command would perform kit and dress inspections, for example, while social work and medical staff would sensitize and rehabilitate troops with issues related to psychological motivation, operational stress injuries, family violence, or substance abuse. Independent specialist corps contribute to the military and contextual discipline of the soldier's life.

To highlight the fact that their cultures differ, the various NSCs use separate rank structures , and wear badges and accoutrements that distinguish them from the NR and the new general staff (NGS). Each corps adopts a unique hierarchy, with or without insignia, to mark professional standing and other gradations, such as medical assistant, nurse, surgeon, barrister, magistrate, monsignor, bishop, and imam. They avoid military terms for appointments, like commanding officer, in favour of existing, specialized titles such as commandant, superintendent, judge advocate general, chaplain general, and surgeon general. They develop customized compensation systems and terms of service to compete with civilian counterparts and reinforce their unique professional identification. By marking the divergent culture of these professions as clearly separate, the NR can focus its culture on the soldier's life.

Specialist corps do not include technical expertise related to combat, combat support, communications, logistics and other forms of technology and administration

Specialist corps do not include technical expertise related to combat, combat support, communications, logistics and other forms of technology and administration. Specialist corps are restricted to the human and social sciences and professions that support and acculturate the soldier. Specialists applying technology and administration directly to tactical and theatre

operations remain full members of the deployable NR. Experts in technology and administration who are not deployed become part of the civilian bureaucracy. NSC that deploy on operations with the NRs, such as the medical corps, remain under the control but not the command of the NR.

The new general staff (NGS) is a small cadre of officers responsible for strategy, civil-military relations, and for building the army as an institution and a profession. It develops and implements policies to adapt technology, doctrine, and culture to evolving security needs and societal change. It is the army's primary point of contact with the civilian bureaucracy, government, and the host society. It advises elected defence executives, negotiates with the government's central agencies such as the Treasury Board Secretariat, and directs the army and the supporting civilian bureaucracy.[37] In effect, the NGS performs headquarters' duties to allow NR members to remain in manoeuvre units. Jans and Schmidtchen describe how officers well suited for manoeuvre units are bewildered by the culture of national headquarters. Others, with potential as institutional strategists, are held back by the operations-centric career track.[38] NR personnel cannot be expected to build and maintain all of the expert knowledge required for a contemporary army. Instead, the NGS adopts the professional responsibility to shape organizational culture, define the army's security jurisdiction, and sustain an ethical social contract.

The NGS also wears badges distinct from the NRs to avoid misdirected loyalty to former regiments and factionalism

The NGS also wears badges distinct from the NRs to avoid misdirected loyalty to former regiments and factionalism. Officers serve on the NGS in traditional military ranks from major to general. They do not serve in operational theatre control centres and operational headquarters and do not perform bureaucratic functions in national headquarters. Instead, the NGS exercises a form of mission command over the NRs and to guide the civilian bureaucracy responsible for infrastructure, procurement, comptrollership, and so forth.

THE NEW PERSONNEL STRATEGY

Jans and Schmidtchen suggest that the familiar slogan "our people are our greatest asset" should become "our personnel systems are our greatest asset."[39] Personnel policies shape army culture more effectively than lists of espoused "virtues."[40] The new personnel strategy centres on service-life streaming; training and education; selection, promotions, and other conditions of service; personal and professional development; and the management of the whole.

SERVICE-LIFE STREAMING

Every officer and soldier in the Army begins service with the NR, and most stay there for the remainder of their service life. The first ten or fifteen years in the regiment are the "muddy boots" phase of army training and acculturation. This is the best way to make everyone a soldier first. At the mid-point of their service, however, selected individuals have the opportunity to permanently stream into three other roles. They may join one of the NSC, the NGS, or the civilian bureaucracy. Alternately, they may choose to leave the defence community and pursue another way of life. There are no streams or military occupations below these four broad roles. The development and management of specialized competencies and capabilities within the regiment are discussed below.

The NSC for personnel selection manages the streaming process, which becomes one of the prime personnel policies shaping army culture. Streaming channels people according to personality type, ambition, physical and psychological endurance, command talent, intellectual acuity and agility, strategic vision, and other characteristics. Streaming is critical to the formation of different cultures for the NRs, NSC, NGS, and the civilian bureaucracy.

TRAINING AND EDUCATION

People in each stream are trained and educated to achieve the depth, experience, specialization, and state of the art currency required for the post-Cold War environment. Officers remaining in the NR receive further tactical and operational theatre training at staff colleges. They focus on the thought process necessary for successful *mission command*. Senior non-commissioned members receive similar training at leadership and battle schools. Officers and soldiers selected to join a specialist corps or the civilian headquarters' bureaucracy pursue the qualifications and credentials of their professions and fields. Those who leave the defence community receive benefits for retraining or education. Officers selected for the NGS apply for graduate, inter-disciplinary programs at civilian universities related to the theory and practice of organizations and professions, military-civilian relations, geopolitical grand strategy, and cultural studies related to the host society.

SELECTION, PROMOTIONS, AND STREAMING METHODOLOGY

Selection and promotion are also prime personnel policies shaping army culture. The current counterproductive selection system[41] must be replaced with one that builds social capital, discipline, and professionalism. The new selection and promotion system fills vacancies, with or without a promotion, by holding competitions open only to persons currently serving in that regiment, corps, or general staff. Transfers and promotions do not occur in sequence from a central selection list, do not involve transfers from one NR to another, and do not stream persons between the four defence roles. Rank structures for each of the three military streams are engineered to obtain equitable ratios for promotion.

The NSC for personnel have sole authority over streaming, competitions for vacancies, and the decision to select a candidate. Internal and external observers, inspectors, and independent advocates representing the Army and the candidate closely monitor streaming decisions and competitions. These monitors have veto power for a streaming and competition outcome. The chain of command, however, is only one source of information among many and has no vote, veto or otherwise. This reduces the likelihood that insiders can subvert the selection system according to unit politics, self-interest, personality type, and other prejudices.[42]

The specialist corps collects information throughout a members' service life within a stable market of reputation and a 360-degree view.[43] Information comes primarily from the superiors, peers, and subordinates at the candidate's sub-unit. Supporting information may also be gathered from stakeholders at other units, from various NSCs, the civilian bureaucracy, the military community, and elsewhere. The information is not limited to opinion surveys or performance appraisals but includes a wide variety of indicators applicable to the individual, their sub-unit, regiment, corps, or staff. This data does not directly determine a score or a streaming and selection decision. Instead, personnel selection specialists are free to select, weigh, and interpret complex and detailed data according to professional standards, the char-

acteristics of the vacancy, and the circumstances at the unit. Written examinations are not recommended as a key qualification to avoid creating an artificial event that may interfere with the true goal of education. Local competitions should be less costly than the current, centralized, selection, and posting system.[44]

OTHER CONDITIONS OF SERVICE

Other conditions of service must support the new force structure and personnel strategy. Compensation and benefits, terms of service, perstempo, liability to deploy, universality of service, and pension and severance arrangements must be reformed to build good social capital, acculturate recruits to adopt the ethos of the soldier's life, and reward military professionalism. The Canadian Forces pay range structure, for example, has a limited number of annual increments with no overlap between ranks. It is based on the journeyman job rate and comparability with the Public Service. Neither has been fairly and consistently applied and are only partially relevant to military service. In the new personnel strategy, pay ranges remain stratified by rank but overlap to provide annual increases for as long as necessary to reward accumulated military experience and prolonged commitment. Compensation literature suggests that this policy is feasible, effective, and perceived as equitable by employees.[45]

PERSONAL AND PROFESSIONAL DEVELOPMENT

Personnel specialists manage a local system for each NR designed to match the supply of individual skills with the demand of unit requirements. The supply side consists of the individual's tangible competencies developed as much as possible according to individual interests, aptitude, and personality. The demand side is driven by NR requirements for specific capabilities within the broad categories of sense, act, shield, sustain, and command.[46] The new personnel strategy would only inventory tangible skills directly based on qualifications and experience. Intangible competencies are not inventoried and are only assessed for specific competitions for vacancies, streaming, or personal development. Individuals can acquire a wider range of competencies without concern for the current "one-size-fits-all" occupational career paths and corps/branch "turf." The NR can be easily re-grouped and re-tasked according to evolving operational requirements rather than regimental or corps tradition. A competition makes the final link between supply and demand by matching the candidate's unique competencies to the unit's requirements for a specific vacancy.

Here is how the competency approach relates to capabilities and streaming: recruits begin Army service with infantry tactics and only later specialize by skill and role, whether combat or support. Officers and soldiers with talent and interest to *command*, for example, acquire competencies related to personal leadership, tactics, and theatre operations. At the mid-point of their service-life, if they have demonstrated superior ability and ambition and their unit has forecasted vacancies, they likely remain as commanders in their regiment. Meanwhile, those interested in *sensing* capabilities, such as surveillance drones, can acquire competencies related to sensing technology, the tactical and theatre applications, the *sustaining* logistics, and so forth. They, too, can remain with the NR, specializing in sensing related roles, or stream to the civilian bureaucracy. They may even choose to work for a private sector supplier. Likewise, individuals best suited for tactical manoeuvre, (the *act* capability), can specialize in crewing a major weapons platform, such as armoured fighting vehicles. They may serve with the NR until retirement or stream to the civilian bureaucracy as an item life-cycle manager. Other officers

and soldiers may stream out of the NR into the specialist corps or the NGS. The permutations are almost endless.

The idea of personnel management by competencies is well established in the literature. Lieutenant General (ret USA) Walter F. Ulmer recommends a form of competency management for the US Army.[47]

MANAGING THE NEW FORCE STRUCTURE AND THE NEW PERSONNEL STRATEGY

The NR can assume a great deal of responsibility for its own success and failure under the new force structure and personnel strategy. The effectiveness of an NR is measured over the long term by rates of recruiting and retention. Readiness and operational effectiveness are measured at manoeuvre training centres and on deployments. The NGS can select well led and well managed NRs to absorb increases in strength, test new doctrines, receive new equipment systems, and embark on difficult deployments. Chronic problems with morale, strength, or competency/capability matching, meanwhile, become helpful symptoms for analysis and reasons for intervention. The leaders of problematic NRs can be held accountable and their units would receive remedial attention and easier deployments for as long as necessary Commanders cannot escape difficult situations with short tours, and problem soldiers cannot be passed on to infect other units.

The NGS manages individual and collective training, doctrine, and material policy to achieve adequate commonality and interoperability among NRs. A fair degree of divergence is desirable, however, to customize regiments according to regional differences and for specific operational roles. Cautious differentiation can increase the range of capabilities, recruiting appeal, and *esprit de corps*. It is important that the NGS and the NRs not interchange personnel to accommodate promotions, fill urgent vacancies, or to keep headquarters "in touch with the field." NGS candidates will be chosen for their ability to combine dedication to the Army with the objectivity and emotional detachment necessary to shape Army culture as a continuous evolution and not as an ad hoc, belated response to frequent crises. More importantly, both NR and NGS officers must master and remain current in their very different professional roles and build cohesion, trust, and reputation among their peers.

CONCLUSION

Military operations in the post-Cold War era cover a wide spectrum of capabilities. Military strength in the West depends on social capital, discipline, organization, and professionalism. Accordingly, forces must be all-arms, cohesive, adaptable, and manoeuverable on the scale of the battle group and combat team. The new regimental system provides the social and task cohesion, the stability, the experience, and the focussed professional role required for contemporary missions and doctrine. The Canadian Army must operate as all-arms, all the time.

Only an abrupt change to the army force structure and personnel policies can initiate meaningful cultural transformation. This paper recommends the formation of stable, unified NRs to master tactics and theatre operations. A few officers and soldiers stream at mid-service life into a series of new specialist corps and a new general staff so the New Regiment can maintain a distinct and cohesive culture. New personnel policies for selection, postings, and training build social ties, trust, reputation, and unique personal competencies.

General (ret) Sullivan warns that "The leader must change the critical processes within the organization if he wishes to effect true change. Working upon the margins, in increments, will not effect substantive and enduring transformation."[48]

About the Author...

HARRY BONDY is a Canadian Army major responsible for cultural concepts and personnel policy on the Land Staff at National Defence Headquarters in Ottawa. Major Bondy has served in the militia, Navy, Special Service Force, and Canada's far north and as a military observer with the United Nations in the Western Sahara. His inter-disciplinary research on military culture includes the analysis of modernism as a mode of discourse.

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A COMMENT ON "THE NEW REGIMENTAL SYSTEM"

Editor's Note: *In the spirit of generating academic debate, I have included comments on Major Bondy's proposal by Lieutenant Colonel David Banks, an infantry officer with his own views on the future of our Regimental System. Lieutenant Colonel Banks article will be published in the next edition of the* ***Canadian Army Journal****, and Major Bondy will be invited to comment. Thanks to both for their courage and commitment.*

Lieutenant Colonel Dave Banks writes…

INTRODUCTION

I am a believer in exploring the formation of a single combat branch to replace the existing armour, artillery and infantry. In my opinion, if we cannot (or will not) maintain armour and artillery branches that will deliver units with punch and capability significantly greater than what modern and complete infantry-based units could generate, these branches risk irrelevance and should be reduced to sub-MOCs or employment streams within a single combat MOC and not be permitted to survive with all the trappings, power and friction that such status entails.[1] We cannot tolerate camps dug in around certain pieces of equipment or limited capabilities, just as 20th century cavalrymen once rallied in defence of their horses. We should keep branches for a reason, not invent reasons for branches. Recent discussions of "branch convergence" and of the concept of a pan-branch direct fire support element further set the stage for this exploration.

It was from this personal perspective that I read Maj Bondy's article with great enthusiasm and interest. While I am in agreement with some of his points, unfortunately, I remain disappointed with the remainder.

My overall impression of this paper is that while the author starts out with a worthwhile idea—the restructuring of the combat arms into a single entity-he loses his way in a maze of conflicting premises, broad and often unsubstantiated generalizations and a barely concealed personal dislike of the current combat arms personnel management system. His "solutions" would, in my opinion, create problems beyond even what we face now. I will offer my detailed response to his paper below.

What follows is an opinion piece rather than a studious piece of scholarship replete with references. Those readers who value a work by the volume of quotes attached to it need read no further.

THE NEW REGIMENTS

The author opens well, with a series of good generic statements. Up to about the second paragraph, I am in agreement with him. The Army *should* be structured for flexibility and balance, and it should be suited to the full range of post-Cold War security tasks. So far, so good.

The author then begins to make assertions that if not questionable themselves, offer but weak basis for the conclusions he draws. It becomes plain that he has serious issues with the current Army system for selection, promotion and posting: this theme underpins the entire paper. For example, he asserts that both legitimacy and commitment in our Army suffer because "most" people who haven't been promoted beyond a very junior rank don't like the system. (I missed how he defined either "legitimacy" or "commitment" as they relate to his argument). While this may on the surface be "substantiated" with any number of quotes from various studies, in my opinion an empirical check is a much better way to determine the truth here. I challenge the author to show how our recent operational performance by Army field units (Kosovo, Afghanistan, etc.) demonstrates an Army suffering from a lack of either legitimacy or commitment. It is an "easy kick" for people who haven't yet been promoted to the rank they feel they deserve to blame it on a defective system. It is also easy, in any Army, to point to any number of people of superior rank whom one considers to be ill-suited, ill-selected or both.

Maj Bondy is quite right to identify the crucial nature of cohesion to the combat arms, and in this I believe he is well substantiated both by any number of writers as well as by empirical evidence. The lack of stability in our combat arms units has been a serious problem for years now, probably more so in the Infantry than anywhere else. I suggest that most of what we know about combat motivation tells us that it is stability of manning and commonality of experience at the unit and sub-unit/sub-sub-unit levels rather than at the formation level that a 5,000-member organization would represent that truly builds and maintains cohesion. However, it isn't clear to me how his system of endless regrouping for various task forces would strengthen cohesion, particularly at the unit level. It really isn't much different from what we have been doing for the last few years, and what the TSSU concept would expand upon (for better or for worse).

Restricting postings to within each new regiment would be a recipe for developing exactly the "factionalism" and parochialism that the author claims to oppose

Further on, the author introduces us to his concept for a personnel management system that he apparently believes would contribute to stability and cohesion. I sense a danger lurking here. While it is, on the face of it, very attractive, leaving somebody in a job for more than about three years would produce only a sclerotic promotion system, dangerous complacency and a general stagnation. I point to the regrettable situation that presently exists in a number of our Army reserve units, in which commanding officers are too frequently extended or recycled and other officers serve in unit positions for years due to a severe lack of depth in succession lists and a shortage of appropriate ERE positions.

Restricting postings to within each new regiment would be a recipe for developing exactly the "factionalism" and parochialism that the author claims to oppose, perhaps to a degree even worse than we experience today. It would be tantamount to restricting all of one's service to within a single one of our CMBGs now. If you add to that his proposal for very rigid distinctions between the new regiment, the new specialist corps and the new general staff, I suggest that the product would not be an agile, flexible, adaptable force at all. Instead, I think it would probably look and behave a lot more like the British Army at the end of the 19th century. Finally, while I agree with his description of the profession of arms under his proposed system, I fail to see any significant difference from what we believe today.

The author refers to a number of writers and authorities from the US Army and Marines in order to support his position. The USMC has for many years enjoyed the benefits of being one big regiment (although it is not quite as simple as that). While the Marine MOCs have their communities, there are no separate and fractious branches as we know them-there is only one Marine cap badge. The US Army, on the other hand, has struggled since WWII to develop a personnel management system that maintains cohesion while remaining both operationally and politically acceptable. To the best of my knowledge, both the US Army's Combat Arms Regimental System (CARS) and COHORTS were motivated at least in part by an admiration for, and desire to emulate, the Commonwealth regimental system that the author seems to condemn as an unscientific anachronism. Their recent experiences in OIF have reinforced their desire to achieve this goal of manning stability. Recently, the US Army announced that over the next decade it will move to a personnel system in which soldiers of all ranks will remain at the same location for several years, much of that time being spent with the same battalion. Pondering these facts, I must in all fairness concede that there may be something to some of Maj Bondy's concept. Notwithstanding that concession, I continue to take issue with much of it.

THE NEW SPECIALIST CORPS

After laying out his concept for the sharp end, the author describes the "New Specialist Corps" (NSC). He may not know it, but this separation of the "support army" from the "field army" seems to owe much to an idea developed by MacNamara and his "whizz kids" in the mid years of the last century (the functional groupings of the original post-unification CF reflected something of MacNamara's systems theory). It was not applied by the US Army then and has not been since. The author's exposition of his version of it offers no further reasons to adopt it in our Army now.

In my experience, "supporters" work best with (and for) the field Army when they look, sound and act like the soldiers they are supporting. The ideas put forward here such as rigidly segregating them from the new regiment, giving them different ranks and uniforms, etc. would do very little to build the vital trust and cohesion between supporters and supported. It would, in my opinion, lead to more factionalism, mistrust and to a serious lack of awareness by the supporters.

A hint of what may actually underlie the author's suggested division of the Army into modern equivalents of Spartans and Helots can perhaps be found in the telling phrase, "By marking the divergent culture of these professions as clearly separate, the New Regiment can focus its culture on the soldier's life…" Aha! We will prevent the pollution of the warrior ethos not by ensuring that everybody has it but by putting the unclean in a different uniform with different ranks and a separate corps where they can't harm the pure ones. They can, apparently "support and acculturate" them, but maybe those are harmless activities the way the author conceives them. This entire matter is further confused by the author's proposal that those supporters who provide deployable cbt sp and logistics directly to the new regiment would not be part of the NSC but would be under the control of the new regiment. Presumably these supporters would be imbued with the warrior ethos (or get it by osmosis). Excellent. But why not go further and ensure that everybody who serves in the Army subscribes to the idea of "soldier first, tradesman (or support officer) second"? I suggest that this might make for a much healthier and more cohesive relationship as well as ensuring that those supporters such as doctors and psychologists can move about adequately to ensure their professional currency.

THE NEW GENERAL STAFF

The new general staff idea is equally flawed and equally likely to contribute to a fatally sundered Army with little institutional cohesion. Even the Germans, in the ultimate conception of their general staff, never imagined a rigid restriction on movement between troop duty and staff duty. To the contrary, they regarded such exchange as a necessary part of the development of both a successful staff officer and a commander, just as we do today. The author's proposal to allow only a mid-career transition to the NGS from the new regiment, with no meaningful interchange between the two entities, would in my opinion produce two things: a field Army led by parochial ignoramuses and a general staff filled with officers sorely detached from the reality of operations and the consequences of their own plans. Rather reminiscent, I might add, of the fox-hunting, *fin de siecle* British Army mentioned earlier. Once again, not a particularly useful course of action for strengthening either cohesion or effectiveness.

THE NEW PERSONNEL POLICY AND PROFESSIONAL DEVELOPMENT

The new personnel policy described in the subsequent paragraphs appears to contradict some of the earlier premises of the paper. If we read back, we see that the NSC is to be segregated from the new regiments in every practical way. It is not clear how the NSC would maintain a useful and current understanding of life in the field force. Yet, if I understand the author, he would put the management of the new personnel system in the hands of these same culturally isolated people. As I understand the situation in our Army today, a good number of our field unit COs find that their powers with respect to personnel issues are at least circumscribed, if not diminishing. The author apparently intends to relegate the chain of command to an even more secondary role. Who is better to judge us than those who see us every day doing our jobs and who have probably done those jobs themselves? This proposal , I suggest, would take us beyond even the awkwardness and inadequacies presently inflicted on the Army to new depths of centralized bureaucracy.

The author proposes what amounts to a “closed shop” promotion system will be applied that restricts candidates to those serving in the unit. Once again, I suggest that this would risk inflicting upon the field force one of the more lamentable aspects of the current Army reserve unit-based personnel system: selection from a severely restricted base of candidates and the inherent last-man-standing promotion system that too often entails. Once more, parochialism and factionalism between new regiments (not to mention the three military branches) would be almost guaranteed.

It is evident that he considers our present system of selection and promotion to be too covert, “unscientific” and arcane to be of much value in the new regiment. I am wary of scientific ideas about managing and leading people, especially in the Army where personal factors count for so much.

At this point I will relent to say that I agree fully with his assertion that conditions of service and personnel policies must support force structure and professionalism (even if ultimate achievement of this excellent goal will only occur on the day we finally de-unify the forces and focus on operational jointness instead of administrative unification). That said, I am not sure that any of his courses of action would serve materially to obtain that aim.

In his paragraphs on professional development and personnel strategy the author yet again runs afoul of some of his earlier assertions. For example, he states that matching personnel supply to demand will be the responsibility of personnel specialists within the new regiment. However, he earlier stated that personnel selection and promotion was to be conducted by the NSC, a body I identified as being particularly unsuited to the task due to its cultural segregation.

I agree fully with starting all soldiers and officer candidates with infantry training: in my own thoughts on a single combat branch this is also a key tenet. Following this good start, the author falls into a hole again. Earlier, he stated that there would be no sub-streams below the four major divisions. However, I believe that the author is recommending that there would in fact be sub-streaming, based on competencies such as operating ISTAR systems or crewing AFVs. I am somewhat in agreement with this concept: I am merely pointing out an inconsistency.

When he first describes the new general staff, the author proposes the rigid segregation of this body from the field force; a move that I believe will likely to lead to a stultified, detached higher staff. Yet the author goes on to assign to this same new general staff the business of managing "the individual and collective training, doctrine and materiel" needed by the new regiments. Having spent a few years as a staff officer at various levels, I shudder to think what such a cloistered staff might produce and later inflict on the field force in the way of silly or irrelevant training ideas. It is difficult to imagine how this segregation would contribute in any useful way to the development of "cohesion, trust and reputation" that is so necessary between line and staff. One is reminded of the confrontational relationship that existed between line officers and the "red tabs[2]" of the First World War British Army. The result would likely only be further aggravation of the various schisms that this proposed force structure would create.

As an advocate of exploring a single combat branch, I first approached Maj Bondy's paper with enthusiasm, hoping to find the words of a kindred spirit. In all fairness, I must say that Maj Bondy and I are probably headed for a single objective but through rather different approaches. While I confess to agreeing with some of his points, I find the remainder a recipe for institutional dis-integration and parochialism that would only exacerbate problems we face now. Regimental life would no doubt be quite satisfying, if a bit boring after, say, seven or eight years in the same job. Beyond that limited achievement, Maj Bondy's paper offers nothing but a recipe for a narrow, introspective Army riven by a factionalism that has merely had its focus shifted from its present level of traditional regiments and corps to their proposed successors of the new model army. I don't see how implementation of this concept would make us better as a whole Army, which is what we must achieve.

ENDNOTES

1. If, on the other hand, we intend to maintain these branches at levels of unique strength and capability that would significantly exceed what an infantry-based combat branch could achieve, then my concept is rendered irrelevant. At the moment it appears more likely to me that the days of heavy iron in the Canadian Army are fast drawing to a close, and that this impending closure is provoking a search for relevance.

2. A derogatory term applied to General Staff officers because of the red blazons on their tunics.

ACHTUNG DRIVER! VEHICLE CONVOY SECURITY IN A UNIQUE ENVIRONMENT

Captain George Jager

"We have treated, tried and found defective, much that we fancied perfect in the training, organization, clothing, equipping and arming of all branches of the Service…We have seen, too, how easily mistakes can be made through ignorance of the first principles of manoeuvre, and through inexperience in those officers who are best instructed in the theory of strategy and tactics."

Naval and Military Gazette, 1853

INTRODUCTION

The seed of this document came from my experiences as the officer commanding (OC) Transport Squadron, Republic of Sierra Leone Armed Forces, from January to June 2001. The Sierra Leonian troops that I had under my command had spent the last ten years in a revolutionary situation, while suffering through several governments controlling the country. Throughout this time, they continued to attempt to perform their duties, and some of the soldiers paid the ultimate price for their loyalty. In conversations with many of them, it became quite clear that they had experience in being ambushed but they really did not have a sound way retaliating. A number of my soldiers still carried the wounds of their experiences, but were still willing to fight for the cause. I was able to glean from them how the enemy normally attacked and how they normally responded. The one thing that was obvious was that they could not adapt to enemy action. However, what was also clear was their loyalty and their willingness to develop their training to overcome their shortfalls. This document is based on my experiences in Sierra Leone, Canadian doctrine [combat service support (CSS) tactics and light armoured vehicle (LAV) III company (Coy) tactics], as well as some of my own ideas.

Any CSS organization that is moving must be capable of defending itself and the load that it is carrying, be it materiel or troops. Jungles offer a unique challenge to this task. It must be able to work in a combined arms team, and be able to coordinate external attachments into the defensive plan. An armed escort provided by another unit must be able to superimpose itself over the defensive plans of the unit seamlessly, adding to the defensive ability of the unit rather than being the only layer of defense.

Military forces in many African countries are prone to superstitious beliefs and will fall back on the idea that their life or death is in the hands of the gods. While this is not much different than our western European beliefs, the Africans use this reasoning to avoid fighting with determination. An aggressive counter-attack to an ambush can in most circumstances quickly turn the tide of the battle. If the soldier believes that the gods are on his side, the act of stepping out into the middle of the road and firing a hand held rocket launcher like a rocket propelled grenade (RPG) into the lead vehicles of a convoy is not unusual. This act will trigger an ambush. If the reconnaissance and advance vehicles of the convoy are prepared for this type of action, a successful ambush can either be avoided or easily defeated. If the enemy soldiers see that the convoy

moves in a confident manner with a very heavy show of firepower, they will be reluctant to attack as they will believe that the gods were not looking favourably upon them this day. The success or failure of an attack can be as simple as making the opposition prematurely spring an ambush or by discovering the ambush before it is ready. In any event, an immediate and strong response is likely to defeat an ambush.

DEFINITIONS

Small villages are the most likely spots for any ambush as they are usually surrounded by heavy jungle, allowing any ambushing force to have easy access to supplies while still having the ability to melt into the undergrowth rapidly. They are normally not much larger than 500-1000 m in length with buildings on either side of the main road.

Large villages are more substantial (almost towns), where a large part of the population is on the streets during the daytime hours. Any type of ambush would be with the support of the local population, and vigilance is thus required. One sign of possible enemy presence would be a lack of activity in the village. Intelligence on possible belligerent activity would dictate whether it is safer to move by an alternate route around the town.

TRANSPORT COMPANY EQUIPMENT REQUIREMENTS FOR CONVOY OPERATIONS

The company should be equipped with the following vehicles and equipment as a minimum:

♦ Each platoon should be equipped with one Gun Truck (GT). The platoon vehicle that is configured as the GT should be capable of going to the same places as the rest of the vehicles in the platoon. It needs to be just as robust as the rest of the vehicles and should not stand out, being neither smaller nor larger or looking radically different than the other vehicles. The only vehicle in the Canadian Forces (CF) inventory that matches that description is the heavy logistic vehicle wheeled (HLVW) cargo with add-on armour kit (preferably without a hydraulic lift arm). The vehicle should be equipped with at least one heavy machine gun (HMG) mounted on a frame in the rear compartment, as the gunner's cupola is not designed to withstand vibrations of any weapon heavier than a light machine gun (LMG). It should be capable of covering 180 degrees to the front, with the ability of being swung around to fire 180 degrees to the rear. The vehicle should

Sierra Leone Army Convoy winds its way through the crowded streets. (Photo courtesy of the author)

have two medium machine guns (MMGs) mounted on brackets on each rear corner of the vehicle with coverage of the right and left arcs respectively and to the rear. Consideration should be given to having armour plating or some type of armoured cupola around the HMG and armour plating around the MMGs. The vehicle should be equipped with automatic smoke grenade dischargers as well. The crew compartment should be armoured. If an air conditioning unit is installed, it should be placed on the back wall of the cab, thus avoiding obstructing the HMG position. The vehicle should also be equipped with communications equipment and there should be a wire cutter installed on the roof of the cab to protect the gunners.

One example of a Light Escort Vehicle (LEV) on convoy escort duty (Photo courtesy of author)

♦ The platoon reconnaissance (recce) vehicle (PRV) should be a four wheel all terrain vehicle (ATV). The vehicle should be equipped with a wire cutter and the driver should have a radio to maintain communications with the convoy command team.

♦ The light escort vehicle (LEV) should be similar to a Jeep, Landrover, or Mercedes Benz G Wagon and should have at least two pintle-mounted MMGs to allow for 360-degree coverage. It should ideally have a soft top for removal to allow for freedom of vision. It requires communications, a wire cutter and automatic smoke grenade dischargers.

♦ The command vehicle should be the same type as the LEV with one MMG. In addition to the commander, it should be crewed by a driver and a gunner. The gunner acts as a close protection party for the commander during halts and mans a MMG while on the move.

♦ The rest of the company vehicles should be manned with a driver and co-driver. The co-drivers' responsibility is the cupola both on the move and during halts. Each vehicle is given an arc to cover while on the move and at halts. The vehicle should have a wire cutter installed to protect the co-driver/gunner.

♦ The rear of the convoy requires protection. If the convoy is a troop lift, the commander of the troops in the rear vehicle is tasked with providing rear security. If the convoy is a re-supply run, the rear security rests with the transport company and depending on the threat there may be a requirement for extra sentries.

♦ The convoy trail also has to be included in the defensive plan. The trail requires communications and a robust defensive plan. This may include an extra vehicle with troops (drawn from the company) to provide security specifically for the trail party. The size and composition is dependant upon the type and size of convoy. As a minimum, it should be a vehicle fitted with at

least two MMGs, like a LEV. In most circumstances, if the trail party is robust enough, there will not be a requirement for the convoy to halt for a breakdown. As there will be halts established during the planning phase, the trail party will catch up to the rest of the convoy at the halt areas.

♦ The platoon should have medium range anti-armour weapons (MRAAWs) and short-range anti-armour weapons (SRAAWs) assigned specifically to convoy duty in addition to those assigned to the company/platoon defensive position.

EXTERNAL SUPPORT REQUIREMENTS

Helicopters have the added advantage of providing extra battlefield situational awareness (SA) as well as rapid intervention. Prior to the deployment of a convoy road move, the convoy commander and the supporting aviation commander must coordinate their plans in the event of an ambush (i.e. coloured smoke, panel markers, etc). Communications should be established between the two units while on the move. As well, any opportunity to develop and practice anti-ambush drills with the helicopter squadron should be taken. The helicopter squadron and the Transport Coy should be aware of the capabilities and limitations of each other in order to minimize confusion in the event of an ambush. Aerial recognition should be clear and follow friendly forces policy.

Artillery support should be made available during convoy moves. Members of the Transport Coy should receive training in engaging enemy forces with indirect fire support. Convoy commanders and packet commanders should, as a minimum, be trained in these procedures. If the convoy is moving troops, then the convoy commander must confirm who will be responsible for employing artillery assets, either someone in his headquarters (HQ) or an element from the convoy. Depending on the tactical situation, defensive fire (DFs) points along the route should either be recorded or registered.

In the event that there is a convoy escort group, any response to enemy attack must be coordinated. Counter-ambush drills must be rehearsed together by both groups in order to maximize the destruction of the enemy and minimize damage to the convoy. The employment of the integral defensive resources of the convoy must not interfere with the employment of the convoy escort group. PRVs should still lead the convoy and LEVs should be integrated with the armoured vehicles. Standard operating procedures (SOPs) should be worked out in dealing with limits of exploitation of the counter-attack as well as target acquisition drills.

CONVOY DRILLS

The convoy should be formed up with two PRVs leading, followed by two LEVs approximately two to three km behind. The main body should be approximately two km behind the LEVs. The command vehicle should be two to three places into the convoy, with a section commander leading the packet. The GT should be located somewhere near the end of the first third of the convoy, though there should be variations, as the enemy will be able to define a pattern and make adjustments to his ambush plans.

As a general guideline, vehicles should keep a distance of between 50-100 m between them. As the terrain opens up, the vehicles should spread to the maximum distance and when they move into close terrain the distance should be reduced. Vehicles should always be teamed in pairs, thus allowing for mutual supporting fire. Vehicle speeds should be between 30-50 kph or slower

as road conditions dictate.

While on the move, all top gunners should keep an eye out for any suspicious activities. As the sides of the roadway are usually obscured with elephant grass during the dry season it is important that extra vigilance be taken. Any unusual cutting down of the grass should be viewed as suspicious and should be brought to the attention of the convoy commander. The PRV and LEV teams should be extra cautious when approaching villages that do not have any people present or when the flow of vehicles or personnel coming from the opposite direction has disappeared. Any village that appears abandoned should be immediately considered suspect and the convoy should be halted well short of the approaches.

Convoys in closed country require frequent halts with the PRVs and the LEVs ensuring that the road ahead is secure. The route should be divided in sectors and each sector should be cleared before the convoy moves into it. This tactic takes time and this must be factored into the convoy commander's time appreciation.

Any small village that may be considered suspicious should be entered and exited with extreme caution. The following drills should be established:

- PRVs approach the village entrance and make visual recce to see if anything is out of place.
- PRVs then proceed through the village slowly, using alternate bounds.
- Once through the village the PRVs continue their recce of the route outside of the village, looking for any signs of an enemy ambush. They should contact the convoy as to their status and secure themselves approximately 3-4 km outside of the village.
- LEVs would then enter the village entrance and establish themselves on over-watch, and await the convoy.
- Upon entering the village the vehicles in the convoy should proceed slowly in pairs 20 m apart and continue until they were approximately 2-3 km outside of the village and then halt to form up in proper order. The vehicles should maintain a distance of 10-20 m apart at the halt. As the vehicles are halted the top gunners are again required to maintain an all around defense. The GT should be placed in a location that allows it to provide over-watch until such time as the LEVs returned to the head of the convoy. Once completely through, the LEVs move forward and meet up with the PRVs, and await the order to continue the road move.

Commanders should make every effort to avoid following the same routine during their convoys. Making routine halts in the same location on commonly used routes should be avoided. Several areas should be identified as possible halt areas, but a unit should occasionally choose a previously unused area. These areas should be identified during a map recce, and a primary and alternate site should be chosen. During the move, the PRV team should confirm that the site is secure and the convoy commander can decide if the halt area will be used. If the site is chosen, the PRV team moves forward to an area approximately 2 km beyond the site and the LEVs move into over-watch positions, awaiting the arrival of the convoy. Once the convoy arrives, the GT positions itself in an over-watch position as well. The halt area has to be large enough to accommodate the vehicles with a spacing of 10-20 m between vehicles. The vehicles may also be spaced in staggered formation on either side of the road, ensuring that an all around distance of 10-20 m is maintained and that the convoy maintains a 50% stand-to posture. Once the halt

is completed, the LEVs and PRVs begin to move forward. Once the escort vehicles have moved off, the remainder of the convoy moves on order of the convoy commander. Sufficient time should be allowed for the escort vehicles to get into their positions ahead of the convoy.

Defiles can be defined as short or long. A short defile is one where the end of the defile can be seen from the mouth. A long defile is one where the end of the defile cannot be seen from the mouth. Defiles can be cleared either mounted or dismounted and it is a command decision based upon the threat and on time constraints. While clearing dismounted is more secure, the longer length of time it takes may impact on the overall operations plan. In the case where a convoy escort is provided, the convoy commander, in concert with the convoy escort party commander, decides how the defile will be cleared. In the case where there is no escort, it is unlikely that the convoy will have enough troops for a dismounted operation, thus the following technique should be carried out:

- For a short defile the PRV team should recce the area ahead of the defile. Once satisfied that the area is secure they would proceed through the defile, one at a time, and recce the area on the far side of the defile, again confirming no enemy presence. The PRV team then advances 1-2 km ahead and wait for the convoy to pass through the defile.

- For a long defile the following procedure should take place:

  - The PRV team should recce the area before the defile. Once satisfied that the area is secure, the PRV moves into the defile up to a point where they can see the next leg but still maintain line-of-sight with the opening of the defile.

  - The LEV team should by this point have moved forward to the opening of the defile. It should move forward to the next leg where the PRV team is waiting. Once there the PRV team should move forward to the next bound, where line-of-sight again changes.

  - These two teams continue this until they make it through the defile. Once through, the PRV team moves forward approximately 2-3 km and secures a halt area.

  - While the defile is being cleared, the GT should move forward to the mouth of the defile and provide over-watch. Once the defile has been cleared, the remainder of the convoy should move through the defile two vehicles at a time, providing mutual protection, keeping a spacing of 10-30 m apart.

  - The GT may be required to move forward to another over-watch position if there is a significant change in the line of site or the convoy commander wishes to send a dismounted team to clear the defile on either side instead.

  - The LEV team should be stationed at the other end of the opening of the defile to provide over-watch.

  - Once the last two vehicles have passed by the GT, it, along with the trail party, should proceed through the defile.

  - Once the entire convoy has passed through the defile they should get back into formation at the halt.

Bridge types in Africa tend to be of two types, small short bridges, 25-50 m in length, and very long narrow bridges (usually former railway bridges) over very wide, shallow rivers.

Short bridges are usually not an issue, however, caution and intelligence gathering can identify those that should be of concern.

Long bridges should be approached in a similar manner to long defiles, villages and halts. The areas 200-300 m before and after the bridge are most vulnerable to an ambush. The following procedures should be followed when crossing long bridges:

♦ The PRV team should recce the area before the bridge. Once satisfied that the area is secure they should move across the bridge, one at a time and recce the area on the far side of the bridge, again confirming no enemy presence. The PRV team should then advance 2-4 km ahead and wait for the convoy to cross the bridge.

♦ While the PRV team is performing reconnaissance on the far side of the river, the LEV team should establish an over-watch of the bridge. Once the convoy was in sight of the bridge the LEV team would move across the bridge one at a time and establish an over-watch on the far side. The convoy would halt just before the bridge and the GT would move forward to provide over-watch on the near side of the river.

A robust counter-response will mitigate some of the damage and may turn an unfair fight into a victory

♦ The LEV team would then move forward and secure a rendezvous (RV) point approximately 1-2 km beyond the bridge and await the arrival of the convoy.

♦ The convoy commander should establish a dismounted fire team on either side of the bridge and begin to move his vehicles across the bridge, forming up in the forward area that has been secured.

♦ In order to minimize targets of opportunity for the enemy, the vehicles should cross the bridge one vehicle at a time. Once the all of the vehicles in the convoy have crossed, the fire teams mount up and move to the RV point. The fire teams should be drawn from the rear party escort or one of the convoy vehicles. This is in addition to the GT.

♦ The GT also waits until the convoy had moved to the RV point and moves forward to meet them there.

♦ Once the convoy had reformed at the RV point, the convoy commander issues orders for the convoy to continue in the same formation as at the start of the road move.

Large villages should be bypassed at all costs if there is any possible threat. The close proximity of the buildings to the roads and the lack of clear escape routes, not to mention the usual large numbers of civilians on the streets makes any action on the part of the convoy very difficult.

ACTION ON AMBUSHES

The first lesson that must be learned by a unit in regarding an ambush is that a robust counter-response will mitigate some of the damage and may turn an unfair fight into a victory. The leadership must also ensure that anti-ambush drills for likely scenarios are practiced, but they must not solely rely on drills. Each scenario must be slightly different each time so that the troops and leadership are tested on their ability to respond in an effective manner.

The usual method of tripping an ambush in Africa on roads in open and closed country is to have an RPG gunner step out into the road and fire at the approaching vehicle. The vehicle gunners

must be vigilant at all times and should make every attempt to counter this action by firing at the soldier as quickly as possible. While they may not kill or disable him, they may cause him to miss his shot or abandon the idea completely. The firing of the LMG by the vehicle gunner will also be a warning to the vehicles following. While the ambushing soldier may be able to fire the first round, the danger of getting killed or injured from heavy return fire will give him pause about raising his head above his protective cover and continuing to fire. The convoy members should be briefed on RV sites to be used in the event that there is an ambush and some vehicles have been destroyed. There are three general circumstances when a convoy is ambushed:

♦ **Progress not held up**. This type of ambush would be based on harassing fire, usually from a sniper, in areas where the road is in more open terrain. Any vehicle that comes under this type of fire should continue and increase its speed. The vehicle gunner should try and identify where the firing has come from and if possible return fire. At the next halt the information should be passed to the convoy commander and through him to higher HQ. Higher HQ will be able to make a decision on what actions will be taken and the type of convoy that was ambushed. If it is a troop convoy, there may be a requirement to send some of the troops back to sweep the ambush site. If helicopter escort is being provided, then the vehicle gunner should be able to direct them by a pre-arranged signal and, if the helicopter crew can identify the enemy, engage them. The convoy should not take the same return route unless there are no other options.

♦ **Progress held up**. This type of ambush occurs when the lead vehicle has been disabled or destroyed, and if it is a well-set ambush, the trail vehicles as well. In circumstances such as these, the first few moments will be both very crucial and very confusing. The most likely methods used in Africa would be to start the ambush with an RPG round into the first vehicle which would signal the remainder of the ambush party to start firing at targets of opportunity. Whether or not the vehicle gunner is capable of countering the initial attack, the ambush will have been sprung and the enemy will have begun their attack. Any vehicle gunners who are within the ambush zone should begin returning fire towards the enemy positions (or towards the sound of fire). If the vehicles are carrying troops, the section commander should have them dismount rapidly and organize them to launch a quick attack. The vehicle gunner and the driver are responsible to give them covering fire. Should the LEV and the command vehicle be in a position to return to the ambush site, or are in the ambush zone, then the command personnel should dismount, get apprised of the situation and attempt to take control of their troops. A contact report should be sent immediately, and any supporting elements should be called in if possible, including helicopters and artillery. The LEV should move into a position to offer covering fire to the vehicles and personnel caught in the ambush zone to assist them in extricating themselves. Once they have succeeded in this task, they should continue to lay down fire to suppress the enemy and be in a position to fire in a counter-attack if one is ordered. The GT should also move forward to a position to offer covering fire, being mindful of possible enemy action. The GT should be able to stand off a certain distance due to the range and firepower of its weapons. The GT detachment commander will have to make the decision on where to sight his vehicle until such time as the command element is able to confirm the position or move the GT to another location. If there is an armed escort with the convoy it should move into a position to assist in the firefight and counter-attack if one is ordered.

♦ **Some elements not held up, remainder held up**. In these circumstances, lead elements of the convoy have gone through the ambush. The lead elements will have to find a halt area several kilometres from the site of the ambush in order to regroup. The command element will send in a contact report and be prepared to return to the site to take command of the counter-attack. The command element must also be prepared to call in artillery fire or helicopter support. The location of the GT and the LEVs dictate what action should be taken. The main role of these vehicles is to lay down enough heavy fire to allow troops caught in the ambush to withdraw. In most circumstances, the vehicles will have been abandoned or destroyed. The intent of the counter-attack would be to destroy the enemy and deny him any of the supplies or information that is on the vehicles. Any held-up vehicles not in the ambush zone should move to a pre-arranged RV site and await further orders.

Ambushes on a bridge will be sprung by allowing a lightly escorted or unescorted portion of the convoy to pass and then attacking a vehicle on the bridge, blocking any further progress. At the same time the enemy would spring an ambush on the vehicles that have already crossed. The use of the LEVs and the GT as well as dismounted troops on the far side will reduce the chances of this type of ambush. However, should this occur, the vehicles on the far side of the river should immediately attempt to push forward through the ambush to a prearranged RV site. Due to the inherent dangers of this type of ambush, the convoy commander must have as much supporting firepower as possible to minimize the damage. The availability of helicopters and artillery are vital in countering this type of ambush. The requirement to have dismounted troops and over-watch cannot be dismissed. Progress over a long bridge will be slow and the need for security is great. The halt area before the bridge must be far enough away so that any vehicles waiting a call forward are not caught in a bridge ambush. They must be at 100% stand-to in order to avoid being surprised by the enemy. Any armed escort should assist in providing over-watch in concert with the GT and LEV.

An ambush in a defile is similar to that of a bridge ambush. The enemy will likely allow a portion of the convoy through and then block the access of the remainder of the convoy and destroy it. It is important that the convoy commander move quickly to the scene of the ambush to try and bring in support fire from either helicopters or artillery. By keeping the LEV and the GT and any armed escort vehicles in over-watch positions, the commander can reduce the risk of these vehicles getting caught in the ambush zone, allowing them the opportunity to move to a secure position to bring down effective fire as rapidly as possible.

The danger of responding to an ambush in a small village is the large number of civilians who may be hiding in their homes. Most houses in Africa are made of mud bricks and cannot withstand small arms fire. The enemy will use the buildings to hide behind and in when launching an ambush, increasing the danger to the civilian population. Vehicles should travel at about 50 m apart, thus being close enough to offer mutual support without endangering themselves by being too close together. The escort team must be highly disciplined in these circumstances and ensure that they do not fire indiscriminately. Aimed shots at known or suspected positions is the desired action. The vigilance of the top gunners and the escort vehicles is paramount to the success of countering an ambush in a small village. Most villages have only the main road running through them, with any side roads dead-ending. In the case of an ambush, any vehicles that are not caught in the ambush zone should pull off between some of the houses and the troops

should dismount in order to have better protection and, if possible, begin to return fire at the enemy. In this case, helicopters are not an option unless enemy soldiers are seen fleeing from the village. The GT and the LEV teams in over-watch positions will have to lay down suppressing fire, mindful of the civilian population. The convoy commander then decides if he has the forces available to him to clear the enemy from the village or withdraw any of his forces in the village.

RECOMMENDATIONS

While the addition of an armed or armoured escort is always a welcome addition to a unit moving in potentially hostile terrain, the unit must be capable of a robust self-defense. Far too often, lip service is paid to the idea of self-defense when we train. We rarely get attacked, and when we do it is more of a haphazard attack, which is not necessarily based on what could be expected from an organized enemy force. The response is usually based on panic, followed by driving away quickly. When, on the rare occasion there are "umpires, or observers/controllers," the criticism that is offered is not valid due both to the subjective nature of their observations and their lack of experience in ambush/counter-ambush drills. In order to overcome this weakness, a solid training regimen should be put in place. To counter an ambush, the CSS soldier must have a strong will and a positive attitude towards his own abilities and that of his peers, which comes from having the right training and the right equipment. The training must be realistic and challenging, and ongoing. The advent of the Weapons Effects Simulation (WES) system in the near future will greatly enhance the ability of carrying out realistic training, with the caveat that convoy training must be a priority for CSS units. Equipment holdings must be reviewed to identify any improvements or modifications that can be made to increase a convoy's chances of survival.

All members of the unit should go through several weeks of individual training to practice and improve their skills, both in dry and live practices. While all of the members of the unit require the minimum standard of training, the Individual Battle Tasks Standard (IBTS), members of the convoy escort team should attain task specific training as well. Training should be robust and challenging, including, but not limited to, weapons handling, including the LMG, MMG, and HMG as well as their personal weapons. They should also have extra practice in driving under difficult conditions, including driving through roadblocks, and driving on difficult roads. The teams should also practice responding to ambushes, engaging in counter-ambush drills, firing on the move and providing fire support for dismounted counter-attacks.

To counter an ambush, the CSS soldier must have a strong will and a positive attitude towards his own abilities and that of his peers, which comes from having the right training and the right equipment.

Once all of the troops have attained proficiency in their individual skills, they must begin practicing the convoy drills. The convoy escort team members should meet up with the rest of the convoy team and begin practicing their escort duties, including driving in convoy formation and driving through and responding to enemy actions in defiles, bridges, villages and close country. The entire convoy team must become accustomed to reacting to effective enemy fire and being able to respond in a coordinated manner to gain practice and confidence in their actions. They should also practice live field firing, both static and from a moving target. A "jungle lane" for vehicle convoys, with variations built in so that the troops are faced with a different scenario on each "roll through"

should also be developed. The convoy troops should also be involved in conducting ambushes on convoys in order to "see what the enemy sees."

Different convoy types should have a specific order of march that limits destruction of valuable resources:

♦ Convoys that are moving supplies only require a robust escort party. They also have to ensure that they utilize the standard SOPs that keep certain vehicle types away from each other, i.e. ammunition and fuel.

♦ Mixed convoys are convoys that have both troops moving forward or rearward as well as vehicles with supplies. The supply vehicles should be mixed in with the troop-carrying vehicles, allowing for a greater response to any attack.

♦ Troop convoys are troops that are carrying out a relief in place. The supplies that the moving unit is taking forward or rearward should be towards the rear of the convoy, but should have at least one troop-carrying vehicle dedicated to its primary escort. The leadership of the moving unit must coordinate with the convoy commander as to what is to occur in the case of an ambush.

Regardless of the fact that a returning supply convoy will most likely be empty, the same vehicle order of march should be maintained. This assists in maintaining discipline and command and control (C2), as the drivers, co-drivers and security teams will know where everyone is located.

Security personnel who are to provide intimate support to the convoys should be specifically assigned to the defence and security (D&S) platoon and can be of any trade. The structure of a unit deployed overseas would have to take this requirement into account. The platoon should have a strength of 35-45 personnel, have vehicles assigned specifically to them, they should train together as convoy escort teams, and the assignment should be for a specific length of time in order to develop team cohesion.

CONCLUSION

Leadership at all levels must have a warrior spirit and be prepared to respond in a robust manner to any threat. Our training must emphasize this aspect of leadership as part of the routine training activity rather than minimize its importance. Recent events have shown us that support troops are just as vulnerable as the combat arms when is comes to being ambushed. The difference between successfully defeating an ambush and being destroyed is the type of response that takes place. The focus of training must be more balanced with soldier training, both individual and collective, taking on a more prominent role in CSS training. The damage that occurs when CSS troops are poorly trained in soldiering skills is much greater than when CSS troop's trade skills are weak. If a delivery point (DP) operation goes poorly and a unit does not get its supplies, a supplemental DP can take place to correct the problem. On the other hand if the road move to the DP gets destroyed in an ambush, then there is little recourse to correct the problem.

The convoy escort team should be an integral part of the CSS unit. These troops can be of any trade, have experience in operations and be specifically designated for this type of work. They should be experts at the job of defending a convoy, thus ensuring a successful and coordinated response to any ambush.

The maintenance elements that travel with the convoys should be the members of the integral support of company. They must be involved in all training events to ensure that they are fully integrated into the anti-ambush drills.

In order to become successful in our training regimen, we must learn from the experiences of other armies and apply and practice those lessons in our own units. A trial of tactics, equipment and vehicle configurations should be done in order to identify the direction we need to take in the future. Our junior leaders must be aware of what happens during an ambush and what actions and reactions work and do not work and spend time training. We must ensure that we fund and equip our units properly, train them in realistic and effective anti-ambush drills, preparing them to go to war, no matter what the mission may entail.

About the Author...

Capt George Jager is currently the Operations Officer for 1 Service Battalion in Edmonton, Alberta. This article is based on his experience while employed as the Transport Company Commander for the Sierra Leone Army, a job for which Capt Jager was recently decorated.

— BOOK REVIEWS —

A PREMATURE REPORT OF OUR DEATH

A Review of
Who Killed the Canadian Military?
By J.L. Granatstein, HarperFlamingo Canada (2004), 250 pages, $24.95

Reviewed by Colonel Mike Capstick

This is a difficult review for a serving soldier to write for two main reasons. In the first place, Dr. Granatstein's eloquent and impassioned plea for a Canadian Forces capable of advancing the nation's interests is essentially political. It deals with ministers of the Crown and prime ministers—it is about their decisions and indecisions—and it describes the historical trajectory of Canadian defence policy since the end of the Second World War. For a serving officer or soldier, it is tough to analyse Granatstein's critique of defence policy within the bounds of the military profession's understanding of the concept of subordination to the civil authority. Secondly, this reviewer has served for almost three of the five decades covered in this volume. Most of that time was spent as an officer in field units, and I have more than a bit of discomfort with some of Dr. Granatstein's characterizations of events and his interpretations of military activity. Neverthless, despite these issues, *Who Killed the Canadian Military?* must be reviewed because it must be read by all military professionals who care about the future of the institution.

Dr. Granatstein has provided Canadians with a compelling and incisive description of the evolution of Canadian defence policy since the end of the Second World War. His evaluation of major global strategic events and the responses of Canada's political leadership is a new look at familiar elements of the national peacekeeping myth. He deals with the Korean Conflict, the Suez crisis of 1956, the near-nuclear American-Cuban confrontation of the 1960s, Cyprus and the other major engagements of the Cold War from the point of view of an avowed realist. In doing so, he adds much needed perspective to the grand narrative of liberal internationalism

that most Canadians uncritically accept as fact. Most importantly, he reinforces the simple truth that the military professionalism of Canadian soldiers, sailors and airmen and women—in other words, warfighting skills—has been the main ingredient of operational success. Too many Canadians have never understood this fact and have bought into the fiction that the first identity of Canadian military professionals is that of peacekeeper. Granatstein clearly rejects the validity of that presumption and insists that Canadian policy-makers do so as well.

Who Killed the Canadian Military? is advocacy. Dr. Granatstein holds a particular (realistic) world-view and argues that Canada's relevance on the world stage largely depends on our ability to influence international events with the instruments of "hard power." He contends that the will and ability to use armed force in pursuit of Canadian national interests are essential to our future as an influential member of the international community. Even those who would disagree with his hard-nosed approach to international politics should understand that the instruments of "softpower" are almost impossible to use in the absence of the kind of physical security that can only be imposed by effective armed forces. Granatstein uses this volume very effectively to advance this case and clearly hopes that it will resonate in the ears of the policy elites in Ottawa. He brings his reputation as an historian to bear and misses few opportunities to remind Canadians that a strong military is the essential prerequisite of sovereignty. At this level of analysis, Granatstein's book is well worth reading, and his advice must not be ignored as the government tries to develop a national security policy for the 21st century. That said, his prescription for re-invigorating the CF is a bit confused and does not reflect the substantive changes in the international security environment since the end of the Cold War. In short, his call for a beefed-up *status-quo* would be great for dealing with an enemy like the old Soviet bear—it would not help much against the diverse snakes that are today's adversaries.

Dr. Granatstein is a superb advocate. Although he does not claim that this book is "pure history," some of his analysis of contemporary and historical events is disappointing. He is, after all, an authoritative figure in the circles of Canadian historiography, and his work will have some influence in classrooms across the country. It is important, therefore, that he ensure that the record is accurate. In several instances, he has not been rigorous in this regard and, as a result, has perpetuated a number of urban myths about today's Canadian Armed Forces. The first of these is his assertion that a letter from the Chief of the Land Staff (CLS) to members of Armed Forces Council in June 2003 was a plea to "put all available money into army needs" (p. 98). This characterization of the CLS' letter first appeared in newspapers across the country, and, at the time, it was clear to anyone who had read the letter that the journalists had not. Rather than a parochial attempt at garnering more resources for the army, the letter was, in fact, a statement of a strategic view that advanced one vision of a truly joint CF capability. Dr. Granatstein seems to have based his analysis on the journalistic reports instead of the letter itself. This oversight can only serve to perpetuate and magnify the original flawed journalism by lending it an air of authority that it simply does not deserve.

Another major example of Dr. Granatstein's tendency to make his point through the reinforcement of urban myths is his discussion of the impact of the *Charter of Rights and Freedoms* on standards and warfighting skills (pp. 139-148 and p. 204). Again, he perpetuates the journalistic conventional wisdom that quotas for the recruitment of visible minorities and women are in effect and that standards have been lowered to ensure that they are met. Although few would disagree that the CF training system has some major problems, it does not logically follow that these are the result of the Charter and political correctness. In the first place, there are no

recruiting quotas for minority groups. Yes, increasing their representation in the CF is a strategic level priority, but even Dr. Granatstein seems to support that goal. Yes, some standards have changed over the years, but resources (the amount of available ammunition, etc.) usually had a more direct impact than the agenda of political correctness. Granatstein claims that the end result is a "kinder, gentler peace machine" that is a "bad joke." I'll leave it to the policy analysts to evaluate the validity of this assertion in terms of strategy and programme. I will, however, disagree with him profoundly at the level of units and individual soldiers and leaders. All I have to do is think back to my arrival in Germany in 1979 and compare the soldiers, NCOs and officers of that era to those of today. In the late 1970s and early 1980s, 4 CMBG had more than its share of disciplinary and social problems. The level of physical fitness was, if anything, much lower than that seen in combat arms units today, and our tactical skills were great—as long as we stayed on the roads! Today's soldiers and leaders have, in my opinion, a far better base of experience, are fitter, more adaptive and better trained than those of a couple of decades ago. More importantly, I strongly believe that they also have a better understanding of the military ethos and have a warrior spirit second to none. Dr. Granatstein ignores this reality near the end of the book with his discussion of education and the requirement for a proper military ethos (pp. 233-237). Although he admits that great strides have been made since 1997, he accuses the CF of still harbouring a deep-rooted anti-intellectual bias and he discounts the experiential aspects of education. Despite his allusions to the granting of advanced degrees for "latrine digging," (p. 234) there is a valid place for educational equivalencies based on the challenging experiences that our soldiers, non-commissioned officers (NCOs) and officers continue to gain on a daily basis in operations. As a fairly recent graduate of the Army Officers Degree Programme, I can attest that my time as an undergraduate at the University of Ottawa gave me a new appreciation for the wisdom that Canadian Senior NCOs bring to bear on the resolution of emotional and complex situations on the ground. Granatstein does not seem to place much value on this kind of experience and perhaps a little too much on formal education.

Finally, Granatstein ends with an eloquent plea for a proper military ethos. He makes an excellent case in a few paragraphs, but he also inexplicably ignores the simple fact that the Chief of the Defence Staff issued the booklet *Duty with Honour: The Profession of Arms in Canada* in October 2003—well in advance of his publication. In the three areas of professionalism, education and ethos, the CF has made substantial strides in recent years, and Dr. Granatstein's repetition of old stories to make his case is both unnecessary and unfair. In the end, the soldiers, leaders and units of Canada's Army today can hardly be characterized as a "bad joke," and he does them a great disservice by implying as much.

Despite these criticisms, *Who Killed the Canadian Military?* is an important contribution to the debate on Canadian national security and defence that should inform the government's planned policy review. If nothing else, it should be a wake-up call to Canadians and their representatives as to the fragility of their Canadian Forces, and it should be a must read for all of us in uniform. Dr. Granatstein's argumentative skills are impressive as is his grasp of the trajectory of Canadian history. It is indeed unfortunate that he chose to sensationalize real issues of substance by exaggerating and repeating stories that have assumed the status of urban myth. This is unfortunate because this book challenges many of the assumptions that have come to characterize the great Canadian narrative about defence and global security, and it deserves the full range of Dr. Granatstein's considerable talent and obvious passion. He has given us the passion, but did not fully apply his proven ability to give us good history.

THE PELOPONNESIAN WAR

By Donald Kagan Viking, (2003) 416 pages ISBN 06700321l5 $45.00 Cdn

The bravest are surely those who have the clearest vision of what is before them, glory and danger alike, and yet notwithstanding go out to meet it.

-Thucydides

Reviewed by Capt Steven Nolan

Donald Kagan, a noted scholar and the Sterling Professor of Classics and History at Yale University, has written a short, one-volume history of the Peloponnesian War. It is based on his four-volume history of the era, first published in 1978. Condensed and simplified, Kagan manages to deliver a book that is readily understandable by those not studied in the historiography of ancient Greece. *The Peloponnesian War* quickly captures the attention of those interested in military affairs by providing insight into the socio-political factors of the day. The result is a work that illustrates the complexities of nations at war as well as the pressures felt by both political and military leaders. Kagan's intent is not to analyze the war or compare it to modern times but to present it in a clear and factual manner, leaving the inferences and lessons to be deduced by the audience. In Kagan's words, "the Peloponnesian War is a source of wisdom about the behaviour of human beings under the enormous pressures imposed by war, plague, and civil strife, and about the potentialities of leadership and the limits within which it must inevitably operate."

The reader will be impressed by the breadth of the Kagan's knowledge of his subject from the very beginning. In the first chapter, the reader is introduced to his style through an insightful combination of historical reference and anecdotes. Kagan tackles the challenge of summarizing 27 years of warfare (that occurred roughly 2500 years ago) and writes in such a way as to make its relevance obvious to the average reader. This is not a simple task, but Kagan is successful. Some readers may find his writing style particularly esoteric at times, yet he does manage to give depth to historical figures so that the reader may understand the complexities of the era. Kagan is a stickler for historical accuracy and includes sections and chapters that describe minor actions which could have been edited out without changing the book's overall effect. As a result, this tome may intimidate those who are looking for an easy read that provides lessons in a "laundry list" format. The investment in time to work through the material, however, will pay off in an appreciation of some timeless lessons about warfare.

Kagan explores in depth the human concerns of the era, particularly the soci-politcal differences between the two antagonists: Athens (democracy) and Sparta (oligarchy). The key themes examined are the general misunderstanding that the two cities had for each other and how political forces can spin misunderstanding into mistrust and fear. He examines how alliances can draw nations into conflict, even though the initial intention of those alliances is ostensibly to prevent war. The parallels to the beginning of other wars are clear, but Kagan does not give any inferences to modern times. He allows the reader to draw his or her own conclusions and lessons from history.

The book's worth to the military reader, however, lies in the perceptive and analytical account Kagan brings to his history of the war. There are lessons to be learned in a tremendous breadth

of topics, ranging from small unit tactics up to national strategies. The book is replete with command and leadership lessons. One example is that of the Athenian general and politician Pericles, who employed what would today be termed a "manoeuvrist" approach to warfare. Instead of assembling the Athenian army and marching out to meet the stronger Spartan phalanxes, as was conventional practice, Pericles instead let the Spartans move deep into Athenian territory. Impervious to the criticism and fears of the other Athenian citizens, Pericles then used the superior Athenian naval fleet to degrade the Spartan's already weak supply line. In so doing, Pericles chose to fight using his strengths against his enemy's weaknesses. This unique strategy was a significant change in the change in style of warfare of the era. Pericles saw beyond the dominant Greek "way of war" and was repeatedly rewarded with tactical victories, nearly ending the war in Athens' favour.

But it was not to be. Pericles' death and subsequent Athenian defeats lead to a Spartan victory in 404 B.C., almost twenty-seven years after the war began. Within thirty years, the Spartans, too, had lost their empire. Half a century before the war, the Greeks had united and thrice defeated an invading Persian Army; now, the Peloponnesian War had ended The Golden Age of Greece.

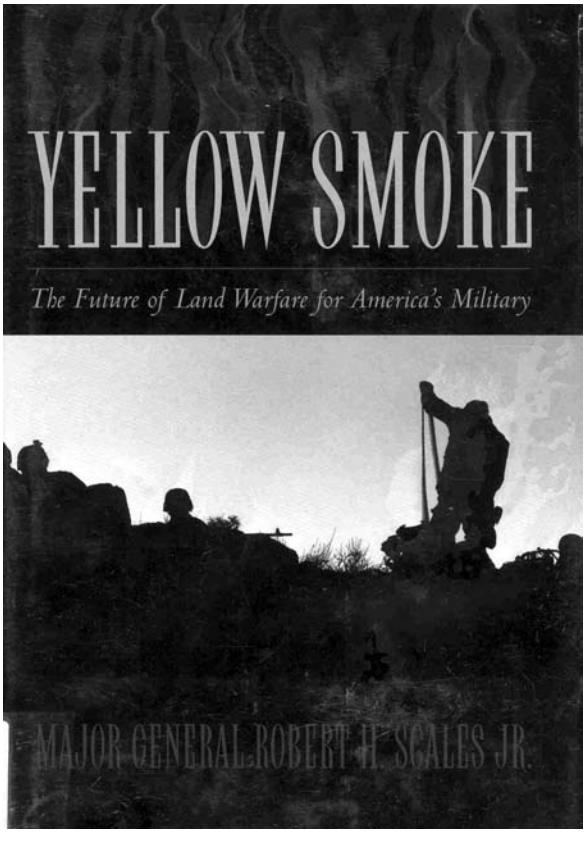
Of particular value to the reader is Kagan's detailed analysis of the works of the ancient chroniclers of the Peloponnesian War, especially that of Thucydides. Kagan also provides an excellent index of other modern and ancient writers who have dealt with the subject, including Aristotle (411-330 B.C.), Xylophone (428-362) and Plutarch (50-120 A.D.).

Kagan's work is relevant to modern audiences for two reasons. First, he illustrates the timeless lessons of warfare as demonstrated during the Peloponnesian War. More importantly, Kagan's expertise lends credence to his depiction of the factors that affected the decisions made by political and military leaders. Kagan's attention to detail is astonishing, and he examines virtually every military engagement known during the era. A diligent reader will be rewarded with a clear understanding of the political motivations and human concerns of the military leaders faced with that ancient, brutal and decisive war. As much as Kagan's work records the deeds of the ancient past, it also serves as a warning for leaders of today.

NO SMOKE (OR MIRRORS) HERE…

Major-General Robert H. Scales, Jr. *Yellow Smoke: The Future of Land Warfare for America's Military*. New York, 2003. ISBN 0-7425-1773-X. 179 pages. $49.95.

Review by Major John R. Grodzinski



In the preface to this book, Major-General Robert H. Scales recounts his dismay at not participating in a tradition unique to his brigade when he left Vietnam in 1969. Apparently, as a farewell gesture, departing officers would toss a yellow smoke grenade from their helicopter as they left the field camp. Since he was in his battalion commander's ship, this proved impossible, and Scales has regretted it since. To make up for this missed opportunity, Scales' considers this book as compensation and the "yellow smoke" trailing his departure from the US Army.

During his 30 years of service, Scales combined impressive operational credentials with considerable command, staff and training experience along with substantial academic work, culminating in a doctorate. He not only oversaw the intellectual development of army officers as Commandant of the United States Army War College but also earned a reputation as an "authority" on military history. He was intimately involved in the "Army After Next" project and also cast his mind into the future strategic challenges facing the United States. He is a noted author, speaker and lecturer. Readers of this journal may recall his address at the 2003 Army Symposium in Kingston, Ontario.

While *Yellow Smoke* examines many themes, it ultimately seeks to explain the "American Way of War," as it has evolved, particularly given the technological transformation of the US Army in the last decade. Limiting his historical survey to the post-Korea era, Scales argues that technological advancement has "radically altered the balance between protection and killing power in favour of the latter" (p. 2). He argues that the three technologies of stealth, precision and information give the United States the most efficient delivery of killing power against a wide variety of enemies in pre-emptive, short and even long wars, across the spectrum of conflict, against symmetric or asymmetric threats. These ideas culminate in a hypothetical discussion, "Kosovo, 2020: A Wargame," where Scales plays out his ideas. This is a personal perspective, but one developed in an extraordinary milieu.

According to Scales, the most significant challenges facing the US Army are rooted with three questions at the strategic, operational and tactical levels, namely the achievement of national goals, the art of manoeuvre and the tactical fight. Without giving his solution away, Scales' recommends a balanced approache to all three levels with time, risk, manoeuvre, firepower, precision and combinations of offensive-defensive war critical to operational and tactical levels, while winning the tactical fight lays at the core of the new American style of warfare. Part of the equation includes a shift from a division-based to a brigade-based army. Given the range and lethality of weapons, add-on capabilities and the area of operations allotted to a brigade, brigades act more like divisions, divisions more like corps, while the future utilization of corps headquarters must be re-examined. This is an interesting argument and one that brings a different perspective to those concerned about our shift from brigade-based to battalion level operations. Consider the area allocated to a battalion in operations.

Scales concludes by offering ten principles to guide future development, focusing on speed, precision, manoeuvre, information dominance, including the abandonment of "jointness" for interdependence between the services. He emphasizes the enhancement of confidence, through a "Band of Brothers" (apologies to Shakespeare and Nelson) approach to achieve "physical fitness, emotional maturity, technical competence" and above all "confidence in leaders" (pp. 162-163). Throughout his discussion, Scales emphasizes the human factor, whether it is in exploiting technology or in developing robust soldiers.

As an interesting side note, there is no abstract terminology or bafflegab as to the raison d'être of the American army. It wins wars and protects national interests. It fights "enemies," several of whom have recently "opposed" Canadians. Given the newspeak we are continually exposed to, do Canadians still think in these terms? Do we have "enemies"? Surely, even peacekeepers must face "bad guys," otherwise there would be no reason for their deployment.

While reading this book, two questions came to mind. The first is whether Scales's ideas are applicable the Canadian Army. The second is why Canada has not produced a Scales or DePuy (or Slim, Carver or Simpkin et al). The closest was probably Lieutenant-General E.L.M. Burns, a successful corps commander, peacekeeping theorist, practitioner and academic who was cast aside for his pains.

Scales emphasizes that American fighting methods are unique since "no other military today has the technological expertise or the operational skill to duplicate it even in part" (p. 141). Reading this, one could conclude that we should turn off the lights, lock the hanger doors and go home. While no other country might be able to equal or surpass American technology or military might, the Americans do need allies, particularly given their current commitments. The armies of Britain, Australia and Canada, for example, offer additional combat power, unique skills, complementary methodologies and perhaps most importantly, some modicum of international legitimacy. If we are to be allies in the field, it is important for Canada to understand the theoretical and practical basis of transformation within the United States Army. However, it is equally important that in our own efforts to modernize and transform, we should not follow American practice slavishly but develop our own structures and doctrine to fit our unique capabilities and goals, albeit with an understanding that we work in a coalition context. This leads to my second thought.

Scales reminds us that "transformation" is a continual process where the endstate is continually refined as time passes; in effect, it is less an "endstate" and more of an aspiration. Borrowing from General William DePuy, Scales believes change is only possible when the "the culture and

attitudes among the officers corps has changed" (p. 143). This leads to the intellectual development of our officer corps and their engagement in change mechanics.

Transformation development begins as an intellectual exercise. In many ways, they define the raison d'être of a military, its culture and the means by which it supports national goals. One cannot simply copy another army's plan just as one cannot use a single set of plans to build two houses to satisfy different needs. Furthermore, it is leadership, not process, that is imperative for successful transformation. The military's senior leadership must guide transformation development and be the champion of its implementation in order to ensure, as Scales states, it stay the course as "about 15 years is required for vision and ideas to mature into secure and irreversible change" (p. 5). Arbitrary measures or decisions are disruptive and cannot be allowed.

Canadian strategic and operational thought are sorely inadequate. The difficulty may lay with the size of our army. Smaller armies produce excellent soldiers, solid leaders and good units at the tactical level but suffer when dealing with higher concepts and issues at the formation (division or corps) level that require leaders, staffs and capabilities to meet complex demands. To expect a small army to produce a number of thinkers and doers like DePuy or Scales may be asking too much, but could we not produce at least one? We may be a tactical army, but should we not develop at least a cadre of officers with theoretical and practical experience at higher levels? Scales sums this up nicely by noting (p. 13) "time dedicated to understanding the higher orders of conflict inculcates mental agility and the ability to be creative. A well-read and-educated leader will be better prepared to deal with the uncertainty and chaos of combat." Is this a surprise? Hopefully there will be more discussion of this issue in the pages of this journal and elsewhere.

To his credit, Scales does not present himself as the saviour of the American Army; instead, he humbly notes that although his ideas may not pan out to be completely "right," his goal is to ensure army transformation is not "completely wrong." War is still unpredictable, and armies must understand that. Surprisingly, Scales believes revolutionary change must proceed at an evolutionary pace, with cycles that can be traced and anticipated (p. 169). This leaves one to wonder if "revolution," by its very nature, can be achieved at such a pace? Indeed, the challenges are many, and the American military is fortunate to have such officers contributing to this debate. Perhaps one day we may read such a thought provoking book by a Canadian.

THE STAND-UP TABLE

Commentary, Opinion and Rebuttal

Major J.A. Atkins writes...

THE LEOPARD C2 IS NOT A TANK

Dear Editor:

In his article "The Medium Gun System is Coming!…Now What?"[1] Major Senft continues to perpetuate the myth that the Leopard C2 is capable of armour tasks on the modern battlefield. The article repeatedly refers to heavy capability, ability to manoeuvre in the face of the enemy and close with and destroy the enemy, all in the context of the Leopard C2. Meanwhile, it is emphasized that the Mobile Gun System (MGS) is not a tank. The argument is summed up in the statement, "The MGS is not a tank killer, it does not have the armoured protection or stand off range of a modern MBT to undertake this task."[2] I agree. Indeed, I have not met anyone who disagrees, but the Leopard C2 is equally deficient in the role of tank killer. A modern main battle tank is one that can effectively engage high-end threat tanks (e.g. T80/90 mounting a 125 mm gun). All western tanks in this category have a 120 mm gun and weigh more than 55 tonnes. The Leopard C2 is a medium weight vehicle effective in the role of the direct fire weapons platforms as described in LCol Sherrard's article "The Future Battlegroup in Operations."[3] It cannot perform the tank tasks identified in the same article.[4] Any differences in firepower, survivability or mobility are insignificant and, taken as packages, the MGS and the Leopard have very similar operational capabilities.

I have concluded that the mind-numbing track-versus-wheeled debate boils down to this: a modern wheeled combat vehicle has very good cross country mobility, and our soldiers are becoming expert at maximizing what the capability has to offer. Tracks do provide better mobility in marginal terrain and have the edge in tactical mobility; advantage goes to wheels for operational mobility. I have not seen any evidence that the difference in mobility between wheeled or tracks is a decisive factor in the outcome of combat operations.

Firepower and survivability are the critical factors that should be discussed. Firepower is equivalent: the MGS and Leopard have virtually the same gun. Having stated that the MGS and Leopard C2 are not tank killers, the 105 mm gun is capable of defeating many in-service tanks (T55, T62 and early T72s) at normal combat ranges. More modern tanks (T80/90), if encountered, will be engaged by other elements of the direct fire system—light armoured vehicle TOW under armour (LAV TUA) and multi mission effect vehicle (MMEV).

Most of the misconceptions have to do with survivability. The differences in protection levels of the MGS and Leopard are not dramatic. The MGS will be fielded with rocket propelled grenade (RPG) protection. The performance will be very similar to the Leopard protection levels. Design features of the MGS that help improve survivability, such as a crew of three (one less person at risk), low profile turret which puts the crew and ammunition low in the vehicle, narrower turret and ammunition encased in a spall liner, all contribute to closing any survivability gaps. The most important point, however, is that the Leopard C2 is as vulnerable to tank rounds as the MGS.

The operational research war game *CARRÉ DE FER*,[5] the favourite reference of MGS bashers, is a study designed to examine and quantify the differences between a main battle tank, the M1A2

Abrams, and an armour combat vehicle (ACV), a wheeled vehicle with a 105 mm gun, in high intensity engagements against a capable enemy equipped with T80Us and BMPs. Valuable lessons were learned and are being applied in the development of appropriate doctrine for the MGS and the direct fire system of systems. Often these studies are used to run "what if" scenarios. One such excursion in *CARRÉ DE FER* asked what if the ACV had more armour. The model was adjusted to give the ACV enough protection to stop a 125 mm round fired at ranges greater than 1000 m, a level of protection much higher than available on the Leopard C2. This is the conclusion:

♦ The improved armour protection proved insignificant because the ACV was still "out gunned" by the 125 mm sabot or the ATGMs [antitank guided missiles]. The extra armour was inadequate and did not allow it to survive long enough to defeat the T80. Losses were similar to those experienced by the baseline ACV, resulting in only marginal improvement in Loss Exchange Ratio (1.1 vs 1.0). [6]

The Leopard C2 does not have the required firepower or protection to be employed as a main battle tank. Major Senft calls for a paradigm shift when the MGS is fielded. We should have had a paradigm shifts years ago. The Canadian Army is, and has been for over ten years, a medium weight army. We continue to go on exercise using doctrine and tactics inappropriate for the weapon platform and the operations our army is expected to conduct, comforted by the fact that the Leopard would rarely go on operations. I will take the liberty of paraphrasing the infamous line from the CARRÉ DE FER Executive Summary: To employ the Leopard C2 "as an alternative to the MBT in warfighting would be morally and ethically wrong and courts defeat."[7]

The Canadian Forces cannot continue to invest in an outdated piece of kit unsuitable for the role it was originally designed for. The MGS is being brought into service and will be used in an appropriate role: that of a direct fire weapon platform. It will be used on operations often, employed in accordance with the Commander's intent for a transformed Army (See "Punching Above Our Weight"[8]).

If one wants to induce a paradigm shift, take Leopard out of service and field the Mobile Gun System.

Major J.A. Atkins
Project Director, Mobile Gun System Project

ENDNOTES

1. Major D.J. Senft, "The Medium Gun System is Coming!...Now What?", The Army Doctrine and Training Bulletin Vol 6, No. 3 (Fall/Winter 2003), pp. 26-32.
2. Ibid, page 28.
3. Lieutenant-Colonel L.B. Sherrard, "From the Directorate of Army Doctrine: The Future Battlegroup in Operations," The Army Doctrine and Training Bulletin, Vol 6, No. 3 (Fall/Winter 2003), pp. 5-14.
4. Ibid, page 11.
5. Directorate of Operational Research (Joint and Land), QUARRÉ DE FER, Analysis of the ACV in Warfighting Tasks, ORD Project Report PR9717, December 1998.
6. Ibid, page 36.
7. Ibid, page iv.
8. Lieutenant-General R.J. Hillier, "Army Transformation: Punching Above Our Weight," The Army Doctrine and Training Bulletin, Vol 6, No. 3 (Fall/Winter 2003), pp.3-4.

Professor Terry Copp responds to Brian A. Reid's review of *Fields Of Fire: The Canadians in Normandy*, in The Army Doctrine and Training Bulletin Vol. 6 No. 3 (Fall 2003)...

Editor's Note: *The author of the review of Terry Copp's* ***Fields Of Fire****, published in Volume 6.3, was incorrectly identified. The correct author of the original review is Brian A. Reid (a retired Canadian Army Officer, historian and author of* ***Our Little Army in the Field: The Canadians in South Africa, 1899-1902****, plus several other titles including an upcoming study on Operation TOTALIZE) and not Brian Holden Reid, the British historian. The editor would like to extend his sincere apologies to those involved for this mistake.*

Dear Sir,

since my book *Fields of Fire* includes a critique of other accounts of the Normandy Campaign, I have no grounds for complaint when a reviewer launches a counterattack. However, Brian Reid suggests that the "many errors in fact throughout the book seriously detract from the thrust of the argument," so I hope you will permit a rebuttal. Apart from several typos and my failure to recognize Montgomery's promotion to full General, what Mr. Reid calls mistakes are simply arguments that he does not agree with. Part of the problem is that *Fields of Fire* is a work of history not a theoretical study, so when Reid writes that I do not understand that "the commitment to carrying out orders must not override the exercise of basic tactical principles" or insists "that few military professionals" would agree with my assessment of the actual role of divisional commanders, I can only reply that my conclusions are based on the evidence of what happened in Normandy not on the theories of military professionals.

Those who have read *Fields of Fire* will be surprised by your reviewer's statement that I suggest "our artillery was ineffective." What I demonstrate is that predicted fire was "less effective" than most historians have assumed. When observation and correction was possible, especially during German counterattacks, artillery was the single most important weapon in the Allied arsenal. Reid's comment that operational research is "most useful in determining hard data" but "can not be taken as a reliable measurement of human factors and other uncertain variables" reminds me of the response of particularly stubborn army and air force officers who during the war ignored the hard data provided by soldier-scientists, preferring intuition and tradition.

Your reviewer was especially upset by my statement that Canadian divisions were required to fight more often than their British counterparts and suggests that there is no evidence to support this. While it is quite true to say that neither I nor anyone else has done a day-by-day analysis of the role of every battalion in 21 Army Group, the book draws attention to the limited role played by I British Corps after "Charnwood," the withdrawal of 51st Highland Division from 2nd Canadian Corps before "Tractable," the orders issued to 11th Armoured, 53rd and 59th Infantry Divisions on 18 August to avoid becoming entangled in combat, and Montgomery's decision to send 7th Armoured Division from its rest area to Lisieux instead of using it to help 2nd Canadian Corps close the Trun-Chambois Gap. If historians of the British army would begin to do research on the operational history of 2nd British Army, we would better understand these decisions. In the meantime, it is surely fair to point out that Montgomery's failure to reinforce 2nd Canadian Corps in August placed a very great burden on the Canadians and Poles. If Mr. Reid finds this suggestion "explosive," wait until he reads the sequel to *Fields of Fire*, a study of Canadian operations in September and October 1944, to be published by the University of Toronto Press in 2005.

Sincerely,
Terry Copp.

On "Army Transformation: Punching Above Our Weight", *The Army Doctrine and Training Bulletin* Vol 6, No. 3 (Fall/Winter 2003)

Major L.R. Mader writes…

In his article, the Chief of the Land Staff describes his vision of how the transformed Canadian Army will function. The CLS goes beyond "hot-button" equipment issues such as the MGS to speak of how the Army will be trained and prepared for operations. The vision describes an army that has regained some predictability in how it operates and makes it clear that life in the Army will be very different from what we have known in the past.

The vision also makes it clear how much tight funding envelopes, a high operational tempo and limited equipment resources are driving our actions as an institution. This is evidenced by the decision to stockpile equipment where it is expected to be needed rather than to move it there (at the cost of $7M for a brigade exercise in 2003). This stockpiling will pre position the equipment for essentially two Coyote squadrons, two LAV III infantry battalions, two light infantry battalions and supporting elements in Wainwright and Montréal/overseas (half in each location). In their garrison locations, soldiers will only be able to count on "the equivalent of a company of vehicles for each unit." This approach should regularize somewhat the turmoil that units have known over the past 15 years but has some real problems that must be considered. I would like to mention six of them briefly.

The first is that separating soldiers permanently from their equipment will break their pride-of-ownership link to that equipment. The equipment will become nothing more than a resource to be used (and used up) and then fobbed off on the next temporary user. Units will become equipment renters rather than equipment owners. The potential consequences of this change in attitude are obvious and could lead to a serious degradation in the condition of our equipment fleets. Such degradation can only be avoided by implementing an extensive and (likely at times confrontational) sign-over and inspection process. Every unit and higher training event will begin and end with a concentrated, and lengthy, QM activity, where one side is often convinced that the equipment it is receiving is not as well maintained as what it handed over. This activity will cut into the time available for training.

The second problem is that pre-positioning of equipment is not without cost. Equipment parked and left unused degrades with time. Thus, the stored equipment will require a caretaker/maintenance staff and special storage facilities and regime. In effect, we will be incurring a new cost by paying someone to maintain and exercise equipment because its users cannot. The second part of the cost of this approach is the loss of expertise in doing major equipment moves. If we never conduct such moves during training, we will have a reduced ability to do them during operations. This will probably lead to inefficiencies and additional cost as we improvise such moves in a hurry to respond to a crisis. It is to be hoped that the detailed cost benefit analysis supporting this decision identified significant savings that justify these costs.

The third problem caused by pre-positioning of equipment is that the Army's operational flexibility will be reduced. A large portion of our equipment will be overseas or in storage or maintenance facilities separated from its users. Therefore, any unexpected event at home, beyond a normal domestic operation, will start with a massive (and probably improvised) gathering up and signing out of basic unit equipment. We will also face real problems the day an international situation calls for two deployed mechanized battalions (as did Croatia and Bosnia for three years) when we have assumed that only one mechanized battalion will be needed overseas.

The fourth problem is an indirect effect of the placement of so much of our equipment in

stockpiles. By doing this, we could be seen as "proving" that units do not need their own equipment. This "proof" could then be used by some future decision-makers to challenge the quantities of equipment that the Army tries to purchase. Very often, capital projects can have trouble now convincing some mid- and higher-level NDHQ staff of why equipment needs to be bought at all, let alone in the quantities proposed. Already, new equipment is frequently purchased in smaller quantities than what is being replaced. Our stockpiling concept could be perverted in the future to show that Canada only needs three to four battlegroups worth of mechanized equipment—one set for Wainwright, one for overseas use and the rest to be split among the three brigades for garrison training. Having set this new lower (and less expensive) standard of four mechanized battlegroup sets, it will be harder to argue why we cannot be "fiscally responsible" and make do with *even less* equipment in the next procurement cycle.

The fifth problem caused by pre-positioning of equipment is summarized by the incongruity of our army, which claims to emphasize the use of advanced technology, parking much of its key equipment. As a consequence of this decision, a large portion of the soldiers in our "high-tech army" will use their principal mission equipment as only an occasional part of their normal workday as opposed to it being an integral part of what they do. In effect, on a day-to-day basis, our *mechanized* forces will be primarily *dismounted*. For infantry units, this may not be a complete disaster, as many basic infantry skills are learnt and can be practised on foot. Its effect on equipment-oriented units, armour, artillery and engineer in particular will be very serious. While simulations can address some of the training shortfall, units can only practise so much. In fact, the improper use of simulation can teach bad lessons that may only come out during a real operation.

This "dismounting" of a large portion of our equipment-oriented units also raises a question about their perceived deterrence/coalition contribution capability. One has to wonder whether units that are incomplete, not ready to deploy and lacking in much of their mission equipment will provide a desirable public image of us to our friends and potential adversaries. We may be seen as having only a hollow army. Any such lack of credibility could undermine Canada's ability to respond to a future crisis.

In summary, it seems to me that resource limits are changing how we operate as an army by forcing us to try to get by with less equipment than needed. I believe that lowering the bar on how much equipment is essential to the Army risks creating new problems in the future and hamstringing those who follow us. These consequences can only be avoided or minimized if we are very careful now in how we explain and caveat our acceptance of unpalatable solutions.

Some Thoughts on "Shifting Paradigms", *The Army Doctrine and Training Bulletin*, Vol. 6., No.3.

Sergeant Arthur Majoor writes...

Major Mader's article in *The Army Doctrine and Training Bulletin* reinforces the need for Canada's Army (and indeed the Canadian Forces as a whole) to have a coherent doctrine .[1] One thing that came to mind after reading the article was the idea that we are not "selling" our doctrine either internally, or to parliament or to the public as a whole. A second thought was to ask why Canadian forces have had an infantry bias and, finally, are Major Mader's recommendations for a force structure realistic?

While most readers can object and point to manoeuvre warfare as our doctrine, can anyone really spell it out in a simple and concise manner? The examples of Canadian doctrinal writing Major Mader includes in his article are sophisticated and well written, but would be almost unin-

telligible to the lay reader. Armies in the past were often able to "sell" their doctrine and the underlying assumptions to their governments and nations because the guiding principles were understandable by everyone. France created the *levée en mass* to defend the revolution, Germany had *Blitzkrieg* to tear open enemy defenses in WWII and the United States has *AirLand Battle* today to deal with large- and medium-sized conflicts.

Some elements that shape doctrine are outside of our purview. Canada has a small domestic economy and industrial base, which is ill suited to producing large quantities of advanced heavy weaponry without a prolonged conversion period. During the two world wars, Canada was able to convert existing industry to the licensed production of British and, later, American equipment. No major equipment of entirely Canadian design made it to large-scale production, and the largest and most complex fighting unit Canadian industry could mass-produce during World War II were corvettes for the Navy, no matter what the admirals may have desired.

Canadian governments, both then and now, see no political benefit in having a large and capable defence industry, preferring to emphasize "butter" to "guns." Sweden was able to raise and maintain a capable arms industry due to its close proximity to the former Soviet Union whose aggressive nature was never in doubt for the Swedes. With the collapse of the USSR and the diffusion of the external security threat, even Sweden is moving away from domestic military production toward joint ventures (such as SAAB and BAe combining forces to build the JAS-39 Gripen jet fighter) or toward licensed production (Sweden recently adopted the German Leopard 2A5 series of tanks to replace the "S" tank).

Given the small base upon which to design and build military equipment and the lack of a clear and present danger, Canada has preferentially turned to infantry as the basis of the Army. Infantry units fit the bill because they are versatile, easy to raise (and disband) and relatively cheap. Technical arguments for the merits of armour, artillery, close air-support, and so on, are ignored by governments because they are expensive and because there is no clear reason given to have other units in particular proportions and numbers-no clear doctrine to open their eyes and guide them![2]

This results in military purchases based on fulfilling political needs, or reacting to unfavorable media coverage or a particular crisis. The recent purchase of 65 Stryker direct fire support vehicles (DFSVs) was astonishing, given the negative results from the *Quarre de Fer* exercises,[3] but sensible when viewed as a way of throwing political pork to the London, Ontario region and a sop to media critics of our increasingly outdated Leopard 1 tank fleet. In a similar vein, the replacement of the Illtis may become embroiled in political manoeuvring due to the deaths of two soldiers in Afghanistan in a mine strike.[4]

This is not to say we don't need new tanks or DFSVs and mine-resistant vehicles for our soldiers, but rather the types and amount of equipment should be driven by our doctrine. Assuming the Stryker is indeed the best vehicle available, why purchase only 65?[5] A coherent and well-understood doctrine would have generated questions, such as how many do the Militia need for training and creating follow on forces? Could the infantry anti-armour platoons use Strykers with through tube missiles in the anti-armour role and high explosive shells as a secondary support role? Could a Stryker-derivative fire sensor-fused munitions and become a part of the artillery's bag of clubs?

In a similar vein, how do we combine mine resistance with winning hearts and minds? General Leslie's observation that it was easier for our soldiers to reach out to the local people if they drove around in open vehicles rather than "speeding by in armoured vehicles" may be overlooked in the stampede to "do something for the troops." This practice could lead to the purchase of some form of armoured or mine-proofed vehicle for public relations reasons,

without examining how they are to be used. Would something like an armoured Hummer do, or do we need specialized vehicles instead?[6]

These questions go back to my opening point: we must "sell" our doctrine in a manner everyone can understand. Bold titles like *Blitzkrieg* or *AirLand Battle* may risk oversimplifying things, but they also quickly summarize the essence of these doctrines to non-military audiences. How can you fight a lightning war with plodding masses of infantry, or an "*Airland battle*" without air power? By building on a key concept, the authors of these doctrines could quickly describe ways, means and potential results to everyone, much like a pithy *National Post* headline summarizes the story while attracting people to read the article for greater insight.

Finally, I will go out on a limb and suggest that while Major Mader's prescriptions for a viable force structure are very much on the mark, they are also inextricably rooted in the here and now. A shrinking demographic pool of desirable recruits will limit the potential size of the Army and Armed Forces, making it very difficult to sustain all the roles Major Mader identifies with traditional force structures. On the other hand, increasing technical capabilities allow the distinctions between units to shift and blur, giving them greater capability and flexibility. Infantry units may be able to provide their own long-range offensive fire-power,[7] armoured units may have highly enhanced indirect fire capabilities, and artillery may become "virtual," with special sub-units directing and managing fire effects across the battle space from non-dedicated platforms. In the Army of the future, two units may maintain the traditions and histories of (say) the PPCLI and the RCD, yet have similar tables of organization and equipment (TO&E). Future units may be identified by the particular load-out of ammunition in their vehicles or the amount of communications bandwidth allocated for adjoining units and higher formations. (Combat team elements would emphasize the *horizontal* use of bandwidth, while recce, artillery and support elements would emphasize *vertical* links.)

Major Mader's article is a clear call to create a flexible force structure. In the past, large numbers of infantry were the inexpensive way to create the core of a flexible force for Canada. What the Army needs now is a way to "sell" a doctrine that supports the creation and use of a modern force structure to Parliament and the public, so it can be funded and sustained. For the longer term, factors beyond our control, such as economics and demographics, will influence the force structures and organizations to get the results we need from our doctrine.

ENDNOTES

1. Major L.R. Mader, "Shifting Paradigms: Be Careful of the Grails You Consider Holy," ADTB 6,2 (Summer 2003), pp. 41-52. http://armyapp.dnd.ca/ael/adtb/vol_6/ADTB_vol6.2_e.pdf
2. Lack of a clearly stated doctrine has hurt our sister services as well. The Canadian Navy specified the EH 101 over smaller, less capable helicopters since our navy uses helicopters as major fighting units in their own right. Lack of understanding or appreciation of this fact by parliamentarians and the public has been one of the reasons for the long delay in replacing the Sea King and the suggestion the Navy can use less capable helicopters. Similarly, the purchase of 100 Griffin helicopters for the Air Force was done for political reasons, with little thought given to operational questions such as could a Griffin squadron carry an infantry company in one lift?
3. Major L.R. Mader, "Manoeuvrist Operations: Some Thoughts on Whether We Have Got It Right," ADTB 4,1 (Winter 2000/Spring 2001), pp. 50-53. The results of the simulations would seem to be a clear refutation of the armoured combat vehicle concept, yet the Stryker is very similar to the vehicle used in the operational research scenarios.
4. Sgt Robert Short and Cpl Robbie Beerenfenger were killed 02 Oct 2003 by a mine strike while on an Iltis patrol in Afghanistan.
5. On Oct 28, 2003, the Federal Government announced the signing of a contract to purchase 65 Strykers for a cost of $500 to $600 million CDN. A search using Google found very few positive references to the planned purchase in the first 30 of about 3000 "hits." (search string: Stryker + Canadian forces).
6. For example, the South African Army and police used Casspir mine proof vehicles, which had some of the attributes of an armoured personnel carrier. Does our operations other than war (OOTW) doctrine stress "hearts and minds," which would suggest

modifying existing utility vehicles (see http://www.drev.dnd.ca/poolpdf/e/90_e.pdf), or being able to escalate when needed?
7. Sgt Arthur Majoor, "Fighting Machines for Manoeuvrist Warfare and Beyond", ADTB 5, 3 (Fall 2002), pp. 62-65. The hypothetical Achzarit fighting machine armed with fire-and-forget missiles would provide the firepower, protection and manoeuvre capabilities for the infantry units. Other possible developments, such as replacing the tube-launched optically-tracked wire-guided missile (TOW) with ground launched Hellfire would give the infantry a reach of eight km, while some proposed fibre optic guided missiles (FOG-M) have a reach of 10 km or more. Clearly the ability to strike at long ranges is reaching into armoured and artillery territory.

On "The Integrated Fire Support Capability: An Opportunity for Innovation," by LCol J.A. Summerfield, *The Army Doctrine and Training Bulletin Vol 6, No. 3* (Fall/Winter 2003)

Lieutenant-Colonel Luc Petit, currently working in the Directorate Land Requirements, writes….

Given that I was one of the officers closely involved with the staffing of the Mobile Gun System (MGS) project, it is with interest that I read the "Fire Support Capability" article. In that article, LCol Summerfield challenges the reader to focus on innovative thinking in order to make better use of future capabilities offered by emerging military technologies. Given that the Army is committed to a medium weight force, it is very important to develop new force employment concepts and to acquire the right equipment if the Canadian Army is to remain operationally relevant. This being said, it is a very difficult task to develop and implement new force concepts, while having to keep legacy vehicles and acquiring new ones not fully meeting the expectations of the force concept developers. In this short article, I would like to highlight some of the factors that lead to the decision to acquire the MGS and some of the limitations of a 120 mm turreted SP mortar.

LCol Summerfield criticises the decision to acquire MGS to replace the Leopard tank. He suggests that the Army should wait in order to capitalize on the Multi-Mission Effects Vehicle / Fire Control System (MMEV/FCS). It is true that the MGS will not provide significant tactical improvements over the Leopard C2. Even though the Leopard is used extensively for training, it is rarely deployed in operations because of its size, logistic footprint and domestic and international political repercussions. As a result, in all recent deployments, Canada has deployed battle groups with very limited integral direct fire support. Because of its operational and logistic compatibility with the LAV III, the MGS is expected to be deployed with most mechanized battle groups abroad. A Canadian medium weight force will be a significant contribution to any coalition, even though it will have limited capability against enemy tanks. In the recent conflict in Iraq, the US Marines very successfully lead the advance on one major axis with their LAV 25s. Canadian LAV IIIs operating with MGS will deliver even more combat power.

In his article, LCol Summerfield recommends the acquisition of a LAV III 120 mm turreted SP mortar and using it in direct fire roles. LCol Summerfield asserts that this system would be more capable against MBTs than the Leopard 1 and that it would have an extended-range anti-armour system with more capability than the LAV TOW and projected LAV ADATS systems. LCol Summerfield also states, "The 120 mm SP mortar system can be procured with no increase or change to the current DSP projects." The Directorate of Land Requirements (DLR) is closely monitoring the development of these mortar systems.

The most mature 120 mm turreted SP mortars are the Patria-Hagglunds SSG120 Advanced Mortar System (AMOS) (twin-barreled) and the GDLS 120 mm Armoured Mortar System

(AMS) (single barrelled). Neither system has been fully type classified. Both systems are optimized for indirect fire support and are very good at it. They will have access to extended range rounds as well as precision-guided mortar ammunition. They have a direct fire capability, being fitted with a fire control system with laser range finder, but this capability is very limited. These systems have much lower hit and kill probability than what is suggested in the LCol Summerfield's article: direct fire engagements are limited to 1000 m as rounds have muzzle velocity of only 410 to 480 m/s (dispersion), they have no stabilization for firing on the move and cannot calculate lead angles to engage moving targets. In addition, there is no hi explosive antitank (HEAT) round developed for these systems. They can fire standard HE rounds at LAV and tanks in self-defence, and damage should result, but this ammo is not expected to defeat tanks. The direct firing capability for both systems is essentially for firing at fixed targets (bunker-busting) from a stationary position and for emergency self-defence. Against moving targets or heavy armour attacks, these turreted 120 mm SP mortars would have a low probability of success and survivability. Upgrading these mortar systems to enable them to fire on the move and developing/qualifying a direct fire anti-armour round would take time and be very expensive. The acquisition of 120 mm turreted SP mortars would be very expensive and time consuming as vehicle/ammunition development and full type qualification must be completed prior to production.

The Army chose to acquire the MGS to replace the Leopard to rapidly improve operational capability, leveraging the US Stryker program to reduce costs and risk. Studies will begin this year to integrate the ADATS on a LAV III chassis, and we will continue to investigate the future operational applications of the MMEV by actively supporting the MMEV Technology Development Project. Army transformation is well under way, but acquisition costs and risk must be managed, while maintaining and upgrading as quickly as possible the Land Force operational capabilities.

On the need for a Canadian Land Force Historical Section

Editor's Note: *This letter was originally sent to the journal* ***Canadian Military History*** *(Waterloo: Wilfred Laurier University Press). The author makes an interesting and valid point, as well as a timely recommendation for capturing the history being made by the Canadian Army today.*

Dear Sir:

Once again, having read through Vol.12, Nos.1 & 2 of *Canadian Military History*, I thought that I should send in a few of my comments and observations.

The article on "Hannah Ingraham-Loyalist Refugee" sparked my interest as many of the events that she described-the confiscation of land and property, to individual harassment-were strikingly similar to what went on in the former Yugoslavia from 1992 until 1995. Even though the events described in the article happened over 200 years ago, it is blatantly evident that in times of major civil strife, it is still easy to turn to the same means of intimidation in order to establish power and secure territory.

The obituary on Sam Hughes by Tim Cook provided me with quite a bit of fuel for thought. Something I did not realize until I read the article was that the publications *From Pachino to Ortona* and *After Victory-What?* (both of which I have in my reference collection) were authored by Hughes.

Cook's article really brought home the work that was conducted by an historical officer during the Second World War, how he conducted that work and, more importantly, what an innovate and far-sighted concept this was. This undertaking certainly paid off with the published works that were produced after the war.

What really captivated me was that the Canadian Forces now has a weak mechanism for collecting historical data from deployed forces. I have had four overseas operational deployments: one United Nations, one humanitarian relief, one disaster relief and one NATO. All of them took place at the Headquarters, and at no time did I ever see or hear of an historical officer. I get the impression that the gathering of first-hand historical data within the CF is a lost art. I am sure that everyone will agree that the tempo of operations for the CF has grown exponentially since the early 1990s, and now CF members are deploying to regions where the potential for combat is very high. Yet for some reason, there is no one on the ground to collect, collate and analyze data that may become historically significant for future use.

Even more surprising was that during the first deployment to Afghanistan, a film crew was present to capture some of the major events of the tour and their work was broadcast in 3 one-hour segments on the History Channel. Apparently the History Channel could see the merit of collecting first-hand historical information, but the CF could not.

Cook's article proves that a dedicated historical section is required to deploy with the CF. This section can be tailored depending on the nature and location of the deployment, but the mandate needs to be the same. The mandate should be to collect and generate historical data that relates to the operation or deployment. This means everything from collecting pertinent documents, to interviewing key personnel, to photographing personnel and equipment, to collecting artifacts.

The historical section would have to consist of either Regular or Reserve commissioned and non-commissioned personnel who have not only the academic and trade qualifications, but who are also properly security cleared, trained and equipped for operational deployments. This section need not be any larger than six or eight persons and could be headed by a major. One captain and four non-commissioned members could flesh out the section and would be the labour pool that would be out there interviewing, collecting data, taking photographs and locating artifacts. This section would also have a cross-section of ranks so that members of the section could effectively mingle within their peer groups to basically "keep an ear to the ground" and stay on top of current events.

Liaison with established military museums back in Canada would also be the responsibility of this historical section. From the large national museums to the small regimental museums, all require historical data and artifacts in order to update their collections and exhibits. By maintaining communications with the relevant museums, the passage of this information can be achieved in an efficient manner.

I think that the time is now to establish a field deployable historical section in order to get the collection of historical data back on track so that the record of the CF and its deployments can be recorded for future generations.

Ed Storey,
Nepean, ON