The Future RCAF: Modelling and Simulation in Wargames

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Abstract

The Operational Research and Analysis (OR&A) branch of the Royal Canadian Air Force (RCAF) Aerospace Warfare Centre (RAWC) was instrumental in the RCAF's development of its Future Air Operating Concept (FAOC) and is helping the RAWC with the development of the required functional and enabling concepts that support and give form to the FAOC's vision for the future RCAF. The support includes providing a geo-strategic context and an understanding of Canadian Defence Policy that shapes a priority of concepts using multi-criteria decision-support. Furthermore, the support includes modelling and simulation to augment wargames that need to be conducted, and to help the RAWC develop a sound in-house experimentation capability to test concepts rapidly as they are being developed. This paper outlines the current methods of OR&A being used within this RCAF force development process, as well as identifying research areas still to be explored.

Military concept development requires a firm basis of analysis. This is particularly so when defining how a military force will fight and operate in the future. This vision takes its direction from defence policy, ideally a sound military strategy, and the air force's own understanding of advances in technology and operational method and their effect on the environments in which it will operate. But in order to turn policy and strategic guidance into practical advice for future force development, the ideas forming the basis for, in this case, the Royal Canadian Air Force (RCAF) Future Air Operating Concept (FAOC) should be subjected to various strategic and operational research and analysis techniques, including the use of wargames to ensure their soundness. Only upon this firm intellectual foundation can reasoned capability investment and force structure recommendations be made. The purpose of this paper will be to present and defend the method used in developing the first-ever RCAF FAOC and will outline the current and complementary methods of operational research and strategic analysis being used within this RCAF force development process, as well as identifying research areas still to be explored.

Background

The Royal Canadian Air Force Aerospace Warfare Centre (RAWC) has existed since 2005, and has had an operational research and analysis (OR&A) capability since its inception. Initially located in a detachment in Ottawa, and later at the RAWC's home building at Canadian Forces Base (CFB) Trenton, the OR&A Branch is so named because its team consists of quantitative operational research and a strategic analyst – the latter studying the use of instruments of national power, with an emphasis on understanding military power, to achieve strategic objectives, and the former using statistical analysis, simulations, predictive modeling, and other tools to develop practical solutions to military problems. This team's interdisciplinary nature and credibility gained by its close proximity and working relationship with the military gave the Commanding Officer the confidence to approach the OR&A team with the most pressing problem for which quick analysis and recommendations were required.[1] That project was the development of the RCAF's FAOC.[2] This project produced a scientific report providing advice not only to the RAWC but also to the wider Canadian Armed Forces (CAF) force development community.

The Value of a FAOC for RCAF Force Development

For good or ill, advanced military air power has always been at the forefront of technology. Thus, change has been an enduring feature of air power's history and evolution. Over the past two decades, the ability of technology-enabled air forces to deliver precise, discriminatory, and proportional effects has made air power the force of first-resort for political leadership. But in the context of more stringent defence budgets and competing priorities, the costs of acquiring and

[1] The Concept Development and Experimentation (CD&E) branch had been developing the FAOC for eighteen months without producing a satisfactory draft. The method employed by OR&A for this project was sound scientific critical thinking applied to concept development.

[2] See Brad Gladman, Bruce Chapman, and Andrew Billyard, *The development of a Future Air Operating Concept: Proposed process and example* (Ottawa: DRDC-RDDC-2017-R043, 2017).

operating even a useful minimum of such capabilities is proving an enormously expensive proposition for the resultant capability delivered. As some scholars have argued, for "air forces this is the first step in an increasingly one way slide towards irrelevancy."[3] Success for smaller air forces in the anticipated domestic and expeditionary operating environments requires a balanced force structure and effective methods of operating that will allow the RCAF to respond swiftly and decisively to a range of contingencies at home and away, ensuring strategic effect through operational agility and tactical precision. Choices will have to be made and investments in future capabilities to develop the FAOC's vision. That vision must align with US and other key allied thinking, but the RCAF must also be aware of the limitations imposed by domestic considerations, including anticipated defence budgets, and in that context must seek to define a meaningful role that meets domestic needs and provides a useful contribution to the coalitions in which it will be involved.

Operational Research and Strategic Analysis Advice to the RCAF FAOC Development

The project began with strategic analysis. It was essential to tie the vision for the FAOC into overarching policy and strategic guidance, with a thorough understanding of the threats faced and the Government of Canada (GC) orientation towards that dynamic security environment. There would be little sense in designing a vision for the RCAF that was completely at odds with GC intent and level of ambition. The RCAF is not an air force on the scale of the United States Air Force (USAF) and for the foreseeable future will not be. The recommendations made to design a future RCAF able to deal effectively with the future operating environments within those constraints must be pragmatic, affordable, and innovative to ensure defence dollars are well spent

[3] Sanu Kainikara, "The Future Relevance of Smaller Air Forces" (Canberra: Royal Australian Air Power Development Centre Working Paper 29, 2009), 3; also see Gladman, Chapman, and Billyard, *The development of a Future Air Operating Concept*, 1 and 26.

and result in an effective RCAF. Setting an appropriate context around problems is one of many things strategic analysis does for military clients. Strategic analysis uses expertise in the use of instruments of national power, and in particular military power, to achieve strategic ends to understand how all these various pieces fit together to set the context for, *inter alia*, capability and concept development. In the outline that follows of the method used in this instance, the value of strategic analysis in setting that context will be evident.

As stated earlier, the FAOC should seek to build on the strategic guidance provided by a series of GC, Canadian Armed Forces (CAF), and RCAF documents. Ideally, those documents should flow from well-understood theories of war and warfare necessary to establish a national security policy and grand strategy, but should provide sufficient detail to guide both the development and employment of military power in support of national interests. The articulation of a national grand strategy is particularly important in a volatile strategic environment, and only "from this foundational base can a functional national security strategy and a well aligned military strategy that operates within a whole-of-government (WoG) approach be developed."[4] It is the only way in which practical national defence policy and the resultant military strategies can be developed in accordance with GC aims and levels of ambition.

The formulation of sound and enduring defence policy, as well as a national military vision and strategies, for a country of Canada's size and global interests is no straightforward matter. It is further complicated by a dynamic security environment, where calls for a military response can come with little warning, and times of fiscal austerity. Ensuring the CAF has the right set of capabilities to meet defence of Canada requirements while at the same time making a meaningful contribution to deployed coalition or national operations in support of Canadian interests can seem

[4] *Ibid.*, 8.

a near impossible task. While dynamic security environments and tight defence budgets are nothing new to the CAF and the Department of National Defence (DND), such times require clear strategic thinking all the more in order to create a defence policy that is sufficiently explicit and enduring to guide capability investment and force development (FD) to build a suitable military.

As with many of its allies, Canada typically builds its defence policy upon assessments of the strategic threat environment in the context of the nation's geostrategic imperatives.[5] This normally leads to a description of a hierarchical framework for Canadian defence which outlining the three enduring roles for the CAF. The top priority is always the defence of Canada and its approaches, with a close second, recently given almost an equal footing with the defence of Canada, being cooperation with the US in defence of the continent. A third priority, formerly expressed as discretionary but more recently as directly linked with continental and domestic defence, is the contribution to deployed operations tied to international security in general and Canadian interests specifically.[6] These three broad priorities, which appear as expected in the latest defence policy released in 2017 – *Strong, Secure, Engaged*[7] – can accurately be referred to as Canada's geostrategic defence imperatives, transcending political ideology or individual proclivities. As such, the strategic analyst advice was that this was a reasonable starting point for the development of the RCAF FAOC.

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[5] For examples of this trend, see Government of Canada, *White Paper on Defence* (Ottawa: Queen's Printer, 1964), 6-16; Government of Canada, *Defence in the 70s: White Paper on Defence* (Ottawa: Queen's Printer, 1971), 1, 3-13; Government of Canada, *Challenge and Commitment. A Defence Policy for Canada* (Ottawa: Minister of Supply and Services Canada, 1987), 4-16; Government of Canada, *A Role of Pride and Influence in the World: Defence* (Ottawa: Her Majesty the Queen in Right of Canada, 2005), 6; Government of Canada, *Canada First Defence Strategy* (Ottawa: 2008), 6.

[6] Government of Canada, *White Paper on Defence* (Ottawa: Queen's Printer, 1964), 13-15; Government of Canada, *Defence in the 70s: White Paper on Defence*, 17, 25, 32, 39; Government of Canada, *A Role of Pride and Influence in the World: Defence*, 16, 21, 24; Government of Canada, *Canada First Defence Strategy*, 7-9.

[7] Government of Canada, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: 2017), http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf (accessed 30 May 2018).

The three broad roles – defence of Canada, cooperation with the US in the defence of North America, and the contribution to international peace and security – are reiterated in the RCAF's main strategic guidance document *Air Force Vectors* (AFV).[8] The conclusions from these roles provide more granularity on RCAF requirements from its Commander's perspective. For the defence of Canada, the priorities are to maintain the capacity to "provide surveillance of Canadian territory and air and maritime approaches; maintain search and rescue response capabilities that are able to reach those in distress anywhere in Canada on a 24/7 basis; and assist civil authorities in responding to a wide range of threats—from natural disasters to terrorist attacks."[9] As a credible partner in North American defence the RCAF will conduct daily continental operations through the North American Aerospace Defense Command (NORAD), train and remain interoperable with the United States (US) military. Finally, the expectation is that full-spectrum expeditionary operations involving the full range of RCAF air power capabilities will continue, that appropriate high-readiness forces be maintained, and that the RCAF develop suitable capabilities to meet anticipated contingencies.[10] It is the job of the FAOC to determine, in the context of the RCAF Commander's identified air power attributes of agility, integration, reach and power (AIRP), how those roles might evolve over the concept's timeline. The advice was clear that it will be that understanding that should drive the development of the FAOC central theme, and which should reinforce the need for the RCAF to maintain a balance of capabilities and an institutional organisation that will meet future challenges in the manner directed by government policy. From this more detailed understanding of RCAF strategic guidance, the FAOC subordinate concepts could be described, beginning with the domestic, continental, and expeditionary air operating

[8] A-GA-007-000/AF-008, *Air Force Vectors – 1st Edition*, (Ottawa: Chief of the Air Force Staff, 2014), 12-15.
[9] *Ibid.*
[10] *Ibid.*

concepts. These, in turn, required an understanding of the anticipated threats in each operating environment.

The narrative of the threats faced in each began with an assessment that the security environment will continue to be dynamic and uncertain. With that said, it was possible to identify a range of possible military operations in each operating environment that would support of a whole of government effort to protect Canadians and advance national interests. Each end of this spectrum will demand unique capabilities that may not transfer well to the other end. On the one hand, the threat posed by radical Islamist insurgencies as experienced in the recent campaign in Afghanistan and Islamists militants like Daesh[11] now being fought in Iraq and Syria, will continue to be a challenge in various parts of the world in which Canada has a keen interest. On the other hand, one cannot forget the threats from states with advanced militaries like Russia whose recent actions have forced the North Atlantic Treaty Organization (NATO) to respond. Canada's operation 'REASSURANCE' was the CAF operation with CF-188 Hornets as a key feature in support of NATO assurance measures in response to Russian provocation against Ukraine. Moreover, a developing trend resulting from the proliferation of missile and other technologies is the establishment of advanced anti-access and area-denial (A2/AD) strategies in areas of the world the Canadian government has expressed its enduring interest. Air power will continue to be a critical component to each operation across this spectrum, from 'small wars' to conflicts against near-peer adversaries, but its exact role and utility is powerfully situational and dependent upon having the right capabilities employed in the right way at the right time. It is in this context that

[11] The term 'Daesh' is the acronym Arabic speakers use for the Arabic name of ISIS, Al-Dawla al-lslamiya fi al-lraq wa al-Sham. See Terry Terriff, John Ferris, and James Keeley, "Hic Sunt Dracones!", *Journal of Military and Strategic Studies* Volume 15, Issue 4 (2014), 1.

discussions must begin to shape a balanced future RCAF able to meet GC expectations and levels of ambition across that spectrum of conflict.

FAOC – Where it Fits

The RCAF Future Air Operating Concept (FAOC) is the RCAF's capstone force development concept, and the relationship to Government of Canada (GC) policy and National Military strategy discussed previously is shown in figure 1 below.

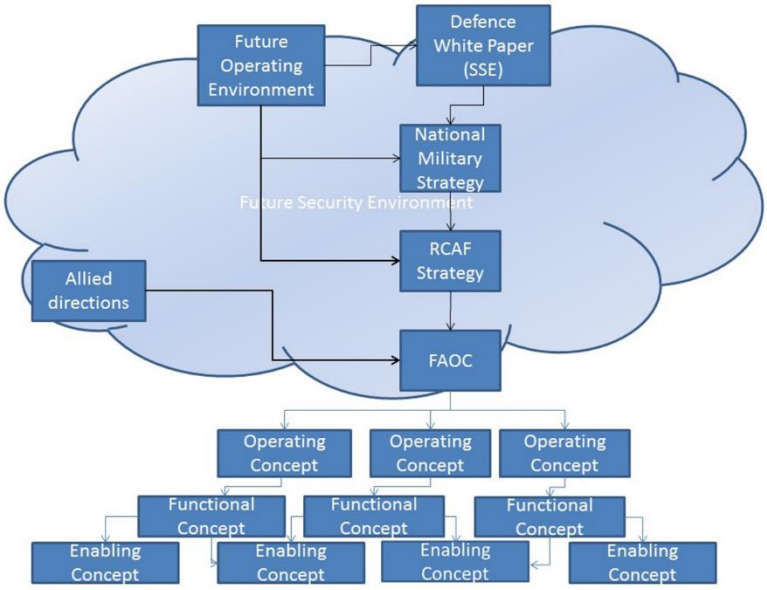

Figure 1: FAOC Relationship to GC Policy and National Military Strategy

The RCAF FAOC portrays in broad terms how the anticipated force structure, which includes current capabilities and those forecast to enhance the RCAF, will deliver a balanced, agile, and integrated RCAF with reach and power ready and able to conduct its core missions as part of a joint, interagency, or multinational force, or independently in support of national security objectives. Since, barring unforeseen circumstances, most of the agreed force structure outlined in *Strong, Secure, Engaged* will endure for the lifetime of the FAOC, enhancing those capabilities will depend largely on more effectively integrating capabilities, ensuring the best set of sensors,

networks, and weapons are acquired and integrated with the capabilities, and through developing existing platforms through incremental upgrades, and through more effective conceptual development to solve unanticipated military problems. Both modelling and simulation and wargaming are essential elements in doing all of this in an efficient and effective manner.

FAOC Developmental Flow

With the context and influencing guidance clearly in mind, the FAOC development commenced. In doing so, it was essential to understand how much detail was required of this document. As stated, the strategic guidance yielded three distinct operating environments – domestic, continental, and expeditionary. It was important to define each distinctive operating environment, including describing the anticipated threat environment, types of missions expected, other conditions that may influence the application of air power, and how the guiding notions of an agile and integrated air force with reach and power would be expected to evolve across the air force functions of during the concept's timeframe. The advice given was to then introduce the subordinate functional concepts (see figure 2) without going into too much depth, as that detail would come from the detailed analysis of each one.

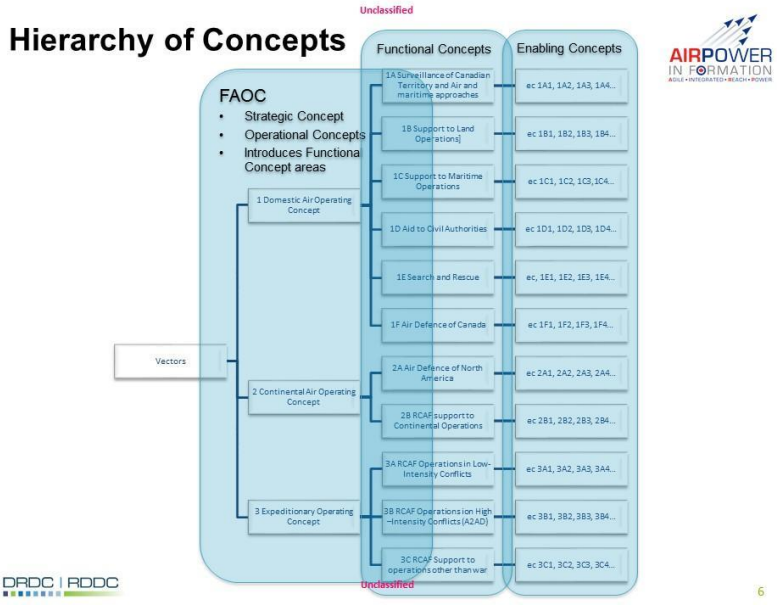

Figure 2: Hierarchy of Concepts

In each of the distinct air operating concepts, a number of anticipated functional concepts (called functional areas in the RCAF FAOC)[12] were identified. In figure 3, those functional concepts are identified, as well as the air power functions: control of the air, attack, surveillance and reconnaissance, and air mobility. How those were expected to evolve over the FAOC time frame was indicated as a statement of desire for each functional concept.

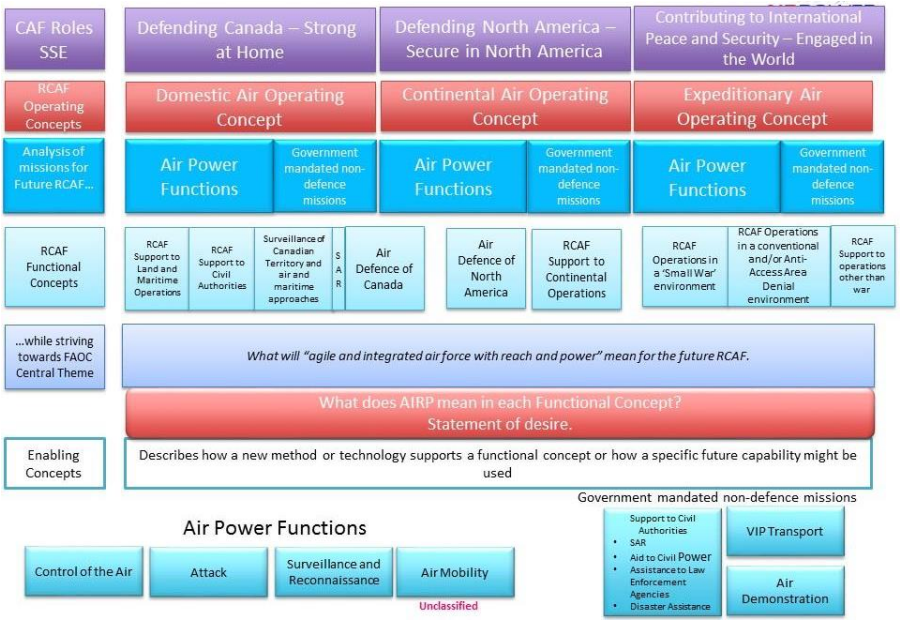

Figure 3: FAOC Development Flow

Out of the wargaming and other modelling and simulation efforts in the development of these functional concepts would come the supporting enabling concepts, which describe how a new technology or operational method would support each functional concept, or how a specific future capability might be used. At the end of the functional concept exploration and wargaming, a series of enabling concepts will be identified for each. It is the ones that are common across most of the functional concepts that should receive further attention. It is important to note that the advice given was for the FAOC to make reference to the

[12] Royal Canadian Air Force, *Future Concepts Directive Part 2: Future Air Operating Concept*, 14 August 2016, 13, http://www.rcaf-arc.forces.gc.ca/assets/AIRFORCE_Internet/docs/en/cf-aerospace-warfare-centre/elibrary/future-concepts-directive-part-2-future-air-operating-concept.pdf (accessed 30 May 2018).

lower-order concepts, but not to attempt to flesh them out explicitly. It is these functional and enabling concepts that are key to establishing priorities to the research and development community, and to the force development organisations within the RCAF.

Wargaming the FAOC

An invaluable capability in concept development is the intellectual exercise of conducting "what-if" vignettes to test the strengths and weaknesses of a concept. The most common type of such exercises are wargames which come in many forms. At a local level, they encourage debate between communities within the RCAF on shared challenges and possible opportunities, all in the context of government intent and level of ambition. More globally, they allow peer-air forces to do the same to help better understand national approaches to operations and to help delineate coalition responsibilities.

For the FAOC, the tight seven-week deadline for this OR&A tasking required parallel activities of researching the methods and inputs for the FAOC, regular briefings with the CO to ensure that the emerging outputs were meeting the initial requirements, and ensuring that the content of that input was relevant to the RCAF community. For this activity, the OR&A Branch led a two day seminar wargame on March 11 & 14, 2016, to help shape the statements of desire and the implications for AIRP for each of the functional concepts. The purpose of this wargame was threefold; first, to socialise the emerging FAOC with a sample of the RCAF community; second, to gain insight to, and augmentation of, the extant statements of desire and AIRP implications; and third, to help evolve those statements of desire and AIRP implications not yet developed.

The workshop was structured as follows:

1. Day 1, Morning: Brief participants on
    a. the intent of the workshop
    b. where the FAOC sits within the higher-level guidance documents
    c. the merger of the three-force model (a systematic way to viewing the CAF's structure) with the Conceive, Design, Build and Manage capability framework[13]
    d. the three air operating concepts: domestic, continental and international contribution to peace and security
    e. the core mission sets, the Government mandated non-defence mission sets and how when viewed through these sets yield the 11 functional concepts

2. Day 1, Afternoon: Examine the Domestic Air Operating Concept by critiquing the statements of desire and AIRP implications for the functional concepts Surveillance of Canadian Territory and Air and Maritime Approaches, Support to Land Operations in Canada, Support to Maritime Operations in Canada, Search and Rescue, and Support to Civil Authorities

3. Day 2, Morning: Examine the Continental Air Operating Concept by critiquing the statements of desire and AIRP implications for the functional concepts.

4. Day 2, Afternoon: Separate the participants into groups of eclectic trades (in order to maximise diversity of experience in each group) to produce the statements of desire and AIRP implications for the International Air Operating Concept.

The Day 1 exercise explicitly avoided scenarios to be as broadly applicable as possible, allowing for subject matter experts to draw upon their experience of multiple operations to provide a detailed (but generic) implication statement for the evolution of the terms Agile, Integrated, Reach and Power over the concept's timeframe. The format of the seminar wargame included the introduction of the functional concept, and a series of queries by the OR&A facilitators for what these terms meant. The activities on Day 1 resulted in the writing of AIRP statements for each functional concept explored. Due to time constraints, the seminar wargame shifted method into breaking into groups to write the statements that were then discussed in plenary. The results of this two-day workshop were folded into the final draft of the sample FAOC.

[13] For details, see Gladman, *et.al., The Development of a Future Air Operating Concept: Proposed Concept and Example*.

Future Wargaming and Modelling & Simulation

Due to the relatively short timeline, this type of high-level table-top exercise provided a level of detail sufficient to allow the completion of the FAOC's introduction to the 11 functional concepts. The RAWC is now embarking on a longer-term goal of examining each of those functional concepts with the intent to introduce enabling concepts. For each, in-depth wargaming and modelling and simulation, as part of the overall experimentation design, will be required in order for the RCAF to have a firm understanding of what enabling concepts will be required to realise an appropriate future capability (whether that future capability be an existing capability, an extant one modified for future requirements or a new capability altogether). In order to explore this capability space, the RCAF will need to conduct wargames to see how extant capabilities could be used in the future environment. Only when this baseline is firmly established and gaps are identified will the enabling concepts be fully realized.[14] The table-top exercise described above was sufficient to meet the task because of the compressed timelines and the level of fidelity of the FAOC's context.[15] However, once the functional concepts are examined, several types of exercises are envisaged as needed to challenge ideas and explore capability limits. These would include campaign-level wargames, modelling and simulation of extant capabilities against new threats, as well as virtual and live experimentation to test how such capabilities could be used.

For the campaign-level wargames, the RCAF would benefit greatly from participating in international wargames. Indeed, it participated in the two-week UK Eagle Warrior (EW) wargame

[14] Canadian defence planning and military doctrine use the definition of concept as "a solution-oriented transformation idea that addresses a capability shortfall or a gap"
[15] As determined through validation meetings with RAWC leadership.

in November 2017 and will do so again with the US Global Engagement (GE) in June 2018. Unfortunately, without a sufficient exploration of its own functional concepts, the RCAF was not able to bring new enabling concepts to the EW, nor to the GE, to test them on an international stage; as a result, the RCAF missed an opportunity to test its own concepts in a coalition setting. Still, the EW wargame was of considerable value nonetheless. First, it highlighted the magnitude of the A2/AD issue against which the UK were testing their capabilities, and by association, an implied magnitude that would face the RCAF. Second, it provided a window into the capabilities that the UK were interested in testing. Although not final, it helps allies understand what each nation is considering in future capabilities which should help focus their own force development initiatives, especially in a coalition context.[16] Finally, the wargame forced each nation to consider what they would have to do if the coalition would not take on roles that the nation itself may not have the ability to provide, or want to provide. For example, there were instances in which the UK EW participants would say something like "We assume that the US would provide this role for us" to which the US participants replied "in this context we would not be able to provide that support", forcing the UK to explore how to deal with the situation. Such coalition wargames are ideal because it was acknowledged that each nation typically 'coalitions-away' their hard problems when played at their own national level.

In February 2018 at the Technical Co-operation Panel TP-11 (*Challenging and Future Operations*) meeting in Melbourne, Australia, the five-eye defence science community re-examined the EW scenario and conducted a two day matrix-style[17] wargame, this time exclusively

[16] See Brad Gladman, *The Future of Allied Air Power: The Royal Air Force* (Ottawa: DRDC-RDDC-2017-R166, 2017) for an example of how the RCAF is using a comprehensive examination of allied capability and concept development to shape its own.

[17] In a matrix wargame, each player within a red/blue team has an assigned role (e.g., red's ASW capability).

focussing on three concepts that the UK had introduced for the November 2017 UK EW game. In November, although the participants did consider the new concepts, the analysts noted that the game participants unintentionally tended to spend more of their time planning the current force. The Melbourne EW game chose three selected concepts (low-cost attritable aircraft, high-altitude pseudo-satellites and pulse-gain propulsion engines) to see how they affected the outcome of the game. Interestingly, the Melbourne EW game ended with red force and blue force effectively posturing, while the UK EW game ended in warfare. It is not clear whether this was a result of the difference in players, in assets used during the game or whether it was the timeframes over which the games were played. It is beyond the scope of this paper to detail either wargame and their output; but it is worth noting that one key outcome of the Melbourne EW game was a plan to investigate how modelling and simulation should be used to (a) shorten segments of the wargame and (b) validate moves within the wargame. For example, in the UK EW wargame, the first three days of the event were spent in ramping up the red and blue forces before getting to a point where capabilities could be tested; these three days were testing policy and diplomacy. Unfortunately, the goal of the wargame was never to resolve the conflict through diplomacy but to test future capabilities in an armed conflict scenario; although the three-day build up was useful as a warm up exercise to get everyone socialised to the scenario, the discussion after the Melbourne game included whether modelling and simulation (M&S) could be used to get people up to the warfare portion of the game. We provide here a few examples of how M&S could be used.

Future Modelling and Simulation Considerations

As a pre-game analysis one could use game theory[18] to determine the scenario's most likely political end state (i.e., conflict resolved through diplomacy or through armed action) and the most likely path to get to that end point. As such, the results could be briefed to the game participants, along with a discussion to help orient their mindset, reducing that three-day lead in to potentially a one day information brief. Although the game theory exercise may take longer than the two days saved, it could be conducted by a small number of analysts, an overall saving of time when one considers the fact that the UK EW wargame involved over 100 participants.

Another avenue for wargaming, M&S exploration could be to use conduct Monte Carlo simulations of proposed concepts against known threats. The results of which could be used in a few ways within the wargame. First, it might be prudent for each nation to validate through M&S how their proposed concepts would fare in situations before they bring them to large, multinational wargames. In this way, they may be able to better use the concepts in the wargame itself. In the UK EW game, when participants were introduced to a concept and asked whether or how they would alter their plan to incorporate the capability, they often responded with "Well, if it would help, of course we would use it." This response exposed a lack of familiarity with the concept, something that may have been remedied by pre-game M&S.

The UK EW game also conducted a tactical-level wargame in which allied assets tested an A2/AD environment, and because of its complex nature, ended up with subject matter military experts (SMEs) estimating the likelihood of success. The entire tactical game could have been completed within an M&S environment (one run or Monte Carlo) with the SMEs giving the initial

[18] For example, see A. P. Billyard, I. A.Collin, and H. A. Hrychuk, "*Strategic War Game - Arctic Response*" (Ottawa: DRDC CORA TM 2010-240, November 2010) and G. H. Van Bavel, "*Applied Game Theory - National Surveillance and Counterinsurgency as 2x2 Strategic Games*" DRDC ORAT TN 2007-14, October 2007.

conditions and tactics. Indeed, with the near-real-time capabilities that exist, the same period of time spent in the UK EW tactical game could have run several M&S runs testing variance of tactics to find the best outcome.

Finally, M&S could be used to help the white cell of wargames determine whether they would accept a blue team or red team move. That is, at the end move/counter-move round the moderators would pronounce whether the move and counter-move were "realistic". Although their experience certainly has credibility to help make that determination, there was often fair debate between the cells about the likelihood of such moves and those debates could have benefitted from M&S validation.

Conclusions

As the RCAF endeavours to systematically determine what concepts are needed to fulfil their future operating concept, it is paramount that they test their concepts. It is also paramount that they do so within the context set by strategic analysis that identifies GC policy expectation and level of ambition, along with a detailed understanding of the anticipated threats and character of future warfare. All too often, the designers of these high-level documents look to what our allies are doing and hope to simply "Canadianise" those concepts for their own. The problem with this method is that is blatantly ignores the reality of the Canadian policy and strategy framework that can impose serious limitations to the breadth and scope of Canada's approach to the operations for which these concepts are designed. Consequently, the DND/CAF having a deeper understanding of Canada's geostrategic imperatives is critical before any high-level concept is developed.

From there, simple table-top exercises, wargames and modelling & simulation are all tools within the experimentation envelope that can aid in testing those subordinate concepts. Recently, the RCAF has started to build an M&S lab in order to augment the RAWC's experimentation

capability. It is hoped that through repeated use of modelling and simulation, the RCAF can conduct experimentation to support the realization of the future vision from their FAOC. The concepts that emerge will allow the RCAF to focus the science and technology support towards specific goals, and to come to the multi-national wargames such as Eagle Warrior and Global Engagement with concepts to test in a coalition environment. In the end, there seems to be no single OR&A method applicable to all instances. Rather, the circumstances will dictate the most efficient method possible for the timelines presented, and any OR&A method will focus thinking and discussions in a structured way. In short, it is important to have a structured, scientifically-based framework that forces critical thinking.