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CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES
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EXERCISE/EXERCICE NEW HORIZONS

Projecting Canada's Security Interests: Canada's Fighter Force Post 2020

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Abstract

The CF-18 will be replaced by the year 2020. Four key factors related to Canada's security requirements are examined. First, security policies that identify the requirement for fighter aircraft are unlikely to change. Second, the geopolitical structure circa 2020 identifies two counter ideologies. Whichever theory prevails, Canada will still require an armed force. Third, an examination of the opportunity cost of fighter aircraft concludes that: more research is required; cost benefits of UCAVs for comparison are not available; a niche capability is not desirable; and Canada is under funding the collective defence burden. Fourth, the political support for the research to make an informed decision is not forthcoming. Given Canada's lack of a strategic culture to properly address these "key factors", and given that something must be done when the CF-18 retires, the logical choice, indeed the only choice by default, will be to procure a new fighter aircraft.

INTRODUCTION

The CF-18 is an aging aircraft. The incremental modernization programme is expected to extend the life of this aircraft to between the 2015 and 2020 timeframe.¹ Will Canadian Defence, however, require a manned fighter aircraft after the year 2020? If the answer is yes, then Canada should be looking now for its next replacement given the current lead time for capital programmes at DND.² If the answer is no, then why not, and what would be the alternative? A fighter aircraft is an expensive weapon system and many people would like to see this system replaced. Proposed alternatives to manned fighter aircraft procurement include space surveillance capabilities or less expensive Unmanned Combat Air Vehicles (UCAVs). Others believe that the changing geopolitical structure of the world requires more peacekeepers and therefore the defence budget should be changed at the expense of fighter aircraft.³ It has also been suggested that Canada develop a niche capability within an alliance structure.⁴ So which should it be?

To answer the question requires a careful examination of key factors that make up Canada's defence security requirements. First, what are the policy issues that currently identify the requirement for fighter aircraft and are these policies likely to change? Second, will the geopolitical structure of year 2020 require weapons systems such as manned fighter aircraft? Third, if they are required, do the benefits received from having this capability justify the cost? Is there an alternative to fighters based on the benefits

¹ These estimates were based on work conducted by the author as a Project Director at NDHQ from 1994-1997. The IFOSTP programme is still underway at NRC, Bombardier and in Australia to fully determine the life expectancy of the CF-18.

² Project Management Course 1994 estimated that current projects at DND take from 5-10 years to complete on average.

³ National Procurement Estimates indicate that the CF-18 alone takes up approximately 40% of the operational and maintenance budget.

⁴ Colonel David W. Read, "The Revolution in Military Affairs: NATO's need for a niche capability strategy," Canadian Military Journal, Vol. 1, No. 3 Autumn 2000: 22.

received from a niche capability or using a technological alternative such as UCAVs?

Fourth, what are the implications in deciding whether or not a proposed fighter replacement will receive the political required support? Only with an objective review of these factors, in relation to the security of Canada, can a rational answer be found. Sadly, given Canada's lack of a strategic culture to properly address these "key factors," and given that something must be done when the CF-18 retires, the logical choice, indeed the only choice by default, will be to procure a new fighter aircraft!

FIGHTER ROLE IN CANADA

Three principal defence roles have been more or less enshrined in Canada's Defence Policies since 1947: Sovereignty; NORAD; and International assistance, including NATO and UN operations.⁵ Colin Gray, in an objective review of Canada's defence commitment confirmed the necessity of these same three roles in support of Canada's vital and major national interests.⁶

Aerospace assets have traditionally been required to support all of these roles. It is unlikely that this requirement will change during the first half of the 21st century as nation-states remain the principal organization for societies. What is more likely to change is how some of these assets are used to protect their sovereignty. It is important to note that Canada's security requirements and the historical requirement for some type of aerospace asset, fighter, UCAV, or other is unlikely to radically change by 2020.

⁵ Douglas Bland ed., Canada's National Defence: Volume 1 Defence Policy, (Kingston, School of Policy Studies Queen's University, 1997) 309.

⁶ Colin S. Gray, Canadians in a Dangerous World, (Toronto: The Atlantic Council of Canada, 1994) 21.

FIGHTERS IN JEOPARDY

What are the key arguments against the procurement of future fighter aircraft for Canada? It is not so much that the role that fighter aircraft provide will likely change in the next 25 years. Rather it is a question of the level of commitment and the degree of the requirement. There are four key arguments that seem to be rooted in the perceived need to do away with manned fighter aircraft. The first is the changing nature of security in the world and the resulting effect on Canada. Many believe that globalization has changed, and will continue to change the nature of security requirements enough to reduce the type of military requirement needed to protect the nation state. Environmental concerns, human security and economic security are replacing traditional military security of a nation state in a global world. Military security would still be important, but the emphasis will not require the level of military commitment and resources, such as the traditional fighter aircraft, as in the past. The second argument concerns the Revolution in Military Affairs and the technological changes that will replace fighter aircraft. Unmanned Combat Air Vehicles will be a cost effective way to accomplish the traditional roles of fighter aircraft in the future with no threat to human life. A third argument is the problem of ever escalating costs of fighter replacements. The projected cost of the new Joint Strike Fighter, the next generation “low cost” fighter, is approximately \$38 million per unit and may yet prove to be higher.⁷ The procurement of a new fighter aircraft could well be at the expense of other services and capabilities that are also important to the security agenda of Canada. The final argument, based on the issues of cost and the Revolution in Military Affairs (RMA), is that Canada should seek a

⁷ David A. Fulghum, “JSF Drama: Cost vs. Performance,” Aviation Week and Space Technology Vol. 153 Issue 19 Nov. 06, 2000: 40.

niche capability such as in information operations.⁸ Other countries, the U.S. for example, would maintain the strike capability carried out by fighter aircraft, and would provide for Canada's defence, as it is likely to be one of the only nations able to afford new fighter aircraft in sufficient numbers to make them useful. Another potential niche capability would be the provision of UN peacekeeping troops in lieu of a new fighter. These four key arguments: the geopolitical structure circa 2020; the technological viability of alternatives to fighter aircraft; the cost of new aircraft; and, whether a niche capability will serve Canada's interests must all be carefully examined to determine if there is an objective argument to give up Canada's fighter force capability.

GEOPOLITICAL STRUCTURE 2020 AND BEYOND

With the ending of the Cold War, the world security structure changed from a bipolar world to a multi-polar one. The two great power nations, the U.S. and the former Soviet Union, no longer require to build-up military forces to specifically counter what they believe to be the ideological expansion of the other nation's interests.⁹ Third world countries are no longer propped up with arms and economic aid in exchange for ideological allegiance, regardless of their actual political practices, as they were during the Cold War.¹⁰ This does not mean that arms proliferation has decreased, that there is no longer a threat of nuclear war or that a future Cold War will not occur. What has changed, and is still in the process of changing, is how nation states interact within their regional and global spheres of influence in defining their own security interests.

⁸ Colonel Richard Szafranski, "Aerospace and Cyberspace: The Transformation of Small Air Forces," Air Symposium 2000: Space in the 21st Century, (Toronto: Canadian Forces College, 2000): 24.

⁹ Booth, Ken, ed., Statecraft and Security: The Cold War and Beyond, (Cambridge: Cambridge University Press, 1998): 63.

¹⁰ Booth 167.

Current literature paints a spectrum of theories covering the geopolitical structure circa 2020, with two poignant counter ideologies at either end. At one end of the spectrum are the “liberal optimists” whose theories were developed by a prominent political scientist, Francis Fukuyama.¹¹ The essence of their argument is that communism has failed in favour of liberal democracies and the market economy. At the other end of the spectrum are the “New pessimists”. Their theory is dominated by thoughts of a bifurcated world with the “islands of the west” threatened by criminal anarchy on the part of alien races and cultures and the “clash of civilizations” where interests, values and power are increasingly threatened by Islamic fundamentalism and rising powers of Asian nations.¹² It is likely that the geopolitical structure by 2020 will be somewhere in between.

For the moment, trends within the international community are leaning towards a more “liberal optimist” world. Collaboration rather than confrontation mark current trends in the behaviour between nation states. This collaboration is supported by a continued move towards globalization characterized by: growing economic interdependence, technology diffusion, global awareness, and what has been termed value sharing.¹³

Economic interdependence is a result of the growth of transnational companies, world trade markets and foreign investment. Companies are also investing into non-traditional areas including China, Russia and other states that were once considered very risky.

¹¹ Brian Beedham, “A Survey of the New Geopolitics: The Road to 2050,” *Economist* July 31st 1999: 4.

¹² Booth 41.

¹³ Booth 291.

Although this interdependence does not remove the potential for conflict, the likelihood is lower than if states were less dependent on each other.

Technological diffusion is reducing the lag between when a global dominant country develops a new technology and when a less developed country will begin to use it.¹⁴ Given current conditions in some countries around the world, this does not always appear to ring true, but the fact is that it is easier for people to access new technology than in the past. Transnational companies operating in developing states, for example, are more likely to bring new technologies with them. As well, the explosion in communications and computers makes access, even to the poorest of countries, a reality. The advantages of increased technological competence are evident and countries looking for increased technology are likely to be more collaborative than confrontational.

A major argument in favour of the liberal optimist theory is the increase in global awareness of people.¹⁵ Much of the plight experienced by Albanians during the Kosovo crisis in 1998-1999 was captured on the Internet for the whole world to see. CNN and other media sources are making the world smaller and more difficult for autocratic regimes to influence their people with propaganda. Access to foreign markets, greater freedom of travel, and improved communications all increase a population's awareness of global trends and opportunities that were previously unattainable.

A fourth trend, which supports the theory of increased cooperation among global states is the idea that more people are beginning to develop the same values.

“Expectations from market economies, the growth of basic democratic values, and the growing disapproval of gains achieved through military action all point to an

¹⁴ Booth 291.

¹⁵ Booth 291.

international community that has achieved a more common understanding of the benefits of cooperation.”¹⁶ Nations also appear to be more willing to act together to preserve international stability to protect these values. The NATO intervention in Kosovo is a positive indication of how humanitarian security embodied in common values is growing in importance in international law compared to traditional non-interference in a nation state’s affairs.

At the other end of the spectrum of the emerging geopolitical structure are the New Pessimists. They argue that the world is dividing along lines between those that are prosperous and those that are not. Trends in the world that support this argument include demographic growth, economic underdevelopment and poverty, growing nationalism and ethnicity, and resource scarcity.¹⁷ Demographic growth in many poorer countries is creating economic and social demands that are not sustainable. In addition, growing populations in many Middle-East and African countries are skewed towards the young with many having 20% of their population base between 15 and 24 years of age.¹⁸ Economic underdevelopment creates demands on national infrastructures and reduces interdependency and collaboration between nations. Resource scarcity such as water exacerbates the situation. Added to the problem are that many of these same countries have leaders and groups promoting nationalism and ethnicity that tend to divert populations from addressing the real issues.¹⁹ The result is that countries within these regions may not be as collaborative. Globalization may only make people more aware of

¹⁶ Booth 291

¹⁷ Booth 294.

¹⁸ Charles William Maynes, “The Middle East in the Twenty-First Century,” Middle East Journal Vol. 52, No. 1, Winter 1998: 11.

¹⁹ Booth 292.

their own plight. Mass migration, terrorism and confrontation may offer a more palatable alternative to many that do not see globalization providing relief in the near future.

The New Pessimists also make the case that not every nation embodies liberal democracy, even if they say they do so. A true democracy must have a transparently elected government, which in many “democratic” countries has yet to be realized. “Islam”, argue the New Pessimists, may become the ideological banner for the “have-nots” of the world, replacing communism as the rift between globalized western countries and the rest.²⁰

Herein lies the dilemma, since both arguments for the evolving multi-polar world merit attention. At the positive end of the spectrum the world could be a very collaborative one between nation states interdependent economically and focused on liberal democratic practices and a free market economy. At the negative end of the spectrum the world could return to a bipolar confrontation between national and religious ideologies fuelled by demographic, environmental and social problems on a scale not yet seen by the world. Within these two ideologies the multi-polar world is currently differentiated by: “those that represent a globally dominant core of capitalist economies; and, those that are industrially, financially and politically weaker states operating within a set of relationships largely constructed by the centre.”²¹ NATO countries would certainly be part of the core in varying degrees; the Middle-East, save Israel, and many Asian countries would be in the second group with many African nations representing the margins.

²⁰ Booth 51.

²¹ Spiegel, Steven L. and David J. Pervin, At Issue: Politics in the World Arena 7th ed. (New York: St. Martins Press, 1994): 238.

Whether the world moves towards the positive end or the negative end of the spectrum remains to be seen.

What the geopolitical structure will look like circa 2020 is very much dependent on the industrialized world recognizing its responsibility to assist peripheral nations to recognize the benefits of cooperation and peace to achieve prosperity. In this respect there are a number of key issues that must be addressed. The first is the maintenance of the current diffusion of the Cold War, especially in addressing the many problems created by misperceptions on both sides of what the other nation was trying to achieve in terms of national security.²² A second issue, is knowing when to intervene and having the political will to do so. This intervention does not imply promoting western values over Islamic values either. Democracy does not require western or Islamic values to work as a true democracy.²³ Rather, intervention must be based on clearly defined and agreed upon reasons established in international law. Possessing the political will to intervene, and having the international backing, is likely the best measure to ensure that nation states maintain a more collaborative posture towards the positive end of the spectrum.

Predicting the state of the world circa 2020 beyond these general theories is likely to lead to poorly conceived policies. While current trends may seem to support the liberal optimist argument, historical reality is not in its favour. The reality for a country like Canada is that, whatever theory is realized, the requirement for an armed force is likely to remain for sometime. Peace Support Operations ranging from traditional peacekeeping to peace enforcement will undoubtedly be required. The dilemma for defence planners will be to achieve the right force structure to protect national security

²² Booth 102.

²³ Beedham 13.

interests for the future and providing its proper contribution to promoting world prosperity when and where required. Thus the role for Canada's Armed Forces is not likely to significantly change in the next 25 years. The focus of effort may change, for better or for worse depending on how these competing ideologies develop, but it is clear Canada must prepare for both eventualities. How much to prepare is dependent upon Canada's political will to be involved in securing a more global peace.

OPPORTUNITY COST – FIGHTER AIRCRAFT

“Opportunity cost” is defined as an “economic sacrifice in the form of a lost opportunity” from an investment not made.²⁴ In other words, by giving up manned fighter aircraft what would Canada lose in terms of its Foreign and Defence policy objectives? The Foreign policy objectives are currently stated as “Canada's promotion of prosperity and employment, the protection of our security within a stable global framework, and the projection of Canadian values and culture.”²⁵ Canada's Defence policy objectives were outlined earlier. Understanding what one is likely to lose by not investing in something may help policymakers to make a more informed decision of whether to invest or not. It will also aid in the comparison of alternative technologies and security measures, such as niche capabilities.

Unfortunately, defence economics and the quantification of the benefits of investing in defence is an elusive subject. It is difficult to properly quantify the benefit to society of investing in a CF-18 for example. What these studies do offer, however, is a conceptual model to understanding some of the rationale in defence investment.

²⁴ Peter Lusztig, R. Morck and B. Schwab, Managerial Finance in a Canadian Setting 5th ed. (Toronto: John Wiley & Sons, 1994) 69.

²⁵ Canada, DFAIT, Canada in the World (Ottawa: Canadian Dept. of Foreign Affairs and International Trade, 1994).

Professors Weida and Gertcher provide insight into the relationship of defence spending to the “public good model.” The public good model is a micro-economic model that examines the marginal benefit of a public good: the sum of the individual values held for an additional unit of output of benefits, against the cost of providing an additional unit of output, see fig. 1.²⁶

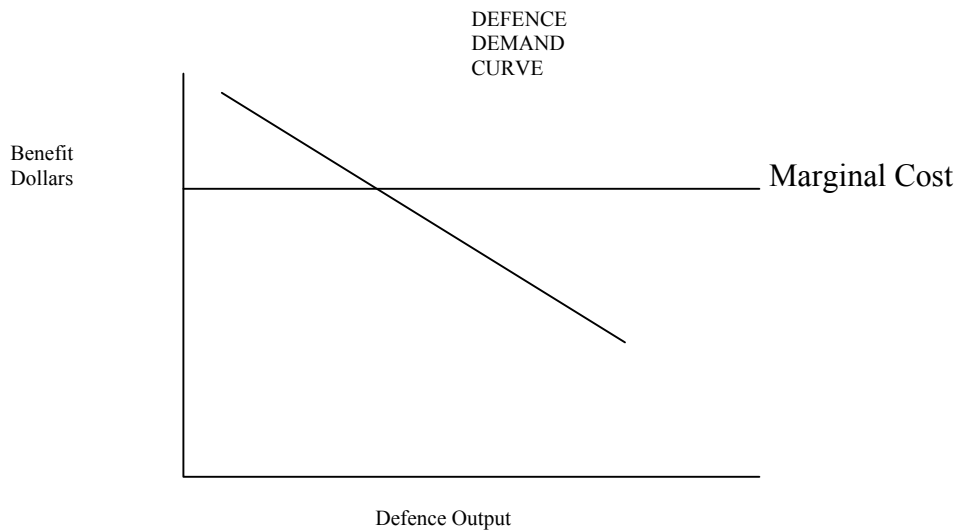


Figure 1. Efficient Output occurs when marginal cost and demand curve intersect²⁷

A public good model is non-rival and non-excludable.²⁸ “National Defence is regarded as a pure public good because once a defence capability is established every citizen benefits from that capability.”²⁹ They go on to conclude that this model provides some understanding behind defence expenditures but cannot aid in “determining the

²⁶ Robert Pindyck, and Daniel Rubinfeld, *Microeconomics* 3rd ed. (New Jersey: Prentice Hall, 1994) 650.

²⁷ Pindyck 651.

²⁸ Pindyck 673. Nonexclusive Good – A good that people cannot be excluded from consuming, and for the use of which it is difficult to charge them. Non-rival Good – A good for which the marginal cost of provision to an additional consumer is zero.

²⁹ William Weida, and Frank Gertcher, *The Political Economy of National Defense* (Boulder: Westview Press, 1987) 46.

efficiency of the expenditures.”³⁰ The reason for this is the difficulty in determining the marginal benefit received for one additional unit of defence. It is difficult to quantify individual values of the entire country, for example, regarding the expenditure on one additional fighter aircraft. Political interference in the procurement process and other inefficiencies also make it impossible to quantify the necessary levels of defence expenditure. “Details of defense are normally left to experts, who are given general guidance by the political administration in power and the specific budget constraints imposed by Congress.”³¹ From a domestic perspective then, the public good model really only tells us that national defence is non-rival and non-excludable; that is, once the money is spent on defence, everyone receives the benefit whether they want it or not.

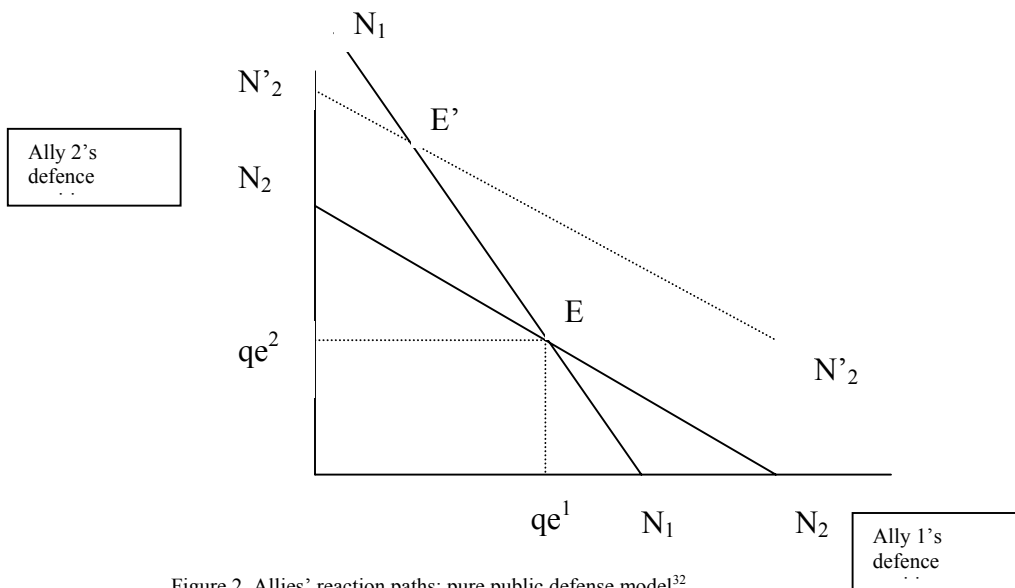


Figure 2. Allies' reaction paths: pure public defense model³²

³⁰ Weida 50.

³¹ Weida 54.

³² Todd Sandler, and Keith Hartley, The Political Economy of NATO: Past, Present, and into the 21st Century (Cambridge: University Press, 1999) 33.

However, when compared to other nations' defence spending from an alliance perspective, such as the UN and NATO, other aspects of the public good model become highlighted. The term "burden sharing" relates to the cost of defence within an alliance. Studies show that countries with more wealth assume more of the defence burden. In 1994 the U.S. assumed 60.18% of the NATO defence burden, whereas Canada assumed 1.95%, and the average individual defence burden for the rest of the NATO countries was 2.91%.³³ Because other nations no longer have an incentive to provide defence if someone else is providing it, countries tend to spend as little as possible on their perceived portion of the defence burden, a concept referred to as "free riding."³⁴ Looked at as a purely public good model, an equilibrium point in defence spending will be found between countries in terms of how much of the burden each will carry for the amount of perceived defence received, see fig. 2. The model also shows that an increase in defence spending by one of the alliance members would shift the equilibrium point in favour of the other alliance member as that member begins to "free ride" on the benefits provided by the other member. The reverse would also be true if there was a decrease in defence spending and the equilibrium point would shift so that the other alliance member would have less of a free ride. The difficulty, again, is assessing whether a country in an alliance structure has reached the proper equilibrium point. The statistics presented, however, indicate that Canada is not spending enough on the "collective defence burden".

This look at burden sharing from a purely spending viewpoint is also limited. Other factors have a significant bearing on the true burden represented by a nation's contribution to the alliance including: geographic location, industrialization, and troop

³³ Sandler 46.

³⁴ Sandler 30.

skill level. As an example, poorer countries tend to contribute more troops instead of dollars.³⁵ As troop pay and skill level vary among NATO countries, it is important to consider all factors when determining true defence burden sharing rather than looking only at defence spending.³⁶

Nevertheless, this economic model does provide some valuable points when considering the opportunity costs of investing in particular defence assets. First, it is difficult to estimate the true benefit received from defence spending. Second, defence burden sharing comparison is instructive in highlighting the “free-rider” concept, which is a free market phenomenon, and given Canada’s standing shows that this nation readily adheres to capitalism. Third, a decrease in spending by a wealthy nation, such as the U.S., does not imply that alliance nations should also reduce their spending. Thus, proposals for the peace dividend after the Cold War had probably already been spent because of Canada’s continued decreases in defence spending. The equilibrium shift would likely require an increase in spending to maintain the same level of defence benefits. Fourth, a nation that benefits from a lower burden of spending within an alliance is able to spend more money on domestic social programs and its own economic prosperity. Estimates show that Japan’s “GNP would be 30 percent lower than today’s figure” if they had shouldered a more equitable portion of their defence burden alliance with the U.S.³⁷ If Canada had traditionally spent even the average NATO country percentage of GDP on defence what would the economic impact on Canada have been?

³⁵ Weida 164.

³⁶ Wieda 165.

³⁷ Weida 165.

One can only guess at the answer to this, but the reality is that Canada's current status in the G7 is partly attributable to the defence burden paid by the U.S.

Fighter aircraft that provide for the defence of a nation compete with other capability requirements. If it is difficult to define the right level of defence spending for a nation, it will be even more difficult to identify the benefits received for the cost of a weapon system, such as a fighter. In this respect, weighting the cost of one defence capability against another, based on perceived defence benefits is misleading. One cannot make the argument that just because fighters use up 40% of the National Procurement estimates, they should be replaced with lower cost alternatives. This type of argument misses the point of comparing the defence benefit received for the cost incurred. First, fighter aircraft benefits to the security policy of the country must be measured independently of other systems. The result of each independent measure may indicate that the country is simply not spending enough on defence rather than forcing an inappropriate comparison between all weapon systems required. Second, if a comparison must be made, then it must be done in an objective way that measures capability benefits versus costs. Assuming that a larger army or navy will provide a greater benefit is not necessarily correct. Quality is often better than quantity and the power projection capability of fighter aircraft may provide more credibility in future limited conflicts with a smaller but very capable army.

The current inability to measure the true benefits of a fighter aircraft capability also diminishes the argument to replace fighter aircraft with UCAVs. Although UCAVs are projected to cost less than manned fighter aircraft, a one for one capability comparison has yet to be done. What the anti-jam capabilities of a UCAV will be is

dependent on the large communication link between the vehicle and the operator. In a limited conflict visual identification requirements, collateral damage limitation and split second decisions based on peripheral information may preclude the UCAV, with a limited field of view for gathering information, from completely replacing fighter aircraft. Interception of aircraft during transition periods of conflict and drug interdiction often require a human interaction at the scene of the interception that the UCAV may not be able to provide. It is also unlikely that Canada would be able to afford both a UCAV capability and a manned fighter aircraft capability. Until the UCAV can demonstrate that it can provide all of the capabilities required for the traditional aerospace roles of security it would not be wise to replace the manned fighter aircraft capability.

Developing a niche capability also requires a benefit vs cost analysis compared to fighter aircraft. If one invests in Intelligence, Surveillance and Reconnaissance at the expense of fighters, then Canada would have to rely on U.S. fighter aircraft to protect its aerospace. Some would argue that this is not a problem, given the current threat to Canada, and that as long as we develop a surveillance capability, an arrangement could be made to allow U.S. fighters access to our aerospace. The problem with this argument is that the U.S. may not necessarily agree to provide aerospace protection when the threat to security might only affect Canadian interests. The issue is that developing a niche capability means that the alliance structure, NORAD, NATO, or the UN has to be trustworthy enough to ensure that one's limitation will always be covered by another alliance member. As has been demonstrated in previous wars, as recently as Bosnia, countries must look out for the welfare of their own troops in the end. The fact that no

nation is willing to completely subordinate their forces to the UN, requires that National Command elements play more than a support function to deployed troop operations.

Measuring the opportunity cost of fighter aircraft is difficult. Economic models provide an indication of trends and rationale in defence spending such as “free rider” status and defence burden sharing relationships. More research to achieve a better understanding of what one is giving up by not replacing fighter aircraft in the future is required. True capability and cost comparisons need to be accomplished prior to replacing manned fighter aircraft with UCAVs or developing a niche capability within an alliance.

POLITICAL WILL

The requirement for political will in Canada has never been strong when it comes to defence. This fact is made clear by the obvious discrepancies in many of the government documents that should define Canada’s security requirements. As a first indication, foreign policy and defence policy objectives are not complementary. Foreign policy leans more to the human security side of the “liberal optimist” argument, whereas, defence policy is more conservative in a reductionist approach to the “New Pessimist” argument.³⁸ Which one is correct is not at debate. The issue is that there is no clearly defined direction from our Foreign Policy that defines Canadian defence policy. It does not appear to be forthcoming either. Many believe that a defence review should follow a security review to link foreign and defence policy.³⁹ The latest indication is that a defence review in the near future is unlikely, however; and General Belzile believes that

³⁸ Brigadier-General W. Donald Macnamara, “Canada’s Domestic Strategic Interests,” Canadian Defence Quarterly June 1994: 24.

³⁹ David B. Dewitt and David Leyton-Brown, Canada’s International Security Policy, (Scarborough: Prentice Hall Canada Inc., 1995) 2.

Canada's Armed Forces should continue to focus on the 1994 White Paper for direction.⁴⁰

The reality is that Canada's free rider status allows defence decisions to be politicized and delayed. Political interference in defence procurement decisions creates inefficiencies for weapon systems. The fact that after 10 years working to procure a replacement for the Sea King exemplifies the inefficiencies in defence procurement. Is the increasing cost of weapon systems solely a function of technological capability? Responsibility for inefficiency must be shared by the politicians that delay, direct, or cancel procurement projects. As was already mentioned, in Canada, defence procurement should be left to the experts with general guidance provided by the politicians. Direct interference not only creates inefficiencies, but makes any true measure of the opportunity cost more difficult to quantify.

The current DPG 2001 and Vision 2020 documents outline the future capabilities the forces will have to meet. These capabilities were identified in the 1994 white paper. Unfortunately, there is still a funding gap of approximately \$1.3 Billion (Cdn) per year for the next 10 years to enable this vision to occur.⁴¹ If there is no political motivation to fund the gap, then how can the forces expect to achieve the vision outlined in 2020? The fact that there is a gap is not solely an indication of there simply not being enough money. Inefficiencies created by the lack of political direction, interference in procurement processes and the inability to reconcile foreign and defence policy into a

⁴⁰ Lieutenant-General Charles Belzile, "Does Canada Need A New White Paper?" The Political Studies Student's Conference. Winnipeg. University of Manitoba, 1-3 Feb. 2001.

⁴¹ Conference of Defence Associations, "Stability and Prosperity: The Benefits of Investment in Defence," (Toronto: The Conference of Defence Associations Institute, 2000): 14.

harmonious focus for Canadian security interests leaves the Canadian Forces floundering to maintain any and all capabilities it can.

CONCLUSION

This paper has examined the five key areas that would allow an informed decision to be made regarding fighter aircraft replacement. First, the support that fighter aircraft have traditionally provided for Canada's security requirements will likely remain in the post 2020 era.

Second, although security requirements are changing from the Cold War era, the world will likely remain insecure. As a worst case the world will try to re-polarize into two factions, Islam versus the West. As a best case, the world will continue to move towards a globally democratic one based on a free market system and the rule of law. Globalization, however, requires a responsibility to participate. Sovereignty protection, alliance participation in NATO and UN operations will be required for the foreseeable future whichever road the geopolitical structure attempts to take.

Third, this paper has looked at some of the opportunity cost definitions that would help make an informed decision. Unfortunately, the true benefit of a fighter aircraft given its cost can only be generalized. The public good model does demonstrate, however, that Canada is not spending enough on defence being at least 1% below the average among NATO allies. The inability to quantify true benefits against cost makes comparison between various weapon systems and requirements difficult. It may be more beneficial for a country to invest in Fighter Aircraft at the expense of other services if the benefits are more cost effective. More research is required in Canadian defence economics to allow a more informed decision.

For similar reasons, UCAVs are unlikely to provide the full capability that a modern fighter aircraft can in all of the required national defence requirements. True cost savings a UCAV may provide is yet to be determined. Without a proper way to measure the benefit received for the cost, it will be difficult to make a proper comparison. Until this occurs, the decision should be in favour of a capability that has already proven it can meet the defence objectives laid out.

Although there are proponents for niche capabilities, the reality is that individual nations within an alliance tend to be more protective of their own forces, perhaps even at the expense of another nations' troops. National Command Elements not only provide support to deployed national assets, they ensure that their own deployed troops are not sacrificed because of another nations' self-interest. Giving up a core capability can only be done if a nation can absolutely ensure that its troops will not be sacrificed.

participation. It will reduce our sovereignty capability with no understanding of the risks. It would ignore our responsibility to promote global stability through peace enforcement when required. And so it is, that Canada, unable to make an informed decision, will have to opt for a replacement fighter aircraft in the post 2020 era.

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