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EFFECTS-BASED OPERATIONS: A CONSTRUCT FOR CANADA

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ABSTRACT

This paper examines the implications for Canada of Effects-Based Operations (EBO). It proposes that that Canada needs to make organizational and procedural adjustments to adapt to EBO.

The paper begins by defining EBO and distinguishing it from its intellectual progenitors in the US Armed Services and Joint Community. It explains the similarities and differences between the scope and function of EBO and other concepts such as Airland Battle, Parallel Warfare, Net-Centric Warfare and Rapid Decisive Operations. The challenges of implementing EBO, along with potential ways of addressing these challenges, are explored.

The paper argues that Canada will be obliged to act in concert with allies who are using EBO and that EBO, in fact, supports the objectives of the Defence White Paper and Strategy 2020. It proposes a Canadian structure of a Cabinet Committee as the highest level of coordination, a working-level Joint Interagency Control Group at the National Defence Headquarters level, and a deployable operational-level analysis and interagency coordination capability at the Canadian Forces Joint Operations Group level.

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Introduction

Since the end of the Cold War, Canada has been engaged in a number of international situations in which military force, or the threatened use of force has been a prominent feature. These situations have run the gamut from Peace Support Operations (Somalia, Bosnia) through to war (Gulf War I, Kosovo, Afghanistan). Furthermore, all of these operations have been conducted with allies, either in the form of the United Nations (UN), the North Atlantic Treaty Organization (NATO) alliance or in *ad hoc* coalitions. In fact, the 1994 Defence White Paper expresses a preference for multilateral operations as a means of addressing the complexity of these problems, and of pooling scarce defence resources.[1]

As the White Paper recognizes, the kinds of problems that Canada and its coalition partners will be trying to solve are very complex. They are rarely amenable to a purely military solution and attempts to even understand the problems must take a holistic approach that looks at all of the factors involved (i.e. military, political, socio-economic, religious, etc.). Therefore, the government will need to access the relevant types of information and analysis. More to point, it needs to synthesize all of this information into a coherent picture of the whole in order to make a decision about what it wants to achieve in terms of solving the problem. Arguably, elements of the intelligence and analytical functions exist separately in different government departments but this is a less than optimal way of providing the decision support mechanism that government

[1] Department of National Defence. Directorate of Land Force Strategic Concepts. *1994 White Paper on Defence* (Ottawa: DND Canada, 1999). Available from http://www.forces.gc.ca/admpol/eng/doc/5118_e.htm; Internet; accessed 5 April 2004.

requires. The missing piece seems to be a permanent entity for synthesizing the information and analysis across departmental boundaries.

One of the challenges for Canada, particularly when dealing with larger and more powerful allies, is to ensure that the Canadian perspective on a problem is taken into account. Aside from devoting more resources to our contribution, a method of increasing our relative influence would be to harmonize all of our elements of national power so that they all represent a singular Canadian point of view. A process to better determine that perspective and a harmonized effort by all of the elements of national power will go some way to achieving this by creating a unity of purpose and message. The ability to communicate that message and to coordinate Canadian actions with those of our allies is another crucial enabler. To a certain extent this has always been possible through the exchange of diplomats, the use of telephones and the use of the media. However, information technology allows for not only the rapid exchange of huge volumes of data, but it offers the possibility of collaboratively manipulating and analyzing the data. Early participation in a collaborative planning process, and adding analytical value to that process are enablers to ensuring that the Canadian voice is heard. This ought to be incentive enough to participate in the construction of such a collaborative environment with our allies.

Our principal ally, the United States, has begun to experiment with a new method of conducting operations, namely Effects-Based Operations (EBO). The promise of EBO is that it offers a means of conducting operations that is based on holistic analysis and

which attempts to explicitly link actions across the spectrum of national power to the desired ends. This paper will examine the EBO concept and the challenges to its implementation, as well as the compatibility of the concept with the current method of operations. It will argue that Canada needs to make organizational and procedural adjustments to be able to participate effectively in a coalition using EBO.

As with any new concept, much has been written about EBO and many of these writings reflect different Service and national perspectives. There is thus a healthy debate about what exactly constitutes EBO, so the first task of this paper is to define the concept and its supporting ideas. Next, it will be useful to examine some of the challenges associated with implementing this concept, as this may highlight areas of future development or capabilities in which Canada may want to take a lead. The challenges notwithstanding, the compelling case for adopting EBO as the future method of conducting operations will then be examined.

Canada already has a certain methodology and doctrine for conducting operations, which needs to be examined to determine whether or not they are compatible with EBO. Finally, this paper will propose certain changes to existing structures and practices that will enable effective Canadian participation in coalition operations using EBO.

Describing Effects-Based Operations

The proliferation of Information Technology, the end of the Cold War, and the beginning of the War on Terror have all wrought tremendous changes in the area of

defence. In general, the effect of these changes on Western militaries has been a reduced emphasis on mass, an increased emphasis on precision, and a shift towards trying to exploit the advantages of information technology in terms of increased information sharing and situational awareness. The so-called Revolution in Military Affairs (RMA) is really about the impact of information technology in transforming the ways in which military power is conceived and applied.[2] At the same time, the War on Terror has highlighted the challenges of confronting non-state opponents and opponents using asymmetrical means of fighting. Asymmetry is a double-edged sword however and the U.S. in particular perceives that it has a massive information technology advantage, (as well as advantages in global reach, mobility and the use of space), over potential opponents and has been looking for ways to leverage this advantage.[3]

The US military services have been searching for ways to leverage the precision and information advantages since at least the late Cold War period. In the Army, the doctrine of Airland Battle posited the use of precision strikes against the Soviet follow-on echelons before they could be brought into the battle.[4] Thus, the Army has had more than two decades of talking about 'effects' in terms of the effects of precision weaponry. The US Air Force was, of course, involved in the Airland Battle developments but began to think anew about the use of information technology in the application of strategic

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[2] Merrick E. Krause, *Decision Dominance: Exploiting Transformational Asymmetries*, Defense Horizons, Number 23, February 2003, Center for Technology and National Security Policy. National Defense Univesity 2.

[3] Ibid. 2.

[4] Richard M. Swain, *Filling the Void: The Operational Art and the US Army*. The Operational Art: developments in the Theories of War. Edited by B.J.C McKercher and Michael A. Hennessey. Praeger, Westport, CT, 1996. 158-165.

airpower during the 1st Gulf War (1991). The air campaign planners began to think of the use of precision and stealth to attack multiple target sets simultaneously instead of sequentially, thereby dominating and controlling an enemy as a result. This came to be known as Parallel Warfare.[5] The US Navy meanwhile had been thinking since the 1970s about how to defeat swarms of Soviet aircraft and cruise missiles launched against its carrier battlegroups. The issue was one of being able to sense all the simultaneous threats and assign the appropriate resources to deal with them. This thinking led to the linking together the sensors and weapons of multiple platforms in the battlegroup in order to have the battlegroup fight as a coherent whole rather than as a collection of individual ships. This idea has gradually evolved to the concept of Network-Centric Warfare, which seeks to exploit the advantages of common situational awareness. Finally, in the US Joint community, US Joint Forces Command (USJFCOM) developed the concept of Rapid Decisive Operations (RDO), which built upon the Service concepts and sought to capitalize on the asymmetrical advantages of the US, as well as the perceived lessons of 1st Gulf War (1991).[6] Thus, each Service, and the Joint community can lay claim to a part of the intellectual heritage underpinning the current EBO concept.

This leads to a point that often arises in discussions of EBO; that it is not really anything new and that, "The roots of EBO are as old as strategy and many military

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[5] David A. Deptula, *Effects-Based Operations: Change in the Nature of Warfare*. Aerospace Education Foundation, Arlington, VA. 2001. 1-6.

[6] United States. Department of Defense. *USJFCOM Rapid Decisive Operations White Paper, Coordinating Draf;* Available from http:www.globalsecurity.org/military/library/report/2001/RDO.doc; Internet; accessed 14 Ma

operations over the years have incorporated its tenets."[7] From the foregoing discussion of the intellectual history of EBO, we can see that it cannot claim to be entirely new. We can also take for granted that most military operations throughout the millennia have been intended to have some effect on the enemy. The point is not whether EBO is a totally new concept or not, but rather whether it is a concept that will work across all Services, from the tactical to the strategic level, to allow the precise application of national power to achieve national objectives. One of the first challenges then is to clearly define EBO as distinct from its intellectual ancestors: Airland Battle; Parallel Warfare; Network-Centric Operations; and Rapid Decisive Operations.

The Airland Battle concept can trace its roots back to the mid-1970s and the challenge of defeating numerically superior Soviet land forces in the West European operational theatre.[8] By 1982, the doctrine had evolved to one of 'deep attack', that is the idea of attacking follow-on echelons of Soviet forces with air and artillery assets before those follow-on echelons could be brought to bear in the close fight.[9] The developments in precision weaponry and improved conventional munitions (laser-guided artillery rounds, sub-munitions, scatterable mines, etc.) at the time made such a doctrine technologically feasible. Thus, the US Army began to systematically think in terms of applying power throughout the operational area to influence the final outcome of the

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[7] Saunders-Newton, Desmond, and Frank, Aaron B. *Effects-Based Operations: Building the Analytic Tools*. Defense Horizons, Number 19. October 2002. Center for Technology and National Security Policy. National Defense Univesity. 3.

[8] Swain, 158-165.

[9] Ibid. 164.

campaign and ultimately successfully applied this doctrine in the 1st Gulf War.[10] Airland Battle was therefore both a way of thinking about warfare (the operational level) and a leveraging of nascent precision technologies. There are those within the US Army who see EBO as a logical extension of Airland Battle: "Thus, effects-based operations, as a concept, is a refining and broadening evolution of Army doctrine…" [11]. However, because it involves only the military and only the operational level, Airland Battle is much narrower in scope than EBO.

The concept of Parallel Warfare, developed from advances in air warfare, is an attempt to avoid sequential, attritional air operations against an enemy. The concept envisions the enemy as a set of target systems that can be attacked more or less simultaneously to achieve dominance over the enemy through "…a cumulative or cascading effect." [12] Parallel Warfare relies on precision and stealth technologies as substitutes for mass to deliver firepower to critical nodes of the enemy systems in order to achieve "systemic effects rather than individual target destruction."[13] In this construct, EBO can be conceived of as an enabler of Parallel Warfare in the sense that EBO establishes the campaign plan for Parallel Warfare to implement. Conversely, Parallel Warfare can be conceived of as a tool guided by the premises of EBO.

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[10] Ibid. 164.

[11] Allen W. Batschelet, "Effects-based Operations for Joint Warfighters." *Field Artillery.* Fort Sill. May/June 2003. Issue 3. 7; Available from http://proquest.umi.com; Internet; accessed 18 Dec 2003.7.

[12] Gary L. Crowder, "Effects-based Operations". *Military Technology*. June 2003, Vol 27, Issue 6; 16. Available from http://proquest.umi.com; Internet; accessed at 18 December 2003. 16.

[13] Deptula, 8-16.

The decreased reliance on mass due to stealth and precision makes Parallel Warfare an 'air-centric' concept: "No longer do large numbers of surface forces require movement, positioning, and extensive preparation before we can achieve dominant effects over the enemy."[14] The proponents of Parallel Warfare highlight the speed, reach and timeliness of aerial firepower and its relative invulnerability to enemy counter-access strategies; in effect "…increasing reliance on force projection rather than solely on force deployment…"[15] This point in fact reveals why Parallel Warfare is narrower in scope than EBO: not all problems require the application of aerial firepower. Many historical examples can be found where visible presence, for instance, was used to create an effect and where the situation never evolved to the actual use of force.[16] Even in warfare, other means, such as deception, may be used to create an effect on the enemy.[17] Parallel Warfare may have much to commend it as a method of warfare, but it is hard to see how it would apply to Operations Other Than War.[18]

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[14] Ibid. 18.

[15] Ibid. 20.

[16] Edward R. Smith, *Effects Based Operations: Applying Network Centric Warfare in Peace, Crisis and War.* DoD Command and Control Research Program. 2002. Ch 5. The author uses the examples of Superpower interactions during the 1967 Arab-Israeli War, the 1970 'Black September' crisis in Jordan, and the 1973 Yom Kipopur War as examples to illustrate the creation of effects by the military element of national power without evolving to actual combat on the part of US forces. He argues that the US military deployments and posturing were used to create psychological effects in the battlespace. These deployments had effects on enemy, friendly and neutral powers.

[17] *The Valour and the Horror*, Available from http://www.valourandhorror.com/DB/BACK/Final_St.htm; Internet; accessed 7 April 2004. An example would be that of Patton's 'Phantom Army' prior to the D-Day Invasion in World War II.

[18] Department of National Defence. B-GL-300-001/FP-000 *Operational Level Doctrine for the Canadian Army.* Ottawa: DND Canada, 2000. Operations other than war cover a wide spectrum from domestic operations, service assisted and protected evacuations, peace-support operations and humanitarian operations. However, they may be broken down into three categories : those in which Canada is a **participant**, either through choice or necessity; those in which Canada is a **third party** to the conflict; and those where unarmed **assistance** is provided.

Network Centric Warfare (NCW) has evolved from naval operations. It seeks to leverage the informational power of a networked force that is greater than the sum of its parts. It is "the concept of linking all aspects of war fighting into a shared situation awareness and a shared understanding of command intent so as to achieve a unity and synchronicity of effects that multiplies the power of military forces."[19] Networked military forces will undoubtedly be the way of the future and will be able to use their information advantage across the spectrum of military operations. However, NCW is more of a method of operating military forces than it is of the application of national power to achieve national goals. It is conceivable that NCW could occur without EBO, and *vice versa*, though they can best be thought of as complimentary and synergistic concepts.

In April 2000, the concept developers at USJFCOM were asked to develop a new joint warfighting concept, and they came up with Rapid Decisive Operations (RDO).[20] RDO is essentially the progenitor of EBO in that RDO was based on the four characteristics of: knowledge based; coherently joint; effects based; and fully networked.[21] The concept attempted to deal with the changes wrought by the end of the Cold War, etc., discussed above. In the context of RDO, 'effects-based operations' were "designed to apply the right mix of precision fires, dominant manoeuvre, and information operations capabilities throughout the battlespace to create effects," a somewhat military-

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[19] Edward R. Smith, 62.

[20] USJFCOM Rapid Decisive Operations White Paper, Coordinating Draft, 2-1.

[21] Ibid. 2-3.

centric approach. [22] Effects were defined as an "outcome, event or consequence that results from an action or selected set of actions."[23] Thus, the concept of effects was not too dissimilar from what eventually appeared in the EBO concept. RDO was narrower in scope than EBO because it was about warfighting and therefore military-centric, and because the focus on rapid operations excluded longer-term operations. Many of the ideas contained in the RDO concept eventually found their way into the Joint Operations Concepts of November 2003.[24]

Some analysts have postulated that EBO is also primarily about warfare. Effects-Based operations have been described as "an approach – a way of thinking – to planning, executing and assessing military operations that focuses on the results of military operations – and the explanation of how those results came about…"[25] In a similar vein, EBO has been said to "represent the identification and engagement of an enemy's vulnerabilities and strengths in a unified, focused manner and uses all available assets to produce specific effects consistent with the commander's intent."[26] These descriptions represent the minimalist view of EBO in that they are focused on military actions in warfare. This view could also be described as "effects-based warfare".[27]

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22 Ibid. 2-3-2.

23 Ibid. 2-3-2.

24 United States. Department of Defense. Defense Technology Information Center. *Joint Operations Concepts* Available from. http://www.dtic.mil/jointvision/secdef_approved_jopsc.doc; Internet; accessed 7 April 2004.

25 Maris. McCrabb, *Effects-based Coalition Operations: Belief, Framing and Mechanism*. DMM Ventures Inc., Yorktown, VA, 2002.

26 Batschelet, 7.

27 Edward R. Smith. 108.

There is a broader view of EBO, however, that encompasses all of the elements of national power, (diplomatic, informational, military, economic), in peace and crisis as well as war.[28] As mentioned, USJFCOM has evolved its concept of EBO from its previous work on RDO.[29] It is worthwhile to look at how the USJFCOM view of EBO has itself evolved over time. Desmond Saunders-Newton and Aaron B. Frank quote an early 2002 USJFCOM definition as. "…a process for obtaining a desired strategic outcome or effect on the enemy, through the synergistic, multiplicative, and cumulative application of the full range of military and non-military capabilities at the tactical, operational and strategic levels." [30] Allen Batshelet drops the mention of 'multiplicative' and simply mentions 'all levels of conflict' rather than tactical, operational and strategic.[31] Finally, the USJFCOM White Paper of October 2002 gives the following definition: "An effects-based operation is 'a set of actions planned, executed, assessed and adapted – with a system perspective – that creates the effects needed to achieve policy aims via the integrated application of various instruments of power'."[32] This evolution shows that the EBO concept has grown from focusing on the military (tactical, operational and strategic) and war fighting (enemy) aspects to something that can apply

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[28] Department of National Defence. B-GG-005-004/AF-000 *Canadian Forces Operations*. (Ottawa: DND Canada, 2000), 3-1. Lists the elements of national power as economic, diplomatic, psychological, technological and military.

[29] United States, Department of Defense. United States Joint Forces Command. Available from http://www.jfcom.mil/about/transform.html; Internet; accessed 26 Feb 2004.

[30] Saunders-Newton and Frank. 2.

[31] Batschelet. 7.

[32] United States, United States Joint Forces Command, *Effects-based Operations White Paper*, (Norfolk,VA: October 4 2002),2.

universally to all the elements of national power; In essence, a move away from 'effects-based war fighting' to 'effects-based operations'. Nonetheless, the environment in which EBO is performed is still described as a battlespace, defined as:

> The environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission. This includes the air, land, sea, space, and the included enemy and friendly forces: facilities, weather, terrain; the electromagnetic spectrum, and the information environment within the operational area and areas of interest.[33]

The USJFCOM EBO White Paper definition of EBO establishes a clear linkage between actions and effects and policy aims. "In short, the goal is to gain an enduring policy aim and not just to achieve a military victory in the next engagement, battle or campaign."[34] As shall be seen, the concept developers foresee an EBO process that plans, executes, assesses and adapts rather than some omnipotent database that offers an instant solution to a problem.

The phrase 'system perspective' indicates a view of the battlespace that looks at the friendly, enemy and neutral situations as inter-related systems of nodes and links.[35] In this construct, links are the relationships between entities (either physical assets or social structures) and nodes are points at which multiple links intersect.[36] One perceived advantage of the systems approach is that it can result in products that, to some extent,

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[33] Ibid. 12.

[34] Ibid. 7.

[35] Ibid. 3.

[36] Saunders-Newton and Frank. 5.

simplify the complexities of the battlespace to highlight cause and effect.[37] This increases a commander's cognitive ability to recognize patterns and identify which actions he might take to achieve the desired effects.[38]

Moreover, the system perspective acknowledges that the enemy in particular is a complex adaptive system. Such systems are characterized by non-linearity, sensitivity to initial conditions, and adaptation.[39] A non-linear system is one in which the inputs and outputs are not proportional and where there is no obvious relationship between cause and effect. The sensitivity to initial conditions means that even small changes in the initial environment can lead to very different outcomes, even if all the other factors are the same. Finally, adaptation means that a system attempts to actively adjust to a situation and turn it to its advantage. These characteristics would seem to cast grave doubt on the ability to make any kind of predictions about complex adaptive systems. So how can a process predicated on planning specific actions to achieve certain effects have any hope of succeeding?

> Complexity theorists…suggest that the key element of success is to 'observe, observe, observe'… that you see reality for what it is and realize that the game you are in keeps changing so that it's up to you to figure out the current rules of the game as it's being played.[40]

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[37] United States Joint Forces Command, *Effects-based Operations White Paper*, 13.

[38] Saunders-Newton and Frank. . 3-4.

[39] *The Challenge of Assessing Effects-Based Operations in Air Warfare*. Available from http://www.airpower.maxwell.af.mil/airchronicles/bookrev/glenn.html; Internet; accessed 2 November 2003.

[40] Ibid.

Furthermore, effectively ignoring some of the outcomes and concentrating on only certain ones may reduce the complexity of the problem. This approach of 'bounding complexity' is both intuitive and a method that has been used historically.[41]

An analogy for the complex adaptive system would be more biological than mechanical; that of treating a diseased patient rather than fixing a broken automobile. There is thus an implicit recognition that actions might have more than one effect and that not all of the effects might be predictable or desirable. This reality is acknowledged by the USJFCOM definition of EBO insofar as it talks about assessing and adapting. Assessment and measurement thus emerge as key enablers (or limitations) of the EBO concept and this will be dealt with later. However, it is clear that the common myth that EBO requires 'perfect knowledge' to succeed is questionable, at best.

If EBO is about acting on complex adaptive systems to create effects to achieve policy aims, then what are effects? A U.S. Air Force study describes them as "…a full range of outcomes, events or consequences that result from a specific action."[42] The USJFCOM definition is roughly similar: "An effect is simply the physical and, or behavioural change in the state of a system that results from an action or set of actions."[43]

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41 Edward R. Smith, Chapter 6.

42 Edward C. Mann, Gary Endersby, and Thomas R. Searle, *Thinking Effects*. Air University Press, Maxwell Air Force Base, Alabama. 2002. 31.

43 United States Joint Forces Command, *Effects-based Operations White Paper*, 2.

There are a number of perspectives from which to consider effects if we are to be successful at predicting what actions will cause them. The first perspective is that of the immediacy of the consequence of the action. Hence, first order effects "…are directly attributable to a military attack on a target or other actions at a specific location and occur immediately or very nearly immediately after the specific actions."[44] First order effects are also known as direct effects.

Effects that occur with some delay after the action are numerically ordered, (i.e. second, third, fourth, etc.), and are "Those effects that are created through an intermediate effect of mechanism, thereby producing a final outcome or result."[45] These are also known as indirect effects. Given the aforementioned properties of complex adaptive systems, it is apparent that predictability will tend to decrease the further away we move from first order (direct) effects.[46] This is particularly true when multiple, simultaneous actions are taking place. In the patient analogy, if give the patient multiple drugs, how do we know what is causing what?

Another perspective from which to consider effects is the realm, or the domain in which they manifest. Basically, this breaks down to physical effects and psychological effects. Physical effects "…are created by the direct impact, through physical alteration, on an object or system targeted by the application of military resources."[47] They may be

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[44] Mann et al. 32.

[45] Ibid. 32.

[46] It is a lot easier to predict a first order rather than a third order effect.

[47] Mann et al. 37.

further broken down into kinetic or non-kinetic, depending on the means used to achieve them.[48] An example of a kinetic physical effect would be blowing up a radio transmission tower, whereas a non-kinetic effect on the same target could be the disabling of the transmitter by some directed energy weapon (i.e. microwave beam). Psychological effects "… are the results of actions that influence emotions, motives, objective reasoning, and ultimately the behaviour of foreign governments, organizations, groups, and individuals."[49] An example of a psychological effect would be shock or paralysis in the mind of an enemy decision-maker. These types of effects may act singularly or in some combination to produce functional and/or systemic effects. A functional effect simply refers to whether or not a target or object can perform its function correctly and a systemic effect is a disruption of a particular system or systems.[50] An example of a functional effect would be that of a radio station being unable to transmit. An example of a systemic effect would be the inability of the enemy political leadership to communicate with their forces in the field.

A third perspective from which to consider effects is that of their implication on the whole system. Cascading effects are top-down phenomena: "Most frequently indirect effects cascade or flow from higher to lower levels of employment."[51] Cumulative effects are bottom-up phenomena: "Cumulative effects result from the aggregate of many

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48 Crowder, 16.

49 Mann et al. 38.

50 Ibid. 37-38.

51 Ibid. 34.

direct or indirect effects. This aggregation of effects may occur at the same or at different levels of employment."[52] Finally, there is the issue of collateral effects, which like the more familiar collateral damage "…are those outcomes that result when something occurs other than what was intended."[53] Using a medical patient analogy, collateral effects may be likened to drug side effects.

Effects can apply to any given level of operations: tactical, operational or strategic.[54] This is not to say that tactical actions produce only tactical effects, and so on. It is conceivable that a tactical action might have a strategic effect or vice versa. An example of a tactical action having a strategic effect would be that of the sinking of the GENERAL BELGRANO in the 1982 Falklands War. The result of this sinking (a tactical action) was that the Argentine surface fleet returned to port and played no further active part in the war (a strategic effect).[55]

To get from systems analysis and effects to something that is actually achievable in a particular situation, EBO requires an operational planning process (OPP). While this process may share some similarities with current OPP, the EBO planning process "…moves objectives-based planning to the next level… with analysis of desired effects and the underlying causal linkages by which planned actions are expected to create

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52 Ibid. 33.

53 Ibid. 35.

54 Ibid. 39.

55 Available from http://en.wikipedia.org/wiki/Falklands War; Internet; accessed 7 April 2004.

desired effects."[56] Thus, EBO attempts to operationalize a hypothetical cause and effect relationship in planning operations that is a step above conducting a campaign of manoeuvre and/or attrition until the opponent concedes. EBO gives a commander a process to 'plan, execute, assess and adapt actions' to "…reliably align the desired end state to effects to causative actions to the beginning state in order to influence a complex adaptive system."[57]

USJFCOM proposes an effects-based command cycle for EBO.[58] The first stage in the cycle is the planning stage. Like any planning process, it requires up-to-date knowledge about the battlespace so that commanders and planners can compare the start state with the end state. Because EBO encompasses more than just military activities, planning staffs of the other elements of national power need to act in concert with the military to build an accurate picture of the battlespace and: "An interagency analytic effort offers the best opportunity to tap into the broadest set of skills and organizational resources."[59] The USJFCOM approach to this problem is to create a Joint Interagency Control Group (JIACG), linking together elements from other government departments ((OGDs)(i.e. Justice, CIA, State Dept)), and non-governmental organizations (NGOs):

> The JIACG is as [sic] a multi-functional, advisory element that represents the civilian departments and agencies and facilitates information sharing across the interagency community. It provides regular,

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[56] Mann et al.. 53.

[57] Ibid. 2.

[58] Ibid. 8.

[59] Saunders-Newton and Frank. 5-6.

timely, and collaborative day-to-day working relationships between civilian and military operational planners.[60]

As mentioned previously, the cognitive abilities of commanders and staffs to perceive linkages and relationships ought to be enhanced by the systems approach to the battlespace. Planners decide what effects will be needed to get to the end state and then decide what actions will produce these effects.[61] A product of the planning stage is the Effects List, defined as "… a tool to give some sense of priority to the importance and timing of an effect in achieving campaign success. It does not prioritize effects, but provides a basis for considering various options, branches and sequels to an ongoing operation."[62] Again, this is a product that seeks to help staffs forecast effects beyond the first order. This product would be roughly analogous to the determination of 'lines of action' and 'decisive points' in the current Canadian Forces (CF) operational planning process. Another product of the planning stage would be an Effects Tasking Order, "…designed to give sufficient direction to …commanders so they can collaborate in order to align an end state to effects to targets to forces to actions. At the core of the tasking order is the description and measures of desired operational effects."[63] The final product of the planning stage is the Effects/Tasks Synchronization Template, which "…is a 'resourcing' tool. It helps 'operationalize' the 'effects to task' process by aligning the desired effect to an assigned (or implied) task to a functional component

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[60] United States Joint Forces Command, Available from http://www.jfcom.mil/about/fact_jiacg.htm; Internet; accessed 7 April 2004.

[61] Saunders-Newton and Frank. 5-6.

[62] Ibid. 7.

[63] Ibid. 6.

within a specified time frame."[64] Like current operational planning processes, the planning staff will need to war game the various effects in order to fine-tune the tasking order and synchronization template. The war game process in EBO however, needs to include players that represent all of the elements of national power that are acting at a given level.[65]

The next stage in the process is the execution stage. Subordinate commanders receive the Effects Tasking Order and must align forces to actions, where "…the key during execution is identifying the causative actions and instruments needed to create the desired effect."[66] Subordinate commanders will have the latitude of deciding how best to achieve the effect if they are given mission-type orders that describe the desired effect and its duration rather than specific objectives. Additionally, it is particularly important for effects beyond the first order that the subordinate commander be provided with the measures of success for achieving an effect.[67]

Next comes the assessment stage. If EBO is to function as a process, determining whether and when an effect has been achieved is crucial. Particularly for effects beyond first-order, the challenge is to identify observable phenomena that will indicate success or progress. Four measures are proposed: traditional battle damage assessment measures can indicate physical damage; measures of performance focus on observable system

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64 Ibid. 7.

65 Ibid. 6.

66 Ibid. 9.

67 Ibid. 5-8.

capability, (i.e. number of aircraft sorties generated or currency exchange rates); measures of effectiveness are broad indicators of operational success that may have to be observed indirectly because they are trying to measure behaviour (i.e. refugee patterns, street protests); Measures of merit demonstrate progress toward strategic end states or effects (i.e. an enemy complying with terms of a United Nations resolution).[68]

The final stage in the EBO process is adaptation. This is simply using the feedback provided from the assessment stage to determine progress towards the end state and making adjustments, corrections and additions as necessary. It could also be the stage where new policy direction and/or new end-states are analysed in terms of what new sets of effects are needed. [69] "Getting it right the first time does not hold near the promise of being able to adapt quickly."[70]

The keys to the whole EBO planning process are the iterative and adaptive aspects of it. The process does not assume or require perfect knowledge of the battlespace; indeed complexity theory tells us that such perfect knowledge is not possible.[71] The mechanism of the JIACG and the systems analysis approach attempt to gather as much data as possible from across the whole spectrum of national power and

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68 Ibid. 9.

69 Ibid. 9.

70 Mann et al. 54.

71 Paul Plsek, Curt Lindberg and Brenda Zimmerman, *Some Emerging Principles for Managing in Complex Adaptive Systems,* Working paper, Version: November 25, 1997 at http://plexusinstitute.com/edgeware/archive/think/main_filing1.html accessed 7 April 2004. The authors argue that the detailed behaviour of a complex adaptive system is unpredictable but that one can still derive practically useful statements about the behaviour of the system as a whole. They illustrate this concept with an example of the stock market: it is impossible to accurately predict a certain closing value, but one can see a trend of 'bear' or 'bull' behaviour and make investment decisions accordingly.

present it in a coherent and relational format. The EBO planning process is thus a task-assess-adapt loop in which the tasks are linked explicitly to the achievement of an effect, which is linked explicitly to the achievement of the end-state. As mentioned at the beginning of this paper, it is often claimed that the tenets of EBO have been intuitively understood and exploited by successful commanders throughout history. EBO represents an attempt to consistently reproduce such success.

Challenges to Implementing Effects-Based Operations

The challenges to implementing EBO can be generally grouped into the categories of analysis, measurement and process. Obviously, the systems view of the battlespace will require quite an extensive analytical effort that will encompass all of the elements of national power. USJFCOM reckons that analysis is the foremost challenge to implementing EBO.[72] The type of analysis needed is that which will enable "decision-makers…to conceptualize complex systems and evaluate options for manipulating, transforming, or destroying them."[73] Therefore, this effort is more than just a military affair and more than just Intelligence Preparation of the Battlefield.[74] The analytical effort is crucial because without it, "EBO will remain an interesting but ultimately unrealizable concept."[75]

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[72] United States Joint Forces Command, *Effects-based Operations White Paper*, 2.

[73] Saunders-Newton and Frank. 5.

[74] United States, Department of Defense, Field Manual 34-130, *Intelligence Preparation of the Battlefield,* (Washington, D.C., Department of the Army, 1989), 1-1. IPB is a systematic, continuous process of analyzing the threat and environment in a specific geographic area. It is designed to support staff estimates and military decision making.

[75] Desmond Saunders-Newton and Aaron B. Frank. 5.

One view of the systems analysis required is that of 'strategic environment research', consisting "…of three major types of research – contextual, nodal and assessment – that are conducted on three different levels: generic, regional, and target audience specific."[76] Within this framework, contextual research is done on potential enemies to determine "...what capabilities, strengths and weaknesses they possess."[77] Nodal analysis then is the study of the target systems to determine how they might be affected.[78] Finally, assessment research provides the metrics for measuring success.[79] Each of these types of research is then increasingly focused from the generic to the specific, allowing for an increasingly focused response to a crisis situation. For example, in a crisis in East Africa, analysts would be able to draw on the contextual analysis of the type of threat (e.g. biological weapons) in relation to the global situation and how that threat manifested in East Africa as they developed their analysis of the specific situation in the country (or target group). Similarly, they would be able to analyse vulnerabilities of a particular system in the target country (e.g. telecommunications) by drawing on the generic and regional nodal analyses. Finally, they would be able to develop metrics for assessing effects against that system based on the generic and regional assessment research. The assumption of this approach is that there is a certain consistency amongst systems and that the causes and effects of these systems could be, at least partly, determined in advance. Intuitively, this seems to have some merit, especially when

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[76] Mann et al. 58

[77] Ibid. 58.

[78] Ibid 64.

[79] Ibid. 65.

considering physical systems such as telecommunications or banking networks. It would be a greater leap to transfer such an approach to human systems but theoretically, one could imagine the generic subject of group dynamics being applied in the social construct of East Africa and then further refined to a particular country or target group.

Another perspective is that the systems view of the battlespace can be achieved by developing different 'information sets' and aggregating the data from these to form knowledge of the various systems.[80] The technical information set looks at enemy military capabilities while the geographic and infrastructure information sets look at the natural and man-made physical features respectively. The organizational information set describes human organizations. As its name suggests, the socio-political information set describes the social and political underpinnings that give rise to the organizations and motivations of the various actors. It is safe to say that these information sets are already familiar intelligence products whereas the final three information sets are less well developed, if they exist at all. The psychological information set explains the influence of emotion, identity, morale and other nonmaterial factors in friendly and adversary decision-making and conduct. The context information set is an analysis of the previous sets but puts the data in the context of the particular problem. This set is similar to the 'so-what' type of conclusion arrived at in the military estimate process. Finally, the dynamics information set is the final level of analysis in that it relates causes to outcomes.[81]

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[80] Saunders-Newton and Frank. 3-4.

[81] Ibid. 3-4.

In both views of the analytical systems required, it is the human behavioural factors that really challenge current analytical capabilities. It is, after all, humans that make the complex adaptive system so complex and so adaptive. Whatever analytical construct is used, the aim is to predict a relationship between cause and effect so that actions can be planned to become the causes. The analysis of cause and effect is crucial to the success or failure of EBO. "Failure to properly analyze the mechanism that ties tactical results to strategic effects has historically been the shortcoming of both airpower theorists and strategists."[82]

Aside from the types of information that must be analysed, there are the challenges of focus of analysis and time. The focus challenge arises from the multiple potential adversaries or conflict situations. As opposed to the Cold War, the potential new adversaries are not as monolithic as the U.S.S.R.[83] In the end, it is individual people, (who need certain language skills, cultural awareness, etc.), who perform analysis and the challenge will be to maintain an effective analysis capability for each potential conflict situation. A wide variety of analysts with different cultural and technical knowledge, as well as linguistic skills will be required. From a purely military intelligence point of view, this would be a challenge even for the US and its regional combatant commanders, not to mention smaller powers like Canada.[84]

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82 *The Challenge of Assessing Effects-Based Operations in Air Warfare*. 1.

83 Although the USSR was less monolithic than was often popularly portrayed, there was little doubt that the *lingua franca* was Russian. Therefore, the foreign language challenge of training intelligence analysts was less problematic than now.

84 Saunders-Newton and Frank. 8.

An obvious response is to increase the military resources devoted to data collection and analysis but realistically, this is unlikely to solve the whole problem. Another part of the solution could be to rely on a network of coalition partners, recognizing that some of them will have a more profound experience in the area of conflict than we do (i.e. French experience in West Africa) and leveraging their experience and analysis. As well, there is the option of capitalizing on the personnel and skill sets already resident in OGDs. Foreign Ministries in particular specialize in knowledge (organizational, socio-political, contextual) about other nations. Personnel from OGDs might also bring detailed technical knowledge about geographical or infrastructure information sets. Finally, academics and non-governmental organizations (NGOs) can bring a wealth of knowledge to enhance particular information sets. Thus, the answer to the challenge of the widening focus of analysis is to vastly broaden the pool of analysts, but this will bring its own challenges.

Fusing analysis from across the different elements of national power and potentially from elements outside of government (either from Allies, academia or NGOs) will require some new approaches in the way that analysis is currently performed. Within government, a common system or method of sharing information and retaining security classifications is needed. Between Allies, there are different standing agreements (e.g. CANUKUS, or NATO) but an *ad hoc* coalition presents a difficult

challenge.[85] Finally, the inclusion of academics and NGOs in the analysis seems to necessitate that "…the data and information that drive the analytic models must be readily available or rapidly and reliably acquired, (can't rely too much on clandestine material)."[86] This is simply because of the challenge of obtaining proper security classifications for such people (were they even willing to submit to the process). Some sort of collaborative environment would be needed to ensure that, for the most part, all interested parties were working with the same information sets and were not working within 'information stovepipes'.

A further analytic challenge comes from the relative dearth of simulation tools. Current operational planning processes involve war-gaming of Courses of Action in order to identify such things as potential problems and synchronization of actions. However, most current war games and conflict simulations are based on operations research that deal with quantifiable factors such as attrition rates and movement rates.[87] What are needed are tools that can model higher order effects but these tools tend towards qualitative instead of quantitative products and therefore involve a degree of subjectivity.[88] Subjectivity is something that could be expected to impede consensus in

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[85] United States, Department of Defense. Defense Technical Information Center. Available from http://www.dtic.mil/doctrine/jel/jfq_pubs/1331.pdf; Internet; accessed 21 March 2004. USJFCOM is sponsoring an Advanced Concept Technology Demonstration called Content-Based Information Security (CBIS) which aims to create a system that would allow user access to information based on information tagging, data encryption and user certification. The system would be a plug-and –play set of boxes that could be used with any personal computer to exchange data over the Internet.

[86] Saunders-Newton and Frank. 8.

[87] McCrabb.

[88] Saunders-Newton and Frank. 4.

the context of wide intra-governmental and inter-Allied analysis participation. This point will be discussed in further detail later.

The analysis challenges make it difficult to obtain a clear view of the starting state of the battlespace. The difficulty of determining whether and how the battlespace is moving towards the desired end-state, or in other words success, constitutes the measurement challenge.[89] As we move beyond first order effects, measurement gets more difficult. However, measurement implies, by definition, observable phenomena. One of the biggest challenges therefore is to figure out which of these is relevant for the effect in question because: "The danger is that in the absence of relevant measures of effectiveness commanders and staffs become fixed on easily measurable criteria which may be irrelevant."[90] A well-known historical example would be that of using a 'body-count' as a measure of success in Vietnam.

It is fair to say that physical effects measurement, in terms of damage assessment or performance assessment, is more easily achievable than measurement of psychological effects.[91] That being said, it is not clear what the measures of physical effects actually tells us about the progress towards victory. Measures of attrition "…still leaves us trying to determine how the action of destroying forces and capabilities translates into a

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[89] United States Joint Forces Command, *Effects-based Operations White Paper*, 4.

[90] Howard G. Coombs, *Planning for Success: The Challenge of Applying Operational Art in Post-Conflict Environments*. Draft Article for Canadian Military Journal. Queen's University. 24 October 2003.7.

[91] Dr. E.D. Smith. *From Network Centric to Effects-Based Operations*. Boeing WSA, Powerpoint Presentation.

particular behaviour, such as … the enemy will to fight."[92] However, some of the behaviours are observable so these will be the basis of assessment of psychological effects. Change in the system is an effect and the challenge will be to determine what factor or factors are producing it, particularly in light of simultaneous and multiple actions producing cascading and cumulative effects. This is similar to the problem of a psychologist trying to predict what actions might induce shock in a specific individual. The psychologist knows what symptoms to look for and has a pretty good idea of the kinds of action or information that will induce shock but he will be unable to predict with certainty when shock will occur and will have to use a continuous action/assessment mechanism to achieve the goal. In an EBO, a desired effect might be to produce shock in the enemy political leadership. Figuring out how to measure shock involves understanding the behaviours that result from it and then figuring out how those behaviours might manifest themselves in the case of the target group. Whatever measurement criteria are adopted, it is important that they be consistent throughout the conduct of the operation. The adage that 'what is measured is what is produced' implies that we must be able to determine the measures of an effect in order to be able to produce it.

Measurement tools are also an area that requires some development. Again, tools for measuring physical effects, such as bomb damage, are relatively sophisticated. Functional effects can also be measured with some success if the system being analysed is a physical one (i.e. a railroad network or a power grid). It is harder to measure, for instance, the degree to which communications between enemy government departments

[92] E.R. Smith, 378.

have been impaired. In such cases, the measurement may have to be more subjective and based on human intelligence rather than on technical means. Again, the wider analytical community (OGDs *et al*) may be able to observe what strictly military-technical means may not. The challenge will be to design a process that captures these observations in a systematic and timely manner.

Part of meeting the analysis and measurement challenges will be revising current processes to better adapt to EBO. Mann *et al* have suggested that the process challenge breaks down into two main elements: doctrine (including terminology definition, education and training, interagency integration), and command and control (including modelling and simulation, staff training, and intelligence).[93] As this paper has already addressed modelling and simulation, as well as intelligence in terms of analysis, they shall not be dealt with further.

Terminology definition would indeed seem to be a necessary step. Even a cursory review of the available literature reveals confusion about what 'effects' are, the aim scope and purpose of EBO, and others. "A key step in implementing any effects-based concept then, would be to get the services and joint community to agree on common usage of the relevant terms."[94] For example, there is a need to properly define EBO and separate it from seemingly related concepts like NCW and Parallel Warfare. There is additional confusion that results from traditional military notions of thinking about 'effects' as the

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[93] Mann et al. 77-87.

[94] Batschelet. 7.

results of fires (i.e. 'weapon effects'). Thus, speakers may refer to 'effects-based targeting' in the context of matching weapons effects to targets rather than speaking about a process of choosing targets to produce an effect. No doubt, as the concept matures, the Joint community in the US will agree to some common definitions and this will likely be followed by NATO and other standardization bodies such as the Australian-British-Canadian-American (ABCA) Group, and the Multi-national Interoperability Council ((MIC), the ABCA countries plus France and Germany). Thus, a common terminology will begin to take shape to enable EBO in a coalition context.

Directly related to a common terminology is education and training. The analytical challenge has already been discussed and it would have its own training and education implications. The EBO terminology and planning process need to be incorporated into the military education and training programs and within these, the emphasis needs to be on leadership. "The holistic, nested and integrated nature of effects-based operations places a premium on leaders who understand the big picture and the potential impact their decisions could have on achieving desired effects."[95] At the higher levels, education and training programs in Defence and War Colleges can be used to inculcate officials from OGDs so that leaders in all of the elements of national power understand EBO concepts.

EBO is arguably a more command-centric method of conducting operations than the current process because of the explicit linkages between tactical actions and desired

[95] Ibid. 7.

end-states. Well-trained commanders are essential to the process: "Commanders do not deliver fires, they deliver decisions."[96] One of the challenges in training commanders is to train them not to over-control. The tendency to do so may be accentuated by EBO: "If commanders become overly concerned with the need to control second and third order effects, the potential exists for them to 'reach into the turret' and personally direct operations …"[97] Thus, we would have effects-based micromanagement. At the other end of the scale is the necessity for commanders to provide their subordinates with sufficient guidance to get the job done: "The viability of effects-based operations becomes questionable if commanders fail to provide subordinates clear intent or measures of success." [98] In an EBO, commanders will also need to be aware of the inter-relationship between the various elements of national power and how their military action will relate to the production of the overall effect. This means that commanders will have to have knowledge of a number of relevant fields such as politics, economics, strategy and social affairs. If it ever was acceptable for commanders to be purely military specialists, then this will be less so with EBO. Clearly then, the implementation of EBO requires an investment in training and education, particularly for the leadership and staff elements.

Interagency integration (the integration of OGDs in planning and conducting EBO) represents a significant process challenge to implementing EBO. As we have seen, the definition of EBO includes the coordinated use of all of the elements of national power. We have also seen that the OGDs have great potential to contribute to the

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96 United States Joint Forces Command, *Effects-based Operations White Paper*,.6.

97 Batschelet. 7.

98 Ibid. 7.

analytical effort and that their leadership will require training and education in EBO. The challenge arises from trying to integrate OGDs in the process from the beginning, and in a more coherent way than is done at present. It is not the aim of this paper to determine the degree to which this is accomplished in various Allied countries but it suffices to say that challenges exist even in the US, where a large and mature national security system has existed for decades.[99]

In general, four main areas have been identified that make proper integration of OGDs problematic.[100] In the first place, the focus and resource level of government departments is not the same. For example, whilst both Defence and Foreign Affairs Canada (FAC) have an external focus, and both maintain some level of 24/7 operations capability, the resources available to Defence in terms of both budget and personnel are much greater. Other departments that could bring analytical power to bear may not have a primary external focus (e.g. Communications or Transportation). Indeed, these departments may not see their mandate as having much to do with national security. Assuming that the relevant departments could establish operations and analysis centres, the next challenge would be getting these centres engaged in the analysis of potential battlespaces before crises erupt. This implies a permanent dedication of resources to an area that was traditionally outside the mandate of many departments. Hence, it is likely to need a conscious, Cabinet-level decision to implement.

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[99] The US has, since the early Cold War days, had a National Security Council, Defence Advisory Board, etc. The system has arguably become more integrated with the creation of the Department of Homeland Security, but bureaucratic turf battles and legitimate differences of focus are still challenges to the creation of an effective Joint Interagency Control Group for exercises and operations.

[100] Saunders-Newton and Frank. 5-6.

Assuming that the focus and resource issues could be sorted out, a remaining challenge would be that of establishing who has overall coordination authority. One approach would be to name either Defence or Foreign Affairs as the lead agency. Another would be to put a Cabinet Committee or the Privy Council Office in charge. One of these latter approaches would likely be more effective as the coordination function is supposed to be concerned with translating political will into policy, analysis and actions. With some agency exercising overall coordination, the final challenge would be that of "Synchronizing interagency analytic support to EBOs with each organization's operational elements."[101] The end result of overcoming these inter-agency challenges though would be a Government of Canada-wide analytical effort that harmonized the different elements of national power in EBO.

As mentioned at the beginning of the paper, Canada rarely acts outside her borders in a unilateral fashion. Therefore, while it is necessary to have a coordinated analytical and operational effort at the national level, such an effort must then be coordinated with Allies. EBO in a coalition context presents some challenges of its own. "At the highest levels, EBO is initiated by direction…(which) begins with a clear vision of the end state sought. And then this end state is translated into national objectives or strategic effects that define a successful operation."[102] The biggest issue is that of arriving at the common clear view of the end-state. It is the nature of coalitions that not all of the

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[101] Saunders-Newton and Frank. 5-6.

[102] United States Joint Forces Command, *Effects-based Operations White Paper*, 4-5.

interests of all of the states involved are congruent. Therefore, building the consensus view requires more than just sharing information, "It requires understanding the strategic culture of one's coalition partners…"[103] Coalitions are likely to be more cohesive when the partners have a good understanding of each other's interests, culture, and methods.[104] For instance, an ABCA coalition might be expected to be reasonably cohesive because all of the participants share a language, common cultural background, and have spent considerable effort to standardize doctrines, methods and procedures.[105] Obviously, this will be less true of ad hoc coalitions. "War games, exercises and educative activities are the traditional means" of achieving this common understanding but the applicability of these methods to ad hoc coalitions is questionable.[106] Some combination of three different methods could be used to attack this problem. The first idea would be to limit the number of coalition participants in the interests of cohesion. Politically, this is often not desirable. The second approach would be to widen the sphere of contacts in performing the traditional means, (i.e. Exercising with non-traditional partners or attending foreign staff colleges). Finally, the increased use of the age-old practices of exchange and liaison officers seems attractive. At the strategic EBO level, the liaison officers might have to include political, and OGD elements as well as military.

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[103] Maris McCrabb,. *Effects-based Coalition Operations: Belief, Framing and Mechanism*. DMM Ventures Inc., Yorktown, VA, 2002. 143.

[104] E.R. Smith. 346.

[105] The ABCA army grouping is paralleled by efforts amongst air forces, navies and communications elements.

[106] McCrabb.143.

The final challenge presented by coalition EBO is that of the connections between different nation's elements of power. One method would be to have only Cabinet-level contacts between nations and to transmit orders down the chain as appropriate. Another way would be to permit groupings of the various departments of various nations to exchange knowledge and understanding through some collaborative communications process.[107] Each of these approaches has advantages and disadvantages and experimentation would likely be required with each to select the best method. Of course, some coalition partners might choose one approach while others prefer the alternative.

According to the USJFCOM White Paper, " …at the strategic level the most important responsibility of the policy makers is to maintain congruence between the desired end-state, the desired effects, and the instruments of action: to integrate interagency and multinational actions into a single coherent operation."[108] This assumes that policy formulation is a rational process where the political masters will know the end-state they want to achieve. Although this may not always be the case, it is no more the downfall of EBO than of any other method of operations.

The Necessity for EBO

As we have seen, EBO is both an evolutionary outgrowth of technological developments and US Service doctrines, and a concept designed to leverage the asymmetrical advantage enjoyed by the US in certain areas. The questions to be asked

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[107] http://www.jfcom.mil/about/experiments/mne3.htm One of the objectives of the experiment was to evaluate a Coalition Interagency Coordination Group.

[108] United States Joint Forces Command, *Effects-based Operations White Paper*, 4-5.

then are whether EBO is an American solution for an American problem and whether it has any applicability to other countries, particularly Canada? Might EBO be just a passing fad based on an infatuation with technology?

EBO is likely to be attractive to many countries, including Canada. The concept of EBO is not so much a revolution as an evolution enabled by technology, but it does promise to break out of the 'victory through attrition' paradigm. If the Napoleonic Era gave rise to the concept of total war, then that concept was perfected in the 20th Century. The great conflicts of the century, World Wars I and II, were ultimately wars fought to the point of unconditional surrender and hence became wars of attrition. Throughout the Cold War, the Superpowers engaged in a number of limited contests whose main character was nonetheless also attritional (Korea, Vietnam, Angola, Afghanistan): "The presumption at the root… is that the destruction of the means of waging war will ultimately result in victory."[109] The point here is not that attritional warfare is inherently bad; it may in fact be the inevitable outcome in contests between two evenly matched competitors. Rather, it is that decades of fighting attritional conflict may have produced a tendency to regard conflict as inherently attritional in nature.[110] EBO's "…critically important message is, do not confuse means with ends."[111] Therefore, it is useful to

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[109] E.R. Smith, 374.

[110] Antulio J. Echevarria II, *Toward An American Way Of War.* Strategic Studies Institute, (U.S. Army War College, 122 Forbes Ave, Carlisle, PA), March 2004. The author argues that Americans have a way of battle rather than a way of war. This way of battle is predicated on the destruction of enemy armed forces. He argues that this is insufficient for translating military victory into strategic success.

[111] *The Challenge of Assessing Effects-Based Operations in Air Warfare.* http://www.airpower.maxwell.af.mil/airchronicles/bookrev/glenn.html

consider whether there might be some more efficient and less costly way of achieving national aims than through attritional military battles.

EBO seems to offer such a way because of its' holistic approach: "EBO is not focused upon an adversary but, rather, on the conditions necessary to achieve success in any action."[112] The idea of looking at a battlespace that includes all of the potential factors in a conflict, (including neutrals as well as the belligerents), and of coordinating all of the elements of national power to achieve national objectives, is intuitively appealing. The view of the enemy as a system of systems also makes great intuitive sense. EBO seems to hew to the idea that "…the true aim of war is peace and not victory, therefore that peace should be the ruling idea of policy, and victory only the means toward its achievement."[113] The layman would tend to ask why we haven't been doing this sort of thing all along. The answer is that until the advent of information technology, it was extraordinarily difficult to gather, process and share the necessary information, let alone do it in a timely manner.

The appeal of EBO then is that it appears to be a method that tries to achieve its goals with the least casualties, cost and destruction: "…this concept does not address results in terms of destruction but in terms of outcomes that may or may not include destruction… "[114] This is not the same thing as saying that EBO is a method of

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[112] Mann et al. 42-43.

[113] Major General J.F.C. Fuller. *The Conduct of War, 1789-1961: A Study of the Impact of the French, Industrial and Russian Revolutions on War and Its Conduct*. New Brunswick. New Jersey: Rutgers University Press 1961. rpt Cambridge and New York: Da Capo Press, 1992. 76.

[114] Mann et al. 42-43.

conducting operations that 'will' produce less casualties, collateral damage or destruction. There is also no particular reason to believe that EBO is about to usher in an era of 'bloodless conflict'. However, EBO does apply across a wide spectrum of situations and is not just limited to 'hot war', 'unilateral' or 'military' situations: "In short, EBO has universal applicability to any international or national security enterprise."[115] Such universal applicability ought to make EBO as attractive to a Canadian or other national government as it is to an American one.

The criticisms of EBO tend to come from the point of view of feasibility. These criticisms arise from the practical considerations discussed above in the 'Challenges' segment. There are questions whether the types of required analysis (eg. Human factors) are possible, whether it is realistic to expect such a close degree of coordination amongst disparate government departments and whether effective performance measures can be devised for effects beyond the first order, amongst others. Proponents counter that these are merely challenges that await resolution and that these challenges may be addressed through experimentation. In the US, USJFCOM has established a program of experimentation and prototyping designed to develop the concept of EBO and work out the practical problems associated with its implementation.[116] The multinational experimentation portion of this effort involves the MIC nations in trying to address the challenges, so the developmental effort going into EBO is more than just a US-only one.

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[115] United States Joint Forces Command, *Effects-based Operations White Paper*, 10.

[116] USJFCOM Homepage at http://www.jfcom.mil accessed 12 April 2004. Joint and Multinational Experimentation and prototyping and fielding of a Standing Joint Force Headquarters in each Combatant Command are parts of an integrated effort to address the challenges of EBO.

The CF, through the Canadian Forces Experimentation Centre (CFEC) has been a participant in this series of experiments. Indeed, if EBO is something that successful commanders throughout the ages have done, why not try to produce a system to replicate success consistently?[117] EBO then, rather than being a passing fad, is likely to enjoy a prolonged period of development and evolution as the technology, tools and processes to enable its success are developed.

EBO is not an American solution to an American problem because the concept has universal application and because the US acknowledges the need to continue to work with Allies: "There is little of lasting consequence that the United States can accomplish in the world without the sustained cooperation of its allies and friends in Canada and Europe."[118] In a Canadian context, we will continue to see operations with our US allies in the future.[119]

EBO has inherent advantages for Canada in terms of offering a more holistic and potentially less costly way of conducting operations. We need not be a major power or the Superpower to benefit from the EBO approach and it potentially offers a method of accomplishing the Strategy 2020 objective to: "Establish clear strategic, external

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117 E.R. Snith. 356. Successful commanders have used intuition and *ad hoc* metrics, part of the solution seems to lie in studying their situations and applying information technology to the process.

118 United States, *National Security Strategy of the United States*, http://www.whitehouse.gov/nsc/nssall.html , accessed 12 April 2004. The document makes numerous references to the necessity of working with allies in the War on Terror, defusing regional conflicts, halting the spread of Weapons of Mass Destruction and promoting democracy and open markets.

119 Canada. Department of National Defence. Chief of the Defence Staff. Strategy 2020. Ottawa: DND Canada, 1999. 8.

partnerships to better position Defence to achieve national objectives."[120] Additionally, it appears that our principal ally and other major allies will pursue the concept of EBO. If we are to maintain the Strategy 2020 objective of strengthening our interoperability with allies, then we too are obliged to pursue EBO. In fact, through the efforts of the CFEC, we have already begun.

How Canada Ought to Adapt to EBO

The Canadian Forces (CF) Operations Manual states that: "It is the Government's responsibility to define Canada's national interests and to provide necessary guidance and focus to strategic policy makers and planners."[121] The military is acknowledged as "an instrument of national policy" in that Defence policy supports foreign policy.[122] The document then lays out the mission, strategic objectives and operational priorities for the CF, as well as outlining the role of CF doctrine. Amongst the CF strategic objectives, three seem to have relevance to EBO:

a. To provide sound advice on defence and national security to the Government and timely information to Parliament and the Canadian public;

b. To play a unifying role and provide effective support to the Government's broad programs and policies;

c. To optimize the use of resources available and to promote efficiency and cost effectiveness.[123]

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120 Ibid. 11.

121 Canada, Department of National Defence. B-GG-005-004/AF-000 Canadian Forces Operations. Ottawa: DND Canada, 2000. 1-1.

122 *Canadian Forces Operations,* 1-1.

123 *Canadian Forces Operations,* 1-1.

These three strategic objectives are relevant because EBO "…creates the effects needed to achieve policy aims via the integrated application of various instruments of power."[124] In the Canadian context, perhaps more so than in the American, the question is who is performing the integration function?

In the US, the National Security Council (NSC) advises the President on defence and security issues and "serves as the President's principal arm for coordinating these policies among various government agencies."[125] Permanent representation on the NSC comes not only from Defence, but the intelligence community, and the Departments of State, Treasury and the Attorney General. Other representatives are invited as necessary.[126] While this ensured a certain degree of coordination at the national level, Combatant Commanders lacked a formal mechanism at the operational level with which to coordinate the efforts of non-Defense departments. As already mentioned, the Joint Interagency Control Group has been experimented with by USJFCOM to provide both the analysis and the day-to-day coordination required during operations. To ensure that planning focus and analytical capability are available at the Combatant Commander level, the US has begun deploying Standing Joint Force Headquarters into each of the Combatant Command Headquarters.[127] With each Combatant Commander having a

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[124] United States Joint Forces Command, *Effects-based Operations White Paper*, 2.

[125] United States, White House, *National Security Council*,Available from http://www.whitehouse.gov/nsc/; Internet; accessed 13 April 2004.

[126] Ibid.

[127] USJFCOM, Available from http://www.jfcom.mil/about/fact_sjfhq.htm; Internet; accessed 13 April 2004. The SJFHQ is to focus on the Combatant Commander's trouble spots, collaborating with the JIACG in building the 'system of systems' view of the battlespace.

SJFHQ at his disposal, the US is able to maintain a focus on trouble spots all over the globe. The SJFHQ at each of the Combatant Command HQs is able to 'reach back' to elements of the JIACG at the national level to coordinate as necessary.

In Canada, a Cabinet Committee would perform the highest level of interagency coordination. However, both the position of National Security Advisor and the Cabinet Committee for Security, Public Health and Emergencies have only recently been created.[128] Thus there is not the same bureaucratic tradition of formulating national security policy in this country as in the US. The result of this lack of tradition is that the various elements of Canadian national power have not had a bureaucratic mechanism for coordination, outside of informal consultations performed at the Ministerial level and below. In a sense then, EBO both requires and provides the stimulus for a mechanism for formulating national policy objectives in a holistic way.

The creation of the new Committee on Security, Public Health and Emergencies is potentially an enabler for ensuring high-level coordination between government departments. It is chaired by the Deputy Prime Minister and consists of the Ministers of Justice, Environment, Public Health, Foreign Affairs, Civil Preparedness, Health, Defence, Fisheries and Oceans, Citizenship and Immigration, Transportation, Treasury Board, Finance and Democratic Reform.[129] The National security Advisor advises the

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[128] Canada, Office of the Prime Minister Website, available from http://pm.gc.ca/eng/chgs_to_gov_1.asp; Internet; accessed 13 April 2004.

[129] Canada, Library of Parliament Website, List of Cabinet Committees, available from http://www.parl.gc.ca/information/about/people/key/CabCom.asp?lang=E; Internet; accessed 13 April 2004. Treasury Board, Finance and Democratic Reform are *ex-officio* members.

Prime Minister and the Committee. Additionally, the National Security Advisor is to be "responsible for intelligence and threat assessment integration and interagency cooperation, and to assist in the development and overall implementation of an integrated policy for national security and emergencies…"[130] The Committee membership is certainly large enough to ensure representation from all of the elements of national power and, like the US NSC, it can invite others to attend as required.

If a Cabinet Committee is the proper element of Government for providing 'necessary guidance and focus to strategic policy makers and planners', it is a necessary but not sufficient mechanism for ensuring smooth 'inter-agency' cooperation down through to the tactical level. As noted above in the 'Challenges' segment, the analytical and assessment capabilities of the OGDs need to be harnessed in order to provide the depth and breadth of analysis to support the construction of the 'systems view of the battlespace'. The US approach to this problem is the creation of a JIACG, and a similar mechanism is appropriate for Canada. In this country, it could likely function at the Deputy Minister level or below; a level that is still cognizant of political sensitivities but which is able to meet frequently on a working level and assign resources.

Given that military members will be most at risk from the results of an uncoordinated national effort, it is reasonable to expect DND/CF to show some leadership. [131] Referring back to the strategic objectives laid out for the CF in the Operations Manual, it is clear

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130 Available from http://circ.jmellon.com/agencies/nsa/; Internet; accessed 13 April 2004.
131 Coombs, 7.

that providing the leadership to establish such a body would fall within the objective of providing 'sound advice on defence and national security to the Government'. The strategic level headquarters is charged with the mandate of advising political authorities and coordinating at the national level so it seems logical that National Defence Headquarters (NDHQ), and the Deputy Chief of the Defence Staff (DCDS) be responsible for such an entity.[132] The creation of a JIACG entity at the NDHQ level would also support the two other strategic objectives mentioned above. Certainly, a coordinated national effort would both 'optimize the use of resources available' and 'provide effective support to the Government's broad programs and policies'.

Once the coordination is established at the strategic level, the unity of effort can continue down at least to the operational level, and possibly the tactical. It is a common practice for Foreign Affairs Political Advisors to be deployed with operational level military commanders. Deployed military forces would also be capable of housing and/or sustaining OGD (e.g. FAC, CIDA) personnel in theatres of operations.

However, just as the US has introduced the SJFHQ to provide Combatant Commanders with a standing ability to focus analytical and planning effort on trouble spots, Canada needs a similar mechanism to enable our operational commanders to do the same. Our ability to focus on all of the trouble spots to the same depth as the US is obviously much less but arguably so is the requirement. As the CF Joint Operations Group (CFJOG) is the "rapidly deployable, operational-level command and control

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[132] *Canadian Forces Operations,* 2-5.

capability for the Canadian Forces," then locating the operational level analytical and planning capability with it might make the most sense.[133] This capability would then be able to perform the same 'reach back' coordination function as its US counterpart.

The next question to consider is how well the CF Campaign Design Process is suited to the conduct of EBO. A brief summary of the processes will be followed by a more detailed comparison of their steps or stages. We recall that the EBO process is a four-step affair: planning; execution; assessment; and adaptation. In the planning stage, planners determine what effects will produce the desired end-state and produce an Effects List, an Effects Tasking Order and an Effects Synchronization Matrix. In the execution stage, commanders align forces to actions in order to achieve effects. The assessment stage determines whether or not an effect has been achieved. Finally, the adaptation stage determines progress towards the end-state and makes corrections and adjustments as necessary. The cycle then begins again. The EBO process is thus a continuous, iterative loop.

The current CF campaign design process is described as having five elements, or steps. [134] The first step is "defining the national strategic conditions which determine success".[135] The next step is "translating policy goals into military terms by establishing

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[133] DND, available from http://www.forces.gc.ca/site/Operations/CFJOG/index_e.asp; Internet; accessed 15 April 2004.

[134] *Canadian Forces Operations*. 3-1.

[135] Ibid. 3-1.

military strategic objectives," or in other words, mission analysis.[136] Operational command is assigned as the third step and the last two steps are "imposing limitations" and "allocating resources".[137] The process is not explicitly described as iterative and continuous but it is common practice to re-evaluate campaign design as circumstances change.

The first step of the CF Campaign Design Process, (defining conditions which determine success), is presumably that at which the military effort is coordinated with the other elements of national power. This process tries to determine the opposition centre of gravity and then devises lines of operation and decisive points along those lines that must be attained to ultimately affect that centre of gravity. The opposition, denied their centre of gravity, will then either have to concede or be defeated in detail. Similarly, the EBO process first determines the desired end-state and determines the effects needed to produce the desired end-state (an Effects List). The EBO process then analyzes what actions are needed to produce these effects and apportions the actions to the appropriate element of national power. A critique that might be made at this point is that in the real world, the definition of success or the desired end-state is not necessarily known at the outset of planning an operation. While it could be argued that this makes the planning process one of planning for risk mitigation rather than for success, the political ambiguity is often bounded, in the sense that we know what we don't want to happen (i.e. planning

[136] Ibid. 3-1.

[137] Ibid. 3-1.

to avoid failure). In any case this difficulty is neither more nor less advantageous to either conventional or EBO planning.

The next step in the CF process is that of mission analysis, or translating policy goals into military terms or objectives. In the EBO process, this step involves the creation of the Effects Tasking Order by determining what military actions will contribute towards producing an effect. Note here that it might take multiple actions to produce an effect so the assignment of actions is not necessarily the same as the assignment of an effect (e.g. an economic boycott (an action) organized by the diplomatic element could be enforced (an action) by the military and enhanced by air strikes (an action) against critical commodities or facilities; the effect being economic weakness in a particular timeframe).

There could be a debate here about the difference between 'objectives' and 'effects' and whether or not one could or should assign 'objectives' in an EBO. The objectives-oriented approach measures success by progress towards the assigned objective rather than by the change in the enemy behaviour. The underlying assumption is that the assigned objectives are part of the overall campaign that, once executed, will result in the desired strategic condition. In EBO, success is measured against observable change in the enemy behaviour, but indicators of success and measurement criteria are necessary for commanders at all levels. These indicators and criteria in turn look an awful lot like objectives. The utility of the distinction between 'objectives' and effects' then becomes very marginal. Successful commanders have always looked for changes in enemy

behaviour and modified their campaign plans accordingly rather than slavishly adhering to the plan. EBO recognizes this reality in the Assessment and Adaptation stages.

The step in the CF process of assigning operational command is not explicitly dealt within the construct proposed by USJFCOM. This is likely due to the national differences in command structure. The Canadian *modus operandi* is that forces deployed outside the country are under the operational command of the Deputy Chief of the Defence Staff (DCDS), whereas the US has geographical Combatant Commanders that have an inherent command structure.

The last two steps of the CF process, imposing limitations and assigning resources, would be dealt with in the EBO process during the development of the Effects Tasking Order and Effects Synchronization Matrix. In an EBO context, limitations would have been considered during the 'system of systems' analysis phase of the planning process and would be accounted for in determining which actions would produce which effects.

Thus far, we can see that both processes (CF and EBO) are oriented towards achieving a desired end-state but that the methods used to get there are different. The current CF process has no explicit linkage to the other elements of national power and no explicit iterative process to adjust to an adapting enemy. The CF process will measure success towards achieving the military objectives, and therefore tend to rely more on traditional damage assessment means that are more compatible with an attrition-based outlook. EBO has explicit linkages between the military and the other elements of

national power so that it tends to produce a holistic, national campaign rather than a purely military campaign that achieves political objectives. It is by design a more dynamic and iterative process by which to coordinate military actions in concert with the actions of other elements of national power. It uses less traditional methods of assessment but also has less risk of being drawn into the attritional mind-set as a result.

The EBO system of systems approach of looking at the battlespace would appear to increase the cognitive ability of the leadership to identify linkages and relationships, and therefore to better craft clearer relationships between actions and results starting from the strategic level. To facilitate the analysis required for the systems approach, the Government will have to devise some communications infrastructure and procedures that will allow the different analytical communities to share knowledge. In the US, work has been undertaken on the Collaborative Information Environment (CIE) concept, which uses Web-enabled collaborative IT tools to allow collaborative work in real time.[138] Yet again, it will likely fall to DND/CF to show leadership in creating a CIE and then 'marketing' it to the OGDs, and once more the CFEC is in a great position to provide insight and guidance based on their work with the USJFCOM experimentation and prototyping effort.

The 'Challenges' portion of this paper highlighted some of the difficulties of applying EBO in a coalition context and some of the measures that might be required to overcome these challenges. The difficulty of arriving at a common view of the end-state was noted

[138] United States, United States Joint Forces Command, *Multinational Experiment Three: Concept of Operations,* (Norfolk, VA, USJFCOM, 2000), 4-5.

to be larger than just the problem of sharing information and more fundamentally related to trying to understand the strategic culture of coalition partners. It is worthwhile exploring at this point a nuance in the difference between an *ad hoc* coalition and a permanent alliance. The members of a permanent alliance such as NATO may be reasonably familiar with each other's strategic culture but they may still have differences of opinion in determining the desired end-state or the means to achieve it.[139] Members of an *ad hoc* coalition may have less familiarity with each other's strategic cultures but agree readily on the common end-state.[140] Indeed, their willingness to join the coalition in the first place implies agreement with the objectives of the coalition. EBO is not a method of solving fundamental differences of opinion between nations. However, amongst nations that already have similar views of a problem, the keys to making EBO work are increased shared situational awareness and an understanding of each other's intent. [141]

If we assume that Canada will continue to undertake operations primarily with its' traditional allies (NATO, U.S., Australia), then the challenge of understanding each other's strategic culture is largely addressed. This point is a potent argument in favour of such things as military foreign exchange tours, participation in international exercises, and continued effort and presence in organizations such as NATO, ABCA and the Multinational Interoperability Council (MIC). The utility of such international

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[139] The differences between the US on the one hand, and France and Germany on the other in the recent Iraq conflict are a good example of this idea.

[140] The Australian-led INTERFET coalition in East Timor is a good example of nations with not terribly close relationships, such as Canada, Thailand, Singapore and New Zealand, effectively participating.

[141] E.R. Smith, 341.

engagements are often questioned in tight budgetary times but their contribution to strategic interoperability should not be underestimated.

Improved situational awareness is an area that requires much more attention. We have seen that pre-crisis analysis using the systems approach is necessary to support EBO. We have also seen the necessity for Government to devise some communications tool or methodology that permits the necessary breadth of analysis within a purely Canadian context. For cooperating with other nations, Canada has a number of intelligence-sharing agreements with traditional allies and, of course, the usual panoply of secure telephones, fax machines, e-mail and the like for communicating in a crisis. However, sharing the huge volume of data required, in the formats required and in a timely manner to achieve shared situational awareness early in the planning process is a challenge identified by our MIC partners.[142] USJFCOM, along with the other MIC nations, (Canada through the CFEC), have undertaken a series of experiments to develop capabilities for enhancing shared situational awareness in a coalition context.[143] These capabilities include a near real time collaborative information environment, and a Coalition Interagency Coordination Group.[144] Developing these capabilities over time will require an investment in secure communications with sufficient bandwidth and may involve changes to security procedures related to information sharing. The experimental work being done by the CFEC in this regard ought to point the way towards the necessary

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[142] United States, DOD, available from http://www.defenselink.mil/nii/org/c3is/ccbm/mic.html.; Internet; accessed 23 April 2004. The Goal of the MIC is: To provide for the exchange of relevant information across national boundaries in support of the warfighter in coalition operations.

[143] United States, United States Joint Forces Command, *Multinational Experiment Three: Concept of Operations,* (Norfolk, VA, USJFCOM, 2000).

[144] Available from http://www.jfcom.mil/about/experiments/mne3.htm; Internet; accessed 23 April 2004.

changes and investments. Ignoring these developments risks having diminished influence in shaping potential coalition operations and therefore less chance of achieving our national objectives.

Conclusion

The best way for Canada to maintain its strategic relevance and maximize the payoff from its investment in defence and security is to ensure a coordinated national effort that is capable of making a meaningful contribution to any allied effort. The Canadian public expects that the Government will make the best use of its resources and engage in any conflict with a focus on ends rather than means. The CF has an intense interest as well because its members pay the price when that is not the case and because it is mandated to advise the Government on defence and security issues, as well as to manage resources wisely.

The changes wrought by the confluence of the end of the Cold War, the rapid technological development in the IT field, and the beginning of the War on Terror present Canada and its allies with significant challenges. In the US, a response to these challenges has been a reduced emphasis on mass and an attempt to leverage the US advantage in Information Technology. Effects Based Operations is a method that seeks to harness all of the elements of national power in a coordinated way to achieve desired strategic outcomes. Though this has arguably always been the objective of any method of conducting operations, EBO tries to capitalize on the possibilities offered by Information Technology to share information quickly and in a collaborative way. It

challenges the traditional manner in which governments have coordinated their efforts and promotes a holistic approach to achieving national objectives.

EBO is an evolutionary development and synthesis of elements of various concepts that have been developed in the US Services over the last three decades. EBO focuses on the desired end-state, determines the effects required to achieve the end-state and further determines what actions will be required to produce the effects. One advantage of EBO lies in its' holistic approach to conflict, recognizing the inter-relatedness of the situation and the subtleties of the different elements of national power that may be brought to bear. At the same time, the system of systems view of the battlespace attempts to simplify such complex inter-relatedness so that decision-makers are better able to understand a situation. Though EBO is knowledge-based, there is no presumption of omnipotence. The emphasis is not so much on 'getting it right the first time' but rather on constant assessment and adaptation. This will require the development of new analytical tools but promises a shift away from assessing success by measuring attrition. This leads to another advantage of EBO; that it seeks to avoid costly attritional conflicts. The fact that EBO is not necessarily about attrition and destruction is appealing but ought not to be confused with the ability to deliver 'bloodless' or cheap victories. Finally, EBO leverages the West's superiority in Information Technology as an asymmetrical advantage against opponents. These advantages have sparked serious interest on the part of the US and other major allies; they suggest that EBO is likely to become the method by which operations are planned and conducted in the future.

As a developing concept, EBO is not without challenges to its implementation. The primary challenge is in the area of analysis, coming up with the system of systems view. The holistic nature of this analysis requires an expansion of the breadth and depth of what has traditionally been thought of as Intelligence Preparation of the Battlefield, and a corresponding expansion of the number and types of personnel involved in the analysis. The inclusion of Other Government Departments and Allies in the analytical effort will require new infrastructures and procedures. Other challenges include building the supporting tools in the areas of success measurement and simulation, training staffs and commanders to use the methodology, and establishing a commonly understood vocabulary for describing the subject. Finally, the implementation of EBO in a coalition context presents particular challenges because the explicit nature of the linkages between end-states, effects and actions requires that allies establish good situational awareness from the early planning stages of an operation.

To respond to the challenge of conducting EBO in concert with allies, Canada needs to make certain adjustments. First amongst these is the requirement to establish a body that can consistently provide coherent political strategic direction to coordinate the various elements of national power in operations. The recent creation of a Cabinet Committee on Defence and Security could provide just the enabling mechanism we need. The nature of such a committee does not make it suitable for overseeing the day-to-day analysis and synchronization efforts required to effectively harmonize the elements of national power. Therefore, DND/CF ought to take the lead in establishing a Joint

Interagency Control Group (JIACG) at the NDHQ/DCDS level that would facilitate inter-agency analysis and coordination of actions to achieve effects.

A mechanism is required to translate strategic level policies and directions into actions at the operational level. The US has created SJFHQs at each of its geographic Combatant Command HQs and a similar Canadian mechanism ought to be created at the CFJOG. Such an entity would be deployable and capable of coordinating the operational level actions of multiple government departments in a theatre of operations. It would have to be modular in nature in order to cope with the reality of engagements in multiple theatres of operations.

Canada must also increase its ability to collaboratively share information with allies across the spectrum of national power and this will require an investment in secure communications technologies with high bandwidth, as well as procedural changes relating to information security. The work being done by the CFEC in terms of participating in EBO experimentation should be examined to determine what 'best practices' can and should be adopted to facilitate both interagency cooperation and enhancing situational awareness with allies in the planning process.

Particular staff processes and products will evolve as the CF and the allied community gain experience with EBO. How the CF OPP should be modified to adapt to the EBO process is not yet clear but should continue to be studied. As changes become

apparent, the CF education and training system will have to be kept up to date as a result. However, it is already clear that military commanders of the future will need a broad understanding of fields outside of their traditional area of interest in order to effectively coordinate military actions with the other elements of national power. It is also clear that senior officials from OGDs need to have a similar broad view in order to coordinate their departments' activities within the whole. The inclusion of OGD officials on higher level military courses such as the National Security Studies Seminar would go some way to promoting this objective.

In the future, the US and our other principal allies are likely to conduct Effects-Based Operations to achieve their national policy objectives. As a frequent participant in coalition and multilateral operations, Canada will have to contend with EBO. To ignore EBO and its implications is to risk being left behind by our allies and thus with a diminished ability to influence events in our favour. Adapting our national structures and procedures to produce a unity of purpose and message seems to offer us the greatest success in achieving our national policy objectives.

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