Through A Glass Darkly
Canada's Air Force and The Revolution in Military Affairs

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For now we see through a glass darkly;
but then fact to face; now I know in part;
but then shall I know even as also I am.

1 CORINTHIANS 13:12

Introduction

When first I suggested to Lee Windsor, the co-ordinator of the 1998 Conference of Defence Associations Institute Symposium, a theme for a paper, the Revolution in Military Affairs, or RMA, and what this might mean to Air Command as it prepared to cross the threshold of the 21st Century, I thought that it would be a rather straight forward examination of the rapidly developing trends in new, very high-tech aerospace technology and the process by which Air Command would evaluate, select and integrate those systems that Canada could realistically afford to meet the Air Force's various commitments. Well, I was wrong. Almost from the moment I began the research for this paper my plan unravelled with speed. First, I learnt, to my shock and horror, that Air Command no longer existed. Despite having worked in the History Department at the Royal Military College for five years, from 1994 to 1998, and having had regular professional and personal dealings with various colleagues and friends at National Defence Headquarters in Ottawa, I was unaware of the creation of 1 Canadian Air Division/Canadian Norad Region (1CAD/CANR). Then in the autumn, after moving to the United Kingdom to take up a new post in the Defence Studies Department (DSD) at the Joint Services Command and Staff College (JCSCS), my many discussions with the Air Liaison staff at the High Commission in London also failed to shed much light on this major re-organisation of Canada's Air Force. So, having experienced at first hand what Clausewitz would call friction, I moved on to the RMA side of the question, and, equally unsettling, quickly discovered that the most common feature of the RMA is the lack of consensus on what exactly is the RMA. Thus the title of my paper, for diving the future of Canada's Air Force in the 21st Century is like viewing a film through a glass darkly. Many scenes are unclear and different people see different things: sometimes helpful and sometimes distinctly not. The paper that follows, therefore, is less a detailed analysis of the subject and more a series of some rather broad and random reflections which are the result of having thought, talked, and more recently lectured about air power, war and technology for the better part of the last fifteen years. The subjects covered in this brief offering include the revolution in military affairs, the technology trap, the characteristics of air power, what all of this means for Canada's air force, and finally some general conclusion.

The Revolution in Military Affairs

The term Revolution in Military Affairs has no agreed definition, and it is precisely how one defines an RMA that will influence the views and conclusions which can be made about the nature of an RMA.[1] Not surprisingly there is a great deal of popular debate taking place in

political, industrial, academic and military circles as to whether or not there is an RMA currently underway. Proponents of the RMA claim that the current state of military technology, and the likely future advances in technology, will enable military operations to be conducted with such speed, precision, and selective destruction, that the whole nature and way in which future wars are fought, and the consequent political impact of such operations, will fundamentally alter the way in which military and political affairs are conducted in the international system in the next millennium. Underlying all of this is the core issue that the RMA is being constructed around a Western, American led, military affairs paradigm. In the aftermath of the Cold War, and victory in the Persian Gulf, the utility of the military instrument has gained a new acceptability in the strategic thinking of many Western nations. Canada's involvement in the spring 1999 air campaign in Kosovo and Serbia is another example of this growing trend. Indeed, in the United States, the Department of Defence's Office of Net Assessment defines an RMA as 'a major change in the nature of warfare brought about by the innovative application of technologies which, combined with dramatic changes in military doctrine, and operational concepts, fundamentally alters the character and conduct of operations'.[2]

Other views are not so enthusiastic as to the efficacy of the RMA. One critic in the United Kingdom, Professor John Gooch, Head of the History Department at the University of Leeds, makes a bold assertion that there has been only one Revolution in Military Affairs in history, and it occurred during the French Revolutionary and Napoleonic Wars. Oddly enough, there were no appreciable changes in the technology of war in the hundred years before or, for that matter, during these wars, fought between 1792 and 1815. What is lost in the US Defence Department's definition is the nature of war, which, in spite of technological changes on the battlefield, remains a complex interaction of political objectives, human emotions, culture and ethnic factors, along with military skills.[3]

The Technology Trap

The RMA's proponents seem to advocate that technology, an essentially mechanical process, can overcome problems inherent in war, an essentially human process. Thus, what some would claim as the enduring characteristics of war, for example, Clausewitz's theory of friction in war, are swept away by technology. These are bold claims which the RMA theorists have yet to prove. If we are to avoid 'the technology trap' we must put technology into its proper context and perspective. Martin van Creveld is one historian who has, stating that 'merely because technology plays a very important part in war, it does not follow that it alone can dictate the conduct of war or lead to victory'.[4]

Generally, the more sophisticated and technologically advanced weapons systems become, the more they cost in absolute terms. Air Marshal Sir Timothy Garden, RAF, has suggested that 'a time will come when nations will be unable to afford more than one aircraft'.[5] This is, admittedly, an extreme example, though it is not a rejection of technology. The question is not whether technology can offer improvements in military capability – of that there is no doubt. The key issue, given limited resources, is how to identify and then exploit technologies which offer the greatest promise for military use, and hence increase national security.[6]

In terms of modern air power, increases in complexity and costs usually results in fewer aircraft and related weapons systems. This in turn increases the risks of widening the gap between capability and expectations: there are not enough aircraft available for the desired operations and therefore they are not as effective as either desired or thought. Failure to keep pace with new technology can have an adverse effect on coalition capability. Pursuit of this technology can be equally detrimental, marginalised by the rapid changes of measure/counter measure as well as the inadvertent introduction of asymmetric responses. The application of technology for military use is, therefore, a complicate and obscenely expensive problem for defence planners to tackle.

The Characteristics of Air Power

Air Power has the unique ability to exploit the third dimension above the surface of the earth. As a result, air vehicles – inclusive of manned aircraft, UAVs and space based systems – are far faster and have greater reach than naval ships or land vehicles. They can, and often do, dominate the nature of the battle space and the tempo of military action. Height, speed and reach are the primary strengths of air power. Taken together, height, speed and reach, also act synergistically to produce additional strengths, namely, flexibility, ubiquity, responsiveness and concentration. But just as air power has inherent strengths it also has inherent weaknesses, namely, impermanence, limited payloads and fragility.

In addition to these strengths and weaknesses, there are a few other key factors which also affect air power, namely, escalating costs, dependence on bases, sensitivity to light and weather, and sensitivity to technology itself. The point behind outlining these characteristics is that the delivery and exploitation of air power is both complicated and expensive, and, if it is to have any lasting effect, it must be set in strategic, campaign and/or scenario context.[7] It may surprise some to learn that this is exactly what Sir Hugh Trenchard, the first Chief of the Air Staff, RAF, emphasised throughout the 1920s and 1930s.[8]

What all of this means for Canada's Air Force

In a recent report tabled in Parliament, the Chief of Defence Staff, General Maurice Baril, stated 'his troops are dwindling in number, using old equipment and limited in responding to international crises, but things are looking up'.[9] The General is of course right; his Staff are addressing serious personnel problems such as recruitment and retention, sexual harassment and declining quality of life issues. But how is he going to square the Armed Forces' need for new modern equipment with the significant budget reductions of the last ten years or so?

In the Air Force the process of becoming leaner and more functional with a reduced budget began a little less than two years ago in the autumn of 1997 with the creation of 1 Canadian Air Division/Canadian Norad Region (1 CAD/CANR). What was in fact a major reorganisation of Air Command combined Air Transport Group, Fighter Group, Maritime Air Group and 10 Tactical Air Group into one organisation; a process which Major General Lloyd Campbell, Commander of 1 CAN/CANR, said presented 'no fundamental problems'. Campbell confirms that bringing the four Groups together 'has contributed not only to a better understanding of all facets of air power within the air force community itself, but has started to show some benefits in synergy of operations'. Campbell also claims that 'On numerous occasions over the past year we

have been able to employ all of the various aspects of air power, transports, maritime air, tactical helicopters and fighters, so that they are complementary to each other'.[10] As a result, the Air Force is more capable today that it was in 1991 during the Gulf War. This said, Campbell acknowledges that a lot more work needs to be done to maintain, never mind increase the Air Force's operational capability. The Aurora patrol aircraft and the CF-18 fighter, for example, need significant upgrading to maintain their usefulness in the future whilst the Labrador and Sea King helicopters as well as the C-130 turboprop Lockheed Hercules cargo and transport aircraft need to be replaced.[11]

'The challenge over the coming years' Campbell states, 'will be to continue to do the various tasks asked of the air force by Canadians while being squeezed by conflicting pressures of tight budgets and aging [sic] equipment in an era of rapid technological advancement'. To this end, Campbell believes that both the Government and the Air Force have to put greater effort into determining what kind of air force will be required in the 21st Century. The review that Campbell has called for is to address 'the deployability of the air force; chemical defence; contingency support operations; combat support; quality of life issues; and how to better integrate Reserve and Regular Forces'. 'We need a succinct, clear vision of what we are trying to create', Campbell believes, 'so people, whether in procurement offices, headquarters or at the Wing level, truly understand what we are trying to build and maintain'.[12]

This, however, is a political problem, not an air force problem that can be dealt with by the Air Force independently. Moreover, it concerns the politics of 'what is the question'? In Canada, at the present time, though it must be added that Canada is not alone in struggling with these issues, there is little agreement on first principles to act as a guide through the political/security debate. Hence, how to apply armed forces to achieve national security or even regional security interests is problematic. Taking the debate a step further into the realm of post Cold War security challenges and changes does not even bear contemplation; the glass darkly quickly transforms into a modern version of Pandora's Box with all of the unsavoury connotations conjured up in this Greek mythological imagery.

Defence policy is politically delicate, and air power is politically delicate within the defence/politics debate; both positive and negative, especially in terms of coalition value, high technology and the coerciveness of air power. Within the Canadian Armed Forces, both the Army and the Navy have taken an active role in working through this debate. Over the summer months of 1998, the Army promulgated Parts I and II of the Land Forces Strategic Direction and Guidance (LFSDG) 98.[13] These two documents, along with a third published separately, entitled Land Force Command Strategic Options and Resource Direction (SORD), are part of the Land Force Management Process (LFMP), aimed at setting out the guidelines for both how the Army will operate today and how it will evolve into the future. And whilst it may be correct to question the limited value of the Army's efforts in this area, the publications the Army has produced are well in advance of any similar enquires, exercises or publications coming from the air force side of the Canadian Forces. Air Force officers at NDHQ in Ottawa, at bases across Canada, and the Air Force liaison staff at the High Commission in the United Kingdom, all of whom were both very helpful and supportive of the research being conducted for this paper, were unable to identify any Air Force publication similar to either LFSDG 98 or CFP 300 – Canada's Army; and most had never heard of or seen any of these army publications. It may be that 'Out of the

Sun' Aerospace Doctrine for the Canadian Forces,[14] endorsed by Lieutenant-General A.M. DeQuetteville, and produced by Air Command when it still existed in Winnipeg, is a similar type of publication. This document does set out in general terms both a definition of doctrine and the future direction of the Canada's air force. But again, not one Air Force officer this author spoke with ever mentioned it or acknowledged familiarity with it once they were made aware of its existence. Returning to General Campbell's rather prophetic words 'a lot more work needs to be done'.

Conclusion

Yet despite the long legacy of disinterest and neglect, and the foreboding uncertainty of the future, morale in the Canadian Air Force improved during the first half of 1999, in part, because of the positive contribution Canadian air force assets and personnel have made to Operation Allied Force, the NATO air effort to restore peace in the Balkans. Close to 100 Canadian air force personnel are serving with NATO's Airborne Warning and Control Systems (AWACS) surveillance team, which have flown missions daily since the air campaign over Kosovo and Serbia began on 25 March 1999. Eight Griffon helicopters from 408 Tactical Helicopter Squadron, based in Edmonton, Alberta, are also scheduled to carry out night and day airborne surveillance, transportation and medical evacuation mission as part of the peace implementation force. And Task Force Aviano, which comprises of 18 Canadian CF-18 fighter bombers from 3 Wing in Bagotville, Quebec and 4 Wing in Cold Lake, Alberta, equipped with precision-guided weaponry, have flown combat missions since the start of the air campaign.[15] Moreover, it is the first time that Canadian combat aircraft have deployed precision-guided munitions and, as a number of Canadian Air Force generals in Ottawa have been overheard saying recently, often loudly in the corridors of NDHQ, 'we are back in the game'. But being 'back in the game' brings along with it a considerable price with a real potential for the exponential growth of this price as the twentieth century gives way to the twenty-first. More accuracy and clarity than traditionally has been apparent in Ottawa, and not just from senior air force commanders at NDHQ, is required in order to establish realistic perceptions of air and aerospace power. The traditional air force ethos of 'any time, any place, any where' exacerbates the danger of failing to deliver with expectations exceeding ability, both political and military.

Technology should not then been seen as the solution to all problems; it must be embraced with care and forethought if the Icarus syndrome is to be averted. For example, in the Canadian case, does the addition of precision-guided weapons to the Air Force's arsenal mean that military intervention – rejected more times than not by Canadian governments in the past – is now an integral part of Canada's diplomatic and military response to international crises? If it does, where will it come from, how often will it be used, and is it sustainable? The delivery of 'air power' is both complicated and expensive, and to have any chance at being effective and successful it must be set in the broader context of strategic, campaign and/or scenario objectives. For as margins get smaller – shrinking budgets, fewer assets – there is an increased danger of over-stretch to existing forces. Their ability to carry out their tasks is further complicated by the inevitable deterioration of existing equipment and the seemingly intractable complexities of the procurement process for the attainment of the next generation of air assets.

In short, the future of the Canadian Air Force depends, as General Campbell correctly noted, on its ability to strike a workable balance between resources and commitments. When an air force is small, and its access to resources are severely limited, as is the case for the Canadian Air Force, getting the balance right is not a luxury; it is imperative. 'Doing more with less', particularly when it comes to matters of defence planning, may be the maxim of politicians, civil servants, and senior military officers, irrespective of the colour of cloth they wear. But in the fluid international milieu which we live, it may be a very dangerous and risky strategy, especially if added to it is the illusory panacea of technology.

Endnotes

1 Steven Metz and James Kievit, The Revolution in Military Affairs and Conflict Short of War (Carlisle Barracks, PA, July 1994).

[2] See D.J. Caddick, 'The Revolution in Military Affairs – A Case of Wishful Thinking', M.Litt Thesis, University of Aberdeen, 1998.

[3] E.H. Tilford, The Revolution in Military Affairs: Prospects and Cautions (US Army War College Strategic Studies Institute Paper, June 1995) Pt.1, p.1. See also Brian R. Sullivan, 'The Future Nature of Conflict: A Critique of "The American Revolution in Military Affairs" in the Era of Jointry', Defense Analysis vol.14, no.2 (1998) pp.91-100; Stephane Léfebvre, Michel Fortmann and Thierry Gongora, "The American Revolution in Military Affairs": Its Implications for Doctrine and Force Development Within the US Army in B.J.C. McKercher and Michael A. Hennessy (eds.) The Operational Art: Developments in the Theories of War (Westport, Connecticut, 1996) pp.171-192; and Sir Michael Howard, 'How Much Can Technology Change Warfare?' in M. Howard and John Guilmartin Jr., Two Historians in Technology and War (Carlisle Barracks, PA,

[4] Martin van Creveld, Technology and War (London, 1991) p.6.

[5] Air Marshal Sir Timothy Garden, The Technology Trap (London, 1989) p.4.

[6] See Major J.A.R. Perron, 'The Technology Trap' Brooke-Popham Essay, RAF Staff Course (unpublished, Bracknell, 1996); and Brigadier General Edward T. Buckley Jr., Lt.Col. Henry G. Franke III and A. Feuner Milton, 'Army After Next Technology. Forging Possibilities into Reality', Military Review (March/April, 1998) pp.2-9.

[7] For a detailed discussion of the characteristics of air power, and the challenges facing air forces in the first few decades of the 21st Century, see Group Captain Stuart Peach (ed.) Perspectives on Air Power: Air Power in its Wider Context (London, 1998); Group Captain Andrew Lambert and Arthur C. Williamson, The Dynamics of Air Power (London, 1997); AP 3000, RAF Air Power Doctrine 2nd ed. (MoD, London, 1993) and 3rd ed. (MoD, London, 1999); and RUSI Focus, 'Future Airpower Capabilities', RUSI Journal (August 1998) pp.49-60. Sadly, in Canada, similar publications to support the Canadian Armed Forces do not exist. This said, NDHQ is committed

to producing a new Service Journal out of the Royal Military College of Canada with the first issue forthcoming in late 1999 or early 2000.

[8] Trenchard Papers: MFC 76/1/357 Rôle of the RAF in War, RAF Museum, RAF Hendon; and Air Marshal Sir Hugh Trenchard, 'Aspects of Service Aviation' The Army Quarterly v.2, no.3 (April 1921) pp.10-21.

[9] The Kingston Whig-Standard, Friday, 9 October 1998, p.13.

[10] Major General Lloyd Campbell as quoted in Mike Reyno, 'Canadian Air Force: Lean and Functional' Wings Magazine Issue 4 (1998) p.37.

[11] Mike Reyno, 'Canadian Air Force: Lean and Functional' Wings Magazine Issue 4 (1998) p.37. Throughout October 1998, many Canadian newspapers ran a series of articles on the air unworthiness of the Canadian Forces' fleet of Labrador and Sea King helicopters. For a flavour of this debate see The Globe and Mail, Saturday edition, 3 and 17 October 1998, and The Kingston Whig-Standard, Tuesday, 6 October 1998. Finally, with regard to the Hercules, Colonel Brett Cairns, Director of Aerospace Requirements at NDHQ, notes that some of Canada's model E Hercules, which entered service in the late 1960s, have logged more than 40,000 hours of flying time, which 'is probably the highest time for any C-130s in the world'. See Ken Pole, 'Defence Aerospace. Project Selection Vital', Wings Magazine Issue 4 (1998) pp.46-7.

[12] Major General Lloyd Campbell as quoted in Mike Reyno, 'Canadian Air Force: Lean and Functional' Wings Magazine Issue 4 (1998) p.39.

[13] Chief of the Land Staff, The Land Force Strategic Direction and Guidance 1998 Parts I and II (Ottawa, July 1998).

[14] Author unknown, Out of the Sun Aerospace Doctrine for the Canadian Forces (Craig Kelman and Associates Ltd., Winnipeg, no date).

[15]See Department of National Defence, Air Force, D-NET, Kosovo – 'Canadians serve aboard NATO AWACS', 'Griffon crews to Macedonia', and 'CF-18 operations' at www.airforce.dnd.ca/eng/whnew.htm (6 June 1999).