ORGANIZATIONAL CHANGE

AND CANADA'S AIR FORCE

BY

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A Thesis
Submitted to the faculty of Graduate Studies in Partial
Fulfillment of the Requirements for the Degree of

Master of Arts

Department of Political Studies
University of Manitoba
Winnipeg, Manitoba

THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES

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Abstract

This thesis identifies the most influential factors in organizational change through an examination of the Canadian air force. The significant factors influencing the decision to change revolve around the market, as well as other factors that are germane to the organization's external environment. However, as an organization matures, another important factor stemming from within gains increasing influence, that of the organization's internal culture.

During the formative years of Canada's air force, it was characterized by civilian roles as a result of the absence of an external military threat, the lack of funding, and the organization's primary goal of survival. This function lasted until 1936 when a significant change in the external environment led to a shift to military functions.

During World War II, the emphasis was on the adoption of strategic bombing role without debate. In many ways, it foreshadows the impact of the external environment of the post-war period. Specifically, the adoption of this role resulted from the combination of domestic external forces and the imprint of the Royal Air Force (RAF).

In the post-war period, Canada's commitments to NATO and NORAD in response to the evolving Soviet threat was significantly filtered through the RCAF's close relationship with the USAF. At the same time, the RCAF's culture had to deal with Paul Hellyer's reorganization. Demonstrating the staying power of its culture, the air force was reborn with the re-establishment of an independent command in 1975.

This period is unique in that it marked the first time that the air force's culture had a greater influence than the environment. Simply put, the Canadian Air Force successfully maintained its functional preferences based upon its combat culture, as informed by its linkages to the USAF. Worrying for the future, however, is a cultural victory overshadowed by dwindling number of aircraft that threatens the capacity to perform these roles.

ABBREVIATIONS

AIRCOM	Air Command
ARG	Air Reserve Group
ASW	Antisubmarine warfare
ATG	Air Transport Group
BAI	Battlefield air-interdiction
BCATP	British Commonwealth Air Training Plan
CAF	Canadian Air Force
CAS	Close air-support
CAST	Canadian air-sea transportable
CGAO	Civil Government Air Operations
CO	Commanding Officer
DND	Department of National Defence
DPP	Defence Development Plan
EW	Electronic warfare
FG	Fighter Group
ICBM	Intercontinental ballistic missiles
LRPA	Long-range patrol aircraft
MAG	Maritime Air Group
MPA	Maritime patrol aircraft
NATO	North-Atlantic Treaty Organization
NFA	New fighter aircraft
NFTC	NATO flying training in Canada
NORAD	North American Aerospace Defence
NSA	New shipborne aircraft
NWS	North warning system
RAF	Royal Air Force
RCAF	Royal Canadian Air Force
RCN	Royal Canadian Navy
RCNAS	Royal Canadian Naval Air Service
RNAS	Royal Naval Air Service
SACEUR	Supreme Allied Commander in Europe
SAR	Search and rescue
USAF	United States Air Force
UTTH	Utility transport tactical helicopter
1 (CA) DIV	1 Canadian Division
10 TAG	10th Tactical Air Group
14 TRG	14 Training Group

How Organizations Change Roles

Both IBM and the Canadian Air Force (CAF) can be defined as organizations, yet they have fundamentally different goals and roles. IBM deals with basic corporate questions, such as markets, costs, profits, and customer service. The CAF as a military organization confronts different challenges. In western developed countries the military has the primary goal of ensuring the existence of the sovereign state, and a secondary goal of promoting state interests abroad. Moreover, discussions about cost in a military setting are not as clear as corporate spending. It is therefore difficult to quantify how much military capability is enough to ensure victory, continued peace, or security. By contrast, tools such as balance sheets provide a clearer assessment of corporate performance.

Notwithstanding the differences between civilian and military organizations, both have similar traits. Moreover, these differences have led to the neglect of organizational theory in the study of the military. In an attempt to pursue this underdeveloped field of analysis, organizational theory is applied to examine why Canada's air force changed roles over its seventy-five year history. The aim of this first chapter is to explain various elements of organizational theory.[1] In particular, this chapter examines how organizations adopt particular roles and what impacts the way these roles change. The two most important elements to consider in explaining how organizations change roles are the external environment and culture.

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[1] When using the word 'theory' what is implied is Daft's definition as a "description that explains the manner in which certain concepts or variables are interrelated." R. Daft and

To demonstrate this, the chapter is divided into three sections. The first provides a general theoretical discussion about organizations, along with some of their attributes at the macro and micro level. The terms organization, institution, bureaucracy, and traditional roles, as well as the goal setting processes are conceptualized. The second section discusses organizational culture and its impact on roles. The third discusses change in general, and, in particular, the resistance to change that inevitably occurs.

ORGANIZATIONS

There are a variety of terms used interchangeably in the organizational literature. These include organizations, institutions, and bureaucracies. Despite these terms having common attributes, they imply different things. Max Weber defines organizations as "complex, goal-seeking social units that must achieve at least two tasks for survival."[2] These tasks are that of 'adaptability' to the external environment and 'reciprocity' in the internal relations of management with the employees.[3] Similar to Weber, Blau and Scott define formal organizations as "established for the explicit purpose of achieving certain goals."[4] Daft also agrees with the two preceding definitions, but adds that organizations have a deliberately structured activity system and an identifiable boundary.[5] The deliberately structured system implies subdivisions into separate departments and activities, within an overall hierarchy. An identifiable boundary means there is a clear

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Steers, Organizations, and R. Steers, Organizations: A Micro/Macro Approach (Glenview, Illinois: Scott, Foresman and Company, 1986), 23.

[2] E. Burack, Organization Analysis: Theory and Applications (Hinsdale: The Dryden Press, 1975), 189.

[3] Ibid., 26.

[4] J. Shafritz, and S. Ott, Classics of Organizational Theory (Chicago, Illinois: The Dorsey Press, 1987), 189.

[5] Daft and Steers, Organizations, 6.

line between people who are in an organization and those who are not.[6] Bolman and Deal also share the common theme that "organizations are rational institutions whose primary purpose is to accomplish established objectives."[7] However, they add that rationality, for the modern structural organization, is best achieved through systems of rules and formal authority based on sound organizational control and coordination.[8]

Using those definitions, organizations consist of three elements. First, organizations have to do with a group; they have a social element. Second, they are created to carry out rational goal-directed activity. Third, organizations have a structure.

There exists several different structural models which organizations can adopt. The most useful is the hierarchical Weberian bureaucratic model. It is the model often associated with government and the public sector[9] in modern-developed states. Bureaucracies distinguished themselves from other organizations by their use of departmentalization and inflexible routines. Moreover, bureaucracies provide "regularity, standardization, and predictability for organizational activities."[10] In so doing, administrative control of the organization is enhanced.

A third term to define is 'institutions.' Young writes that institutions have "identifiable practices consisting of recognized roles linked by clusters of rules or conventions governing relations among the occupants of these roles."[11] Such rules and conventions take a certain amount of time to become operative and recognizing this

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6 Ibid., 6.

7 Shafritz and Ott, Classics of Organizational Theory, 166.

8 Ibid.

9 Such as the CAF, Daft and Steers, Organizations, 225.

10 M. Barnett, "Institutions, Roles, and disorder: The case of the Arab States System" International Studies Quarterly, Vol. 37, No. 3, (Sept 1993), 272.

introduces a temporal dimension for analysis. In effect, an institution is simply an organization that has persisted over time.

Finally, central to any organization is the concept of traditional roles. These roles are a function of the historic results from the goal setting process. Two significant considerations are important in determining and identifying these roles. First, there is a temporal issue. The event or date chosen as the start of an organization affects what will be identified as a traditional role. Second, there is a normative element involved in deciding what the organization itself has valued as its traditional role over a certain period of time. Thus, both temporal and normative considerations, in conjunction with the historic results of goal setting provides the best indicator of an organization's traditional roles.

Understanding roles and change also requires a distinction between the micro and macro level of analysis. Daft defines the macro perspective as focused upon "larger units of analysis, especially the organization itself."[12] The literature that deals explicitly with macro theory is referred to as 'organization theory.'[13] In contrast, the micro level deals with individuals or groups within the organization.

On the macro level, Quinn and Cameron propose that organizations have a lifecycle similar to humans. They put forth an organizational model that consists of four sequential stages.[14] The first stage is the birth stage, where the emphasis is on organizational survival. Most energy at this stage is devoted to acquiring resources and marketing products. Planning and coordination remains simple and they are left up to a

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[11] Daft and Steers, Organizations, 8-9.
[12] Ibid.
[13] Ibid.
[14] Ibid., 236.

handful of people. There are few formal processes and the structure is nonbureaucratic. Transition to the next stage generally follows a leadership crisis. Such a crisis usually occurs from organizational growth to the point that the entrepreneurial spirit and technical skill of the leaders are incapable of dealing with the emerging management issues.[15]

The second stage is referred to as the youth stage. In this stage the organization is successful in the market. There is growth and innovation. Members identify with the mission and work hard to contribute to organizational growth. The structure is usually pre-bureaucratic, with a possible transition to the next stage following a control crisis. In such a crisis, it is the expansion of the organization in several directions that leaves senior managers without overall control. Top executives need to develop a more efficient administration, in order to inject stability.[16]

The third stage is referred to as the midlife stage. In this stage, the organization has grown quite large and measures are required to improve administration and efficiency. According to Quinn and Cameron, this is the stage where a bureaucratic structure is implemented. The crisis that often precedes the next stage is a red-tape crisis. Middle managers are unable to get things done due to over-regulation. In such cases, more authority must be given to departments, as well formal procedures need to be mixed with informal ones.[17]

Organizations in the final, or mature stage, generally have a complex bureaucratic structure. These organizations seek to avoid stagnation by being more adaptable, flexible. They also emphasize renewal. Furthermore, such organizations are concerned

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[15]Ibid.

[16]Ibid., 237 and 239.

with their role in the environment. They may be forced to seek new roles because their relevance has been based on the legitimacy derived from the external environment, which may have changed. Following such events, organizations put the emphasis on turnaround and streamlining.[18] In such times senior managers are often replaced. Complete failure of an organization in the fourth stage is unlikely, although being out of step with the times is possible.[19]

As organizations last over time, especially during the third and fourth stages of the lifecycle model, they develop institutional responsibilities. A few examples of these responsibilities for the air force would include acquiring the appropriate aircraft and budgeting enough flying hours to be competent with their use. Moreover, an air force must ensure it is capable of fulfilling the roles outlined in the government's policy documents. Consequently, institutional responsibilities affect the roles the organization adopts and maintains.

Organizational planning and goal setting are two further macro issues that impact directly on the roles an organization adopts. Goal setting is an integral part of planning, and the roles that ensue are essentially goals operationalized. Thus, any study of how organizations adopt certain roles requires an identification and evaluation of the factors that affect goal setting. Useful in this conceptualization of organizational planning and goal setting is Daft's definition of organizational goals. He writes that organizational goals are a "desired future state of affairs that the organization attempts to realize."[20] They "serve as guides to action, as a source of motivation, as a standard of performance,

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[17]Ibid., 238.
[18]Ibid.
[19]Ibid., 240.
[20]Ibid., 319.

to legitimize the organization, and as a rationale for internal structure and decision processes."[21] Daft goes on to specify three types of goals: official goals, operative goals, and operational goals.

The official goals are the highest level goals and are associated with top management. The official goals are often called the organization's goals and usually take the form of general statements. "They specify what the organization is trying to accomplish, the reason it exists, and the values that underlie its existence."[22] Long-term planning and the resulting official goals set the direction of large commitments to a specific end.[23] These goals must necessarily be responsive to the external environment[24] for the organization's product or service to have utility.[25] Good planning enhances the organization's response to change in the external environment by anticipating shifts and developing contingency plans.[26]

Operative and operational goals are decided by an organization's medium and short term planners respectively. The operative goals are the responsibility of middle management. They are the goals the organization is trying to achieve through policies and activities. The operational goals are the goals of each supervisor with respect to his/her employees.[27] Through these lower level goals, the actual output of an organization is found. As part of a thorough planning process, the output is always put in question, in order to evaluate if the result is the best reflection of official goals.[28]

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[21]Ibid., 320.
[22]Ibid., 321.
[23]Shafritz and Ott, Classics of Organizational Theory, 140.
[24]Ibid., 225.
[25]Ibid., 132.
[26]Daft and Steers, Organizations, 302.
[27]Ibid., 321.
[28]Shafritz and Ott, Classics of Organizational Theory, 151.

With regard to the CAF, the government's defence and foreign policy objectives are identifiable through its White Papers, and represent official goals. The operative roles can be found at the Headquarters level of the CAF through the field operations it sponsors. Air force roles at the squadron level represent the operational goals. These operational goals can be studied to establish whether or not they reflected the official goals.

The organizational literature also discusses four dimensions within the goal setting process. These are the normative, rational, reactionary, and historic. The normative dimension has to do with individual socialization and the latitude of interpretation of official goals. The rational dimension refers to cost-benefit analysis. The reactionary dimension relates to changes in the external environment that threaten the organization's existence. The historical dimension has to do with inertia within the organization as a function of past preferred behavior, which has served to maintain the institution in the past. As human goal setting is often an optimistic extrapolation of past achievement,[29] the same observation can be made for organizations.

French writes that the basis of long-term goal setting is beliefs and desires that relate to the past and present. In so doing, he focuses on the normative assumptions and values that have an impact on long-term planning.[30] Similarly, Andrews posits that the strategy development process has four interpretive components.

1- Environmental opportunity, what the organization might do.
2- Competence and resources, what the organization realistically can do.
3- Managerial interests and desires, what the organization wants to do.
4- Responsibility to society, what the organization should do.[31]

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[29] Ibid., 162.
[30] W. French, et al., Understanding Human Behavior in Organizations (New York: Harper & Row Publishers, 1985), 448.
[31] Ibid.

Andrews first and third components reflect the influence of the normative dimension in decision making. The second and fourth components relate to the real ends of planning, and address the dimensions of rational and historic considerations in goal setting. In the planning process, for each three levels of goals (official, operative, and operational), corollary roles are attributed to their operationalization. Hence, roles are the functions assumed to meet the goals, which is similar to what Shafritz posited.

A problem with studying official goals is that they are usually enunciated in the abstract. Therefore, looking at the operative and operational roles helps interpret official goals. However, to consider the operative and operational roles as a means to interpret the official goals involves the normative interpretation that bureaucrats make in choosing specific roles. Despite these normative choices, it is clear that the means to achieve higher level goals become the goals of the lower levels, in an ongoing hierarchical relationship.[32] Hence, operative and operational goals should always be subordinate, to official goals.

Planning and goal setting comes with heartaches. Studies on official goals have demonstrated that general agreement on overall organizational objectives is rare, for reasons implied above. Rather, a degree of ambiguity is more common. As a result, organizations may appear to be pursuing one goal at a certain time and a different goal subsequently. Moreover, there is also evidence that sub-parts of organizations often pursue divergent goals simultaneously, this leads to 'role conflicts.'[33] For Stryker role conflicts emerge when:

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[32]French, Understanding Human Behavior, 73.

[33]Shafritz and Ott, Classics of Organizational Theory, 157.

> One holds two norms or values that logically call for opposing behavior; or they may demand that one role necessitates the expenditure of time and energy such that it is difficult to impossible to carry out the obligations of another role.[34]

How role conflicts are reconciled affects stability and cooperation in an organization.[35] With better integration and a clearer vision, there is likely to be fewer role conflicts. Integration is the amount of coordination and collaboration between various departments to achieve the goals of the organization in a unitary fashion.[36] Role conflicts in themselves are not good, as scarce resources can be attributed in opposing directions. However, such conflicts lead an observer to identify the preferential roles of an organization. This occurs as the dominant technology or skill resists change. Often, dominant roles will persist longer than they logically should due to stubborn resistance.

A final problem of the planning process results when one goal is chosen with its associated roles, which may mean that others are not. When strongly committed to one path, the organization may become inflexible when new demands arise. This problem is further exacerbated when there are large changes in the external environment.

Following an organization's goal setting process and choice of roles comes budgeting. Budgets are supposed to be the explicit expression of previous organizational commitments.[37] They represent the allocation of fluid resources that are distributed between personnel and equipment to provide a capability;[38] one that is supposed to fulfil the goals.

However, budgets usually cause problems, especially in bureaucratic organizations. Bureaucracies generally seek to maximize their budget dollars at all levels. There are four main reasons why they do so. First, there are the motives of the

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[34]Barnett, "Institutions, Roles, and disorder" 276.
[35]Ibid., 277.
[36]Daft and Steers, Organizations, 301.
[37]Shafritz and Ott, Classics of Organizational Theory, 160.
[38]Ibid., 141.

bureaucrat, such as salary, reputation, power, ease of managing, and the will to survive (i.e. to have a job). Second, even if an individual bureaucrat is not personally driven to maximize the budget, it is forced upon him/her through department peer group and bosses. Third, there is the competition between agencies for budget allocation dollars.[39] Fourth, organizations tend to measure themselves relative to others in budget terms. The number of people employed, equipment, bases, and budget dollars with respect to the other organizations is a measure of organizational success.

Often the blind drive for budget maximization is incompatible with the organization's higher goals, or with the demands of the external environment.[40] This results in wasted funds and a lack of effectiveness. Regrettably, when a department saves money it is often counterproductive because in the following year it will likely get fewer funds. Moreover, budget maximization is an insidious and incestuous practice, and therefore, it is difficult for senior management to stop.

As highlighted earlier, the external environment plays a crucial role in the macro level of analysis. Daft separates the external environment into two parts. The first part is the task environment, which consists of the elements of the environment that impact directly on goal setting. If the task environment is not addressed properly, the survival of the organization is threatened. Daft's second part is the general environment. The general environment refers to aspects of the environment that impact infrequently, or indirectly on the organization. Elements from the general environment tend to affect all organizations in similar fashion, such as economic conditions and judicial decisions.[41]

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[39]T. Peters, and R. Waterman, In Search of Excellence (New York: Harper & Row, 1982), 188.

[40]W. Niskanen, Bureaucracy:Servant or Master? (London: William Gibbons & Sons Ltd, 1973), 22-26.

[41]Ibid., 287.

When assessing the rate of change and the complexity of the external environment, the organizational literature uses the words 'stability' and 'turbulence'.[42] Studies relating organizations to a stable environment have indicated a reliance on formal procedures. Moreover, in times of stability, a short reaction time will suffice to deal with changes. Similarly, a straightforward task-oriented approach with communication through traditional superior-subordinate channels is adequate.

When an organization must deal with a turbulent environment, the organizations must adapt, primarily because the organization is not able to control, or change the environment to any great extent. There is a need for communication, both throughout the organization and with the elements of the external environment towards which the changes are directed.[43] In the case of a business, external communication takes the form of a public relations campaign introducing a new product or service. Organizations must also adopt an internal strategy to deal with the uncertainties of the environment in order to be more flexible.[44] As a result, in a turbulent environment formalized procedures and rules cannot be used for any length of time, and similarly, roles are more likely to change.

The key attribute of a turbulent environment is uncertainty. Uncertainty can be defined as a lack of information about environmental factors and future events. With more uncertainty it is more difficult to carry out a cost-benefit analysis of the various alternatives. Hence, with greater uncertainty there is an increased likelihood that organizational actions would not meet their desired goals.[45] One way to deal with uncertainty is for organizations that seek similar ends to engage in joint ventures, and

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[42]Ibid., 286.
[43]Shafritz and Ott, Classics of Organizational Theory, 206.
[44]Daft and Steers, Organizations, 297.
[45]Ibid., 293.

therefore reduce risk.[46] A similar outcome occurs for military organizations as their governments forge military alliances with like-minded states.

The second level of analysis from which organizations can be examined is the micro perspective. It has been defined as the perspective that "generally focuses on problems and issues facing individuals and groups within organizations."[47] The micro perspective gives more insight into the specific attributes of the bureaucratic model. Weber believed that a bureaucracy was the most efficient organizational tool to meet the goals of large hierarchical organizations. The model helped deal with the problem of unpredictable and uneconomical human actions.[48] Bureaucracies abstracted the human character and put more emphasis on the use of skilled workers. Furthermore, bureaucracies were a means to overcome the limited decision making of the individual. The model Weber proposed was supposed to be more stable, provide control, and ensure predictable outcomes.[49]

Weber's model consisted of eight elements. First, in bureaucracies there were clear areas of jurisdiction in which rules and administrative procedures dictated how order was to be kept. The presence of rules was to reduce uncertainty about what was to be done.[50] Second, specifications ensured that duties were fulfilled on a continuous basis, with only the qualified serving.[51] This second element implies that there is authority given to positions and the responsibilities of these positions would not change over time. Third is the principle of hierarchy, or levels of graded authority. In bureaucracies the hierarchy was to be a monocratic chain of command in which there

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[46]Ibid., 286.
[47]Daft and Steers, Organizations, 8-9.
[48]Burack, Organization Analysis: Theory and Applications, 30.
[49]G. Moorhead, and W. Griffin, Organizational Behavior (Boston: Houghton Mifflin Company, 1989), 13.
[50]Daft and Steers, Organizations, 233.
[51]Max Weber, On Charisma and Institution Building, ed. S.N. Eisenstadt, (Chicago: The University of Chicago Press, 1968), 66.

would always be supervision of subordinates by a superior.[52] Fourth, bureaucrats would attain their positions by appointment from above, in contrast to politicians who get their positions from below.[53] Progression in the bureaucracy was driven by the need for officials to impress their superiors. Fifth, the specialization and the division of labor were designed to increase both the quality and quantity of production in skilled professions.[54] Furthermore, specialization was to allow a large organization to utilize better the various "skills and aptitudes of the different workmen."[55] Sixth, there was to be "centralization of coordination and control"[56] in bureaucracies. Seventh, the model encourages continuity through a process of institutionalization, understood as institution building, as a means to promote organizational stability.[57] Eighth, bureaucracies introduced standardization, which entails rules and procedures for enhanced efficiency.[58] Standardization in large organizations was to provide an impersonal means of control.[59] Standardization[60] also kept routine decision-making decentralized.[61]

Several valid criticisms of Weber's model surfaced over the years. First, because of the emphasis on written documentation, there is a need for large technical and support staff. Hence, the ratio of support staff per worker increases with the size of an organization, which results in reduction in the percentage of line workers.[62] It is because

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[52]Shafritz and Ott, Classics of Organizational Theory, 81.
[53]Ibid., 84.
[54]Ibid., 165.
[55]Ibid., 87.
[56]Burack, Organization Analysis: Theory and Applications, 26-27.
[57]Ibid., 26-27.
[58]Moorhead, and Griffin, Organizational Behavior, 13.
[59]Daft and Steers, Organizations, 226.
[60] In the CAF the routine decisions are referred to as standard operating procedures, and they are embedded in the Airforce's doctrine.
[61]Moorhead, and Griffin, Organizational Behavior, 407-408.
[62]Daft and Steers, Organizations, 227.

of this increasing ratio that a bureaucracy today is synonymous with paperwork and red tape.[63] Second, an emphasis on the division of labor into smaller tasks may facilitate execution,[64] but it also breeds monotony and inflexibility. This results in bureaucracies being rigid in the face of change. Third, with an emphasis on rules, the Weberian model fails to consider the individual's behavior in an organization. This takes away from an individual's creativity.[65] Fourth, bureaucracies are criticized because they encourage departmentalization and the biased loyalties that ensue. The different loyalties within an organization tend to lead to conflict, more than cooperation.[66] Furthermore, through departmentalization certain subunits can gain power because "the activities of one subunit is affected by the activities of other subunits."[67] Within an organization there can be dominant departments on which others depend. In such cases, the powerful subunits tend to ensure their interests are served, and their roles adopted above and beyond those of other subunits. The best way to alleviate most of these criticisms of the bureaucratic model is through strong and effective leadership, which is easier said than done.

ORGANIZATIONAL CULTURE

Organizational culture is a macro issue that is synonymous with institutional or corporate ideology, style, character, and climate. Organizational culture[68] is an

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[63]Moorhead, and Griffin, Organizational Behavior, 13.
[64]Burack, Organization Analysis: Theory and Applications, 29.
[65]Ibid., 30-31.
[66]P. Selznick, TVA and the Grass Roots (Berkley: University of California Press, 1980).
[67]Daft and Steers, Organizations, 487.
[68]All that is written about organizations having their own character applies similarly to sub-units in organizations. Therefore, the departmentalization in bureaucracies gives a variety of sub-cultures within a larger organization.

extrapolation of how individuals have personalities.[69] In 1951 Jaques gave his definition of culture in a factory. "The culture of the factory is its customary and traditional way of thinking and doing things."[70] Similarly, thirty years later Deal and Kennedy defined organizational culture as "the way we do things around here."[71] Peter and Waterman defined it as "a dominant and coherent set of shared values conveyed by such symbolic means as stories, myths, legends, slogans, anecdotes. . ."[72] Similarly, Douglas wrote that an institution "controls the memory of its members; it causes them to forget experiences incompatible with its righteous image, and it brings to their minds events which sustain the view of nature that is complementary to itself."[73] Tagiuri and Litwin define organizational climate as:

> A relatively enduring quality of the internal environment of an organization that (a) is experienced by its members, (b) influences their behavior, and (c) can be described in terms of the values of a particular set of characteristics (or attributes) of the organization.[74]

Schein outlines six aspects of organizational culture, which synthesize the definitions above. None of the six is the essence, but together they reflect the meaning of organizational culture. First, there are the rituals and language that make up observed behavioral regularities. Second, there are certain norms that evolve in working groups. Third, organizational culture is the dominant value of an organization. Fourth, it is the philosophy that guides organizational policy both internally and externally. Fifth, it is

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[69]D. Denison, Corporate Culture and Organization Effectiveness (New York: John Willey & Sons, 1990), 22-23.
[70]Ibid., 28.
[71]T. Deal, and A. Kennedy, Corporate Cultures:The Rites and Rituals of Corporate Life (Reading, Mass: Addison-Wesley, 1982), 4.
[72]Peters, and Waterman, In Search of Excellence, 103.
[73]M. Douglas, How Institutions Think (Syracuse N.Y.: Syracuse University Press, 1986), 12.
[74]French, Understanding Human Behavior, 43.

the accepted rules of the game that must be followed in an organization. Sixth, it is the feeling or climate of an organization that is conveyed to outsiders.[75]

Snyder writes that the ideology of military organizations entail "a coherent set of shared beliefs about the nature of war, the keys to success in combat, and the prerequisites for healthy military institutions."[76] Furthermore, he argues that such ideologies were embodied in field manuals, war plans, and organizational structures.[77] From his definition it is obvious that what he defines is synonymous with organizational culture. Similarly, military doctrine also reflects the character of the organizations and sets the direction for the best means to deal with a given situation.[78] Hence, organizational doctrine gives prescriptions of the correct answer to solve anticipated problems. As a result, doctrine has an impact on overall strategy, as well as the more fundamental tactical decisions. Moreover, as doctrine deals with how forces should be structured and employed, it necessarily reflects the preferred fighting mode of military services and may be understood as a measure of 'culture'.

Organization culture stems from two sources: institutionalization and socialization. Institutionalization is the process that occurs as an organization persists over time and becomes more permanent. As for socialization, Brim and Wheeler define it as "the process by which persons acquire the knowledge, skills, and disposition that make them more or less able members of their society."[79] Similarly, corporations put their employees through a process that teaches directly or indirectly the organization's nature, meaning, goals, and roles.[80] Socialization is meant to breed institutional loyalty,

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[75]Shafritz and Ott, Classics of Organizational Theory, 384.
[76]J. Snyder, The Ideology of the Offensive, (London: Cornell University Press, 1984) 210.
[77]Ibid.
[78]Department of National Defence, War and the Military Profession, 3C-8.
[79]French, Understanding Human Behavior, 34.
[80]Moorhead, and Griffin, Organizational Behavior, 510-511.

thereby improving morale. Furthermore, because organizations socialize their people to a certain identity, usually the future leaders have been socialized to that identity. Therefore, the leaders are products of the socialization process and have generally internalized the preferred roles and scripts. Mangham defined socialized scripts as:

> Relatively predetermined and stereotyped sequences of action which are called into play by particular and well recognized cues and circumstances, of which we acquire knowledge through the process of socialization.[81]

Borrowing from Schein, there are three different levels of organizational culture. The first level is the most visible and has to do with social artifacts. Social artifacts are behavior patterns or the technologically advanced equipment which are highly visible, despite their meaning being difficult to decipher.

The second level of organizational culture, is the level of 'values.' Deal and Kennedy define values as "the basic concepts and beliefs of an organization. . . . Values define 'success' in concrete terms for employees."[82] Values portray acceptable behavior within an organization, despite some rules being unwritten.[83] As a result, values represent a normative view of what is desirable.[84] The benefit is that the people tend to work harder when their organization has a cause.[85] Both organizational planning and goal setting reflect, in part, the organization's values and lead planners to know what should receive more attention.[86]

The second level of organizational culture also uses the concept of heroes. Heroes provide a model of success for the organization. Deal and Kennedy wrote that "these people personify the culture's values and as such provide tangible role models for

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[81]I. Mangham, The politics of Organizational Change (Westport: Greenwood Press, 1979), 37-38.
[82]Deal and Kennedy, Corporate Cultures, 14.
[83]Moorhead, and Griffin, Organizational Behavior, 495-496.
[84]French, Understanding Human Behavior, 69.
[85]Deal and Kennedy, Corporate Cultures, 31-34.
[86]Ibid., 31.

employees to follow."[87] The hero's accomplishments are taught to the employees within a few months of being with the company. Hence, heroes are culturally specified symbols which "embody and articulate the identity of organizational members."[88] In his study of the US military Carl Builder uses a similar concept , 'altars of worship,' to identify what the armed services aspire to.[89]

Nevertheless, Schein wrote that social artifacts and values are only the superficial manifestation of organizational culture, not the essence.[90] Schein's third level of culture is the basic underlying assumptions, which he sees as the essence of organizational culture. With time, the solutions to organizational problems that have worked repeatedly are taken for granted. What was once a hypothesis becomes reality. Even when solutions are not testable, the process of validation can occur.[91] The difference between assumptions and values is that when dealing with assumptions other alternatives are no longer visible and the assumptions are non-debatable. Therefore, any behavior based on a different premise becomes inconceivable.[92] Assumptions that are "internalized over time as they prove themselves to be meaningful, adaptive strategies, give rise to structures that both reflect and support the basic assumptions."[93] To clarify the embedded fundamental assumption of an organization, the study of both the artifacts and values is helpful.[94]

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[87]Ibid., 14.
[88]Denison, Corporate Culture and Organization Effectiveness, 28.
[89]Carl Builder, The Masks of War: American Military Styles in Strategy and Analysis (Baltimore: Johns Hopkins University Press, 1989), 3.
[90]Shafritz and Ott, Classics of Organizational Theory, 384.
[91]Ibid., 389-390.
[92]Ibid., 391. As an example, military planners in Air Command are not thinking about an Air Force without pilots, is not conceivable. Although the speculation today is that the JSF will be the last manned fighter.
[93]Denison, Corporate Culture and Organization Effectiveness, 30.
[94]Shafritz and Ott, Classics of Organizational Theory, 392-393.

Schein also argues that organizational culture is "a learned product of group experience." After solving problems with a certain set of solutions, these solutions get taken for granted over time.[95] Moreover, to find what an institution wants to look like one must look at its finest hour in the past.[96] Moreover, there are also some ideas which are favored and become part of the organizational culture simply because they are familiar.[97] Similarly, traditions evolve within an organization, for which certain roles and equipment become preferred.[98]

For military institutions, Snyder writes that organizational culture serve three main functions. First, it promotes the military's interest. Second, "it simplifies concepts and facilitates training, planning and implementation of policies."[99] Third, such an ideology provides leaders with a plausible road to victory in battle.[100] A byproduct of establishing a common understanding of the character of an organization is a degree of unity. Furthermore, a strong culture implies the organization stands for something.[101] Having the organization stand for something leads to increased commitment and motivation on behalf of its workers. It does so because the individual identifies with, and feels part of the organization.[102] Moreover, a strong culture can also lead to a system of informal rules that spells out how people are to behave.[103] Furthermore, strong organizational culture provides stability and regularity that gives better control. In such a system, experience serves as a guide to what is expected in the future, which

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[95]Ibid., 384.
[96]Builder, The Masks of War, 127-132.
[97]G. Peters, The politics of Bureaucracy (New York: Longman Inc., 1989), 184-187.
[98]B. Buzan, An Introduction to Strategic Studies, Military Technology and International Relations, (GB: St-Martin's press, 1987), 97-100.
[99]Snyder, The Ideology of the Offensive, 210.
[100]Ibid.
[101]Denison, Corporate Culture and Organization Effectiveness, 22.
[102]J. Mills, and S. Murgatroyd, Organizational Rules: A framework for understanding organizational action (Philadelphia: Open University Press, 1991), 20.
[103]Deal and Kennedy, Corporate Cultures, 15.

can be beneficial in uncertain or difficult circumstances.[104] Because in bureaucracies the individuals are working in smaller units, the smaller units develop their own identities or sub-cultures. These specific unit identities have been seen to increase cohesion and moral in operations.[105]

These benefits do not come without a few problems. Culture does not always enhance the organization's effectiveness. Using the goal attainment model which "equates effectiveness with the attainment of specific organizational objectives,"[106] some would argue the effectiveness of the culture is partial at best. The will of institutions to survive can lead to bias in organizational planning. These biases are more likely when the organization's interests are under severe threat. Moreover, biases are worse when the organizational interest put at stake is considered fundamental to the self-image of that organization.[107] As a result, organizations will tend to favor actions that have a long history, which convey a sense of permanency, reliability, and legitimacy.[108]

ORGANIZATIONAL CHANGE

The process by which organizations acquire roles, maintain roles, and eliminate roles stems from organizational change. In broader terms, organizational change can occur from different sources, but generally stems from the goal setting process, or top-down. The most important form of change is a change in the official goals due to a change in the external environment. Second on the list would be an external environment that demanded a different operationalization of the roles without changing

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[104]Shafritz and Ott, Classics of Organizational Theory, 391.

[105] In Carl Builder's study of US military institutions he outlines how fighter pilots have become the kings of the USAF. Similarly, in the US NAVY tailhook aviation is the top. In a police force the highest moral is found in sub-units such as SWAT teams.

[106]Denison, Corporate Culture and Organization Effectiveness, 36.

[107]Snyder, The Ideology of the Offensive, 25.

[108]Shafritz and Ott, Classics of Organizational Theory, 124.

the official goals. Third there are the predictable changes that are part of the normal functions of the organization.[109]

There are several practical reasons for change. Change could be to reorganize a subunit of an organization to enhance esprit de corps.[110] Change may also be for efficiency reasons leading to changes in the size of an organization or its administration. Similarly, a new structure could be adopted to be more cost-effective, or to incorporate a new technology.[111] Technological innovation usually causes conflicts with the organization's culture as it renders obsolete some roles that were considered traditional.[112]

When change occurs there is a risk of confusion. When confusion reigns then morale, pride, and commitment usually go down.[113] To avoid such a situation there is a requirement to develop an organizational change strategy. Such a strategy can ensure the implementation goes more smoothly and avoids the return to the old ways of doing things with a new name.[114] Lewin proposes a three-step process of unfreezing, change, and freezing.

Unfreezing is the step in which people become aware of the need for change. It is important to make the employees knowledgeable about the importance of change and how their jobs will be affected. Change is the movement from the old state to the new one: a time of transformation. Often associated with change is the installation of new equipment, the restructuring of the organization and anything altering the existing relationship among activities. The more the communication, the better changes can be

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[109]Ibid., 128.
[110]Ibid., 148.
[111]Ibid., 128.
[112]Daft and Steers, Organizations, 581-582.
[113]D. Graves, Corporate Culture--Diagnosis and Change: Auditing and Changing the Culture of Organizations, (New York: St. Martin's Press, 1986), 127.
[114]Moorhead, and Griffin, Organizational Behavior, 715-717.

managed. Often, resistance to change is based on inaccurate or inadequate information.[115] Re-freezing makes the new state of affairs permanent. Doing so will prevent going backward to the old ways of doing things.[116] Many organizations seek outside advisers to help coordinate what and how to change.

Nevertheless, changes are often in conflict with an organization's culture.[117] As "man is a creature of habit,"[118] roles become routinized and internalized. Rules that were to enhance organizational goals at one period become internalized and take on a value of there own, irrespective of the organizational goals.[119] The predefined patterns of conduct channel efforts in one direction against many other possible directions.[120] Difficulties occur when these routines need to be changed. Moreover, if the environment changes and the shared values are no longer beneficial to the organizational success, there is a risk of obsolescence. Yet simultaneously, the socialized culture resists change. The problem of resistance to change in bureaucracies is partly due to an excess of written rules and regulations.[121] Military doctrine is not supposed to be rigid or interfere with innovation, but by virtue of the function it serves, it does. Moreover, military organizations are likely to resist even more as "leadership requires decades of institutional experience."[122]

More specifically, Katz and Kahn have identified several obstacles to organizational change. First, the groups that stand to lose power or resources are sure to resist. Second, the inertia within groups will dampen individual efforts to adopt the changes. Third, when a change threatens an expertise that has taken years to develop, it

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[115]Ibid., 713-714.
[116]Ibid., 715-717.
[117]Denison, Corporate Culture and Organization Effectiveness, 30.
[118]Shafritz and Ott, Classics of Organizational Theory, 90.
[119]Ibid., 148.
[120]Mills and Murgatroyd, Organizational Rules, 97.
[121]Moorhead, and Griffin, Organizational Behavior, 513.
[122]Builder, The Masks of War, 39.

will be resisted.[123] Fourth, organizations tend to protect their dominant technologies. Organizations would prefer to spend more budget dollars on their dominant technology to the detriment of other capabilities which are less mainstream.[124] Any threat to what is perceived as attractive to the self-image of the organization will be met with pressure for the status quo.[125] Fifth, the structure of an organization inherently resists changes because it is supposed to provide stability, especially in bureaucracies.[126] The process of formalization creates rules and procedures that make it inflexible and can only hinder change.[127]

Despite the resistance to change, the fact that organizational culture is a learned behavior, does make it possible to change. Changing the culture implies changing the attitudes, behavior, values, and the fundamental assumptions of the individuals and the organization. This is not an easy task. The best way to change attitudes is to communicate effectively what the changes are. On some occasions, communication is not enough and it is necessary to change the people at the top of the organization, as they are a product of the old culture.[128] Nonetheless, the innovator must also relate the past

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[123]D. Katz, and R. Kahn, The Social Psychology of Organizations (New York: John Wiley, 1978), 36-68.

[124]Thompson, Organizations in Action, (New York: Mc Graw-Hill, 1967), 441.

[125] Just as anxiety in the individual leads to the use of psychological defense mechanisms, so do organizations. Although clearly most of the decisions in organizations are balanced intellectual decisions, there is room for a couple of the psychological defence mechanisms that would resist changes. First, is the defence mechanism called 'regression'. This means a return to habits and roles that were done earlier and that are considered to be less demanding, organizational culture leads to returning to old habits. 'Rationalization' is a second example that may occur in large organizations. Although large organizations have more depth to their excuses, they are often excuses anyway. "Excuses are a natural tendency to explain one's behavior." When the reasons put forth are reasonable, rational, and convincing, they may still not be the real reasons. D. Coon, Introduction to Psychology 3rd ed., (San Francisco: West Publishing Company, 1983), 319.

[126]M. Hannah, and J. Freeman, "The Structural Inertia and Organizational Change" American Sociological Review, (April 1984), 149.

[127]Moorhead, and Griffin, Organizational Behavior, 407-408.

[128]Graves, Corporate Culture--Diagnosis and Change, 130-131.

culture to the desired culture, in order to smooth out the transition.[129] The leaders must manipulate the symbols and use dominant values to help achieve the goals that reflect their vision for the organization.[130] Furthermore, a new culture must be reinforced with empirical examples, stories, and a clear articulation of reasons for the change.[131] The likely advantage of organizational change is that despite the painful process of changing organizational culture, it is argued that the organization will most likely benefit in the end. However, if institutions change too often they will only be mirroring the instability of the environment. Usually, once change has started, the new value system becomes self-reinforcing. Afterwards, the new values of the organizational tend to be as stable and influential as the old ones.[132] Finally of note, the corporate culture's resistance to change can be useful. Organizations should use the resistance as feedback to reevaluate the merits of the proposed changes.

CONCLUSION

What is evident in the literature on organizational theory is that the most important variable in deciding which roles organizations adopt was the external environment. At the outset, Weber wrote, the fundamental task of an organization was to adapt to its external environment. Similarly, it was highlighted how an organization's relevance was based on the legitimacy the external environment attributed to it. Moreover, when institutional responsibilities were discussed, there was the requirement to be responsive to the environment. When examining the goal setting process, the literature emphasized how the process must be responsive to the environment as it was a large commitment to a specific end. Failing to do so would likely lead to the pursuit of a few pointless objectives. More specifically, the purpose of the reactionary dimension of

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[129]Ibid., 132.
[130]Shafritz and Ott, Classics of Organizational Theory, 408.
[131]Moorhead, and Griffin, Organizational Behavior, 513.
[132]Ibid., 514.

goal setting was to deal with turbulence in the external environment. Finally, when discussing changes to official goals of an organization, once again, the literature relates this, primarily, to the external environment.

The second most important influence on the roles adopted was the organization's culture. The literature highlighted the double-edge sword of organizational culture. The important benefits the culture may be contrasted to the danger of archaic thinking which could persist and resist necessary changes in roles. This occurred when the culture institutionalized certain roles to the extent that some became unquestioned assumptions, yet falling behind the times. Overall, this thesis posits that it is these two variables, the environment and culture, are the driving forces behind organizational changes in the CAF's roles.

Chapter Two

The Birth of the RCAF

This chapter marks the beginning of the case study and examines the development of air power in Canada. The chapter is separated into two distinctive timeframes. The first part examines the First World War and the 1920s. It focuses on the inauguration of the Royal Canadian Air Force (RCAF), and its initial capabilities, roles, and goals. The second part examines the 1930s.

Up until 1936 the official goals of the RCAF were primarily civilian. Part of the civilian emphasis was the absence of an external threat, which in turn influenced government funding. More importantly, adopting civilian roles was a conscious decision that helped legitimize the formation of the Canadian air force. For the government spending on civilian roles was cost-effective as it helped develop the hinterland while maintaining a semblance of an air force. What is noteworthy is how the emphasis on civilian roles occurred despite the air force's preference for military ones. The warlike culture of its roots in World War I was not able to influence the roles. Later in the period factors from the external environment led the organization to change roles more suited to its culture. However, the change in roles followed by an influx of money led to a leadership crisis which lasted until the outbreak of the Second World War.

In examining the organization's culture, of significance during the period was the absence of a strategic rationale within the RCAF. Yet, this significant fact did not hinder the organization's desire to gain independence. The RCAF culture proved effective at arguing that its fate should be linked to the RAF's for interoperability reasons.

The Canadian Air Force

In 1909 John McCurdy had undertaken Canada's first powered flight.[1] He and his friend Baldwin lobbied the government to purchase some flying machines, but the Cabinet rejected a string of proposals up until 1912. At that time the Chief of the General Staff Major-General C.J. Mackenzie supported the aviation idea, but once again it was rejected, this time by Colonel Sam Hughes, Minister of Militia and Defence. Hughes later witnessed the Royal Flying Corps on manoeuvres in England, and began to appreciate the potential of aviation.[2] Nevertheless, by 1914 few politicians and military leaders appreciated the importance air power would take. Upon entering World War I Canadians joined the the Royal Naval Air Service (RNAS) and the Royal Flying Corps (RFC) to an extent greater than anyone foresaw.[3] As well, the British ran pilot training schools in Canada. By the end of the war twenty-two thousand Canadians had served in the RAF and its precursors, beginning a strong and enduring air force tradition. This led to growing interest at home and abroad for more distinct recognition of Canadian aircrew.[4] Predictably, the RAF stalled Canadian attempts to establish independent units. They argued that "in view of the situation in France, concrete action on these lines. . . should be delayed til later." [5] Only late in 1918 were four Canadian squadrons established, as two separate initiatives, due in part to the Prime Minister's intervention.[6]

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[1] F.H. Ellis, Canada's Flying Heritage (Toronto: University of Toronto Press, 1954)

[2] S.F. Wise, Canadian Airmen and the First World War (Toronto: University of Toronto Press. 1980), 17.

[3] Ibid., 18 and 580. Moreover, during World War I ten of the top twenty-seven aces of the RAF were Canadian.

[4] Of note the Prime Minister's reversal of opinion following a visit to Europe and discussing issues with Canadians serving in the RFC. Canadians complained of lack of promotion, no distinguishing badge, in general not being treated as equals with their British counterparts. Although it was later proven that Canadians were not purposely passed over for promotion, it was more perception. Ibid., 22 and 583.

[5] Ibid., 600.

[6] These four squadrons were separated into two different airpower initiatives, one called the Canadian Air Force with squadrons in Europe, the other the Royal Canadian Naval Air Service with two

At that time, Canadian airpower advocates hoped that these units would be the percursors of a permanent Canadian air force after the war. However, the wording upon the establishment of these squadrons was 'for the purpose of the current war.'[7] The first casualties of this policy were the two Royal Canadian Naval Air Service (RCNAS) squadrons that were shut down in December 1918. Despite this fact, the two Canadian Air Force (CAF) units overseas kept a positive outlook as the character and spirit of the officers and airmen stemmed from victory in battle[8] as part of the RAF.

In 1919, Canada received five million dollars worth of British surplus aircraft.[9] These aircraft were a positive sign for the two Canadian air force squadrons, and likely contributed to the formation of the Air Board. Regrettably, the gift of aircraft was not enough. By February 1920, the CAF squadrons were also demobilized.[10] The government gave fiscal arguments for the closures, while reminding people they were only formed for the purpose of the war.[11]

Notwithstanding Canada's fortunate geostrategic situation, far away from Eurasia, surrounded by three oceans, without disputed borders or discernible threats, the talk of a Canadian air force resurfaced under Mackenzie King's leadership. At the time, it was argued that an air force was the one area in which military spending was essential.

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squadrons serving on Canada's east coast. The RCNAS came into fruition to replace the dependence on Americans who had taken on the anti-submarine patrolling off Canada's east coast and the Gulf of St-Lawrence in February 1918. Ibid, 603.

[7] Ibid., 602.

[8] Ibid., 613.

[9] The surplus British aircraft consisted of: 62 Avro 504 Trainers, 12 DH 9A Bombers, 12 DH4, 12 SE5A, 1 Bristol Fighter, 1 Sopwith Snipe, and 12 Airships. As well, Canada received fourteen seaplanes which consisted of: 11 F3s Felixstones (technically they were called flying boats), 2 H1 Curtis, and 1 Fairey IIIc.

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A. B. Douglas, The Creation of a National Air Force (Toronto: University of Toronto Press, 1986), 48. Canada also received as a gift the US flying boats that were based in Halifax. F. Hitchins, Air Board, Canadian Air Force and Royal Canadian Air Force (Ottawa: Canadian War Museum Series Paper No. 2, 1972), app. A.

[10] Hitchins, Air board, 1 and 6.

Politicians suggested that these "machines could be used for civilian purposes-surveying, anti-smuggling etc-and the matter [of military expense] could be therefore to some extent disguised."[12] As a result, in November 1922 the CAF was re-born when the Air Board received an allocation of $250 000 from cabinet.[13] The chairman of the Air Board highlighted that the new aircraft would be used to assist with forestry, surveying, customs and other branches of government.[14] There is little doubt that the Air Board sold the CAF idea to the government upon the merits of its civilian roles.

Even with the re-birth of the CAF, the future direction of air power in Canada remained unclear. One view was that air power could be based upon the development of civilian aviation, which could serve, at a later date, as the basis for a military air force. Colonel O.H. Biggar[15] echoed this belief when he wrote that a country's war strength depended on a country's commercial air strength.[16] In contrast, in 1923 the British Air Ministry told King that "it was preferable to have a military aviation to do the civil flying for the government than to expect any civil development to serve a military end in time of need."[17] This civilian versus military debate parralleled the debate on the independence of the air force as a separate military service. Both topics stemmed in part from the work and writings of air power theorists of the era. Both in Europe and

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[11]Douglas, The Creation of a National Air Force, 35.

[12]N. Hillmer and J. Granatstein, Empire to Umpire (Toronto: Copp Clark Longman Ltd., 1994), 98.

[13] The acquisition objectives were quick delivery, fair price, standardization of the aircraft fleet, and home grown manufacture. Although few of the objectives were achieved. In 1923 an aircraft cost approximately $19 000. Douglas, 96-97 and 112.

[14] James Eayrs, In Defence of Canada (Toronto: University of Toronto Press, 1964), 215.

[15]Colonel Biggar was the Air Board's first Chief Executive Officer in 1919 his ideas were influenced by J. A. Wilson, Secretary of the Air Board. Wilson advocated the importance of civilian aviation. Douglas, The Creation of a National Air Force, 42.

[16]Ibid., 35 and 49.

[17]Ibid., 70.

America new ideas emerged as to the future role of air power in armed conflict.

Air power theories

The advent of air power brought a set of unique characteristics to warfare. The airplane gave battle commanders more reach. In the beginning of World War I aircraft had only been used for battlefield reconnaissance. Subsequently, opposing field commanders complained about these aerial spies. The result was the development of pursuit aircraft with machine guns to shoot down the spies in the sky. Thus, the first two roles for air power were purely tactical: reconnaissance and pursuit.[18] These two roles were soon followed by the aerial support of ground forces at the front line, and coastal patrols for U-boats. Then, bombing began behind enemy lines, which led to a different air force paradigm.

> [That] of aircraft operating independently of armies and navies. The task of such forces would be to attack targets far removed from the battle lines, with the aim of destroying essential elements of the enemy's capability to wage war by bombing his factories, transportation hubs, and centers of government.[19]

It was such arguments that promoted an air force as a separate military service. The Smuts memorandum, which is credited with the creation of the RAF, also discussed air warfare in these terms.[20] Hence, the debate on the future of air power became linked to two competing visions: tactical and strategic. The tactical vision implied that air power would be subordinate to the army or navy. The strategic vision had bombers acting independently, with the possibility that armies and navies would become secondary. World War I did not solve the debate, as technology was not yet available to test the new strategic vision, although that was not recognized at the time.

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[18]David MacIsaac, 'Voices from the Central Blue: The Air Power Theorists' in P. Paret, Makers of Modern Strategy (New Jersey: Princeton University Press, 1986), 628.
[19] Ibid., 628.
[20] W. Raleigh, The War in the Air Vol. 7 (London, 1932-37), 8-14.

In the US, Great Britain, and Italy, theorists of the Interwar Period focused on the strategic uses of air power. For the Italian Guilio Douhet there was no longer a distinction between combatants and non-combatants when the totality of a state's power contributed to the war effort. Douhet concluded from World War I's static trench warfare, that successful land offensives were no longer possible. He argued, rather shortsightedly, that the benefit of the air dimension was that it could not be defended against.[21] Hence, a massive attack against the opponent's population, government, and industry would shatter morale and lead to surrender. Douhet's formula for victory prescribed three types of bombs: explosive, incendiary, and poison gas.[22] Moreover, the capability required to wage this new war was "an independent air force armed with long-range bombardment aircraft, maintained in a constant state of readiness."[23]

A second key proponent of air power was Air Marshal Sir Hugh Trenchard. Trenchard had experienced first hand the effects of the German bombing of London and orchestrated the counter attack during World War I. He had commanded the 41st Wing, an independent force, with the responsibility of leading a bomber offensive against German targets far behind enemy lines. He then became Chief of the Air Staff in Britain from 1919-1929.[24] He assumed the duty of ensuring the independence and growth of air power in Great Britain following World War I. As technology began to yield larger bombers, the yet untested platforms, led to speculation that strategic bombing could render trench warfare obsolete. Looking to the future, Trenchard saw the independent use of air power against the enemy's material and moral resources. The prime

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[21] Douhet underestimated the advent of defences such as anti-aircraft artillery (AAA) and radar.
[22] The emphasis on poison gas is often overlooked by critics of Douhet, when in reality, it should be argued that his theory was never really tested. Major powers have been reluctant to use widespread chemical attacks since World War I due to the fears of reprisal on their own territory. Paret, 630.
[23] Ibid.
[24] At war's end Trenchard had ten bomber squadrons. S. Dunmore, and W. Carter, Reap the Whirlwind (Toronto: McClelland and Stewart Inc., 1991), 2-3.

motivation was to avoid a repeat of the grizzly World War I stalemate. According to one commentator,

> Air attacks aimed at the sources as opposed to the manifestations of an enemy's strength, it was argued, would both restore decisiveness to warfare and produce a much swifter and hence in the end more humane decision.[25]

Trenchard's view was that air power could fulfill many roles. He suggested aerial control, as a form of policing for Britain's colonies in the Middle-East. The result was a very cost-efficient way of providing presence and coercion as a substitute for ground forces. Trenchard also argued that attacking the enemy's morale could be decisive, which was similar to Douhet's conclusions. Trenchard's thinking greatly influenced the RAF's acquisitions in favor of long-range strategic bombers during the Interwar Period. It was only late in the 1930s that resources were allocated to air defence and fighter command. The shift proved to be just in time for the Battle of Britain, which ended up being a tactical air battle that Great Britain had to win in order to stop a likely German invasion.[26]

A third influential air power advocate was an American, Billy Mitchell. He shared Douhet's emphasis on the bombardment of industrial and economic targets but their similarities ended there. Mitchell saw a role for all types of aircraft, not just long-range bombers. For instance, he advocated the use of aircraft in power projection for the navy. Mitchell's prime contribution was to underscore the importance that all air activities be orchestrated under an autonomous air command. In so doing, he highlighted the importance of air power as a separate service.[27]

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[25] Paret, Makers of Modern Strategy, 633.

[26] Ibid.

[27] A.F. Hurley, Billy Mitchell: Crusader for Air Power (New York: Bloomington, 1975).

By way of contrast, air forces such as the Luftwaffe had adopted air power theories which favored the tactical uses of air power. In general terms, tacticians posited three incremental tasks air power needed to fulfil in battle. First, fighters needed to gain control of the airspace, which meant no enemy aircraft could fly over one's troops. Second, tactical aircraft were to isolate the battlefield by attacking the enemy's supplies that were beyond artillery range. Finally, tactical aircraft would provide close air support by attacking the enemy's troops in battle.[28] Hence, tactical air power would provide an essential, albeit subordinate, role to a field commander.

Both J.F.C Fuller and Basil Liddell Hart integrated this air-land team idea. The German blitzkrieg was an empirical example, which utilized air force resources to strengthen the punch of the infantry, and in many cases to lead the infantry's advances. The highly mobile warfare resulted in many successful battles at the outset of World War II, such as Warsaw and Rotterdam. Moreover, Hitler wanted to use his new hinterlands to increase Germany's economic strength. Consequently, the use of strategic bombing that turned cities to useless rubble was not part of the plan. Looking at the other major powers, Russian doctrine also favored close integration of aircraft with the land battle. In Japan, they linked tactical air power to the navy, which bore fruit in December 1941 at Pearl Harbor.[29]

The Inauguration of the RCAF

As the British and American air power theorists favored strategic air power, there was an inevitable push towards independent air forces in these countries.[30] For

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[28] Paret, Makers of Modern Strategy, 638.

[29] Ibid., 632.

[30] Although, it is also argued that the aerial policing role contributed to the preservation of an independent RAF.

Canada independence was questioned because of the large price tag attached.[31] There was little appeal to acquire an expensive long-range offensive strategic bomber fleet.[32] As well, the technology for strategic aircraft was not advanced enough for Canada to wage an effective campaign from its shores as the distances were too large. Moreover, Canadians would not accept the purchase of a purely offensive means of waging war at a time when Canada's coastlines were not properly defended. Consequently, Canada never considered acquiring a strategic fleet.

Nonetheless, it was the strategic uses of air power as adopted by the United Kingdom, that helped seal the future of Canada's air force as a separate service. The influence of this external factor stemmed from historic and cultural reasons, as the independence of the CAF would likely mirror the fate of the RAF. Historically, Canada would do so to conform with Britain's military structure; its defacto parent structure. Culturally, Canada's shared World War I experience with the RAF helped seal a similar fate.[33] In March 1922 the British government accorded the RAF independent status.[34] In 1923, Canada Major-General James H. MacBrien, Chief of the General Staff, argued:

> the Defence Forces of any country cannot be considered complete or effective if they lack a well trained military Air Force. . . . Organization is based upon that of the Royal Air Force, so that should war again come to the Empire any unit that might be sent by Canada would be similarly organized and trained to those in other parts of the Empire.[35]

Finally, on the 1st of April 1924 the RCAF was inaugurated as a separate

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[31]Douglas, The Creation of a National Air Force, 48.

[32]Ibid., 119.

[33]Ibid., 58.

[34]Ibid., 60.

[35]This was in contrast to MacBrien's earlier statements against an independent air force in 1921. At that time his opinion was that of an air force as a supporting and subordinate arm. This coincided with arguments for the demise of the RAF. Hence, MacBrien's thinking hinged on promoting a military structure that conformed with British imperial forces, whatever that would turn out to be.

military service, with its head reporting to the Chief of the General Staff until 1938.[36] Notwithstanding its inauguration, the RCAF's fundamental focus remained blurred as it had no strategic assets and few tactical assets.[37] The result was a quasi-military organization that jumpstarted civilian flying in Canada. Not surprisingly, in July 1924 when the House of Commons debated air services provisions the Minister of National Defence E. Macdonald stated "the aircraft service is hardly military in its character; it performs services for all the departments."[38]

Officially the RCAF served other government departments and agencies through the Department of National Defence (DND) which had outlined its two main organizational goals. The first was the security of Canada in time of war or emergencies.[39] However, in the 1920s there was no threat to Canada. Moreover, Canada's geographic isolation with respect to the technology of the era rendered spending on home defence unnecessary. The second goal was to support Canada's policies in internal and external affairs.[40] In retrospect, the focus became the support of Canada's internal policies which received the lion's share of spending.

Canada's air force essentially performed civilian roles without preparing for contingency defence plans until the latter half of the 1930s. Although work was done by Colonel J. Sutherland-Brown to formulate strategic plans in the 1920s, the air force

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Ibid., 57-61.

[36]The title 'Royal' was accorded by King George in recognition of Canada's air war effort in World War I. The RCAF's appropriations for 1924-25 were 1.6 million dollars. The permanent force establishment was small, with only 68 officers and 307 other ranks. Organization and Policy of the RCAF (Published by the Canadian Government in 1924), 10 and app. N. Obtained through the Air Command History Department in 1994.

[37]Douglas, The Creation of a National Air Force, 63-64.

[35] Dominion of Canada Official Report, Debates of the House of Commons 6 vols. (Ottawa: Printer of the King's most excellent Majesty, 18 July 1924), 4816.

[39] Similar to what is referred to as sovereignty today.

[40]Organization and Policy of the RCAF 1.

ignored them. Brown's plans were based on the four danger areas the Imperial General Staff had outlined. The danger sources were a European war, the United States, Japan, or combination of these. Brown believed only the second, fourth, and to a lesser degree the third would lead to mobilization in Canada. Consequently, Brown drafted plans for the defence against the US, Japan, and for a Canadian expeditionary force. Ironically, the last two plans that were never completed depicted the threats that emerged. King's distate for British imperialism contributed to the shelving of Defence Plans No. 2 and 3. It was not until 1932 that one of Brown's successors, H.H. Mathews completed Defence Plan No. 3.[41]

Nonetheless, the RCAF's civilian emphasis was reflected in the 'general policy' statement from 1924. It stated how the air force was "responsible for the development and maintenance of air power in Canada . . . .Air power includes not only the Air Force and its reserves, but the whole development of aeronautics in the country."[42] Additionally, the inaugural documents stated that there was to be a permanent force of the smallest scale to provide:

> 1-Adequate Air Force training.
> 2-Nucleus around which may be formed, in time of war or emergency, active service units sufficient to meet the strategic situation existing.[43]
> 3-The conduct of any flying operations required by other branches of Government service.[44]

It was a broad enough mandate to ensure that the air force would be reactive to future

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[41] Richard, A. Preston. The Defence of the Undefended Border (Montreal: McGill-Queen's University Press, 1977), 215-217.

[42] Organization and Policy of the RCAF 2.

[43] Up until the 1950s most thinkers posited that training of air force personnel could be done rather expeditiously after hostilities broke out. After that, technological advances brought a faster pace to war as well as increasing the time it took to train military airmen.

[44] Organization and Policy of the RCAF 2.

events rather than possess a tidy preconceived doctrine.[45] Moreover, the emphasis was on training of crews and a nucleus air force, with no provisions for large standing forces,[46] which fit with Canada's militia tradition. Overall, it was the third point which received the lion's share of attention during the Interwar Period.[47]

Air force roles during the 1920s

To draw conclusions from the 1920s, a list of operational roles carried out by the RCAF is helpful, especially when the list is separated into civilian and military categories. Starting with civilian roles, patrolling Canada's forests was the dominant role Canadian airmen fulfilled. Forest patrols consisted of spotting fires, moving firefighters, and locating and sketching stands of timber,[48] as well as crop and forest dusting.[49] The air force also carried out aerial photography and surveying.[50]

The RCAF carried out aerial policing against smuggling and fisheries violations. Customs and Excise used the air force to stop drugs from the Orient, as well as rum running. The Fisheries Department used the RCAF to curb illegal salmon fishing in prohibited areas, as well as during the closed seasons. Another predominantly civilian role was the transportation of people and goods such as mine engineers, indian agents, Department of Agriculture officials, and DND personnel. Additionally, the RCAF was

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[45]Douglas, The Creation of a National Air Force, 64.

[46] Thus, contributing to the earlier explanation of why Canada never acquired a strategic bomber fleet.

[47] Douglas, The Creation of a National Air Force, 73.

[48]Organization and Policy of the RCAF app. H.

[49]The flights carried to detect the infestation limits of 'Blister Rust' on the Pacific Coast is one example. Ibid., 7.

[50] Ground mapping proved to be a lot slower and costly as a team of men on the ground required many weeks to travel across harsh terrain. Obstacles such as mountains, glaciers, thick brush, and extreme cold made the task very slow. As well, aerial photography was the only civilian role which had dual benefits as it was transferable from civilian to military purposes. Aerial photography of a forest or river in Canada's hinterland was identical to techniques and equipment as military reconnaissance in a battle theatre. Ibid., app H.

responsible for the control and registration of civil aircraft in Canada. Finally, the RCAF pioneered the development of air mail in Canada, carried out a census of reindeer and buffalo herds, and provided medical rescue.[51]

More evidence of the civilian emphasis was that all the three types of aircraft mentioned in the RCAF's Organization and Policy appendix E (entitled) 'RCAF Equipment Policy' were for civilian purposes. The appendix listed three seaplanes[52] to fulfill the duties of forest-fire suppression, forest-fire detection, and aerial photography. As noted above, 62 percent of the 3515 flying hours proposed for 1924-25 were dedicated to departments other than DND. By far the clearest evidence of civilian emphasis was the fact that forest patrol was allocated 45 percent of the air force's total flying hours in 1924. The RCAF had in effect, created its own monopoly on bush flying for the government. It was no surprise that by the mid 1920s there were only forty-four civil registered aircraft in Canada.[53]

Looking at the military roles performed by Canada's air force in the 1920s, the list is much shorter. The Air Board mounted a joint civil-military enterprise to demonstrate a trans-Canadian[54]capability. Similarly, a few aircraft were deployed north to do ice patrols and document the length of the shipping season into Hudson Bay, also as a form of sovereignty mission. Completing the short list of military roles was the air

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[51] The enumeration of roles was taken from the Organization and Policy of the RCAF 4-6, and Douglas, The Creation of a National Air Force, 2-36, 68, 84, 100, and 105.

[52] Looking at flying operations, the problems the RCAF faced were the vast distances and lack of ground facilities. As a result, the RCAF used seaplanes instead of building airports to reduce capital costs. By the late 1920s there was a shift from seaplanes to land airplanes in the south as aerodromes were built. The impetus for land airplanes came from the inability of seaplanes to fly during the spring thaw or the fall freeze Passengers, mail, and freight needed to fly during these periods. Douglas, The Creation of a National Air Force, 32-49, and 83.

[53] Ibid., 73.

[54] Canadian airman completed the first Trans-Canadian flight. This landmark flight was completed in 1920, it took 10 days. Such missions are referred to as providing 'a sovereign presence' in today's

force's pilot training and an aerobatic team called 'Siskin flight' for public relations purposes.[55] Focusing on the flying hours allocated to DND proper, the majority were used for basic flying training in Borden.[56]

By 1927 the RCAF leadership began to argue that the amount of civilian flying by the military was a detriment to both civilian and military flying operations. RCAF personnel wanted out of the civil operations so the air force could "assure its proper service function of preparing in peacetime for war."[57] Changes in July 1927 should have appeased the more militaristic faction of the RCAF as it was relieved of direct responsibility for the control of civil aviation with the creation of the Civil Government Air Operations (CGAO). However, "bureaucratic inertia and political indirection combined to limit change."[58] RCAF officers still manned the CGAO. During the early 1930s, four years after the re-organization the "primary function [of the RCAF] continued to be training of pilots and crews for civil flying operations."[59] In the larger context, the compromise of flying civilian roles as a military air force contributed to the organization's survival.

The 1930s

On the financial side, the early 1930s was marked by a deepening global economic crisis. The crisis fuelled the rise of militarism and fascism in Japan and Germany in particular. This led to the likelihood that a scenario similar to defence plan

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jargon.

[55]Douglas, The Creation of a National Air Force, 100-101.

[56]Organization and Policy of the RCAF, 12 and App. F.

[57]Douglas, The Creation of a National Air Force, 77.

[58]Ibid., 80.

[59]Ibid., 82.

No. 2 would be enacted as Japan invaded Manchuria. Later on, in Europe Hitler restored conscription and repudiated the provisions of Versailles, which increased the likelihood of Defence Plan No. 3 being actioned. King was caught between spending for a large commitment to British security or appearing isolationist, a question on which the Canadian population was also divided.[60]

In the 1930s improved technology brought about longer-range aircraft. These aircraft put Canada's maritime provinces along with the Dominion of Newfoundland[61] on the great circle route[62] across the North Atlantic. As a result, Canada's landmass had taken on geostrategic importance[63] and North Americans were reconsidering their invulnerability to attack.[64] In 1933 General A.G.L. McNaughton, Canada's Chief of General Staff, urged Prime Minister R.B. Bennett to direct defence dollars primarily to the army and air force.[65] To support his recommendations, McNaughton wrote:

> Air forces even in small numbers are a definite deterrent in narrow waters and on the high seas in the vicinity of the shore; they can be developed with considerable rapidity provided a nucleus of skilled personnel and a suitable training organization is in existence . . . . this being so, it appears to me that the most important element in defence which should be retained is the nucleus air force.[66]

McNaughton later even dropped his support to the army, when he added:

> I fully appreciate the responsibility I have assumed in not requesting greater provision for the land forces at this time, and I do so primarily

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[60] Ibid., 133.

[61] Newfoundland was a Dominion until 1933, then it became a crown colony because of its fiscal problems. H. Kinder, ed. The Atlas of World History (Toronto:Penguin Books Canada Ltd., 1978), 171.

[62] The shortest air route as the earth is a flattened sphere.

[63] Ellis, Canada's Flying Heritage, 265.

[64] Douglas, The Creation of a National Air Force, 125.

[65] He argued that the navy cost too much and could not respond as fast as the air force. Ibid., 126. McNaughton battled in the 1930s against Bennet's cuts to air force estimates. John Swettenham, McNaughton Vol. 1 (Toronto: Ryerson Press, 1968), 267.

[66] McNaughton's intellect and personality dominated Ottawa's defence establishment, so his endorsement of the RCAF was significant. Douglas, The Creation of a National Air Force,125.

> because I believe that the most urgent requirement is to lay the basis of the air force organization which is essential to our defence of the Pacific Coast in the particular contingency which I regard as the most probable, namely the defence of our neutrality in a war in which the US might be engaged with a trans-Pacific power. . . . Failure to do so will result in the occupation, by the United States, of the coast of British Columbia and of our islands in the Pacific. . . and also in consequence of the fact that it will be vital to the safety of the great cities on the Pacific Coast of the United States that no enemy submarine and aircraft bases be established within effective radius of action.[67]

McNaughton also argued that "the army would have time to expand, but the air force would be in the front line from the start and must be *in being*."[68] Prime Minister Bennett did not take action on McNaughton's recommendations, probably due to the depression and a perception that war was unlikely. In fact, under Bennett the RCAF's annual allocation between 1932-35 was less than its 1931 allocation. The lack of funding for the RCAF became a public issue in 1935 when the American media published unofficial reports that Canada had an impotent air defence system.[69] Furthermore:[70]

> Unlike the militia and the RCN with their overseas links, the RCAF found itself with a direct defence role that was unassailable, strategically and politically.[71]

When things did finally improve for the air force, after McNaughton's resignation, credit was given to him for arguing the air force's case.[72]

King, who was re-elected in 1935, recognized the need to protect Canada. He found it humiliating to accept British protection without paying, or relying on the US

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[67] Ibid., 127.
[68] Swettenham, McNaughton, 267.
[69] Editorials in Canada criticized the government for neglecting the RCAF and reminded politicians of the responsibilities of an emerging nation. One such example was an editorial in the *Ottawa Evening Citizen* criticizing the government for virtually disbanding the RCAF. Douglas, The Creation of a National Air Force, 129.
[70] Ibid., 126 and 129.
[71] Ibid., 131.
[72] Eayrs, In Defence of Canada, 302.

without the ability to assert Canada's neutrality. Immediately following the first defence committee meeting King emphasized that the two coasts needed to be defended against air and sea raids. Although, he also needed to move carefully as too much defence spending was unpopular in harsh economic times. Conversely, inadequate defence spending would leave the country unprepared for war.[73] King walked this fine line, but favored the RCAF at the forefront of improved defence capabilities.[74] The air force's flexibility to be used at home or abroad, added to its appeal. Moreover, it was believed that the air force would have fewer casualties than the army if sent abroad. In October 1936, the air force received outside support when British Prime Minister Stanley Baldwin told King that the RCAF would be the most helpful service in the event of an attack on Canada.[75]

Similarly, military headquarters identified the two areas where Canada had to rely on its armed forces in 1936. The first was home defence, which involved the preservation of Canadian neutrality. More specifically, the Defence Minister outlined three types of coastal threats: sporadic raiders,[76] aircraft carriers, and long-range bombers. Leaders realized that to face physical threats off Canada's coasts the air force needed to be in place before a declaration of war. The second area Canada had to rely on its armed forces was in a war abroad, for which a force could be mobilized.[77]

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[73] Blair H. Neatby, William Lyon Mackenzie King: The Prism of Unity (Toronto: University of Toronto Press, 1976), 180-182.

[74] In 1937 King described the air force as a very necessary form of protection. He added, "air fighting has become the most significant feature of modern warfare." King was critical of how the air force was decimated under Bennet's leadership. House of Commons, Debates. 19 February 1937, 1052. Although, Sarty argues that King made the Royal Canadian Navy his top priority. Later, he concludes that both the Air Force and Navy benefited from King's favor. Roger Sarty, The Maritime Defence of Canada (Toronto: Canadian Institute for Strategic Studies, 1996), 131-133.

[75] Neatby, William Lyon Mackenzie King, 182-183.

[76] The fears were not of a large invasion force.

[77] Hillmer, Empire to Umpire, 133.

Consequently, it was the RCAF that was assigned the duty of providing Canada its first line of defence against a surprise attack.[78] Regrettably, despite political support no concrete action occurred. Strategic plans were drafted on paper only.[79] By 1938 the European threat outweighed the Asian threat. Federal money was spent primarily on Halifax (Dartmouth) and St John, to build runways as well as other military facilities.[80]

The RCAF in the 1930s

As Canada was in a crippling recession, the RCAF gained infrastructure as a consequence of two make work projects. The first was the 'airways project,' which consisted of installing beacons and lights for night flying across Canada. The second program had workers clear land, prepare landing strips, and build hangars. When the program ended in 1936 there were forty-eight airfields and hangars in various stages of completion.[81] Even with the government projects, the early 1930s were tough on the air force because the lack of perceived threat combined with the depression cut government funding. The RCAF's strength was reduced to 30 percent of the authorized manning levels with only 100 permanent officers and 600 airman. Similarly, the RCAF budget was cut from 5.2 million in 1931 to 1.8 million in 1932, and cut again to 1.4 million in 1933.[82] This amounted to a 70 percent reduction in the RCAF's budget. In a report given to McNaughton by Group Captain Jonhson in March 1934, the RCAF had only nineteen second-line aircraft while the minimum aircraft requirement in peacetime

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[78] Ibid., 135.

[79] A small effort was made, over the 1935-37 period, by Canadian and British engineers to prepare expanded defence plans for Esquimalt, York Island, Vancouver, and Prince Rupert. G. Stanley, Nos Soldats (Montreal:Les editions de l'homme, 1974), 472.

[80] Ibid., 472 and 475.

[81] Douglas, The Creation of a National Air Force, 90.

[82] One of the means used to save money was to fly fewer flying hours; it is still used today. The RCAF flying hours went from 23 245 in 1931 to 1200 in 1933. Eayrs, 289-290 and 296-297. McNaughton was away at the Geneva disarmament conference when these cuts were announced. He was caught by surprise like others. Swettenham, McNaughton, 267.

was forty-six first line and twenty-four second line aircraft.[83]

In studying the roles performed by the air force, 1936 proved to be a significant turning point. This was the time Canada's air force changed its operational focus. Whereas air force leaders had been advocating a greater military focus over the years, it was the synergy of factors that got things moving. The shift resulted from three major changes in the RCAF's external environment. The first was political with the Prime Minister advocating the air force at the forefront of Canada's rearmament.[84] The second factor was the growing perception of a military threat to Canadian territory resulting from heightened international tensions and technological advancements. The military had to muster forces for coastal defence instead of an overseas commitment, and the air force was the best suited of the three services to meet the new threat.[85] The third factor was a better economic situation that gave the government some money to spend on defence.

In February 1937, Defence Minister Ian Mackenzie acted upon the change in organizational roles when he spoke about acquisitions. He told members of parliament that the purchase of a hundred new aircraft was required.

> [Aircraft of] high velocity, capable of being moved within a few hours for the defence of any portion of Canada - available for the protection of the great St. Lawrence river, available for the protection of Montreal, available for the protection of Quebec, available for the protection against any raid that might be made on the grain elevators of this country.[86]

Additionally, he argued that these new aircraft could be used to deter raids from aircraft

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[83] Moreover, the second line aircraft were more like third or fourth line. Eayrs, In defence of Canada 300.

[84] Kinder, The Atlas of World History, 134.

[85] The air force could intercept long-range bombers and stop aircraft carriers from approaching. Ibid., 36.

carriers off Canada's coast. To emphasize Canada's new vulnerability, the Defence Minister reminded parliament of an Italian air force squadron's overflight of Canada while enroute to Chicago. Mackenzie made it clear that specific solutions were being taken against specific threats.

Overall the air force estimates grew from $3.1 million for 1935-36, to $4.6 million for 1936-37, to $11.4 million in 1937-38,[87] finally reaching $29.4 million for 1939-40. Further illustrating the government's emphasis on air power was how the RCAF's allocation of $29.4 million in 1939-40 represented 50 percent of the total defence allocation of $60 million.[88] Unfortunately, the air force was overwhelmed by the influx of money, and never achieved its 1935 goal of a twenty-three squadron force.

Air Vice-Marshal G.M. Croil, the senior air officer, preached patience with the funds. For him it was better to buy a proven aircraft, and have a pool of trained instructors before opening the recruiting gates.[89] As the structure of the RCAF was based on the idea of a nucleus to expand upon in times of need, it had never been tested. There is no question the organization favored the re-armament, but it failed to expand due to a lack of organizational momentum, inadequate recruiting, and its inability to acquire aircraft.[90] In February 1937 the strength of the RCAF was merely 1591, well below its authorized manning level.[91]

Expanding on acquisition problems, one of the issues was how RCAF

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[86] Hillmer, Empire to Umpire, 133-134.

[87] House of Commons, Debates, 15 February 1937, 879. With the large increases to the RCAF budget in 1937-38, more aircraft were ordered: an additional seven Stranraers, eighteen Wapitis, and thirteen Sharks. As well, a new order for two Canadian built aircraft called the Bolingbroke from Bristol and the Lysander from Westland. Douglas, The Creation of a National Air Force, 142.

[88] Sarty, The Maritime Defence of Canada, 118.

[89] Douglas, The Creation of a National Air Force, 139-140.

[90] Stanley, 468. Douglas, The Creation of a National Air Force, 140-142.

[91] This total included non-permanent personnel. House of Commons, Debates, 23 February 1937, 1169.

requirements differed from the RAF. The coast of Britain needed aircraft that would climb fast to high ceilings because of the proximity of the enemy. By contrast, Canada required aircraft to fly safely over long stretches of undeveloped territory. As a result, in Canada "fighters had a lower priority than patrol, bombing, or army co-operation aircraft."[92] There were other reasons why the arms market in Canada did not develop over the 1920-30s. The RCAF's small size made unit costs high, not to mention the general mistrust of the arms industry because of there profit taking in times of crisis. Also contributing to acquisition problems was Canada's reluctance to rely on the US, due to its neutrality. Relying on the RAF was rejected because when the RAF demands would increase, they would likely stop supplying Canada. As Canada already had more RAF equipment than the US Army Air Corps, the solution was to make RAF aircraft under contract in Canada. Moreover, King favored Anglo-Canadian co-operation in military organization, training, and equipment issues.[93]

Surprisingly, by 1938 the status of the RCAF remained dismal as there were only 150 permanent and non-permanent officers and 1000 airmen.[94] It took the Munich Crisis of 1938 to highlight the shortcomings. At the time, the RCAF could muster only thirty-nine aircraft to the Atlantic coast, of which only twelve could effectively carry bombs. The only modern aircraft were six Blackburn Sharks. Canada's coastal defence capability was inadequate to face any kind of German threat. As a result, the on-going aircraft procurement problems were put on the front burner.[95]

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[92] Douglas, The Creation of a National Air Force, 140-142.

[93] Ibid. Moreover, the Defence Minister clearly stated that it was the policy of the armed services to have equipment "identical with that used by the mother country if possible." House of Commons, Debates, 23 February 1937, 1167.

[94] Douglas, The Creation of a National Air Force, 138.

[95] Canada discussed buying five million dollars worth of aircraft from the US. However, the quick resolution of the Munich crisis resulted in no such acquisition. Ibid., 143.

Croil's priority in 1938 was to equip the nine permanent squadrons for coastal defence with "modern first-line aircraft immediately available and ready for service."[96] Despite Croil's priorities, the realities at lower echelons were squadrons suffering from pilot and airman shortages, as well as flying archaic aircraft. Furthermore, the permanent squadrons were required to carry a variety of tasks for different institutions, which resulted in little training for warfighting roles.[97]

Displeased with several years of inaction, at the end of 1938 the Defence Minister appointed an influential air advisory committee made up of business representatives and politicians to give an independent opinion on air force matters.[98] Their report identified several RCAF shortfalls: questionable policy, inadequate training, bad staff work, weak leadership, and endless delays in acquiring aircraft.[99]

Early in 1939 the Minister of Defence asked again for a briefing on the status of the RCAF's combat aircraft. The answer remained dismal; only two Stranraers and two Fairchilds on the East Coast and five Sharks with eight other aircraft on the West Coast. It was not until June 1939, three months before Canada's entry into World War II, that the first modern fighter, a Hawker Hurricane, was delivered to its home base in Calgary.[100] Similarly, the RCAF strength was only 3142, with an auxiliary (reserve) of 1111.[101] The manning levels were merely half of its authorized establishment of 7259

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[96] The non-permanent squadrons in the late 1930s made due with older aircraft. These squadrons were located in Vancouver, Winnipeg, Toronto, and Montreal. Ibid., 140.

[97] Ibid., 149-150.

[98] Billy Bishop was a member.

[99] Evidence of mis-management could be found in annual reports, such as the comments from the Commander of No. 7 Squadron in 1938: "The unit's lack of a clearly defined role on mobilization was causing confusion and affecting morale. The squadron had not yet been given an armament establishment, nor had it been told whether it would operate on land, water, or both." Ibid., 144 and 149.

[100] Ibid., 15 and 143.

[101] Sarty, The Maritime Defence of Canada, 126

personnel for the planned twenty-three squadrons.[102] Hence, RCAF preparations for World War II were inadequate. The RCAF had failed to operationalize its general policy objective that the RCAF should maintain adequate permanent forces that provide a "nucleus around which may be formed, in time of war or emergency, active service units sufficient to meet the strategic situation existing."[103]

The one positive development in the late 1930s was aircrew training in Canada. Such a concept was emphasized as part of the 1924 general policy, but not the training of foreigners.[104] In 1938, while trying to put a loyalist spin on his refusal to allow RAF establishments in Canada, King mentioned that "if the British wanted to, they would be allowed to have their pilots trained in Canada in Canadian training schools."[105] Canada's upcoming role in aircrew training stemmed from four factors: geography, economics, demography, and politics. In geography, the reason to favour Canada was its good weather and that it was far enough from the European threat, yet closer than Australia for logistic purposes. The economic argument was how foreign money was coming into the country, and even better, Canadian dollars being spent at home. Demographically Canada was the largest white dominion from which to recruit. Finally, the political argument was how a large war effort that would not produce many casualties. These factors led to the British Commonwealth Air Training Plan (BCATP) that was agreed upon in December 1939. The facilities for training were to be wholly-

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[102] English, The Cream of the Crop, 12.

[103] Organization and Policy of the RCAF, 2.

[104] Talks about aircrew training began in September 1936 when the RAF wanted to establish its own training schools in Canada. King found the idea unacceptable as it could be construed as a tacit commitment to an Imperial war. Neatby, 281. Then in May 1938 when the RAF discussed "both the training of aircrew and the production in Canada of aircraft for the RAF." Douglas, 144. This time King did not reject the British Air Ministry's proposal outright but was not going to allow the British to setup its own scheme in Canada. Sarty, The Maritime Defence of Canada, 113.

[105] Neatby, William Lyon Mackenzie King, 282.

owned and controlled by the RCAF. The aircrew training program appeared as one of the few win-win defence efforts for the King government as it entered World War II.[106] However, Canada's eagerness failed to ensure its graduates would serve in Canadian units overseas.[107]

Air force roles during the 1930s

Again it is helpful to list the roles the air force carried out within the categories of civilian and military. By 1930, a boom in civilian bush flying had begun. There were 537 civil registered aircraft. These civilian flyers complained about the monopoly that the military had over government flying and the politicians started to listen. As a result, the RCAF ended fire patrols in the prairies in the early 1930s. Other civilian roles continued, but with less frequency than in the 1920s. Fifty-percent of civilian flying that was carried out by the military during the depression consisted of anti-smuggling patrols for the RCMP. The RCAF had detachments on both coasts to curb liquor smuggling. Support to counter-smuggling ended in 1936 because smugglers figured out that aircraft would not fly much at night and not fly at all in bad weather. The dual-purpose roles of aerial photography and transport operations continued during the 1930s. The decisive shift away from bush flying occurred in 1936 when the Department of Transport assumed control over all civil aviation in Canada.[108]

Looking at the military roles carried out by the RCAF, some were the same as the 1920s, yet many were added despite the small fleet of military aircraft. Training took on greater importance as the permanent squadrons assisted the non-permanent

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[106] Douglas, The Creation of a National Air Force, 144.

[107] Legislation in the 1930s promoted when and where possible for Canadians to serve in distinctly Canadian units, under the command of Canadians. B. Greenhous, et al The Crucible of War, 1939-45 (Toronto: University of Toronto Press, 1994), 13.

squadrons[109] during the summers. As well, the air force began planning its training program for foreign nationals.

The major difference in roles was the emphasis on warfighting that surfaced in the mid-1930s, such as the roles assigned to coastal squadrons. These squadrons were tasked to protect the cities and ports, and carry out reconnaissance and anti-submarine patrols, along with defending Imperial air routes and convoys.[110] As the official history summarizes:

> Flying-boat squadrons practised patrolling . . . . communications with ships, and recognition of service convoy vessels. Torpedo squadrons had to be proficient in ship recognition and the mechanics of torpedoing.[111]

Other warfighting roles that were practised with increased frequency in the late 1930s were bombing, reconnaissance, air fighting tactics, and coastal artillery co-operation.[112] Similarly, "army co-operation squadrons emphasized ground tactics, liaison with ground units, and other combined procedures."[113] Hence, by the end of the 1930s, the RCAF's emphasis had shifted from civilian to combat flying, but still without a strategic role.

Organizational Theory and Canada's Air Force prior to World War II

During the Interwar Period it was the air force's external environment that was the most influential factor in defining and changing the roles of the organization. The evidence is visible in the different list of roles carried out by the air force during each of the two timeframes presented. The main influence on the RCAF's culture was linked to the establishment of the air force as an independent service.

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[108] Douglas, The Creation of a National Air Force, 74, 90, and 177.
[109] Referred to as auxiliary squadrons after 1938.
[110] Ibid., 124, and 149-150.
[111] Ibid., 148.
[112] Ibid., 148 and 150.
[113] Ibid., 148.

The external environment from 1920 until the early-1930s was stable due to an absence of a military threat. Moreover, there was little chance of Canada sending forces abroad as its foreign policy was isolationist. This led the air force to perform primarily civilian roles. Civilian roles were part of the official goals as indicated in organizational documents from 1924. More specifically, the third point in the general policy of the RCAF emphasized flying operations for other branches of government. Furthermore, the flying hours allocation of the mid-1920s also supported this interpretation. It was also highlighted in the list of roles from the 1920s, as forest patrols were the main ones carried out by the air force. Moreover, the lack of civilian registered aircraft left the air force with a monopoly over bush flying.

By the mid-1930s, the air force's external environment had become more turbulent. This prompted changes in the organization's roles. A global financial crisis, acting upon the organization's general environment, contributed to expansionist militarist thinking in several countries. The resulting increased militarism brought about new threats to Canadian soil. These new threats acted upon the RCAF task environment. Similarly, acting on the task environment, advances in aircraft design technology (particularly with respect to improvements in range, payload, and navigation), put Canada in a position to benefit from its location on the great circle route from Europe. Also significant domestically was the return of Prime Minister Mackenzie King in 1935, along with a better economy that allowed a build-up of military forces. King knew that the politically acceptable way of increasing defence spending was with forces which provided home defence. General McNaughton had argued that Canada's air force should be at the vanguard of this rekindled defence effort. Moreover, the air force had both the ability to defend Canada's coast, and deploy abroad should the need arise. The

combination of these environmental factors brought a shift towards warfighting roles for Canada's air force after 1936. As a result, the air force emphasized air fighting, torpedoing, bombing, and anti-submarine warfare instead of aerial policing and patrolling the forests, by the end of the 1930s.

Moving to the RCAF's organizational culture, it was an important influence upon the shape of the air force during the Interwar Period. However, it was not a determinant in the change of roles at the sharp end. The culture proved ineffective in establishing its preferred warfighting roles in the 1920s, and only a decade later change resulted from environmental pressures. Where the culture proved highly effective was in emulating the 'mother country'-thereby establishing the air force as a separate service, despite its short and broken organizational history.

Despite the initial setbacks of demobilization, what the Canadian air force's culture effectively did was guide the air force's leadership in its bid to mirror the independence of the RAF. This was similar to Canada's decision to accepted the RAF's recommendations that a military air force as a basis for civilian flying was a superior formula for the development of air power. The Canadian air force's culture received its strength from its warfighting roots and service traditions resulting from its World War I socialization within the RAF. Moreover, Canada's air force leadership[114] also argued that the future organizational structure of Canada's air force should be similar to the fate of the RAF, for interoperability reasons.

Further evidence of the strength of the RCAF's culture was the advent of the following assumption: since Great Britain was advocating an independent air force, Canada must do the same. Yet, Canada failed to possess, nor did it want, the underlying

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[114] And even leaders outside the air force such as General McBrien.

resources on which the independence argument was based: a strategic air force.[115] Canada's tactical use of air power would have been subordinate to the army and navy. It was Mitchell's emphasis on an autonmous control of all air activities, without a purely strategic emphasis, that was advocated by the RCAF. The air force succeeded, and at no time after its creation was there talk of eliminating it. This occurred despite the lack of external threats to Canada and the lack of strategic capability on which air power theories were based.

Surprisingly, the RCAF's culture was not as succesful in obtaining the roles it desired. A decade after its birth it remained unable to reconcile the conflicting demands of military and civil aviation.[116] Air force leaders wanted to prepare for war in times of peace. Despite having been relieved of direct responsibility for the control of civil aviation, the RCAF still manned the CGAO. Hence, even with the re-organization in 1927, in the early 1930s the primary job of the RCAF remained training pilots for civilian operations. The root cause of this role conflict can be exposed through an examination of the goal setting process.

Prior to 1936, air force leaders and political leaders emphasized different dimensions of the goal setting process. For the RCAF leaders it was the normative and historic dimensions that it wanted to operationalize; normative because the defence of Canada's homeland was a top priority, and the RCAF wanted the military flying roles associated with it. As for the historic dimension, Canadian airmen had fought during World War I, and it was these types of operations they felt they needed to prepare for. By contrast, the official goals were broad enough to allow the rational and reactionary dimensions of goal setting to be operationalized on behalf of the government. Thus,

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[115] Meaning long-range bombers.

government spending on the air force for civilian roles was cost-effective as it helped develop the hinterland while maintaining a semblance of an air force. Moreover, in times of crisis the air force could react, based upon its nucleus idea. The government interpretation of the goals prevailed, largely due to its influence in the budgeting process which allowed the most funding for civilian roles. As a result, the RCAF almost exclusively carried out tasks that had limited wartime use up until the mid-1930s.[117] On the brighter side, it could be argued that the air force survived because an official goal of the government, in general terms, was promoting aviation in such a vast country. The RCAF pilots during this period were effectively "bush pilots in uniform."[118]

In comparing the RCAF to the lifecycle model outlined in the theoretical chapter, at its inauguration the RCAF resembled an organization in the birth stage. The emphasis was on survival. Most of the energy was devoted to acquiring resources and marketing what the air force could do for the country. Planning and co-ordination remained simple. There were few formal processes. The structure was basically non-bureaucratic.

The transition to the next stage was marked by a leadership crisis. The crisis resulted from organizational growth, to the point that the entrepreneurial spirit and technical skill of the leaders were incapable of dealing with the emerging management issues. More specifically for the air force it was a large influx of cash that was not, and could not be acted upon. From 1937 onwards the RCAF failed to operationalize its founding nucleus idea. Part of the reason for this leadership crisis was the air forces recruitment in the early 1920s was based on World War I flying exploits, whereas, only

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[116] English, The Cream of the Crop, 65.

[117] Ibid. 35.

four of its members had university degrees. It was these veteran flyers who became senior officers in the late 1930s.[119]

Similarly, the air force failed to achieve its goal of a home grown aircraft manufacturing base which also contributed to the paralysis. The RCAF leadership was ill-prepared "to organize, control, supply, and direct a large air force."[120] The crisis was eventually resolved, but only a year after Canada's entry into World War II. At this time, the RCAF was finally able to grow and innovate as members identified easily with the cause. Moreover, the government put efficient managers rather than skilled pilots in charge.

An attempt to establish some traditional roles of Canada's air force at this juncture leads in three different directions. First, it is important to consider what the air force liked doing. This could be answered by flying in general, so all roles from civilian to warfighting were embraced. However, as one focuses on the air force's leadership, they preferred warfighting roles, especially after 1927. Second, using a temporal focus to isolate traditional roles leads to the roles that existed in the past. These were mainly fighter, maritime patrol, and reconnaissance flying as done during World War I. However, in the RCAF there were few dedicated fighter aircraft during the Interwar Period, as it was viewed as more of an expeditionary type role, especially prior to the mid 1930s. A third interpretation of the traditional roles would be to list the roles which were consistently present since inauguration in 1924. Such an analysis leads to coastal and sovereignty type patrols, and pilot training.

Overall, the air force's roles reflected the organizational goals, even though the

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[118] Douglas, The Creation of a National Air Force, 91.

[119] Greenhous, The Crucible of War, 16.

[120] English, The Cream of the Crop, 11-12.

goals were vague. During the RCAF's first decade, it was a peaceful and a stable external environment. The result was that some of its goals were not operationalized. Such was the case of home defence, but that was without consequence. Moreover, the predominantly civilian emphasis was an organizational objective, not simply the organization's desperate attempt at survival. Where the organization failed was not in its expression of warfighting roles after 1936, but in its capabilities to perform these roles, due in part to a leadership crisis.

Chapter Three

The RCAF in World War II

This chapter discusses the roles the RCAF carried out during World War II. It exposes how the organization adapted to its external environment while under the influence of its culture. World War II witnessed an amazing transformation of the RCAF. In August 1939 Canada's air force consisted of twenty squadrons, eight regular and twelve auxiliary.[1] Of the two hundred and ten aircraft fleet, only thirty-six were fit for combat. By comparison, at the end of the war Canada had the fourth largest air force in the world. Over two hundred and thirty thousand men had served in the RCAF, along with seventeen thousand women. Moreover, Canada mustered forty-eight squadrons overseas and forty at home. On a grimmer note, Canada paid the heavy price of seventeen thousand one-hundred airmen dead, of which nine-thousand nine-hundred and eighty were from strategic bombing operations.[2]

This chapter begins by describing the Canadian based RCAF activities. Of note were the commitments to coastal defence and the BCATP. Looking overseas, the RCAF's war effort will be studied from both the tactical and strategic perspectives. The relative importance of tactical aviation was proven during the war. Both sides fought for air superiority, which led the way for successful land, air, and sea campaigns.[3] As for strategic air operations, the skies over Europe became a trial arena for the interwar strategic bombing advocates.

The final section of this chapter interprets the RCAF's roles during World War II using organizational theory. The major changes in the organization's task environment led

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[1] B. Greenhous, The Crucible of War, 1939-1945 (Toronto: University of Toronto Press, 1994), 13.

[2] D. Morton, A Military History of Canada (Edmonton: Hurtig Publishers Ltd., 1985) 13-14, 136, and 207.

to the adoption of several new roles, the most significant of which was strategic bombing. The environmental factor driving the RCAF towards strategic bombing was the Prime Minister's desire to avoid conscription. The BCATP was a short-sighted means to that end. Moreover, culturally the RCAF leadership had exclusively been socialized within RAF institutions which were advocating strategic bombing as the way ahead. Also evident during this period was the rise of American influence upon the RCAF culture, as a precursor to further co-operation.

RCAF roles in Canada

The air force's Canadian based war effort consisted of several elements. Airbases were built across the country not only for the BCATP, but also in the Arctic and on both coasts to help ferry aircraft to the various war theatres. The most important airfields for ferry operations were Montreal, Gander and Goose Bay.

At the time, transatlantic air travel was in its infancy.[4] However, the increasing scarcity of shipping space, length of time required to get the aircraft across, and the greater U-boat threat left planners considering long-range ferrying as the preferred method of delivery.[5] The majority of the aircraft ferried overseas were for coastal, bomber, and transport squadrons.[6] In the beginning civilian crews manned the ferry flights. However, as the operations grew, the aircrew body became more of a split half-military half-civilian

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[3] Department of National Defence, Fighter Aircraft History Published by Air Command.

[4] The Atlantic crossing was the busiest. Only a few crossings had been attempted during the summer months. The Commander of RAF Coastal Command was on record as saying it would be suicide to attempt North Atlantic crossings in the winter.

[5] C. Christie, Ocean Bridge: The History of RAF Ferry Command (Toronto: University of Toronto Press, 1995), 3-4 and 24-27.

[6] Overall, more than ten thousand people were involved in the ferry operations. There is no definitive listing of losses. Based on "crew assignment cards, unit diaries, incomplete accident files, in other related records has revealed that the figure is over five hundred." Ibid., App. B.

by the end of 1941.[7] Soon after, select BCATP graduates were doing transatlantic ferry flights prior to joining their squadrons overseas.[8]

Looking at the RCAF's home war establishment, there were squadrons to guard both coasts, and northward to protect the Dominion of Newfoundland. The primary role of east coast aircraft were to escort re-supply convoys crossing the Atlantic. However, a 'black pit' existed where Canadian aircraft lacked the range to cover the ships. The German U-boats operated without hindrance in this black pit. It was only later in the war that the RCAF's coastal forces were better equipped with the Liberator aircraft. It had the range to fill the black pit.[9] Looking at western Canada, the squadrons flew patrols to pre-empt Japanese raids along the coast and the Aleutians. In hindsight, the threat to the Aleutians and the west coast was very limited.[10] Overall, the home war establishment of forty squadrons was criticized as being far too large considering the remote chance of war on Canadian soil.[11]

A new role that emerged under the RCAF's leadership during World War II was Allied aircrew training. It was by far the largest Canadian based war effort.[12] In fact, it took up 1.7 billion dollars, which represented 39 percent of the air force's 4.3 billion dollar budget over the period 1939-45.[13] By war's end the BCATP had trained 44 percent of the Commonwealth's aircrew.[14] In total the BCATP graduated 131 553 airmen of which 72

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[7] Ibid., 37 and 94-95.
[8] Ibid., 292 and 303.
[9] Morton, A Military History of Canada, 194, 199-200.
[10] D. Bercuson, Maple Leaf Against the Axis (Toronto: Stoddart Publishing Co. Ltd., 1995), 58.
[11] Morton, A Military History of Canada, 194.
[12] B. Nolan, King's War (Toronto: Random House, 1988), 104.
[13] Moreover, this sum was four times more than Canada spent on acquiring ships during the same period. C.P. Stacey, Arms, Men and Governments (Ottawa: Minister of National Defence, 1974) App. B Table 3.
[14] When the BCATP was first announced in December 1939, Canada was the largest investor by contributing $350 million out of a $600 million price tag. The BCATP's objective was to deliver twenty thousand trained aircrew a year, from Canada, Great Britain, Australia, and New Zealand. At the outset the air training program absorbed

835 were members of the RCAF.[15] Canada agreed to bear most of the cost of the BCATP, as less would then be spent on the overseas efforts that produced casualties. Canada also frugally negotiated to have its graduates join RAF units and RAF funded RCAF units overseas. Essentially whole squadrons of Canadian aircrew, referred to as Article XV squadrons, were financed by the British.[16] As the wording for the agreement for distinctive RCAF units was left quite broad, there was little impetus for the RAF to meet the eventual Canadian demands to this end.[17] This became a critical error on the part of the Canadian negotiators and King himself. "They had lost almost every vestige of control over their own squadrons."[18]

RCAF Overseas: Tactical Roles

Tactical air power gained great importance as "WW II demonstrated the absolute necessity of air superiority provided by fighter aircraft for effective use of armour, ships, and bombers in any wartime operations."[19] An examination of the RCAF's tactical units

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the peacetime RCAF staff. By the end of 1940, the BCATP had 521 graduates of which most became instructor pilots. Soon thereafter, three more countries joined the plan: Norway, Belgium, and the Free French Navy. By May 1942, there were 21824 graduates in the trades of pilot, observer, navigator, and bomber crew. By 1943, the BCATP peaked and Canada was graduating three thousand aviators a month. By war's end there were 107 schools, 100 airstrips, 8300 buildings, 3500 aircraft, and 100 bases where 100000 men and women worked for the RCAF. English, The Cream of the Crop, 13.

[15] House of Commons, Debates 4 October 1945, 762.

[16] This blind frugality was part of King's attempt at fighting a war with a balanced budget. S. Dunmore, and W. Carter, Reap the Whirlwind (Toronto: McClelland and Stewart, 1991), 38.

[17] British Commonwealth Air Training Plan Agreement, 17 Dec 1939, Article XV: "The United Kingdom Government undertakes that pupils of Canada, Australia and New Zealand shall, after training is completed, be identified with their respective Dominions, either by the method of organizing Dominion units and formations or in some other way, such methods to be agreed upon with the respective Dominion Governments concerned. The United Kingdom Government will initiate inter-governmental discussions to this end." Stacey, Arms, Men and Governments, App. D.

[18] Dunmore, Reap the Whirlwind, 38.

[19] Similarly, Churchill highlighted the importance of the new dimension of warfare when he stated "for good, or for ill, air mastery is today the supreme expression of military power, and fleets and armies, however vital and important, must accept a subordinate rank." DND, Air Command publication, 3-2.

overseas[20] shows how Canadian airman adopted many new warfighting roles under the direction of the RAF.[21] Moreover, the pace of the conflict, stretched over five years, and the relatively simple technology, made it acceptable to learn these roles after the war began.

The majority of tactical air power roles were performed as part of coastal and fighter operations. Looking at coastal operations, by the fall of 1943 Canada had six squadrons as part of the RAF's Coastal Command,[22] as well as eleven maritime patrol squadrons of its own. The maritime patrol squadrons flew anti-submarine,[23] anti-shipping, and escort roles.[24] These missions consisted of reconnaissance, launching torpedoes, and dropping bombs or mines.[25]

Moving to fighter operations, Canadians performed a multitude of different roles. A squadron's title suggested its most common usage, such as day[26] or night[27] fighters, fighter-bomber, and army co-operation. However, a closer look shows they did a lot more. Canadian fighters were also used for artillery spotting. Three squadrons did

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[20] By war's end, Canadian airmen had flown tactical missions during the Battle of Britain, Dieppe, Normandy, escorting bombers to Germany, over the Atlantic and Pacific oceans, The Arctic, as well as in the North African desert.

[21] Although, there were some brief discussions of forming a Canadian fighter group, but the only progress was the formation of a Canadian fighter wing in November 1942. Moreover, there was never any objection on Canada's behalf when RCAF squadrons were transferred from theatre to another. The Canadian government's interest was merely constitutional. Stacey, 267 and Greenhous, The Crucible of War, 47.

[22] This total included one squadron in the Far East.

[23] Submarine patrols were carried out between Iceland and Great Britain, and the western North Atlantic.

[24] Looking at the escort missions, they were flown for both the naval convoys and heavier aircraft. Later in the war, Allied shipping received its first direct air support with the advent of catapults mounted on merchant ships. Both the Hurricane and Swordfish biplane were used from these catapults. Bercuson, Maple Leaf Against the Axis, 200.

[25] Anti-submarine operations were most successful at night as submarines generally transited on the surface. However, the risks were high as aircraft were lost from submarine anti-aircraft fire. Ibid., 83.

[26] Their were fourteen day fighter squadrons.

[27] Four squadrons flew Beaufighters and mosquitoes as night fighters. Morton, A Military History of Canada, 204.

reconnaissance flying Mustangs. The Mosquito aircraft was used to chase and shoot down V-1 rockets. The Canadians in No. 617 squadron did dam busting.[28] When the Allies had air superiority, Canadians performed armed reconnaissance on preplanned targets.[29] As well, they flew close air support (CAS) during the Italian and African campaigns. The night fighters flew intruder missions. The objective of these missions was to disrupt the German air operations by attacking their airfields. RCAF pilots flew sweep missions for the bombers, during which they searched the skies ahead for enemy aircraft to engage. At times the fighters also flew close escort missions which meant they remained within visual contact of the heavy bombers while attacking interlopers. Canadian aircrew also performed more open-ended search and destroy missions.[30] Although these missions came under the direction of the RAF instead of an overseas RCAF organization, nonetheless, the RCAF's organizational culture was influenced by the multitude of new roles assigned.

Canada's tactical effort overseas grew steadily as the war progressed. The first squadron overseas was the City of Toronto squadron, No. 110. It arrived in Great Britain in February 1940 to provided reconnaissance for the army. Then, No. 1 Fighter squadron arrived at RAF Middle Wallop in June 1940. This was Canada's first fighter squadron to arrive overseas and was the only RCAF squadron[31] to participate in the Battle of Britain.

Six months later, in March 1941, there were still only three Canadian squadrons in Europe, No. 401 and No. 402 day fighters,[32] and number No. 400 army co-operation squadron. Over the next fourteen months eleven fighter squadrons were formed for

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[28] Ibid., 137.

[29] DND, Air Command publication, 3-12.

[30] Meaning, aircraft were armed with bombs and bullets, then sent to an area in which they could use their ordinance on enemy targets of opportunity.

[31] The Canadian squadron was off to a tragic start because the first two aircraft shot down were wrongly identified RAF bombers. Canada's first enemy kill occurred on the 15th of Aug 1940, S/L McNab shot down a German Dornier. Bercuson, Maple Leaf Against the Axis, 82.

overseas duty. Of the newly formed squadrons, there were eight day fighter and three night fighter squadrons.[33] All the squadrons were to be paid by the RAF, as Canada argued it had paid the bulk of the BCATP.[34] In general terms, from November 1940 until 1944 Canadian tactical squadrons were criticized for wasting resources.[35]

At the Allied landing at Dieppe, in August 1942, aircrew from eight different RCAF squadron's flew along with their Allies to assist the ground forces. It was a joint operation where the aircraft provided air cover during the beach landing. A massive air battle ensued with many air losses on both sides.[36] However, of significance to the RCAF leadership was the RAF's audacity to not even inform Canadian Commanders of their intended use in the raid. This had been agreed upon two months earlier by the British Air Ministry during the BCATP discussions.[37]

During the D-day invasion, the RCAF fighter and fighter-bomber aircraft of the 83rd Group were dedicated as support to the landing of the second British Army.[38] The Group's mission on D-day and subsequently was:

-To gain and maintain air superiority.

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[32] Formerly known as the No. 1 and No. 112 squadrons. In March 1941 it was decided to assign commonwealth squadrons the 400 bloc numbers to differentiate them from those of the RAF and avoid confusing duplication. Ibid., 78.

[33] The top Canadian ace in World War II was George 'Buzz' Beurling with 31 ½ kills, he joined the RAF as a Canadian. Ibid.

[34] Ibid., 77.

[35] Canada's fighters were used inefficiently as bomber escort by day. Similarly, it was wasteful to conduct large sweep missions far from their home base. Such sweeps were a reversal of the Battle of Britain. The German's had good radar, aircraft with fully fuelled tanks, anti-aircraft artillery on their side, as well as the advantage of flying behind their own lines. The results were disastrous in some cases such as on the 2nd June 1942. On that day a full squadron of twelve Canadian fighter aircraft went to battle and only four returned. Ibid., 80-81.

[36] With the benefit of hindsight, it was the sole reliance on secrecy, instead of a pre-emptive air campaign to soften the Germany coastal forces, which made the attack flawed. Bercuson, Maple Leaf Against the Axis, 61 and 71 and G. Stanley, Nos Soldats (Montreal: Les Editions de L'homme, 1974), 488-489.

[37] Stacey, Arms, Men and Governments, 280.

[38] Such an occurrence was not usual, in such large-scale operations to attempt to match nationalities on the ground and in the air was a waste of time. As long as the proper assets were in the right place, that is all that mattered to the planners.

-Prevent the enemy flow of personnel and supplies to the front.
-Attack ground targets.
-Attack what the Allied ground forces requested to be hit.[39]

In the months following D-day the lack of a Luftwaffe threat in Western Europe had the Canadian Spitfires change roles from air superiority to ground attack.[40] The pilots had to learn the new skills of fast paced dive-bombing in a scant amount of time. These were hazardous new skills gained, for the most part, in actual combat.[41]

Looking at Canada's fighter role in the Desert, it was the spring of 1942 when No. 417 squadron deployed to Egypt with Spitfires and Hurricanes. The squadron flew with the desert air force conducting escort and fighter-bomber missions until the spring of 1943.[42] It was during the African campaign that the Allies recognized the advantages of joint operations. For the first time, Canadian fighters were in radio contact with ground forces on the battlefield.[43]

The final theatre that Canadians flew missions in Asia. In March 1942, No. 413 squadron moved from the United Kingdom to Ceylon (Sri Lanka). Its task was reconnaissance to track the Japanese carrier fleet off the coast, as well as searching for submarines.

A different type of tactical contribution to the war effort was referred to as combat support. Although Canada had two squadrons of Lancaster's doing general transport duties in Canada and across the Atlantic, it did not venture into combat support until late in the war. Canada chose to create three additional transport squadrons in June 1944 to complete

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[39] Bercuson, Maple Leaf Against the Axis, 199-201.
[40] Most tactical squadrons led a similar life to the 126th Wing of the RCAF. It was a nomadic lifestyle, moving forward with the ground forces to support their operations. The 126th Wing was flying from their ninth airstrip in less than four months after the D-day invasion.
[41] The dangers were both enemy and friendly fire, bad weather, mechanical problems, hilly terrain, g-induced loss of consciousness, as well as little time to bail out if something went wrong while diving at the ground. Ibid., 200-202 and 238-239.
[42] Ibid., 82.

its commitment of thirty-five Article XV squadrons. Transport squadrons were chosen as they would not produce casualties as Bomber squadrons had. The first, No. 437, based in Europe towed gliders for the assaults at Arnhem in September 1944. The remaining two were based in Asia. Both No. 435 and No. 436 transport squadrons flew vital supplies to the British 14th army in Burma. Similarly, spare parts for Hurricane aircraft were flown to Russia. [44]

RCAF Overseas: Strategic Roles

Few would have predicted that at war's end "the biggest and costliest Canadian air commitment was Bomber Command."[45] In Great Britain, the optimistic air power theories elaborated in Chapter Two meant that:

> A major part of the country's resources had been committed to construction of bombers and airfields and the training of crews. A gigantic organization had been established, everything based on practicality of strategic bombing.[46]

By contrast, Canada had done nothing related to strategic bombing during the Interwar Period. Yet, Canada essentially supported the emerging bombing theories as the war began. As the strategic bombing campaign was not questioned in Canada, neither were the targets. This can be attributed, in part, to King's lack of interest. Nevertheless, targeting was debated amongst the Allies. Carpet bombing of cities, sometimes under the pretence of hitting industrial targets, led to questions about the morality of strategic

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[43] From the outset of World War II the Germans had incorporated tactical air power effectively into their overall campaign. Ellis, Canada's Flying Heritage, 13.

[44] Greenhous, The Crucible of War, p. 877-878.

[45] Morton, A Military History of Canada, 205 During a bomber raid 4 percent losses were considered poor, but acceptable. However, on some night raids 8+9 percent were recorded. DND, Air Command publication, 3-4 In 1942, Canadian statistics reflected these dismal percentages, whereby only one in three bomber crews survived a thirty-mission tour of duty. Accepting these losses, 'Bomber' Harris became referred to as 'Butcher' Harris. He once began a speech at a Canadian station by stating that more than half of them would be dead in a few weeks. Canadians at War (Toronto: Readers Digest, 1969), 136 and 145. On a night raid in march 1944, 545 Allied aircrew died on a Berlin raid. That was more men than Fighter Command had lost during the Battle of Britain. Bercuson, Maple Leaf Against the Axis, 83, 85-86.

bombing. In Bomber Command, the lion's shares of the raids were the types carried out on cities like Frankfurt, where city destruction became the undisclosed aim. By contrast, the least controversial bombing raids targeted military installations, such as the raids in preparations for D-day. The Americans preferred this type of targeting, done by day to increase the accuracy.

Discussing morality, some pundits simply pointed out that there was no morality in war, so you could target whatever you like. Similarly, others argued the legitimacy of attacking a nation's morale, and to do so one had to attack the civilian population. Some military historians argued that attacking the civilian infrastructure was important militarily, because the totality of the German economy was participating in the war effort. Consequently, factory workers were combatants or as one author wrote, their labour "directly aided the enemy war machine."[47] Conversely, it was argued that attacking civilians was immoral and akin to cold-blooded murder, yet, both sides were doing it. The issue was not resolved in World War II, but the moral debate about city bombing was short-lived in response to German aggression. In 1942, Churchill agreed that strategic bombing was the only second front that Great Britain could mount.[48] Moreover, his people had suffered thirteen thousand casualties from the Luftwaffe's bombing of London and there were little scruples left. The common sentiment was:

> If area bombing did contribute significantly to the Allied victory, then the killing of German civilians was an unfortunate but necessary component of the Allied war effort, a war effort intended to defend against Nazi aggression and to bring about collapse of one of the most immoral and murderous regimes in modern history.[49]

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[46] Dunmore, Reap the Whirlwind, 6.
[47] Berguson, Maple Leaf Against the Axis, 84.
[48] Ibid., 87.
[49] Ibid., 91.

Part of the reason the ethical issues strategic bombing raised were largely ignored[50] was the emphasis on solving the tactical and technological problems of reaching the targets safely and hitting them accurately. Thus, strategic bombing enthusiasts were criticized for concentrating on the means with little regard to the ends. The sad reality was the ends. Strategic bombing cost 560 000 lives and 670 000 injured, mostly women and children.[51] It was only in 1949 that the major powers adopted a clearer distinction of combatant and non-combatants at the fourth Geneva convention. From then on carpet bombing of cities was condemned.

For the Commonwealth it was Arthur 'Bomber' Harris who was given an almost open hand to try and win the war with air power from February 1942 onwards.[52] His objective was to carry out Trenchard's doctrine.[53] An Air Ministry directive quotes Harris' primary objectives as the "morale of the enemy civil population."[54]

With the benefit of hindsight, it is obvious that Harris' notion that his bomber force could win the war was false. There were few signs of sole success. The army and navy remained essential to the Allied victory. The strategic bombing campaign was a form of attrition warfare between offensive and defensive forces. The Allied war machine won because of their larger industrial capacity. It can be asserted that air power was very

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[50] Those of targeting and morality.

[51] Morton, A Military History of Canada, 205, 207

[52] Ibid.

[53] Bomber Harris' free hand in the campaign was attributed to his closeness to Churchill, that put him above leaders of the Air Ministry. Churchill liked Harris'optimism about winning the war using his bombers. His method of operation in May 1942 was to send a thousand bombers each night against a single German city, targeting strategic sights. Bercuson, Maple Leaf Against the Axis, 87.

[54] In October 1942 the RAF shifted their targeting from rail junctions, aircraft factories, and munitions plants, to area attacks aimed at undermining German morale. Part of this shift was simply accepting that their attacks were not accurate enough to hit specific targets at night. Dunmore, Reap the Whirlwind, 6 and Bercuson, Maple Leaf Against the Axis, 83, 90.

important to the Allied victory, but it could not act independently to win the war.[55] It was joint operations that were the most synergistic use of air power. World War II proved that air power was a unique contribution to the victory over land or water, by way of air superiority. The strategist Edward Luttwak promotes the same. He referred to the strategic bomber strategy of Douhet as a non-strategy, because it failed to integrate the different theatres of operations properly (air-land-sea).[56] The Allies would have benefited more from a Grand Strategy, where all the services fought for a common victory, not each on their own, or the strategic bombers on their own in this case.[57] This was a vindication of Mitchell's view of air power over Trenchard's.

Despite being unable to achieve victory alone, the strategic bombing campaign did hurt the German war effort. Some argue, based on German production numbers, that the bombing largely unaffected the output.[58] By contrast, other thinkers argued if the war had gone on much longer, the bomber offensive would have severely hampered German production.[59] Similarly, evidence showed that when aircraft factories were targeted, production fell.[60] Notwithstanding the debate on the effectiveness of strategic bombing,

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[55] Although, at the close of the war with the nuclear attacks in Japan some argued it proved strategic bombing theories were accurate. Sceptics would say, it was not air power, but nuclear weapons that proved decisive to end the Japanese Campaign.

[56] E. Luttwak, Strategy: The Logic of War and Peace (London: Harvard University Press, 1987), 160.

[57] Ibid., 161-171

[58] Hillmer, Empire to Umpire, 91.

[59] A real test of strategic bombing theory required the capacity (a fleet of 4000 bombers in World War II), accuracy, and political will. In World War II all three elements were missing: not enough bombers; their accuracy was dreadful, and the politicians did not have the stomach to use poison gas as Douhet advocated.

[60] More evidence of the success' in the Allied bombing campaign was found by American historian Williamson Murray. He wrote, based on German secret police reports from 1942-43, that the bombing "did have a direct and palpable effect on the morale of the German population." Moreover, aircraft production in mid 1943 increased when the Allies stopped targeting them. He also cites the lack of aviation gasoline in mid to late 1944 as a direct result of the sustained Allied bombing of oil targets in German. Bercuson, Maple Leaf Against the Axis, 42.

the RCAF undertook the strategic bombing role with little consideration of the moral and/or effectiveness arguments.

Looking specifically at Canada's role in the campaign, the first RCAF bomber squadron was No. 405, which began operations in June 1941. By the end of 1941 the RCAF had four bomber squadrons that flew Hampton and Wellington aircraft.[61] On top of these RCAF squadrons, the majority of Canadian airmen served within RAF bomber units. In 1944, the RCAF contributed 19 percent of the total aircrew establishment world-wide at the disposal of Sir Charles Portal,[62] but only made up less than 9 percent of the squadrons. This occurred despite the 'visiting forces act' that set out the principle that Canadians should serve in distinctly Canadian units.[63]

In June 1942, while re-negotiating the BCATP, Canada pushed for a Bomber Group that it would pay for and command. The RAF had been obstructing this process from the outset, very much as it did during World War I in opposing the establishment of the CAF. Until September 1942 the RCAF could not even release press communiqués in its own name. When it finally did, some British newspapers reported it was the first time Canadians participated in bombing raids, even though they had been doing so for over fifteen months.[64]

The negotiations for Canadianization of the Article XV squadrons were on-going. The RAF was in no rush to meet the RCAF's demands as the interim left Canadian aviators at their disposal. The RAF easily masked the problem within bureaucratic process that left no single area to blame. The Article XV units were never manned entirely with Canadians, by October 1943 only 64 percent were Canadians, the RAF had kept the all-important

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[61] Ibid., 83, 88.
[62] The RAF's Chief of the Air Staff.
[63] By September 1941 of 4500 Canadian aircrew sent overseas, only 500 were serving in RCAF squadrons. Greenhous, The Crucible of War, 13-14.
[64] Bercuson, Maple Leaf Against the Axis, 79-81.

power of posting personnel.[65] At certain stages, only 10 percent of the RCAF's BCATP graduates were going to Article XV squadrons, the remainder to RAF units. A report issued in August 1944 showed that 17 111 RCAF aircrew were fighting within RAF units, while 9993 were fighting within RCAF units.[66] Hence, nearly 60 percent of RCAF aircrew were serving in RAF units. Only near the end of the Second World War the Canadianization rate managed to reach 88 percent in the Article XV squadrons, while overall half of the RCAF aircrew served in RCAF squadrons.[67]

To help their bid at the Canadianization of Article XV squadrons Canada had assumed the full cost of all its overseas squadrons in 1943. The result was creation of an RCAF led Group. When No. 6 Group was formed in Jan 1943 it had eleven squadrons and at its peak had thirteen.[68] Brookes was put in charge of the Group. However, typical of a key Canadian military commander, he had no experience or training in strategic bombing. He carried out the missions without questioning the overall strategy.[69]

Regrettably, the formation of No. 6 Group as a form of national pride[70] that led to several problems. First, many crews were separated with the roundup of Canadians throughout the RAF. Second, the bases given to No. 6 Group were further from the targets and had worse weather,[71] which made the missions even more dangerous. Consequently, No. 6 Group beginnings were not very successful. In a four-month period in 1943 the

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[65] At first the RAF argued a lack of Canadian ground crew to man Article XV squadrons. In Canada, their was a high demand for ground crew in the establishment of BCATP schools. Then the issue of who was paying for the squadrons played a role, but in January 1943 Canada assumed the cost of all its overseas squadrons. Stacey, Arms, Men and Governments, 296-300.

[66] Ibid., 301.

[67] Figures from 31st March 1945 show 5160 RCAF aircrew in RCAF squadrons, meanwhile 4524 RCAF aircrew served in Non-RCAF Squadrons. Greenhous, The Crucible of War, 55.

[68] Bercuson, Maple Leaf Against the Axis, 93.

[69] Dunmore, Reap the Whirlwind, 18.

[70] Meaning Canada needed to be recognized as an independent fighting force. It ended up being an attempt to wave the flag, at the detriment of military logic in many cases.

[71] With more fog and icing conditions for pilots to deal with.

Canadian Group lost one hundred aircraft; 7 percent of its fleet. It was not until the spring of 1944 that things began to improve with a new commanding officer (CO), Air Vice-Marshall C.M. McEwen.[72]

Although McEwen never questioned the ultimate aim of the campaign either, he proved to be a good manager. He bestowed more discipline and worked hard at getting better aircraft. McEwen increased the level of skill and experience, which resulted in the formation's increased moral and improved results.[73] The Canadian Group's bad reputation was eventually reversed. Although Canadians were effectively operating their own Group, the changes were mainly cosmetic. The administration became Canadian, but the operational command of their aircraft was in direct support of the British view and implementation of strategic bombing.[74] Canadians, their government, and the RCAF officers did not object.[75]

RCAF bomber units also participated in the pre-invasion bombardment for operation Overlord in 1944. The switch away from city bombing was forced upon Harris.[76] After

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[72] Bercuson, Maple Leaf Against the Axis, 206.

[73] By November 1944 No. 6 Group was dispatching one hundred and fifty aircraft with only one or two losses. At the end of 1944, armed with better leadership and aircraft, No. 6 Group had the lowest casualties and the highest accuracy in Bomber Command. An unrelated fact that helped the Canadian Group was a targeting shift from Germany to softening up the coast of France for the D-day invasion. As a result, the missions became a lot shorter and were performed with fighter escort, so losses were trimmed. More success was due to the lack of German opposition in the air, resulting from low fuel supplies. Morton, A Military History of Canada, 207.

[74] Bercuson, Maple Leaf Against the Axis, 114.

[75] Stacey, Arms, Men and Governments, 258 and 295.

[76] Eisenhower's objective with the bombers was to make the landing area inaccessible to German reinforcements, and cut off the Germans long enough for the Allies to get sufficient troops and supplies ashore. To this end, the bombers hit rail yards, bridges, and tunnels to block the main roads. In early June, just prior to the invasion, the targeting switched to coastal batteries and military targets near the French coast. The unfortunate results of these pre-invasion bombings were the deaths of French civilians. Hitting the civilians was unavoidable considering the inaccuracy of the weapons and the proximity of German forces along the coast. Part of the strategy of bombing the coast was to keep the Germans guessing where the landing was to take place On the last nights before the invasion the Allies favoured attacking coastal batteries in Calais, instead of near the real landing site in Normandy, as part of an effective deception

the invasion, the use of Bomber Command assets in support of the landing forces produced lacklustre results,

> When the huge strategic bomber force was grudgingly transferred to support Gen. Eisenhower's invasion in Normandy, inexperience, unsuitable equipment, and astonishing lack of communications led to tragic accidents and heavy losses among American and Canadian ground troops.[77]

By the fall of 1944 Harris had repatriated the majority of his assets to carry out city bombing. He was still trying to fulfil his pledge of victory through air power.[78] Raids by day were more common due to the increased strength of Allied fighter escort[79] and weaker German day fighter capability. Harris' strategic bombing became revenge bombing.[80] As Carter and Dunmore concluded in their history of No. 6 Group; "at this stage of the conflict, the Allies were in no mood to show mercy to the perpetrators of such horrors as Auschwitz, Belsen, and Dachau. The pressure had to be maintained."[81]

According to Nolan, Prime Minister King believed that war knew no ethics or morals. The strategic bombing campaign was not controversial to him. Nolan demonstrates this by pointing out how King put the perfect manager in charge of the BCATP; making it very

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campaign. Such a strategem was not the same as the Dieppe raid. In Dieppe there was no pre-invasion bombardment, this time they did one, but also mounted the deception by attacking elsewhere. Overall the pre-D-day bombardment consisted of 24 600 sorties with 78 000 tons of bombs. These bombing missions were not unopposed. Five hundred twenty-five aircraft were lost, of which thirty-six were from No .6 Group. Bercuson, Maple Leaf Against the Axis, 196-198.

[77] Morton, A Military History of Canada, 207.

[78] Bercuson, Maple Leaf Against the Axis, 257.

[79] The advent of the P51D fighter escort aircraft triple their escort range. DND, Air Command Publication, 3-2.

[80] Several attacks were similar to the one on the night of the 13th and 14th of February 1945 where 809 aircraft were launched against Dresden. In that attack, it is estimated that 85 percent of the city was destroyed by 2500 tonnes of high explosive and incendiary bombs, killing an estimated one-hundred fifty thousand men, women, and children. No. 6 Group participated in this devastating bombing with sixty-seven aircraft. It was after reports like this that Churchill, rather hypocritically, distanced himself from the strategic bombing campaign, but not so for Canada's leader. The negative political fallout of area bombing led to the failure of Bomber Command crews to be issued any special medals. Bercuson, Maple Leaf Against the Axis, 238, 259.

[81] Dunmore, Reap the Whirlwind, 344.

successful, while detaching himself completely from the ends these crews were used for. Moreover, looking at King's diary, Nolan pointed out that he only wrote how Dresden, a beautiful city, had been lost. There was no mention of the terrible loss of life.[82] Similar accounts about King never visiting war hospitals left him detached from the human suffering of the war. Carter and Dunmore add support to Nolan's argument: "King himself had little interest in things aeronautical. He saw No. 6 Group as he saw everything else, in political terms."[83]

Victory in Europe occurred on the 6th of May 1945. As fighting was still going on in Asia, the RCAF prepared a 'Tiger Force' of Lancaster bombers to help defeat Japan. Of interest is how the RCAF tried to make up for its shortcomings in Bomber Command. As early as 1943 Canada had started working on plans to field "a fully integrated Canadian Air Force" in the war's second phase against Japan. Subsequently, the 'Tiger Force' was planned with RCAF units employed with RAF units but as separate groups with equal representation in a combined headquarters staff.[84] In the end, the plans were never implemented when in August 1945 the Japanese surrendered after suffering the devastation of two American atomic bombs.[85]

Organizational Theory and the RCAF in World War II

The key factor that led to changes in the roles the RCAF performed was its turbulent external environment. More specifically, it was a major change in the organization's task environment, with the advent of World War II. Canada's objective in the war was to mobilize sufficient forces to help its former colonial leader. At first, the Prime Minister wanted to do so with a balanced budget. However, as continental Europe was overun the commitment changed. The European war effort, in particular, put Canada's reputation on

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[82] Nolan, 111, and Bercuson, Maple Leaf Against the Axis, 125.
[83] Dunmore, Reap the Whirlwind, 36.
[84] Greenhous, The Crucible of War,100 and 115.

the line as a newly independent state. The King government wanted to be perceived as doing enough.

The Prime Minister's emphasis on Canada's air force stemmed from his underlying aim of avoiding conscription. Air force commitments were not likely to bring as many casualties, or was there a recruiting problem into this exciting, relatively new, service.[86] The result was an ever larger air force commitment, which drew little semblance to the pre-war force. Many squadrons were mustered and additional roles were adopted. The new roles that resulted from changes in the environment were transcontinental ferry flying,[87] the use of Canada's air force in power projection overseas, strategic bombing, escort flying for sea convoys, training of foreign aircrew, direct support to merchants with ship-mounted catapults, the attack of airborne rockets in the case of Germany's V-1s,[88] dam busting, close air support, intruder missions, joint operations with both the navy and army during beach landings and in the desert, sweep missions for heavy aircraft, and close escort missions for heavy bombers, as well as towing gliders during paratrooper operations. Further evidence of how the roles had changed from previously was the absence of civilian roles.[89] More interestingly, the RCAF willingly accepted every, and any role assigned to it by others, with apparently little or any concern of the consequences.

It was the adoption of strategic bombing by the RCAF that was the most significant of these new roles. Organizational theory posits that it is generally harder for a new technology to be adopted over an older dominant way of doing business; in this case, the bomber over the fighter. Usually, the old way of doing business has a stronger following culturally and can be attributed to past organizational successes. Nonetheless, the bomber was readily adopted as a function of the RCAF's external environment and its culture.

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[85] Morton, A Military History of Canada, 207, 223-224.
[86] Stacey, Arms, Men and Governments, 10.
[87] Albeit, by only a few RCAF members.
[88] Similar to how CF-18s today can shoot down cruise missiles.

The major factor from the environment was the Prime Minister's endorsement of the BCATP, without considering where the graduates were going. The result was the absence of control over how these airmen were employed overseas. This left Canadian airmen to be used at the RAF's discretion, within the framework of its air strategy.[90] Similarly, this resulted in a lack of consolidation of the RCAF's members overseas. The reason the Canadian government did so, was for monetary reasons. King preferred spending on the BCATP while letting Great Britain finance most of Canada's overseas squadrons. Also a consideration was King's lack of interest in strategic planning. It was the RAF's leadership that determined that Canadian airmen would adopt strategic bombing as part of their war effort. At the time bombers were the only way to strike directly at Germany.

The strong cultural argument in favour of strategic bombing was the RCAF's socialization. This socialization of air force officer began in World War I as Canadians and British fliers fought together. Subsequently, the RCAF's organizational culture reflected the values of its defacto parent service, the RAF. These two organizations were very much like brothers in arms. There is little doubt that Canada's air force agenda was pushed along this way as it was accustomed to doing things, following the Commonwealth leader. This symbiotic relationship can be attributed to the fact that Canada's air force officers received their air power doctrine exclusively in RAF institutions.[91] Thus, they echoed the beliefs of the senior British leadership with respect to strategic bombing. Also, a supporting cultural explanation for embracing strategic bombing is found in an extension of what Carl Builder refers to as air power's altar of worship: technology.[92] The air force, and its officers are

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[89] Although No. 168 squadron did fly mail overseas.

[90] "Great Britain preferred individual airmen for Imperial service, not formed Dominion Squadrons. This view was bluntly expressed by a Senior RAF officer who was quoted as saying that the RAF simply wanted 'bodies.' English, The Cream of the Crop, 14.

[91] Greenhous, The Crucible of War, 16.

[92] Builder, The Masks of War, 18-20.

predisposed to embrace newer and more sophisticated technology over the status quo—in this case strategic bombers—regardless of its implications and costs.

Moreover, sometimes an organization's culture can be so strong that alternatives do not even appear, which results in the uncritical development of assumptions. These assumptions, subsequently, remain unquestioned. Such was the case for adopting a strategic bombing role for the RCAF. Evidence of this assumption is how the strategy was not even debated at home. Similarly, targeting plans and the whole morality debate was absent from the Canadian political and air force discourse. Apparently, few people were asking why Canada was doing strategic bombing. In the US the morality debate with respect to day versus night bombing was debated with the latter seen as so inaccurate it translated into mass killings which they tried to avoid.

So how did this assumption transpire? During the 1930s, Canada's air force was a youthful organization doing a variety of roles to operationalize its vague organizational goals. It was not past success or failures that influenced the strategies employed. There did not exist concrete stories, myths, and legends about the way to win a war with air power. So a new possibility was embraced. At the same time abroad, a military air force's survival depended on the adoptions of a strategic role, albeit a new one. Similarly, the bureaucratic rivalry for dollars between the army, navy, and air force, fuelled the appeal to air force leaders for the new unproven strategy. There was little resistance to this change by the RCAF because it let the organization grow, giving its leaders more prestige. Hence, the assumption was born that Canada should embrace a strategic bombing role.

However, once strategic bombing was adopted, the level on which a uniquely Canadian culture operated was fairly low. The only consolidation that occurred was the formation of No. 6 Group in 1943, but these changes were mainly administrative. Moreover, the advent of No. 6 Group can also be attributed largely to the external

environment as it was the politicians that were pushing for the Canadianization of their forces overseas. Although, the RCAF leadership did recommend having more Canadians serving in national units. By contrast, the RCAF leadership was uninvolved in bomber strategy, and there was no Canadian vision for bomber operations.[93] Brookes and McEwen were merely efficient managers. Canada did not debate, nor lobby for anything with respect to its bombers' employment. Thus, the debate before D-day between Eisenhower's emphasis on coastal targets and Harris' preference for city bombing, was largely ignored by Canadians, despite having thirteen bombers squadrons involved and the thousands of Canadians serving in RAF units. The basis behind No. 6 Group was merely to increase visibility of Canadians and improve morale, but even these objectives failed to work out smoothly. Similarly, the planning for the 'Tiger Force' was merely an exercise in assuring Canadianization, not to bring a unique vision for the employment of its forces.

One other event linked to organizational cultural was Canada's further drift into the American defence orbit with the establishment of the PJBD. This organization, which dealt with continental defence co-operation, was a very important precursor of things to come. It was the co-operation that started within this board that created the foundation of a transnationalism between the air forces of the United States and Canada. This relationship grew into the North American Air Defence agreement in 1957, with the updated designation the North American Aerospace Defence agreement which is still in force today.

Considering the four dimensions of goal setting it was the reactionary, rational and historical dimensions that were the most influential. The reactionary dimension was evident in looking at the transformation of air force capabilities that occurred to meet the changes in the external environment. The evidence of the rational dimension was linked to

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[93] "No Canadian commander played a significant part in planning the war effort. When the allied combined chiefs of staff was formed Canada did not insist on any representation."

the government's goal of saving money while minimising the overseas contingent to avoid conscription. The historical dimension was present in the RCAF's usage of air resources which largely relied on the RAF, as it had in the past. Similarly, the results of the budgeting process were linked to RAF strategies. The dimension that was present to a lesser extent was the normative. The RCAF's wartime force differed from the pre-war force in size, scope, and capability. The answer is subjective as to whether the RCAF did the roles it wanted over the period because it had no real preference. In general terms, all wartime roles had honour. Naturally, the RCAF did want to expand, and rarely do people complain when there is lots of growth. Yet, expansion came very much in the manner the RAF wanted, not through an RCAF vision. This is not surprising, as close to 60 percent of Canadian aircrew flew in RAF squadrons.[94]

In considering the RCAF's effectiveness during World War II, the success story remains tainted. Despite a slow beginning,[95] Canada eventually mobilized an admirable air force effort considering its size and economic strength. Canada did its part as an emerging state in this World War, which was the official goal. Moreover, its roles did operationalize the official goals. However, what the RCAF lacked was leadership and its own vision. The RCAF proved largely unable to field units in its own name. The success of the BCATP and then lack of follow through on the graduates was a significant organizational failing. Similarly, a Canadian contribution to the air power employment debates was not present. Moreover, a lack of effectiveness can be associated with the RCAF's large number of squadrons on the home front, which were well in excess of any anticipated threat, and thus a waste of resources. Yet, this did not occur by accident. It was an underlying objective of the Canadian governments to avoid casualties and try to maximise

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Douglas Bland, Chiefs of Defence (Toronto: Brown Book Company Limited, 1995) 10.

[94] Morton, A Military History of Canada, p,. 202.

[95] One year to get a squadron to Europe, and two years for its first bomber squadron. Although, the BCATP effort was demanding large resources as well.

defence spending on assets at home to help appease public opinion that wanted home defence forces. Thus, the large home defence force resulted from an underlying role conflict in which the government wanted to be perceived as spending lots of the war effort but underneath wanted to minimize troops abroad.

Analysing the RCAF during World War II, until mid-1942 it approximated what was described as the youth stage of the lifecycle model. This second stage is usually marked by success in the market, growth, and innovation. The air force grew at an unprecedented rate early in the war, and took on a whole new fleet of aircraft and many new roles. The airmen identified with the mission and worked hard to contribute to organizational growth. This was evident in that recruiting was never a problem in this exciting new service.[96]

Of interest is how the transition to the next stage in the lifecycle model was not marked by a control crisis, but rather by the continued mobilization in reaction to the external environment. The air force grew so fast, that measures were required to improve administration and efficiency. The leaders needed to develop a more efficient administration which characterizes the third stage in the lifecycle model: midlife. According to Quinn and Cameron, this is the stage where a bureaucratic structure is implemented. In the case of the RCAF this bureaucracy became efficient at establishing new squadrons and developing the administrative skills to manage them.

Some may argue that the fact the RCAF personnel were scattered about every theatre the RAF flew in, without any overarching control, could be likened to a control crisis. Yet, this crisis was a home-grown problem. The resulting round-up of some

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[96] Moreover, a co-ordinated recruiting effort was required to ensure the army would gain enough recruits, to facilitate this the air force would stop recruiting and send its aircrew washouts to the army. In return, the army would send some of its most promising recruits over to the air force service.

Canadians for the creation of No. 6 bomber group led to poor results at first. However once established, the RCAF bomber group fulfilled its institutional responsibilities.

Regrettably, the revamped Canadian air force organization displayed many of the inefficiencies of a bureaucracy, as well. The organization and its leaders were inflexible, lacked lateral thinking, and direction. The quintessential example being the absence of debates on why Canada should carry out area bombing of German cities. Douglas Bland provides some insight:

> During most of Canada's history the 'high command' of Canadian military forces and the strategy within which they were employed were the prerogative of foreign powers. Canadian officers, with rare exceptions, never developed any professional sense of their own identity and willingly subordinated themselves to the opinions of officers from other states. Canada's military profession is habitually immature, "whenever a military effort was called for, Canada provided its full share of fine doers, but no thinkers."[97]

Another fault the air force bureaucracy suffered was departmentalization. This led to competition between the subgroups for budget dollars. In both the RCAF and RAF, clearly Bomber Command got the lion's share of money. By contrast, increased spending especially on Coastal Command could have improved the overall effectiveness of the allied war effort prior to D-day.

As a final point, looking at this period there becomes a clearer indication of the traditional roles of the RCAF. Using the same three factors[98] as previously noted, several roles arise as dominant in the RCAF's short history. These roles were fighter operations, maritime patrol operations, and army co-operation. These were ones that would come to dominate the Cold War experience.

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[97] "James Eayrs called it 'growing up allied' " quoted from Bland. Chiefs of Defence 8 and 12.

[98] Consistency, normative, and temporal.

Chapter Four

THE RCAF IN THE COLD WAR

Following World War II, the international political situation evolved into a bipolar system, dominated by the four decade Cold War. During this period several key events influenced the size, structure, and roles of the RCAF. In broad terms, most of the RCAF's roles became alliance driven. Moreover, the biggest change in roles from the previous period was Canada's rejection of strategic forces. While strategic bombing had been arguably the most prominent role of World War II, especially if measured in terms of RCAF casualties, it very quickly disappeared. The predominant reason was its association with offensive nuclear weapons; something more defensive minded Canadians wished to avoid following the devastation of Hiroshima and Nagasaki. Furthermore, strategic nuclear forces were beyond the fiscal reach of Canada's defence budget.

Once again organizational theory highlights the factors that brought about changes in the air force's roles. First, Canada's air force was reactive in its approach to international events. Second, the air force relied heavily upon its historic ties, which became the foundations of its largely alliance based roles. Thus, the two initial influences stemmed from the environment. As the Cold War dragged on it became more of a predictable stalemate. This led to a third environmental factor that increasingly influenced Canada's air force: the government's budgeting process.

In examining the air force's culture over the period it proved successful at maintaining most of its tactical roles from World War II. As well, the air force's strong reaction to Paul Hellyer's re-organization eventually led to the creation of Air Command (AIRCOM). The CF-18 purchase that followed is seen as a consequence

of the consolidated air power voice stemming from the re-emergence of the air force as a defacto separate service.

CANADA's AIR FORCE DURING THE COLD WAR

Immediately following the end of World War II there was little in the way of immediate threats to Canada. Yet, its geopolitical situation was increasingly important to the US. As well, there was a clear desire to maintain strong ties with Great Britain. As a result, Canadian defence and its air force were shaped by the West's evolving security framework.

By the end of 1946 the RCAF had pulled its eleven squadrons out of Germany. In Canada, the major focus of the air force was demobilization. The air force leadership requested thirty thousand permanent personnel, with sixteen squadrons of which six were to be bomber squadrons.[1] However, it ended up getting no permanent squadrons for the following two years and an authorized strength of sixteen thousand.[2] Only in 1948 was the first permanent squadron established, this squadron designated as 410 flew the Vampire daytime jet interceptor. Soon after, a second fighter squadron also flying Vampires, designated 420, was formed in Chatham, New Brunswick. The RCAF had given the British Mustangs which they needed for use in their desert colonies in return for eighty-five Vampire jet fighters.[3]

The three billion-dollar defence budget from 1945 was cut to 195 million by 1947.[4] That same year, Defence Minister Claxton announced three broad objectives for Canada's military. The first was the defence of Canada against foreign aggression.

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[1] House of Commons, Debates, 4 October 1945, 762-766.
[2] J. Jockel, No Boundaries Upstairs (Vancouver: UBC press, 1987), 14. Questions were asked in the House of Commons as to the number and type of permanent and auxiliary squadrons in the RCAF in March 1947. However, Minister Lapointe refused to answer the query within the House of Commons. He saw such detailed information as against the public's interest. House of Commons, Debates, 30 April 1947, 2621.
[3] Jockel, No Boundaries Upstairs, 38.
[4] Morton, A Military History of Canada, 231.

The second was aid of the civil power. The third was the participation in any mission that Canada decided in co-operation with its allies or within the UN framework. The third objective was left quite vague to avoid being caught up in costly ventures in which Canada would only play a secondary role.[5]

The growing mistrust between the East and West became a key issue that shaped the environment Canada's air force operated in. As a result, in April 1949 Canada joined the US, British, French, and the Benelux countries in a collective defence organization[6] the North Atlantic Treaty Organization (NATO).[7] NATO evolved as the centerpiece of Western collective defence. The two important facets of NATO membership related to Canada's air force. First, the alliance existed to counter Soviet aggression. Second, the pooling of resources meant that each country could do less military preparations than it could independently. The result was more specialization of RCAF roles.[8] A byproduct of participating in the US-led NATO, as well as the emerging continental defence relationship was that Canada's air force gradually adopted more American weapons, equipment, and training methods.[9]

When the Korean War broke out in 1950, the RCAF's main contribution was airlift,[10] although twenty-two fighter pilots did fly on exchange with the United States Air Force.[11] Of greater significance was how the Korean conflict caused NATO's European theatre to be weakened, or so perceived, as US forces were transferred to

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[5] H. Klepak, and P. Letourneau, Defence and Security (Montreal: Meridian Press, 1990), 11.
[6] At first Canada only sent surplus military equipment to Europe, while keeping its forces as a strategic reserve. Klepak, 27 and J. Galvin, "Trans-Atlantic partnership for Security: Canada in NATO" Canadian Defence Quarterly Summer, 1988, 9.
[7] Klepak, Defence and Security, 12.
[8] Ibid., 27.
[9] The premise behind NATO was the belief that the defence of Canada resided in the defence of Europe. This was referred to as a 'forward strategy' by the Americans, which meant that the further away from home one met the threat, the better. N. Orvik, Canadian Defence Policy (Kingston: Queen's University, 1980), 15.
[10] The Korean airlift operation lasted four years during which 599 missions were flown with twenty North Star aircraft. Overall, thirteen thousand personnel and seven millions pounds of freight were carried across the Pacific. WWW.airforce.dnd.ca/eng/modern.htm

fight in Asia. As a result, the NATO Supreme Allied Commander in Europe (SACEUR) asked Canada and other nations to help re-enforce Europe, leaving NATO much stronger afterwards. Canada responded by sending troops and fighter squadrons to Europe, as well as increasing its military spending. The Canadian defence budget quadrupled from 385 million in 1950 to 1.4 billion in 1952.[12]

With the increased military spending, Claxton announced the formation of forty additional squadrons, which included twelve to be stationed in Europe by the summer of 1953. The twelve squadrons[13] in Europe eventually formed a Canadian Air Division comprised of three hundred F-86 Sabres. Also part of the forty new squadrons, nine were equipped with the Canadian developed CF-100 Canuck.[14] The early 1950s also put the RCAF back into the business of training foreign aircrew. Aircrew training expanded to include ten countries and lasted over seven years. During those years, five thousand pilots and observers were trained.[15]

Three years after the Korean War started, the RCAF had grown from sixteen thousand to a strength of over forty-five thousand.[16] By 1955 the approved manpower ceilings "allotted the RCAF regular force a maximum of 51000 personnel, placing it for the first time in Canada's history higher than the army's 49000."[17] The zenith of

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[11] Hillmer, Empire to Umpire, 216.
[12] Klepak, Defence and Security, 18.
[13] The sabre was built under license in Canada, and was provided with a Canadian designed and built engine, the Orenda. The Division was a formidable one as the F-86 was considered one of the best fighters in visual air to air combat at the time.
[14] The CF-100's radar gave Canada its first all weather interceptor. A total of 638 CF-100's were built. Although largely obsolete in the early 1960s, a few CF-100s flew until 1981.
[15] Claxton announced in 1951 that Canada needed a range and airspace suitable for jets and new munitions. To meet the demand, Cold Lake was built as the first new RCAF station since World War II. 4 Wing Cold Lake historic booklet, written by Capt Jay Medves, published by the Military base, 1990.
[16] Hillmer, Empire to Umpire, 215.
[17] www.airforce.dnd.ca/eng/modern.htm 5.

Cold War air power in Canada occurred two years later (1957) with two thousand aircraft in the RCAF's inventory, of which seven hundred and fifty were fighters.[18]

Contributing to this dramatic rise in RCAF strength was the gradual integration of continental air defence arrangements with the US. These agreements culminated in the formation of NORAD in 1958. The Americans were keen on a forward strategy.[19] There was little doubt that the advances in air power rendered Canada's Arctic as the prime strategic approach in the future.[20] Yet, analysts believed it would be some time before the Soviet Union would have the capability to deliver nuclear bombs over the North pole.[21] Moreover, at the time the USAF preferred offensive uses of air power.

During the Berlin Blockade this view came under question. The US feared that large numbers of long range TU-4 bombers could strike North-America. This led to the development of an air defence plan for the continent, that included a total of seventy-one radar sites.[22] When the Soviet Union successfully tested their first atomic weapon, air defence plans got more serious to include fighter forces on alert. Canada was to have five regular squadrons for air defence.[23] Following the outbreak of the Korean war,[24] Canada's Defence Minister committed another four regular air defence squadrons and eleven auxiliary squadrons to continental defence.

By 1951, the combination of Canada's geography and technological advances led to further cooperation with the US. The new plans rendered air defence as a major

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[18] Looking at the rest of the air force, the Dakotas and North Stars were being used for transport, whereas the Lancaster and Neptune aircraft were being used for maritime reconnaissance. Wings, 16.
[19] Jockel, No Boundaries Upstairs, 2.
[20] Ibid., 14.
[21] Ibid., 7.
[22] Ibid., 34.
[23] Ibid., 37.
[24] Ibid., 40.

RCAF priority.[25] For the government it was easy to expand air defence politically because it was similar to the BCATP in the eyes of the Canadian public. The expansion employed lots of manpower and it was a defensive in nature.

In the USAF it was increasingly debated whether to spend on offensive or defensive assets. In general terms, the bombers of Strategic Air Command (SAC) represented the offense and fighter-interceptors represented defensive forces. By contrast, in Canada there was only interest in defensive assets. The idea of having bomber squadrons was short lived immediately following World War II. As the Cold War progressed, the offensive implied a nuclear armed bomber force. Clearly this was out of the question politically and economically for Canadians. The issue was never raised after 1946.

As technology improved the arguments favoring the defence became increasingly linked to the offense. This was due in part to the adoption of a massive retaliation strategy by the US in 1954. Massive retaliation implied the reliance on nuclear capability over conventional forces in American defence planning. However, an important part of the massive retaliation strategy was to construct a better defensive shield around North America, thereby adding credibility to the survivability of the offensive forces which were to carry out a counter-strike.[26] For Canada, this meant

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[25] Negotiating went on with respect to border crossing authority, areas of responsibility, control in Canadian airspace, and the authority to shoot. The interim result was a joint air defence plan called 'Continental Air Defence Integration North.' As part of the plans implementation Canada built the 'Pinetree line' consisting of thirty radar stations between 1951 and 1955. Two thirds of the costs were paid by the US. As the construction began, the US realized just how important Canada's airspace was, so they developed greater plans for their cross-border relationship. As Soviet technology improved, academics pointed out that greater warning times were required. Estimates of twenty million deaths following a Soviet attack prompted the push for a line of radars further North. This led to the creation of the Distant Early Warning line (DEW) which consisted of four manned stations and seventy-one unmanned sites along the 70th parallel. The Dew line was built to give four to eight hours warning of a Soviet bomber attack. B. Cutherbertson, Canadian Military Independence in the Age of the Superpowers (Ottawa: Supply and Services Canada, 1987), 45. The final chapter in the development of defensive radar lines was a third set of radars paid for by Canadians called the mid-Canada line along the 55th parallel.

[26] Ibid.

the RCAF's fighter-interceptor forces would become more important.[27] In 1956, Canada's White Paper on Defence reflected the reality of thermonuclear weapons when it stated that the protection of the US strategic deterrent was the primary objective of Canada's air defence forces.[28] This was a significant shift from the original post-World War II objective, which was the protection of the populace and economy. An important transition had occurred from a defensive role to a deterrence one. Canada added credibility to the West's deterrent strategy by contributing "its territory for warning lines, its airspace for fighters to verify an attack, and its own forces to participate in those operations."[29]

The final discussions to establish NORAD dealt much more with political than military integration. Shortly after taking office in 1957, John Diefenbaker was presented with the final drafts of the NORAD agreement that he signed precipitously. This resulted in an immediate backlash. Opposition criticism concentrated on General Foulkes' less than forthright explanation of the nuances in the agreement.[30] The Chief of the General Staff had minimized the political implications and presented the document as the continuation of an evolving defence relationship. Foulkes did not highlight that the agreement, for the first time ever, placed Canadian forces under a non-Canadian authority in peacetime.[31] NORAD was branded by critics as a loss of autonomy, because the integration of air defence meant that the US could declare war and use Canada's fighters. Not realizing these nuances, Diefenbaker had signed without consulting officials from External Affairs, his cabinet, or parliament.[32]

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[27] Ibid., 86.
[28] Ibid., 89.
[29] Ibid., 123.
[30] Bland, Chiefs of Defence 66.
[31] Canadian politicians always feared the Americans were going to run their country. Cutherbertson, Canadian Military Independence, 126.
[32] Ibid., 106.

Despite the controversy the signing caused, NORAD was an important bilateral agreement for both parties.[33] It was based on the recognition of three premises. First, the defence of North America was indivisible. Second, the US would respond to any aggression on Canadian soil. Third, that the only physical threat to Canada was the threat of nuclear attack.[34] Overall, the 1958 agreement intertwined two thousand six-hundred interceptors, of which two hundred were CF-100s.[35] However, the CF-100 Canuck was old technology and too slow to catch the new Soviet bombers. Even with ground control, intercept pilots only had one chance to identify and destroy enemy bombers. In the mid-1950s the Liberal government addressed the shortcoming by funding the development of a new Mach +2 interceptor called the AVRO Arrow.

The CF-105 Arrow was sold as decades ahead of its time. Regrettably, when the Conservatives came to office, some were led to believe the launch of 'Sputnik' in October 1958 had changed the air defence paradigm. Critics of the Arrow program argued that satellites launched the world into the missile age thereby rendering manned interceptors obsolete.[36] Using the obsolescence argument, Diefenbaker cancelled the Arrow program in 1959. However, the real reason the Arrow program was cut was that the aircraft had become too expensive.[37] The end of the Arrow

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[33] Later on, realizing the error he made, Diefenbaker attempted to link NORAD to NATO which was Canada's widely accepted multilateral arena, even suggesting it become one of NATO's commands. However, the US refused anything but vague references to informing NATO of mutually agreed upon material. This was a bit of a compliment in disguise, as the US did not trust its European allies as much as Canada for keeping secrets. Ibid., 117.

[34] Canada was given the deputy command position, although nuclear weapons could not be used without US authorization. It was also agreed that Canada would never assume more than twelve percent of the costs of continental defence. R. Byers, Aerospace Defence: Canada's Future Role? (Toronto, 1985), 49.

[35] Klepak, Defence and Security, 25.

[36] Hillmer, Empire to Umpire, 245.

[37] The air force's initial order of four hundred aircraft had been decreased to one hundred to reduce overall costs. Yet, without any foreign buyers, the cost per aircraft had risen to twelve million dollars. All in all, the cancellation meant that a lot of fighter development expertise was subsequently lost to the US. Most engineers from AVRO were immediately hired by NASA and

program marked the beginning of cuts to Canada's air force which have continued more or less, until the present. The Arrow episode was a failure of the RCAF's culture to translate aircraft acquisitions into political terms that Ottawa politicians could relate to.

Diefenbaker replaced the Arrow with a surface-to-air anti-bomber missile called the BOMARC, manned by RCAF squadrons 446 and 447.[38] Interestingly, the BOMARC missile system was designed to shoot down enemy bombers, not ICBM's. It became embarrassingly evident that only a manned interceptor could tell if a radar return was a flock of birds, a lost airliner, or a Soviet attack. The US gracefully offered sixty-six technologically inferior Voodoo[39] aircraft that Canada paid for by manning the Pinetree line.[40] The acquisition of a smaller number of air defence aircraft and the acquisition of the BOMARC led to three Canadian interceptor squadrons being disbanded.[41]

After canceling the Arrow program, Diefenbaker ordered a re-examination of the reasons behind Canada's military commitments. As was often the case, the driving force for the re-examination was to justify reduced defence spending. The defence budget was indeed cut from 1.8 billion to 1.5 billion in the first three years of Diefenbaker's office.[42] However, the Conservatives larger liability became their

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the other military aircraft manufacturers in the US. As well, Canada lost its technological independence in the aerospace field. "The national tragedy was that the [Arrow] program either should have been stopped earlier, at the project stage, as being too rich for Canada's blood, or completed. It has been noted by historians that if the costs of the Arrow cancellation, the Bomarc missile system and the Voodoos were added, they would have been of the same order as continuing the Arrow program which –apart from maintaining a world-class technical team in Canada- could have garnered export orders." Wings, 20.

[38] John Clearwater, Canadian Nuclear Weapons (Toronto: Dundurn Press, 1998), 55.

[39] The Voodoo was first flown in 1954, it had a max speed under Mach 2. In 1970, the remaining RCAF Voodoos were exchanged for 66 replacement aircraft that had been in USAF storage. Wings, 24.

[40] Morton, A Military History of Canada, 243-244.

[41] www.airforce.dnd.ca/eng/modern.htm 5.

[42] Morton, A Military History of Canada, 246-247.

confused and contradictory defence policy.[43] The main reasons for the Conservatives poor performance in defence issues were Diefenbaker's indecisiveness, his hostility towards the US, [44] and how he isolated himself from the military's leadership. How his government handled air force acquisitions exposed these flaws.

In the past, Canada had opposed the purchase of nuclear weapons because it saw itself as a moderator on the international scene and nuclear weapons were labeled offensive. Yet, Canada was part of NATO and embraced its nuclear strategy.

> Both the Diefenbaker and Pearson Governments were aware that Canada had signed on to NATO theories of employment of nuclear weapons starting in the 1950s. It was the secretly stated position . . .'in the event of a war involving NATO it is militarily essential that NATO forces should be able to use atomic and thermonuclear weapons in their defence from the outset.'[45]

In 1959 Canada bought the Starfighter, Voodoo, and BOMARC surface-to-air missile system. All three of these weapons systems were designed for use with nuclear armaments. In a memorandum from Paul Hellyer to Lester Pearson in December 1962, Hellyer outlined:

> In 1958 we (Canada) undertook to replace eight (8) squadrons of F-86's with the CF-104's and to undertake the strike attack role. This role consists of forward reconnaissance with atomic capability to deal with special targets. . . .SACEUR is counting on this capacity. If we do not fulfil our commitment, there will be intense pressure on us to withdraw and turn the facilities over to others.[46]

Hence, Canada agreed to play an active role in this nuclear alliance, which many choose to forget or ignore. Adding to the confusion was the Minister for External

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[43] At the same time in 1957, NATO adopted a 'massive retaliation' strategy. This posture was with counter-value targeting partly because of the lack of accuracy of the weapons. Moreover, this option was endorsed because it relied less on large numbers of expensive conventional forces and more on nuclear weapons. Part of the strategic response to downsize conventional forces so much was the advent of nuclear weapons in which 'massive response' was the new answer. Klepak, Defence and Security, 18, 28.

[44] Hillmer, Empire to Umpire, 13.

[45] Clearwater, Canadian Nuclear Weapons, 45.

[46] Ibid., 28.

Affairs who crusaded for nuclear disarmament. The government's credibility was further damaged as they failed to convey to Canadians that NATO's nuclear weapons[47] represented the only means to balance the large numerical advantage of the Warsaw Pact.

When the Cuban missile crisis occurred in 1962, more confused policy emerged as Diefenbaker hesitated to support the US blockade. Letourneau and Fortmann argued that the Prime Minister's inaction compromised Canada's credibility.[48] As the situation grew more tense, Canada's Defence Minister put the air force "on alert of his own authority."[49] Similarly, the leaders of both the navy and air force had increased readiness before the crisis became public on the 22nd of October 1962, as these actions were within their mandates. Nevertheless, Diefenbaker's government was unfamiliar with the mechanism of military posturing and feared the principle of civil control over the military had been compromised.[50]

Haydon, in his book on the subject, does not accept the argument that it was merely Diefenbaker's indecisiveness which led to the delay in authorizing a higher alert status. He attributes Diefenbaker's actions to his desire to keep Canada's voice independent in international affairs.[51] Moreover, the crisis occurred at a time when the Prime Minister was very suspicious of both his defence and external affairs staff. He resented how the military had outmaneuvered him into a hasty signing of the

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[47] In the mid 1960s, considering the conventional forces imbalance in Europe, NATO adopted the strategy of a 'flexible response.' This strategy dictated having adequate amounts of military power across the entire spectrum of conflict, to deter the Warsaw Pact. This strategy also implied a possible first use of nuclear weapons by the West. NATO could not use a more traditional strategy of trading space for time, because a third of the German Federal Republic's population lived within one hundred kilometers of the border. Galvin, "Trans-Atlantic partnership for Security" 12-13.

[48] Klepak, Defence and Security, 14.

[49] P. Haydon, The 1962 Cuban Missile Crisis (Toronto: CISS, 1993), 3.

[50] Ibid., 4.

[51] Ibid., 189.

NORAD agreement.[52] In his memoirs, Diefenbaker explained his delaying actions as a need for caution. In order not to provocate the Soviet Union, he avoided putting military forces on alert. Diefenbaker distrusted Kennedy and found his actions hasty.[53] Nevertheless, what Diefenbaker largely ignored were the military procedures that were enshrined in the existing bilateral and multi-lateral agreements. He was ignorant of the nuances as he had no military liaison staff in his cabinet and no military advisor of his own. The government had simply not spent enough time understanding defence policy.[54]

Haydon concludes that faced with a complex situation with many alternatives, Diefenbaker's management style had left him with a bureaucracy which could not provide him with the proper analysis.[55] What also came to light in this crisis, according to Haydon, was how the senior leadership of both the US and Canadian air force and navy were very efficiently linked, to the extent that equipment, ammunition, and tasking of Canada's air force was interchangeable with USAF units. Moreover, the government failed to differentiate between a NATO multilateral operation in which Canadian consultation was a must and NORAD defence agreements in which the bilateral defence was agreed upon ahead of time.[56] Consequently, NORAD had bred transnationalism at operational levels.

> The quiet way in which RCAF NORAD forces were able to honor their obligations reflects the high level of mutual understanding and trust between the RCAF and USAF. In continental defence, close working relationships existed without any threat to the sovereignty of either partner. But this was not understood in Ottawa.[57]

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[52] Bland, Chiefs of Defence 24 and 66.
[53] Diefenbaker was not going to be pushed into adopting US's solutions to problems. John Diefenbaker, One Canada: The Tumultuous Years 1962-67 (Toronto: Macmillan of Canada, 1977) 86.
[54] Bland, Chiefs of Defence 67.
[55] Haydon, The 1962 Cuban Missile Crisis, 195.
[56] Ibid., 206.
[57] Ibid., 218.

Bland concluded that the federal government's poor handling of the Cuban missile crisis led to the subsequent re-organization of the military. The new structures were to ensure tighter civil control over Canada's military.[58]

Following the Cuban crisis, as the BOMARC bases were nearing completion and the CF-104 was entering service, Canadian public opinion swayed in favor of arming the nuclear platforms acquired under Diefenbaker. Yet, the Conservative Prime Minister had not held any tangible meetings with the US on arming the platforms. Critics pointed to a backward defence policy; Canada bought weapons first, then found roles for them.

In January 1963, a retiring NATO SACEUR told Ottawa reporters that Canada was not meeting its commitments, especially its nuclear ones. Diefenbaker denied that Canada had any nuclear commitments. Washington's response was that Canada had chosen its nuclear delivery platforms to affirm its nuclear role. The result of this cross-border disagreement led to the resignation of the Canadian Deputy Minister for Defence.[59] This on-going confused nuclear debate finally led Pearson, the opposition leader, to declare his support for the acquisition of nuclear warheads for its defensive weapon platforms.[60] Following his election victory, Pearson settled the nuclear weapons problem with Kennedy in May 1963.[61] Canada was to be a semi-nuclear power, meaning that it would not use nuclear weapons without US approval.[62] Moreover, Canada retained a veto power over the use of nuclear weapons from

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[58] Ibid., 41 and Bland, Chiefs of Defence 2.
[59] Morton, A Military History of Canada, 248, 255.
[60] Clearwater, Canadian Nuclear Weapons, 30.
[61] Hillmer, Empire to Umpire, 260, 261, 264.
[62] Klepak, Defence and Security, 20.

Canadian platforms. Yet, at the same time, Canada signed away its right to consultation in an emergency.[63]

Looking at the RCAF's fighter forces in the mid 1960s, Canada had acquired fewer Starfighters than Sabres. This, combined with base closure in France,[64] left the overall air force presence in Europe with six squadrons; half the amount from a decade earlier. In North America, technological advances were changing the nature of the Soviet threat. During the 1950s, manned bombers were the only way for the Soviet Union to deliver nuclear weapons across the North Pole. By the mid 1960s, intercontinental ballistic missiles (ICBMs) were developed. With these missiles, the warning of an attack on North America went from six hours to half an hour.[65] Since the ICBM threat could not be met with manned fighters, further reductions in NORAD fighter assets occurred.[66]

Looking at maritime aviation during the 1960s, it was the Argus, Tracker, and Sea King platforms that were used to carry out anti-submarine warfare (ASW) as well as coastal patrol. The ASW role was part of the navy's primary NATO commitment of protecting sea links to Europe, as it did in World War II. As for air transport during the 1950-60s, the RCAF was using North Star, Yukon, Cosmopolitan, Caribou, and the newly-acquired Hercules aircraft. One increasingly visible air transport role was in support of UN peacekeeping operations in Asia, Africa, and the Middle-East. UN flying became the role from which the transport and helicopter squadrons derived the most public approval.

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[63] A right the German government did not have, and the Americans did not want them to hear about it either. Clearwater, Canadian Nuclear Weapons, 36, 44, 53.

[64] Two CF-104 squadrons were closed, due to France's departure from NATO's integrated military structure.

[65] SLBM's later reduce that time to much less depending on their deployment area.

[66] Klepak. Defence and Security, 14.

In 1964, Defence Minister Paul Hellyer presented a new White Paper on defence.[67] It identified three objectives. First, Canada was to be more independent within NATO. This was to occur by gaining more functional autonomy for troops in Europe, which required less costly equipment. Second, Canada would move away from nuclear weapons. Hellyer saw nuclear war "was near the bottom on the scale of probabilities."[68] Third, the military was to be reorganized to enable staff reductions and cost savings. The cost savings were to be used to purchase equipment.[69]

The most noticeable change was Hellyer's push for an administrative re-organization. The idea stemmed in part from the Glassco Commission report tabled in 1961. The Commission had done "a splendid job of exposing the waste and extravagance resulting from duplication and triplication."[70] The report suggested all departments of the defence establishment should come under a single administrative model. As well, Hellyer believed that the three services were preparing for different kinds of wars.[71] These issues were to be remedied in the re-organization. Successive pieces of legislation from 1964 onwards amalgamated the air force with the army and navy. This began with the announcement on the 15th of August 1963 that the titles of Chief of staff of the navy, army, and air force ceased to exist. A new position called the Chief of the Defence Staff was bestowed upon Air Chief Marshal Frank Miller. Hellyer's goal in doing so was to have a central and national point of view on defence matters, free from tri-service rivalries. The various service Chiefs would no longer have equal access to the Minister. Hellyer wanted to make defence planning top-

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[67] Hellyer's White Paper also mentioned an 'intervention force' implying a turn away from the Soviet threat, towards a more flexible, mobile force. Such a force could be used for either UN or NATO operations. It is argued by some that Hellyer was indirectly putting Peacekeeping as the top priority and NORAD as lowest.

[68] Paul Hellyer, Damn the Torpedoes (Toronto: MacClelland & Stewart Inc., 1990), 34.

[69] It was pointed out how a decade earlier capital acquisitions represented forty-two percent of the defence budget. In 1963 they had dropped to a mere thirteen-percent. White Paper on Defence (Ottawa: Queen's Printer, 1964) 21-24.

[70] Hellyer, Damn the Topredoes, 36.

down instead of bottom-up.[72] Unification was made formal on the 1st of February 1968, with the Canadian Armed Forces Reorganization Act, c. 96.[73]

> The Services known before the coming into force of this Part as the Royal Canadian Navy, the Canadian Army and the Royal Canadian Air Force are embodied in the Canadian Forces.[74]

Tucker argues that the new organizational structure decreased the influence of Canada's top Generals in shaping defence policy, which was one of its goals.[75] Hellyer's re-organization left the armed forces separated into six commands: mobile command, air transport command, maritime command, air defence command, training command, and materiel command.[76] Surprisingly, the air force was the only service left without a central authority, as some tactical air units came under mobile command (the army) and functional control over coastal aircraft came under maritime command (the navy). Air force resources were effectively fragmented amongst five of the six commands. Bland depicted Hellyer's unification as a transfer from the command era of military leadership, to a management era.[77] To his credit, Hellyer's reforms did save one-hundred and forty-four million in administration costs. Furthermore, the percentage of the budget to acquire weapons went from 13 percent in 1964 to 20 percent in 1966.[78]

With the increased capital spending the air force purchased one-hundred and sixteen CF-5 Freedom Fighters as replacements for the Canadian based Sabres. The

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[71] Ibid., 33.
[72] Bland, Chiefs of Defence 1-2 and 16.
[73] Acts of the Parliament of Canada Chap 96, 1966-67 statutes in force, 1225-1271.
[74] Ibid., 1227.
[75] Similarly, the Cabinet Defence Committee was given a larger emphasis under Trudeau. M. Tucker, Canadian Foreign Policy (Toronto: McGraw-Hill Ryerson Ltd., 1980), 152.
[76] Klepak, Defence and Security, 23.
[77] The management era led to a disconnect between civilian bureaucrats saving money, and senior officers trying to maintain effective combat capabilities. The result was streamlining the efficiency of details without taking care of major issues. Overall, Nine Generals, along with the Chief of Defence Staff were fired, or retired early for resisting unification during its three year implementation. Douglas Bland, The administration of Defence Policy in Canada 1947-1985 (Kingston: Ronald Frye & Company, 1987).

air force used the CF-5 for fighter lead-in training, ground attack, and tactical reconnaissance.[79] Moreover, the single seat CF-5 had an air refueling capability with the Boeing 707, which was widely recognized as a force multiplier by the mid-1960s.[80] Consequently, the CF-5's transatlantic capability made it the obvious choice to deploy as part of the Canadian Air-Sea Transportable (CAST)[81] commitment to Norway.

Unfortunately, Hellyer's acquisition campaign was short lived. The general climate of the 1960s, not least of all as a function of the war in Vietnam, led public opinion against defence spending. Buying less military equipment was the easy way to reduce military spending. With Canadians feeling secure many even questioned Canadian participation in NATO and NORAD.[82] Consequently, the combination of an unfavorable climate and unification had Canada's military strength drop by 9 percent, from one-hundred twenty-one thousand to one-hundred and ten thousand.[83]

The next set of defence policy changes impacting the air force occurred under Prime Minister Pierre Elliott Trudeau.[84] His defence review called for a re-ordering of defence priorities. The new ranking was the opposite of the priorities outlined in 1964. Sovereignty was advocated as the primary role of the forces, then NORAD, the

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[78] Klepak, Defence and Security, 20.

[79] The Freedom Fighter was chosen over the more expensive F-4 Phantom. Both 433 Squadron in Bagotville and 434 Squadron in Chatham were dedicated ground attack squadrons to re-enforce NATO from the mid 1970s until the 1988, after which the F-5 was only used for fighter lead-in training.

[80] DND, "Fighter aircraft history, development, and tactics" Ottawa, AIRCOM CFACM 2-322, 7.2.

[81] In 1966 Canada took on a NATO commitment to beef up Norway in time of crisis, this was referred to as 'Canadian mobile force (north).' In 1969 the force was re-named the 'Rapid Reinforcement Canadian Air-Sea Transportable (CAST) brigade group.' Canada was chosen to operate in Norway because of its northern expertise.

[82] Galvin, "Trans-Atlantic partnership for Security" 9.

[83] Morton, A Military History of Canada, 250, 254.

[84] Boldly, Trudeau promoted his belief that Canada should become a non-aligned state. After several days of discussion with his new cabinet and the threat of resignation by several staff, Trudeau concluded his idea of Canada becoming neutral was wrong. Hillmer, Empire to Umpire, 289.

UN, and the last priority NATO with only a token force in Europe.[85] Trudeau wanted less European and UN commitments because he believed civil unrest due to language differences was the more likely problem.[86] The net result was cuts in Canada's commitment to NATO. For the air force, the number of squadrons in Europe was cut in half from six to three.[87] A year after the review, a White Paper called 'Defence in the Seventies' was released. It outlined internal security as part of Canada's sovereignty role.[88]

Trudeau also advocated a gradual end to Canada's nuclear roles because he perceived them as destabilizing.[89] Consequently, in May 1971 Canada stopped nuclear attack training on the CF-104. From then on the Starfighter was used as a conventional ground attack aircraft; a role it was not designed to fulfill.[90] The BOMARC squadrons were disbanded in September 1972. Only the CF-101 kept its nuclear tipped 'Genie' missiles until 1984 to counter the Soviet bomber threat from the North.[91]

The Trudeau government also froze the defence budget from 1969-72. The NATO cuts left Canada's air force in Europe with two Starfighter squadrons designated for ground attack and one for reconnaissance. In Canada, spending cuts

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[85] Klepak, Defence and Security, 15.
[86] Hillmer, Empire to Umpire, 285-286.
[87] Of significance was the poor timing of the NATO force reduction. France had left NATO's integrated military command in 1966 and the British had just reduced their NATO forces. Therefore, with Canada's partial withdrawal the Warsaw Pact was not pressured to negotiate with the West, as NATO was disarming itself. Klepak, Defence and Security, 15, 30.
[88] Not surprising, as Trudeau had used the 'War Measures Act' to end French extremist violence in Quebec. Morton, A Military History of Canada, 256.
[89] Tucker, Canadian Foreign Policy, 144-146.
[90] Conventional dive-bombing required the CF-104 to get closer to the target, and by the same token closer to the ground, than nuclear deliveries. Moreover, the Starfighters short wings made for longer dive recoveries. Hence, a dangerous combination for any pilot errors. 4 Wing Historic Booklet, 16.
[91] Clearwater, Canadian Nuclear Weapons, 15 and 58. In the early 1980s Trudeau agreed to a cost free, and politically acceptable, way of enhancing the West's nuclear deterrent, by letting the US carry out cruise missile tests. "Canada Defence Policy" Aviation Week (Sept 1987).

led to seventy-four new CF-5s being put into storage.[92] By 1972, the percentage of defence spending on equipment had dropped to a meager 9 percent.[93] As well, the budget cuts affected the air force's NORAD commitment of sixty-six Voodoos.[94] The number of CF-101s was reduced to thirty-six in 1975.[95] The smaller defence budget brought about a 23 percent overall force reduction, from one-hundred ten-thousand to eighty-five thousand.[96]

For the air force, the only growth area of the early 1970s was in army air support. The helicopter had gained popularity due to its extensive use in Vietnam. Canada acquired and formed squadrons operating the Kiowa light observation, Twin Huey utility, and Chinook heavy lift helicopters.

As to the air force's recently decapitated organizational structure, debates arose whether or not to recreate an independent air arm. Again, what was not helping matters was the lack of strategic units. Surprisingly, Canada's senior air force officers were able to highlight the lack of a focal point for air force leadership as well as air power thought and expertise. They pointed out how airpower skills and knowledge were essential ingredients to Canada's future security, which meant unification was flawed.[97] Moreover, without a focal point during times of dwindling defence budgets, airpower assets would be the first to be axed. It took seven years of discussions with the army and navy to reach a compromise. Air Command (AIRCOM) was to be formed with all air power assets reunited under the leadership of a pilot.

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[92] Morton, A Military History of Canada, 255, 259. Similarly, the DEW line was reduced to thirty-one sites in 1971. Cuthbertson, Canadian Military Independence, 67.

[93] Klepak, Defence and Security, 20.

[94] Canada had replaced its 56 older Voodoos with 66 newer ones from storage in Arizona between 1970-72. The USAF wanted the older aircraft because they had operational in-flight refuelling probes. D. Haglund, ed. Canada's Defence Industrial Base (Kingston: Ronald Fry & Company, 1988), 154.

[95] Klepak, Defence and Security, 21.

[96] Morton, A Military History of Canada, 255.

[97] Steve James, The Formation of Air Command: A Struggle for Survival Master's of Arts thesis, (Kingston: RMC, 1989), 104.

It was in January 1975 that Defence Minister James Richardson announced the creation of AIRCOM.[98] The announcement was seen by many as a sensible step backwards from unification. AIRCOM "was given command of all Canadian Forces air activities, including the Naval Fleet Air Arm, and Army Flying Corps."[99] The AIRCOM solution did result in complex command and control arrangements:

> Long term decisions on air resource allocation are by the land, sea and air triumvirate, and not by Air Command in isolation. National Defence Headquarters'. . . acts as a moderating mechanism in the air power decision-making process.[100]

The groups which subsequently made up AIRCOM were the maritime air group (MAG), ten tactical air group (10 TAG), air transport group (ATG), fighter group (FG), one Canadian air division 1(CA) DIV,[101] fourteen training group (14 TRG), and the air reserve group (ARG). AIRCOM became the focal point for air force thought in Canada. New air force training courses were instituted to disseminate air doctrine at all levels, beginning with an air force indoctrination course for all new officers. This was followed by the Canadian Forces School of Aerospace Studies courses. Eventually AIRCOM ran an air force staff school as well, but only years later.[102]

Despite the positive development with the creation of AIRCOM, the air force was feeling the budget cuts from the federal government. From 1968 to 1980, the defence budget was reduced 40 percent in terms of GDP from 2.6% of GDP to 1.6% of GDP.[103] Canada's NATO allies were not pleased with Canada's defence spending

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[98] W. Russell, "The next logical step after establishment of air command: a support command" Canadian Defence Quarterly (Spring 75), 28.
[99] If it flew, it belonged to the air force. www.airforce.dnd.ca/eng/modern.htm 6.
[100] James, The Formation of Air Command, 109.
[101] The 1 (CA) DIV, in Europe comprised of both air and land forces. The air force squadrons which fell under this division were three fighter squadrons and one tactical helicopter squadron. As well, a few utility aircraft such as the T-33 and Dash-7 were also operating as part of this group.
[102] Ibid., 107.
[103] Klepak, Defence and Security, 20.

and some applied pressure on the Trudeau government. Bowing in part to foreign economic pressures, Trudeau decided to modernize its NATO air force contingent on two major acquisitions: the Aurora maritime patrol aircraft and CF-18 Hornet fighter aircraft.[104]

Since World War II, Canada's maritime air role consisted of ASW in the North-West Atlantic. The ability to detect, track and destroy submarines helped ensure the vital re-supply lines to North America would remain open in a European conflict. The air force's ASW activities required very sophisticated equipment and training, but Canada had been losing these capabilities. This was recognized by the Defence Minister with the announcement to replace the Argus back in 1966.

Consequently, it was only in the summer of 1976 that the government agreed to purchase eighteen CP-140 Long Range Patrol Aircraft (LRPA) to replace the aging Argus fleet.[105] The LRPA acquisition program had been a victim of Trudeau's re-prioritization of defence issues. As sovereignty had become the number one priority, the Aurora program was shelved as it was labeled a submarine fighting platform, which was presented as a priority three alliance item under Trudeau.[106] There was confusion as to whether defending Canada or collaboration with allies was the future direction of Canada's military.[107] It was only when the more traditional results of the goal setting process returned that the acquisition was made possible.

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[104] Trudeau's decision to cut NATO forces was not well received by European leaders. Moreover, the 1973 oil crisis and expansion of the European Community had the Liberal government feeling economically isolated. To regain some ground with Canada's allies, Trudeau decided to increase the defence budget slightly. For similar reasons, Canada also decided to host the NATO Council in 1974. Not surprisingly, Canada was designated by some as a free rider in NATO. Ibid., 16, 20, 30.

[105] Tucker, Canadian Foreign Policy, 143.

[106] In 1969 Trudeau saw the ability to prosecute Soviet nuclear submarines as destabilizing in the superpower deterrent relationship, because it was targeting the Soviet Union's second-strike capability. What he failed to appreciate was that the Soviet Union were doing the same with their ASW aircraft. Ibid., 144-145.

[107] Such as the four DDH-280 destroyers being in built in Quebec, primarily for ASW.

Historical ties prevailed as the absence of a physical threat to Canada led the Liberals to back down from the sovereignty ideal. The 1971 White Paper had created an illogical gap between surveillance, enforcement, and Canada's alliance commitments.[108] For the air force there was no question. The organization's culture had a proud history of courage and heroism in battle over the oceans, as well as in collaboration with the large Anglo-Saxon powers.[109] Consequently, Tucker posits the final LRPA choice marked an important "shift in Canadian defence priorities away from the 1969 sovereignty protection role toward more traditional alliance commitments."[110]

Predictably, the process of acquiring the new LRPA consisted largely of bureaucratic politics between the demands of the military for a cutting edge platform, the finance department for the cheapest alternative, and the trade department for regional industrial benefits.[111] Many manufacturers pitched for Canada's next LRPA.[112] The final bids were seven-hundred million for eighteen Boeing 707 LRPA, or five-hundred and fifty million for twenty-three Lockheed P-3C LRPA.[113] Regrettably, the government stalled, so both offers lapsed as neither offered much in the way of industrial benefits in April 1975. The delay resulted in the final contract being a much worse deal, and cost 1.2 billion for eighteen P-3C's.[114] The CP-140 Aurora finally entered service in 1980.

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[108] Ibid., 147.
[109] Ibid., 149.
[110] Ibid., 144.
[111] The US pushed for Canada to acquire the P-3C Orion as it was their future platform for ASW, thereby providing commonality. The P-3C was initially rejected because the off-the-shelf purchase gave few industrial offsets. Ibid., 156-157.
[112] The aircraft considered were the French Super-Atlantic, British Nimrod, Boeing 707 LRPA, DC-10, DH-7, as well as the P-3C. The list was quickly shortened as the Super-Atlantic had only two engines; not enough for remote operations in the North. The DH-7 had no transatlantic capability and the DC-10 was to expensive to operate at low altitude. The Nimrod was eliminated because it was unproven at the time.
[113] Ibid., 157.
[114] Ibid., 162.

In April 1980, Trudeau agreed to acquire one hundred and thirty-seven CF-18 aircraft at a cost of four billion dollars.[115] The multi-role CF-18 eventually replaced both the Voodoo interceptor and Starfighter[116] ground-attack aircraft. The first operational CF-18 squadron was 409 fulfilling NORAD duties from 1983-85, after which it became the first CF-18 squadron in Europe.[117]

The decision process that brought about the CF-18 acquisition stemmed from the New Fighter Aircraft (NFA) program. The NFA was characterized by Boyd as being "one of the more rational procurement decisions in the not-always-rational recent history of Canadian aircraft acquisition."[118] It is argued that the advent of AIRCOM as the air force's renewed consolidated voice directly impacted upon the successful purchase of Canada's NFA. The centralized organizational structure for the air force enhanced its bargaining power within the overall defence structure. Moreover, the culture of Canada's air combat pilots since World War I was effective in presenting the continued case for their relevance into the next millennium.

The problem with acquisitions was that elections were not won on promises of buying aircraft, which left little incentive for making purchases. The improved military capability resulting from an aircraft purchase was largely abstract to the majority of Canadians.[119] Consequently, acquisitions rarely resulted from sound strategic planning, but from a plea to ensure 'force structure survival.' This was the

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[115] This represented the largest military contract in Canadian military history. Morton, A Military History of Canada, 260.

[116] No. 441 Squadron was the last CF-104 Squadron, it disbanded in 1986. Canada gave its surplus CF-104s to Greece and Turkey. The last Voodoo flight occurred in 1985. Canada was the last country in the world to fly the Voodoo. 4 Wing Cold Lake Historic Booklet, 19,42.

[117] Deliveries of the CF-18 lasted seven years resulting in four operational squadrons in Canada and three in Germany. Ibid., 18.

[118] Frank L. Boyd, "The Politics of Canadian Defence Procurement" in D. Haglund, ed. Canada's Defence Industrial Base (Kingston: Ronald Fry & Company, 1988), 137.

[119] As Gilles Lamontagne later stated in a 1983 speech. Ibid., 138.

context in which the NFA program evolved.[120] At its inception, deferred acquisitions and underfunding had left Canada's CF-104[121] fighters as the oldest in NATO.[122] Moreover, Canada's NORAD fleet of obsolescent Voodoos was due to run out of spare parts in the early 1980s.[123]

Canada's decision to seek a more technologically advanced 'multi-role' aircraft helped reconcile its two different commitments: NORAD (Air Defence) and NATO (Ground Attack). At the outset many different aircraft were considered for the program. The list included the Mirage 2000, F-14, F-15, F-16, F-18, F-18 Cobra, as well as the Panavia Tornado. Moreover, Canada was offered 124 F-14 Tomcats from Grumman for one billion dollars. Canada refused, as it did the opportunity to buy 120 F-15s for two billion dollars. Both deals were killed for political reasons related to a lack of industrial benefits for Canada. As in the case of the LRPA, missed opportunities cost a lot of money in the end.

As the NFA program progressed several key issues were spelled out which simplified the decision process. First, the government put a 2.34 billion dollar budget restriction. Second, the politicians attributed much importance to large industrial offsets in Canada, as these would help them sell the program to the public. The final determinant was that the aircraft would be bought off-the-shelf. In the cabinet, the focus was on averting what it saw as the 'Cadillac Syndrome'(when the air force demanded only the best).[124] The Department of National Defence later specified that

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[120] Ibid., 139.

[121] By 1981, half of the 239 Starfighters acquired had been lost in crashes, others had been cannibalized, as well as 40 sold to Norway and Denmark. Ibid., 153.

[122] Moreover, a NATO memorandum dated 1975 concluded that Canada was not contributing to alliance defence commensurate with its economic strength. G. Porter, In Retreat: The Canadian Forces in the Trudeau Years (Toronto: Deneau and Greenberg, 1978), 164-165.

[123] Haglund, Canada's Defence Industrial Base, 139.

[124] The air force was critized for the failure of the Arrow program because of insistence on the best which created huge cost overruns. Ibid., 142 and 155.

at least one-hundred and thirty aircraft were to be purchased.[125] Only two aircraft made a short list, the F-16 and F-18. The politicians had the two contending companies battle it out for the most attractive industrial benefits proposal. As for the air force, it preferred the multi-engine F-18 to fly over Canada's vast sparse territory, despite the fact most of its NATO allies chose the lower cost F-16.[126]

As two federal elections preceded the final decision, much grand standing occurred by the two competitors. Finally, the Minister of Industry declassified reports comparing industrial-benefits of the two competitors. The bottom line was that the F-18 provided Quebec with one-hundred million dollars more in offsets than the F-16. Considering the government's accommodating stance towards Quebec, the issue was resolved.[127] Canada was fortunate that the timing of the purchase was during a buyer's market.

The renewal of the NORAD[128] treaty between President Ronald Reagan and Prime Minister Brian Mulroney in 1986 paved the way for the modernization of the DEW line. The refurbished radar line was to be named the North Warning System (NWS).[129] Canada's contribution was 1.2 billion of the planned seven billion dollar bill. The aim of the NWS was to detect the threat of manned bombers and cruise missiles coming over the North Pole. Both threats Canada's CF-18s could neutralize.

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[125] This led to the elimination of the F-15 as its cost had gone up from the offer several years earlier. Similarly, the new F-14s were also above the allocated budget for one-hundred and thirty aircraft, so it was eliminated.

[126] Ibid., 147.

[127] Several lessons were learnt from the NFA program. Overall the determining factors in future acquisitions would be the size of the defence budget, regional industrial benefits, political intervention, and that off-the-shelf acquisition of aircraft would always mean a compromise in terms of requirements. Ibid., 148.

[128] DND, Defence 87 (Ottawa: Supply and Services Canada, 1987), 60.

[129] Fifty-four radar sites were planned along the 70th parallel, as well as, five forward operating bases (FOB's) for fighters. The new agreement also had Canadians takeover radar sites the US had been manning since the 1950s. NORAD published handout given on a U of M field trip to Colorado in 1994. 4, 15.

However, with the subsequent collapse of the Soviet Union, the Pentagon delayed and cancelled parts of the proposed NWS.[130]

Comparing NORAD's objectives in the late 1980s to its inception, there was little change really. Canada and the US still assisted each other in airspace sovereignty, through surveillance, warning, and attack assessment.[131] Both countries contributed in deterring an attack on North America and were ready to respond with their integrated air defence assets should deterrence fail.[132] During peacetime, the most common NORAD mission RCAF fighters performed were intercepts of Soviet probes within North American airspace, usually by Soviet long-range Bear-F ASW aircraft headed for Cuba or Bear H aircraft which carried air-launched cruise missiles.

Looking at NATO in the 1980s, the conventional force imbalance had grown.[133] The imbalance was tolerable considering the West's superior technology, as well as NATO's nuclear strategy which was based upon the first use of nuclear weapons.[134] Unfortunately, there were almost as many NATO fighters training in Goose Bay, as Canadian fighters based in Germany. Looking at the overall strength of the Canadian Forces as compared to other NATO nations exposed Canada's weakness in the alliance. In 1986, Canada had the lowest defence spending as a percentage of GDP, and the lowest percentage of armed forces as part of the labor force of the major NATO allies.[135] Moreover, the federal government admitted serious equipment shortfalls.[136]

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[130] The NWS eventually consisted of eleven minimally staffed long-range radars with thirty-six unattended short-range radar sites and four FOB's. J. Honderich, Arctic Imperative: is Canada losing the North? (Toronto: University of Toronto Press, 1987), 107.

[131] Cutherbertson, Canadian Military Independence, 91.

[132] NORAD published Handout, 1.

[133] The Warsaw Pact had sixty-four divisions to face NATO's twenty-four.

[134] Galvin, "Trans-Atlantic partnership for Security" 12.

[135] Excluding Luxembourg and Iceland. Defence 87, 16.

[136] On the air force side, the lack of capability was alarming. For instance, it was estimated that it took five Auroras to track a submarine situated a thousand miles from its base. With three Auroras on maintenance, Canada could only track three submarines at any one time. Aviation

Like previous governments, the Conservatives decided to carry out an extensive review of defence, which resulted in the 1987 White Paper entitled Challenge and Commitment. The paper was praised by most analysts for its depth and commitment to the future. The major issue the White Paper addressed was the widening gap between Canada's commitments and its capabilities.[137] To remedy the situation the White Paper promised 2 percent real growth in defence spending over the next ten to fifteen years and a target of 25 percent of the budget for capital expenditures. It was argued that allocation of predictable long-term financing was essential in view of the lead-time required for acquiring sophisticated weapons.[138]

In strategic terms, the 1987 White Paper "restated the essential principles which have traditionally guided Canadian policy. . ."[139] The priorities were collective security and defence, arms control, and the peaceful resolution of disputes in that order. The White Paper clearly stated that Canada's greatest security threat was a nuclear exchange between the Soviet Union and the US. Furthermore, the paper outlined Canada's contribution to deterrence, which consisted of denying the Soviet Union of the use of Canadian airspace, territory or waters to stage an attack on US strategic nuclear forces.

This commitment was repackaged for the public as a larger sovereignty commitment, which was easier to sell. Consequently, the 1987 White Paper promised six more Aurora's and eighteen more CF-18s. As well, the White Paper consolidated Canada's commitment to central Europe and ended its commitment to Norway. Moreover, in times of crisis two Canadian-based CF-18 squadrons were to augment

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Week, 64. Similarly, it would require all of Canada's operational CF-18 squadrons to man continuously a two-hundred and ten-mile wide piece of Canadian airspace.

[137] This gap resulted from years of accepting commitments while cutting military spending. The Americans attributed the gap mostly to the Diefenbaker and Trudeau governments. Seminar given at College Militaire Royal in 1988.

[138] Aviation Week, 53, 64.

the three CF-18 squadrons in Germany.[140] Unlike Trudeau's vague sovereignty concept, the 1987 White Paper defined sovereignty adeptly. The White Paper stated:

> A country's sovereignty must not be only legislative, it must also be credible. In the sense that the country must be able to possess control over all its territory, nationhood begins with the effective exercise of sovereignty. In Canada this control implies its airspace, the coastal waters of its three oceans, under the ice of the Arctic and on its northern land.[141]

It required the capability to control Canada's airspace with the ability to shoot bullets and missiles, rather than just pictures.[142] The air force's objective was to ensure it could operate anywhere within Canadian jurisdictional limits.[143] As a maritime nation, Canada had to be able to control all three of its oceans as a function of their economic and strategic value.[144]

The last priority stated in the 1987 White Paper was peacekeeping. Canada had a proud record of participating in every UN peacekeeping operation. The air force provided countless transport aircraft and helicopters to this end. Peacekeeping was popular[145] because the costs were low and the political benefits were high, or at least more visible.[146]

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[139] Klepak, Defence and Security, 17.
[140] DND, Challenge and Commitment (Ottawa: Dept Supply and Services, 1987), 62.
[141] Ibid.
[142] C. Diamond, Arctic Sovereignty at any price? (Kingston: National Defence College, 1980), 20.
[143] DND, Challenge and Commitment, 6.
[144] The interest in Arctic sovereignty resulted from an incident a few years earlier when the US Coast Guard cutter the *Polar Sea* transited Canada's northwest passage without permission. Diamond, Arctic Sovereignty at any price? 20.
[145] Fortmann and Letourneau further explain the appeal of peacekeeping to Canadians: The history of Canadian defence underlines the vagaries and inconsistencies of a policy which, because of its dependent, indirect, complex, and costly nature, has never inspired a great deal of conviction in the Canadian government and public. From this perspective, Canada has never appeared to be particularly comfortable in its role as a promoter of deterrence and Canadians have tended to view their defence policy as little more than a reflection of their subordination to foreign interests and their impotence in the face of an international situation governed by the logic of conflict rather than that of peace. It is in this context that the peaceful orientation of Canadian security policy, and in particular, the importance assigned by Canada to peacekeeping and arms control assumes its full significance. This orientation, in fact, symbolizes the Canadian desire to escape from the logic of peace by force and to

As the end of the Cold War was approaching, herein is a summary of the operational roles that the air force performed. Domestically, starting with MAG, its primary role was the surveillance of the Soviet submarine fleet, as part of the West's deterrent. As well, MAG provided air support to Canada's naval fleet, performed northern sovereignty patrols, fisheries operations, pollution monitoring, coastal surveillance, search and rescue (SAR), and missions in support of the Department of Employment and Immigration. 10 TAG provided airmobile support for the army which included, observation, heavy lift, and air support, as well as Northern mapping, VIP transport, disaster relief, SAR, and fire-fighting. ATG carried out airlift, re-supply, SAR, and air to air refueling. 14 Training Group was responsible for all ground and flight courses, as well as the Snowbirds air demonstration team. In the North, Twin Otters undertook transport for cadets, rangers, as well as SAR. Fighter Group performed air sovereignty patrols and alert duties, and offensive/defensive counter air training, as well as support to ground and maritime operations.[147]

Overall in 1987, the air force operated twenty-five different types of aircraft within a fleet of 675 aircraft. This number was down from a total fleet of 2000 aircraft only three decades earlier. Of significance, three quarters of the aircraft were the same as in 1971.[148]

A year after the Conservative government's defence review, Canada's politicians followed peacetime tradition by announcing major cuts in the defence budget. Plans to acquire more aircraft, as argued in the 1987 White Paper, were cancelled, and

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develop for itself a more positive role in the area of dispute resolution. Klepak, Defence and Security, 32.

[146] However, hawkish military analysts warned that peacekeeping was, and always must be considered a secondary role, despite public opinion. This was also advocated in lectures at U of M with Prof. Fergusson, 1993. Klepak, Defence and Security, 32 and 41.

[147] Defence 87, 60, 90.

[148] Canada still had nine Dakotas (from 1943), fifty-six T-33 (1952), twenty-nine trackers (1957), one hundred twenty-four T-114 (1962), thirty Sea Kings (1963), twelve Buffalos (1965), fifty-eight CF-5 (1965). Aviation Week, 57, 69.

several of the older fleets were eliminated. In 1989, with a mounting public deficit and debt, more funding cuts occurred. Moreover, the fall of the Berlin wall and breakup of the Soviet Union marked an abrupt end to the Cold War. This led to seven base closures, as well as the retirement of more aircraft. Further budget cuts in the late 1980s left Canada less influential in its alliances and more reliant upon the US.[149]

ORGANIZATIONAL THEORY AND THE COLD WAR

The air force official goals during the period were the defence of Canada, avoiding a nuclear conflict, and contributing to a peaceful international setting. The air force accomplished these goals by enhancing the West's deterrent capability through collective agreements within NATO and NORAD, as well as participating in UN Peacekeeping missions.

How the air force adopted these goals can be answered by analyzing the dimensions of the goal setting process that marked this period. Based on the four dimensions outlined earlier, it was the reactionary and historical dimensions that dominated over the normative and rational. Canada's air force was reactionary as it adapted to the maturing Soviet threat. It was never strong enough militarily to take the lead in technology and deal with a Soviet threat independently. Instead Canada's leadership sat back until faced with undeniable threats, and then reacted. Canada's air intercept forces is one example. Canada only started integration of its air defence assets with the US after the Soviets successful nuclear test and their development of the TU-5 long-range bomber for delivery. Evidence of the importance of the historical dimension of goal setting can also be seen with the air force's on-going alliance relationships. The two main ones were with the British, following the RCAF's inception in the 1920s, and the Americans with the establishment of the

[149] Klepak, Defence and Security, 17, 22.

PJBD early in World War II. These two allies dominated the leadership of Canada's collective defence organizations: NORAD and NATO.

Similarly, these alliance commitments were the basis for most of the warfighting roles adopted by the air force during the Cold War. Adding the UN commitments to these two meant that external influences largely determined all of the roles that the air force fulfilled. Evidence of these alliance driven roles began during the Korean conflict when Canada was asked to strengthen NATO by re-enforcing Europe and meet new bomber threats at home with more integration with the US. The formation of forty squadrons followed; a tremendous amount of growth for the peacetime organization as it more than tripled in size in six years. Similarly, it was participation in NATO and NORAD which led to Canada's decision to embrace deterrence over defence in the 1950s. This was an important shift in strategic thinking for Canadians and represented a new role for Canada's air force. During the 1970s, alliance commitments also contributed to arguments that swayed the Liberal government in favor of purchasing the CP-140 Aurora and CF-18 Hornet.

The external environment's influence in shaping the air force's development can also be seen through the direct correlation between the level of international tensions and the air force's size. Starting with the immediate post-World War II era, there was little to worry about internationally and the air force was drastically reduced. The focus was demobilization and the RCAF did not even possess permanent squadrons in 1947. As tensions increased the air force established fighter squadrons. With the outbreak of the Korean War massive increases in military spending rendered the air force the largest service in the country.

As the Cold War progressed the superpowers achieved overwhelming nuclear destructive capabilities. For its part, Canada's significance in the power equation diminished. Moreover, the external environment became a predictable stalemate,

albeit based upon a balance of terror. This stalemate translated into a stable external environment, which would, in turn, lead to the erosion of Canada's air assets. From 1958 onwards, successive Prime Ministers re-evaluated defence priorities and commitments with the underlying aim of reducing budgets. Part of the problem for air force advocates was the often conflicting and intangible pillars of Canadian defence and security that demanded widely different roles. These included the defence of Canada's territorial integrity, the defence of North America from a surprise nuclear attack, transatlantic commitments, and the promotion of peace and security around the globe. Unfortunately, the ascribed roles became a liability for the air force as politicians focused on dissimilar pillars to gain political advantage. Even with the air force's official goals included in the various White Papers on defence, the problem was the lack of detailed and specific decisions on the role of the air force. Without clearly defining and specifying the defence policy requirements, the politicians were able to cut defence spending as Canada was at peace.

A consequence of this relative peace was a lack of specific decisions about Canadian requirements necessary to maintain peace, and its influence within its alliances. This resulted in debates by the government, for example, as to whether Canada should have two hundred fighters in Europe or sixty. Regardless, all agreed that Canada could still be part of NATO. Thus, the dilemma confronting the politicians was simply 'how much was enough?' When one cannot measure the intangible relationship between forces and political influence, it becomes hard to justify the costs and level of standing forces. As the Cold War peace lasted decades, the numbers debated behind closed doors by the government were largely beyond the air force's influence. As Canada's social programs flourished, the federal government faced increasing conflicts between defence and non-defence related government programs as part of the budgeting process. The lack of an overt military threat to

Canada translated into less political will, which meant a decline in defence spending. This was demonstrated in the percentage of GDP spending on defence from the late 1950s onward. More direct evidence of the decline is found in the erosion of the RCAF's fleet from 1957 onwards. The Arrow was the first in a series of cuts, as it became too expensive for Canada's defence budget, although the government did try to explain the program cut as a function of the deterrence paradigm. This program cut was followed by the purchase of fewer CF-104 Starfighters to replace the Sabres in the 1960s, and the elimination of carrier aviation. During the 1970s, more squadrons were permanently eliminated.

The political outlook on defence only really began to change in the 1980s. Despite vague measurement techniques, a gap between Canada's commitments and capabilities was acknowledged by the government. Canada was not living up to the spirit of its alliance commitments. Despite this fact, the gap was only addressed for a brief period, rather than the ten-to-fifteen-year timeframe promised in the 1987 White Paper. The real issues on the government's mind was Canada's increasing budget deficit and debt. This was followed soon after by the collapse of Communism. The subsequent turbulent environment again left government spending, rather than sound defence planning, dictating the air force's capabilities.

Another external factor that influenced the air force's roles and capabilities was the shifting of defence priorities. One prime example was how a generous P-3 offer by Grumman was initially refused, because it was not a 'sovereignty protection' platform, as much as an ASW platform. The timing of the offer coincided with Trudeau's shift away from alliance commitments. Later, Canada purchased fewer of the same aircraft at a much higher price when Canada's more traditional defence priorities were re-established.

Another aspect of the external environment which emerged during the Cold War was how the increased complexity of aircraft manufacturing demanded longer timelines for acquisitions. Air forces around the world had to adapt to this new timeframe, as well as the idea of fighting as you were. Large mobilization plans, which would include training pilots and building aircraft such as in World War II, were increasingly seen as no longer viable. Thus, the air force argued that funding needed to be consistent over time to meet the large lead-time in acquiring high-tech weapons and train for their use. Given the political environment, this became an added obstacle to the air force's acquisition program.

A final external factor was the increased perception of Canada as a 'peace loving nation'. Canadians and their politicians largely preferred defensive roles. Hence, NORAD was an easier sell at home and encountered little funding problems, although the fact it was inexpensive helped. The government appreciated the large monetary incentives offered by the US. Similarly, the financial and political support for UN peacekeeping missions grew. In contrast, acquiring tactical nuclear weapons was difficult, despite the fact they were defensive assets. Eventually all nuclear roles were phased out by 1984.

Moving onto organizational culture and its influence, a key issue is the influence of World War II roles on the RCAF organizational culture. Looking at Canada's experience through Bomber Command and No. 6 Group, there was little evidence of significant support to ensure the future of strategic bombing operations in Canada. The initial proposal of six peacetime bomber squadrons was largely forgotten. By 1947 air force plans contained no offensive strategic component. Similarly, the relatively few "happy go lucky" bushfliers of the Interwar Period had little influence on the air force either. Instead, a more mature organization with its own values emerged. These values differed somewhat from American and British

fliers. The RCAF's organizational culture was one of professional fliers in a defensive oriented country, with limited means, that would almost exclusively operate within an allied framework. Moreover, Canada's air force elite after World War II was drawn exclusively from tactical combat operations veterans.[150]

The RCAF's culture also quietly adopted the assumption of an allied framework as the norm for operations. As Schein wrote, this assumption, reflecting the third level of culture (basic underlying assumptions) would represent the essence of the air force's culture. As the minimum assets required to conduct air operations expanded to include high technology airborne electronic warfare assets, airborne command and control, along with many other support aircraft, Canada's air force largely stayed on the sidelines. It could not afford a well rounded capability, was not assumed to have one or need one after World War II, and never even discussed the possibility of acquiring such a capability.

More evidence of how the air force's culture influenced its roles was in its preservation of its traditional roles. Canada's air force remained focused on tactical roles such as air-to-air combat, air-to-ground bombing, and anti-submarine warfare. These roles carried out at home and in an allied context dominated the Cold War. As a result, the air force preferred aircraft that were fighters and maritime patrol. The purchase of the CF-100, CF-18, Argus, and Aurora were heavily pushed by the air force leaders. These represented the traditional military roles that the air force preferred. In the particular case of the Aurora, there is evidence of the culture helping change the defence priorities from Trudeau's preference on sovereignty to more traditional allied based warfighting roles. Similarly, the CF-18 project benefited from

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[150] Initially, the US saw the future of air power to be in strategic nuclear forces to the detriment of tactical air power. It was only after the Korean War that several American Generals warned against short-changing tactical air power as peripheral wars would occur again. Simply bullying with massive retaliation as a shortcut to victory would not deter

the renewed strength of the air force culture having re-established a centralized structure through the creation of AIRCOM.

Prior the creation of AIRCOM the army gained influence in air matters as the air force lacked its own leadership pillar. As a result, army aviation roles with helicopter forces were expanded. Although, the air force accepted these new aircraft and roles they never really took their tasks as part of the air force's core assets. In general terms, the army helicopter squadrons were 'second class citizens' after the formation of AIRCOM.

Another example of the influence of the air force's culture was how its senior officers pushed Canada's politicians into accepting Canada's tactical nuclear roles in 1963. "The Canadian military longed for the weapon which separated the military haves from the have-nots."[151] Canada's military leadership understood and promoted the importance of the West's qualitative advantage over the Soviet Union's quantitative advantage. It was finally able to convince Canada's politicians after the Cuban missile crisis.

The air force's organizational culture remained strong in its resistance to Hellyer's re-organization. Initially, the pressure to reduce costs and ensure better civilian control over the military prevailed. Air force leaders knew their influence had been diminished in the defence equation, this would erode their ability to gain resources. Luckily, some in the air force did not give up despite the resignation of their cohorts. A new battle for institutional independence, and some would say survival, was waged until 1975 when AIRCOM was finally created. AIRCOM took over the direction of all air assets and became the focal point for all air studies. AIRCOM took over the duty of the indoctrination of its members to the air force's

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conventional wars. Paret, Makers of Modern Strategy, 644 and Builder, Masks of War, 100.
[151] Clearwater, Canadian Nuclear Weapons,18.

unique values. Despite being a stronger cohesive unit following the formation of AIRCOM, the organization's culture was not strong enough to obtain the F-15 as its preferred NFA. This was largely due to the distaste of the politicians for the air force's 'Cadillac syndrome,' the budget envelope, and the politicians' desire to achieve industrial offsets. Having missed out on the F-15, the consolidated voice of the air force did help it get its preference with respect to the two final choices: the F-18 over the F-16. More importantly, the air force ensured that the privileged cultural platform was retained. To do otherwise would have been to destroy the culture itself, with the organizational repercussions likely greater than unification.

Looking at the air force's culture with respect to the UN missions, these rapidly came to be considered traditional. This occurred due to the high profile and positive spin attributed to them by the government and press. This in turn reflected upon the air force crews involved, which began to attribute more value to their job in peacetime. Moreover, the leadership of the air force rapidly came to see these missions as combat flying, or very close to it. Predictably, the leadership of the transport and helicopter forces pushed to preserve these missions, and this led to the birth of a belief that UN missions were fundamental to the air force. In effect, this belief was a product of organizational survival.

A different question to be explained is why the RCAF culture would accept NORAD. It meant ostensibly, that the RCAF came under the Command of the USAF. The answer is linked to the RCAF's overall security framework, if not the Canadian Forces as a whole, based upon working with allies. In addition, the RCAF came to 'idolize' the USAF. Canadian airman did so because the Americans had the best aircraft, munitions, bases, and salaries. Canada's air force could only be impressed with the large budgets the USAF enjoyed, their assets, capabilities, the fact they were willing to share their secrets, and arguably most important, the USAF liked and

wanted the RCAF (and/or its airspace). Moreover, the USAF did not force upon the RCAF the adoption of ballistic missiles or the pursuit of space based systems through NORAD. Instead, the USAF was content with supporting the RCAF's cultural preferences. Air defence cooperation led to transnationalism at the operational level. This would lead to problems for Diefenbaker during the Cuban missile crisis as the RCAF's loyalty appeared focused down south, rather than to its own Prime Minister.

The Cold War air force was an organization in the mature stage of the lifecycle model. The RCAF ended up as a large bureaucracy with rules, policies and a hierarchical structure. However, the organization faced severe problems when it was decapitated by Hellyer in 1964. This could be likened to a decline of the organization. But, unlike organizational theory suggests, this decline was not due to the pure inefficiency of the bureaucracy. Rather the management trend of the time was to centralize assets to save costs. This again was an externally motivated change and did not result from inefficiencies of the air force organization. Not until 1975 did the organization re-emerge independently with AIRCOM.

In studying the operational roles the air force fulfilled during the period it can be seen that the official goals of the organization were largely pursued as seen by the list of roles fulfilled in 1987. There were a few exceptions. These occurred when the air force pursued non-core-combat capabilities with its scarce resources. These non-essential roles were SAR,[152] VIP transport, initial pilot training, oversized combat support squadrons, as well as some of the more obscure UN duties. The reasons these non-core-combat roles emerged were invariably political. High-profile rescue missions and UN duties received considerable positive media attention. Moreover, the air force's organizational culture promoted SAR as a military responsibility and

[152] Canada never performed combat search and rescue, which meant the rescue of downed pilots or crews behind enemy lines. This would have been a core-combat capability.

careers were linked to the continuation of SAR as an air force role with the aircraft and squadrons associated. It could even be argued that most Canadians assumed that the military should be doing roles such as SAR.

In studying the roles of Canada's air force from World War II to the end of the Cold War, several changes occurred. The first role was the end of the BCATP. Although a similar program started during the Korean crisis, it did not continue afterwards. Another role that disappeared in the 1970s was carrier aviation. Nonetheless, the most significant change was the end of strategic bombing despite the legacy of No. 6 Group in World War II.

Several reasons can be posited why Canada abandoned strategic bombing after World War II. First, the lessons learnt during the conflict was that strategic bombers led to unacceptable levels of casualties. Another possible reason was the immoral nature of strategic bombing. The campaign was unsuccessful in winning the war alone as advocates had claimed.[153] Also, the bombing of Hiroshima linked the future of strategic bombing to devastating offensive nuclear forces; something Canadians preferred to avoid. By avoiding the strategic nuclear band wagon Canada's air force concentrated more on defensive tactical roles. Nonetheless, tactical nuclear weapons were imposed upon Canada's air force by the environment (i.e. NATO's strategy), although its culture did not object.

Looking at the new roles adopted during the Cold War the emphasis on sovereignty in the north gained importance, as well as, the advent of the helicopter for light observation, utility flying, airmobiles,[154] and heavy lift. Yet, in air force terms the helicopter, which was tasked for the army, was perceived by the air force leadership as the 'poor cousin'. In a way the army benefited from the air force's

[153]Whereas, the successes of tactical airpower during the war were more tangible. Canada's fighter aces had gained popularity as war heroes.

decapitation under Hellyer. Advances in technology brought about more specialization, such as all-weather intercept with radar equipped fighters as an extension of previous daytime air superiority roles. It was also significant that the new role of enhancing deterrence required maritime aircraft and interceptor aircraft. Overall, the air force's roles carried out during the Cold War did not change much after 1955, with the exception of the rise of rotary wing aviation. What did happen from 1955 onwards was the reduction of sharp-end forces, which was compensated for, in a small way, by the improved technology of aircraft.

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[154] Army troop transport in combat, as developed by the Americans in Vietnam.

Chapter Five

CANADA's AIR FORCE IN THE POST-COLD WAR

Arguably, the most noteworthy feature of this period is how significant changes in both the general and task environment did not lead to any significant changes in the roles performed. The capabilities of the air force were affected by significant cuts, implicitly legitimized by the beliefs about the benign nature of the post-Cold War world. Nonetheless, the organization's culture fought to maintain its previously assigned roles, rather than the external environment's ability to demand change. This is especially evident in the fight to save the CF-18 during the 1994 defence review.

During the 1990s NATO redefined itself. The new approach was to maintain:

> Much lower levels of military weaponry and manpower, reflecting a much-reduced threat assessment and greatly increased warning time for any serious attack on the alliance.[1]

NATO's shift in emphasis away from forces in being reflected and implied a reduction of European based forces. This, in conjunction with Canada's increasing fiscal problems, led to the closure of its bases and the pullout of its air force units from Europe.[2] At the same time, NATO also began assuming the duties of regional conflict-management alongside its historic roles.[3] The Kosovo crisis challenged the broader security interests[4]

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[1] Outlined at the 1991 NATO Rome summit. R. Evraire, "Developments in NATO," Forum, January, 1993, 20.

[2] Although a small number of Canadian aircrew kept working on NATO's airborne early warning aircraft based in Europe. Canada reassured its European Allies by designating two Canadian based CF-18 squadrons for NATO rapid reaction. Similarly, the air force continued to provide aviation support for the army and navy in NATO exercises. Canada also pledged larger forces should a NATO Charter Article V operation arise. Article V guaranties that members would go to war against the aggressor of any other member.

[3] J. Lepgold, "NATO's Post-Cold war Collective Action Problem," International Security (Vol. 23, No.1, summer 1998), 104; D. Bashow, Canada and the Future of Collective Defence (Kingston: Queen's University, 1998), 24-25 and 27-35.

[4] Hence, President Clinton warned at the height of the Kosovo conflict that "the alliance will not have meaning in the 21st century if it permits the slaughter of innocent on its doorstep." Bill Clinton, NATO's 50th Anniversary summit. CNN, "Headline News," 30 April 99.

of its alliance partners.[5] The result was Canadians dropping bombs on Serbs as part of a NATO-led campaign,[6] even though it was not an Article V mission; a result that was significant for the air force in legitimizing its CF-18 fleet.

Looking at NORAD, the agreement continued to impact directly upon the roles of Canada's fighters, and maritime patrol aircraft. The first renewal after the fall of the Berlin Wall remained straightforward, as post-Cold War politics had yet to stabilize.[7] In subsequent renewals it became clearer that NORAD's old rival had weakened. In response, alert forces where put on lower readiness.[8] The result was a very small alert force with limited capabilities.[9] Of importance about the continental relationship is that:

> If the Government decided to reduce significantly the level of defence cooperation with the United States, Canada would still be obliged to rely on the US for help in protecting its territory and approaches—and this assistance would then come strictly on American terms.[10]

One of the larger environmental influences upon the CAF in the post-Cold War era was the government's budgeting process. The defence budget became the most significant factor influencing the size and capabilities of the air force. In 1990-91, spending cuts were announced that left the budget at 8 percent of the government's

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[5] D. Collenette, "Canada's International Relations," Canadian Defence Quarterly (Vol. 25, No. 2, December 95), 25

[6] The successful conclusion of the air war in Kosovo demonstrated NATO's credibility due to the solidarity and resolve of its members. Moreover, NATO's operating procedures proved effective in waging coalition operations.

[7] J. Piotrowski, "The Future of NORAD," Forum April, 1990, 14.

[8] For Canada this meant merely two unknown or unwanted aircraft entering Canadian airspace could be intercepted. Of significance during the 1996 NORAD renewal was the issue of Canada and the US National Missile Defence program (NMD). This is increasingly relevant to Canada's air force as it is posited by some that future renewals of the NORAD agreement may require Canadian endorsement of NMD.

[9] Fiscally, NORAD remained good value for Canadians as Canada's NORAD commitment accounted for only 3 percent of the defence budget, which was merely one-tenth of the total NORAD budget. Yet, this small amount of money still gave Canada a large voice in the organization and the Deputy Command position. Bashow, Canada and the Future of Collective Defence, 19.

[10] 1994 Defence White Paper 21.

spending.[11] This was down from over 9 percent during the 1980s.[12] The 1994 White Paper contained even larger spending cuts,[13] but with a promise of no further cuts until 2000. The emphasis of the cuts was on headquarters and support costs in order to preserve money for sharp-end forces. In 1995 the Liberals broke their promise and new defence cuts entailed a further reduction of 2.8 billion over four years. In 1996 the government cut an additional 800 million. In 1999, the result was a defence budget of 9.7 billion;[14] a 32 percent reduction in real terms from the 1991 budget.[15] It is not surprising, given the air force culture (which prefers planes over people), that personnel witnessed the most significant reduction from twenty-three thousand in 1989 to fourteen thousand in 1999; its smallest size since 1948.[16] This represented a 39 percent cut in personnel.

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[11] For a total of twelve billion dollars. To the government's credit, the 1991 funding cuts were designed to allow 30 percent of defence spending on capital equipment by 1995. With this in mind, the government promised to buy nine coastal patrol aircraft, eleven combat support aircraft, a new shipborne aircraft, SAR helicopters, forty UTTH helicopters, upgrades to the CF-18s, as well as PGM's. Marcel Masse, "Defence Policy 1991" presented at the National Press Theatre, 17 September 1991, 5 (Retrieved from the McGill University Library Government Documents section). A year later, a defence policy paper from Defence Minister Masse had similar blind optimism in that it even considered a replacement for the CF-18. Marcel Masse, "Canadian Defence Policy" April 1992, 28. (Also retrieved from the McGill University Library Government Documents section.)

[12] Department of National Defence, Defence 90 (Ottawa: Supply and Services Canada, 1991), 6-9.

[13] The government highlighted that Canada was seven hundred and fifty billion dollars in debt. With debt payments taking up 27 percent of the federal budget. 1994 Defence White Paper 9.

[14] www.dnd.ca Defence Spending Matrix for 1998-99. Within the air force a large number of initiatives were pursued to cut costs as budgets dwindled. Consolidation occurred to save money. This led to the closing of the various air groups, as well as AIRCOM headquarters in favor of a streamlined 1 Canadian Air Division, in Winnipeg. Further savings were obtained through the use of civilian maintenance for the CC-150 Polaris and CH-146 Griffon while under warranty. Similarly, contracting of civilians occurred for primary pilot training in Southport, Manitoba. Fleet rationalization was another way the air force reduced costs. By flying fewer types of aircraft, the maintenance and training costs were reduced.

[15] Using the 12 billion figure from 1991, adding 2% inflation over 8 years would give a comparable budget of 14 billion in 1999.

[16] K. Pennie, "Canada's Changing Air Force: Balancing Fiscal Reality with Tomorrow's needs," Canadian Defence Quarterly (Vol. 24, No. 3, March 1995), 12

To put these cuts into context, tools exist to establish a reasonable amount of defence spending at a given time. Benchmarking is one such tool the Canadian government used, but did not act upon. A benchmarking study provides an indication of how much insurance your neighbors have, or the cost of being sovereign on that day. A 1997 benchmarking study compared Canada to five relatively similar countries: Australia, Italy, Netherlands, Sweden, and the United Kingdom.[17] All of the chosen countries had their military downsized with the end of the Cold War. On average, their defence expenditure as percentage of GDP was 1.9%. Canada's was only 1.3% of GDP, or 30 percent less than the average.[18] Moreover, the average percentage of their defence budgets spent on capital was 29.9%. In Canada, it was only 23.5%, for a total of 2.5 billion.[19]

The end of bipolarity in the 1990s led to more collaboration in the UN.[20] The public's approval of UN operations[21] led the Liberals to advocate UN peacekeeping as a

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[17] Australia, a large, sparsely populated country like our own with very similar traditions; Italy, the G-7 member with the economy closest in size to Canada's; the Netherlands, a middle power, like Canada, with membership in NATO; Sweden, a neutral country with which we are often compared and which also shares with us a proud peacekeeping legacy; and the United Kingdom, with whom we share NATO membership and, of course, many traditions and customs. Douglas Young "A benchmark study of the armed forces of Australia, Italy, the Netherlands, Sweden, the United Kingdom, and Canada," presented to the Prime Minister 25 March 1997. (Retrieved from Government Documents section of the McGill University Library.)

[18] This was part of the reason for Canada low regard with its allies. "In the cases of NATO operations in Bosnia, Canadian objections to NATO air strikes were ignored by its Allies; after the Dayton accord, Allies grumbled at what was widely seen as a stingy Canadian contribution to IFOR. In Zaire, Canada was sandbagged by its British and American Allies, who simply withdrew their support in mid-initiative." L. Nastro, and K. Nossal, "The Commitment-Capability Gap: Implications for Canadian Foreign Policy in the Post-Cold War Era," Canadian Defence Quarterly (Vol. 27, No. 1, autumn 97), 22.

[19] Douglas Young, 1997. Moreover, The government has only committed itself to 23% of the defence budget for capital in the over the next two decades. www.dnd.ca 'Strategy 2020'

[20] A. Knight, "Coping with a Post-Cold War Environment," Canadian Foreign Policy (Vol. 6, No. 2, Winter 99), 19-48.

[21] The peace related missions that ensued were more complex and dangerous than in the past. L. Cohen, "Learning the lessons of UNPROFOR," Canadian Foreign Policy (Vol. 6, No. 2, winter 99), 85-102.

priority while in opposition.[22] This differed from Canada's traditional alliance driven roles that were supported by the CAF's culture.[23] A debate ensued within Canada for the future direction of its military forces. This debate pitted advocates of Canada's collective defence alliances (i.e. combat-capable forces) against more pacifist Canadians[24] (i.e. those wanting a glorified gendarmerie for fisheries patrols, sovereignty surveillance, and lightly-armed peacekeeping duties).[25] Martin Shadwick pointed out that "opting for a constabulary force . . . would send a very clear message about the depth of our commitment to our Allies and our values, one that would betray our history and diminish our future."[26]

The debate was resolved when the Liberals, now in office, presented their 1994 White Paper. The policy paper promised to be "able to fight alongside the best, against the best."[27] Moreover, "the government believes that combat training – undertaken on a national basis as well as with Allies – remains the best foundation for the participation of the Canadian Forces in multilateral missions."[28]

In 1995 Lieutenant-General Clements explained the meaning of the White Paper to Canada's air force when he likened it to:

> A series of concentric circles. . . . At the core are those elements that contribute directly to combat operations; i.e., fighter forces, maritime air, land aviation, and tactical transport. Next to the core are those resources that provide combat support, and finally, in the outer ring are our training

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[22] A. Knight, "Coping with a Post-Cold War Environment" 19-48.

[23] Canada did commit forces to be used for UN contingency operations in the 1994 White Paper. For the air force, a wing of fighter aircraft and a squadron of transport aircraft, as well as the airpower associated with a brigade group and maritime task group were pledged. Department of National Defence, 1994 Defence White Paper (Ottawa: Canada Communication Group, 1994), 34.

[24] These more pacifist, or internationalist, were represented by a group called Canada 21, made up of mostly Liberals from the Trudeau era..

[25] M. Shadwick, "Interesting Times," Canadian Defence Quarterly (Vol. 26, No. 2, winter 96), 31

[26] M. Shadwick, "A Constabulary Future," Canadian Defence Quarterly (Vol. 26, No. 1, autumn 96), 32

[27] 1994 Defence White Paper, 14.

[28] Ibid., 34.

> and utility capabilities. . . . Air Command will seek to absorb reductions as much as possible from the outer ring areas.[29]

In short, Canada's military aircrew would focus on combat roles within Canada's traditional collective defence commitments.[30] However, the level of forces available to fulfil the variety of combat roles was continually being eroded.

With the new millennium came a new planning document from the Department of National Defence. It outlined a vision for Canada's forces that remained consistent with the past. This document, entitled 'Strategy 2020,' committed Canada's air force to remain combat-capable for the next twenty years.[31] However, its relevance remains questionable, not least of all because it was not a broad based political document, but an internal one generated by the military. As a result, it may be taken over by events in the future, as has happened in the past.

CANADA's AIR FORCE IN THE 1990s

The roles Canada's air force fulfilled in the post-Cold War era resembled very much the previous period, albeit with a smaller, rationalized fleet. The alliance legacy continued, despite the turbulence of the external environment. Thus, it was the air force's culture that prevailed. This culture is characterized by professional combat aviators who always worked under the tutelage of the British or Americans. Canada's senior airmen were all socialized within the Cold War context, and brought up in the NATO and NORAD belief systems. At all costs, the air force leadership strived to maintain its combat roles, perfected over decades of cooperation with its closest allies. What the

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[29] K. Pennie, "Canada's Changing Air Force: Balancing Fiscal Reality with Tomorrow's Needs," 14.

[30] In March 1997 the new Defence Minister Young completed yet another review of the armed forces. Of significance was that the government continued to support the major tenets of the 1994 White Paper: multi-purpose, combat-capable forces thanks to the persuasion of three of the four academics consulted. (Bercuson, Granatstein, and Morton.) F. Holman, "The State of the Canadian Forces: The Minister's Report of March 1997," Canadian Defence Quarterly (Vol. 26, No. 4, summer 97), 33.

[31] www.dnd.ca, 'Strategy 2020'

organization's culture proved ineffective at was the pursuit of funding to maintain the size of its forces.

The post-Cold War, as distinct from the previous era, found the air force fulfilling warfighting roles. In August 1990, CAF units deployed to the Persian Gulf following Iraq's invasion of Kuwait. The CAF operated CF-18s,[32] Sea King helicopters,[33] air-to-air refuellers, and transport aircraft in theatre. Overall, many lessons were learnt during this war; the most noteworthy was the importance of precision-guided munitions(PGMs)[34] to decrease collateral damage and aircrew risks.[35]

The air force's second coalition war began in March 1999 and lasted 78 days as NATO bombs fell on Serbian targets "without UN approval and with no immediate threat to the border of a NATO country."[36] In fact, the bombing was the first NATO action ever taken against a sovereign state. As the campaign began Canada's six CF-18s stationed in Italy took part. A month later, there were eighteen CF-18s in theatre. Canadian pilots flew 678 sorties dropping 532 bombs. Reflecting the personnel cuts, the eighteen fighter aircraft used in the aerial campaign required half of Canada's combat ready fighter

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[32] Expanding on Canada's fighter roles, they consisted of "sweep/escort and air-to-surface attack missions in addition to providing about one-fifth of the air defence for the coalition's naval fleet." There were twenty-six CF-18s deployed. Of significance was that Canada's air force did not lose any assets during the war. However, it was caught off guard when its pilots were asked to perform air-to-surface attack missions. Canada's air force had stopped training its European based pilots in air to ground warfare a few months earlier. Canada's pilots in the Gulf War received minimal training before carrying out their fifty-six bombing missions. R. Guidinger, "Maintaining Fighter Pilot Morale," Forum 1992, 10.

[33] They returned to the Gulf again in 1998 as things heated up.

[34] PGM's provide more standoff, which is safer for crews. As well, their accuracy implies fewer missions to obtain the desired result, which again means less risk for the aircrew.

[35] Regrettably, Canada did not spend much on PGMs in the aftermath. Consequently, a few years later, just prior to the Dayton accord, NATO did not invite CF-18's to fly missions over Bosnia as they lacked a PGM capability.

[36] As bombs fell, the Serbian leader ordered his army to expel over 600 000 ethnic Albanians from Kosovo. The Serbian military was guilty of rape, torture, and widespread pillaging in Kosovo. B. Came, "Going to War," Maclean's 5 April 1999, 28.

pilots.[37] Moreover, air force planners estimated there were only sufficient combat ready pilots to operate twelve aircraft over a six month campaign.[38]

Overall, the air force learned from this war that Canada needed more PGM's,[39] as well as upgrades to the CF-18 to ensure interoperability with its NATO Allies. [40] The strategic reality for the CAF was that "the only overt-military confrontation that Canada could get involved in are extra-continental ones,"[41] by choice, within an American-led coalition.[42] Hence, it must be able to fight alongside Americans without being a hindrance.

Looking at peacekeeping operations in the 1990s, the more significant ones occurred in Somalia, Rwanda, Haiti, Honduras, and the former Yugoslavia. Once again, the majority of the flying was logistical, and carried out by transport and helicopter squadrons. The exception was the expansion of UN flying to include maritime patrol aircraft and fighter aircraft.[43] The major difference during UN operations in the post-Cold War era was that the aircraft encountered more threats than previously.[44]

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[37] Lcol. Dave Bashow et al., "Mission Ready: Canada's Role in the Kosovo Air Campaign," Canadian Military Journal Vol. 1, No. 1, Spring 2000, 55-62.

[38] Reported from a senior Canadian fighter pilot flying in the war. Interview, 3 February 2000, Stockholm. Sixty CF-18s does not include the training squadron aircraft or test aircraft.

[39] On the training side, the lesson learnt was that more emphasis was needed on high-level night attack, as well as more combat ready fighter pilots.

[40] The lessons for the politicians were not new ones; warfare is blunt and requires time to succeed. The Western media focused on collateral damage, but the reality was that NATO errors represented only 1/8th of a percent of bombs dropped. In more general terms, Western governments also learnt that medium threat conflicts could allow them to "exercise deterrence or coercion without any costs or casualties at all." CNN, "NATO press Briefing at Shape in Belgium," 9th May 1999.

[41] P. Buteux, "Sutherland Revisited: Canada's Long-Term Strategic Situation." Canadian Defence Quarterly (Vol. 24, No. 1, Sept 94), 7.

[42] "Canada is, at present one of a select few states possessing armed forces of a sufficient caliber (in terms of professionalism and skilled use of advanced technologies) capable of participating in coalition operations vital to the world economy or to global stability." Bashow, Canada and the Future of Collective Defence, 7.

[43] The Auroras undertook UN operations to enforce the sea embargo of the former Yugoslavia, and the CF-18s started enforcing the no-fly zone over Bosnia in 1993.

[44] Evidence of the dangers could be seen through the bullet holes in Canadian Hercules aircraft landing in Sarajevo and Griffon helicopters coming under fire in Kosovo.

Canada's air force also carried out operations that fell under the broad umbrella of aid to the civil power as part of its statutory obligations.[45] Hence, the air force helped peacefully resolve the internal security crisis at Oka in 1990.[46] Moreover, the air force had dedicated assets to assist the RCMP and local police forces:

> [in the]collection of intelligence, the surveillance and tracking of suspect vessels, aircraft and vehicles and, provision of platforms for RCMP ship boarding parties and helicopter transportation to assist in surface, land or air interdictions.[47]

A different form of assistance to civil authorities carried out was disaster relief.[48] The missions flown consisted of troop and equipment transport to the affected regions, personnel evacuations, emergency medical evacuation, communications relay, and general reconnaissance of the disaster areas.

Interestingly, one role Canada largely abandoned in the 1950s is re-emerging, that of NATO flying training in Canada (NFTC), for which Bombardier was awarded a 2.85 billion contract over twenty years.[49] It is hoped that NFTC will put Canada back on the map of worldwide pilot training, as Canada did during World War II, and after the Korean War.[50]

Interview with Hercules pilot, Bagotville, 10 April 1997. Interview with Griffon pilot, Kingston, 3 Juin 2000.

[45] "Review of Defence Policy Guidance Document," Canadian Defence Quarterly (Vol. 23, No. 3, March 1994), 40.

[46] Helicopters, Auroras, as well as CF-5 reconnaissance aircraft operated in the region.

[47] J. Smith, "Canadian Forces Support War on Drugs," Forum 1992, 14.

[48] The more notable operations were the Saguenay floods of 1996, the Manitoba floods of 1997, and the Montreal ice storm of 1998. The armed forces help during the ice storm was "the largest deployment of troops ever to serve on Canadian soil in response to a natural disaster." A total of 16000 troops participated. M. Shadwick, "Of Cormorants...and Ice," Canadian Defence Quarterly (Vol. 27, No. 3, Spring 98), 4.

[49] K. Pole, "Spreading our wings," Wings 75th Anniversary Edition, 56.

[50] Although this program has gained more international interest, it could suffer withdrawals if Bombardier's recent mismanagement continues. They aircraft are arriving late, in smaller numbers, with unresolved maintenance problems. Their groundschool program was not finished on schedule, and was of poor quality. All the while international student were sitting in Moose Jaw waiting to begin their course. Interview with senior staff at 2 CFFTS Moose Jaw, 15 April 2000.

To gain an appreciation of the effects of the government's cost-cutting upon the capabilities of the air force, an analysis of each aircraft fleet is insightful. Beginning with fighter forces, the closure of CF-18 squadrons in Germany decreased the number of operational fighters from one hundred to seventy-two. The 1994 White Paper dictated a further budget reduction of 25 percent for Canada's fighter forces.[51] The result was decreasing the CF-18 operational fleet from seventy-two to sixty aircraft, as well as retiring the CF-5 following a costly upgrade.[52] At present, eighty-seven of Canada's one hundred twenty-two CF-18s are in service. However, a defence memorandum recently made public suggests a future reduction to forty-eight operational fighter aircraft. It becomes obvious that Canada is well below other nations with respect to fighter capabilities in considering that Italy has 369 fighters, Spain 161, Netherlands 183, and Switzerland 122.[53]

The twenty-one Aurora/Acturus maritime patrol aircraft (MPA) were not spared either. There are plans to retire the Acturus aircraft and use a more sophisticated simulator for pilot training and cut two of the remaining eighteen Aurora's. Cost cutting also led to the retirement of the Tracker MPA as part of the air force's fleet rationalization program. The remaining MPAs performed a variety of roles including sovereignty operations, protection of the environment, protection of economic resources, monitoring for illegal ships, NORAD counter-drug[54] evidence gathering, and SAR.[55] As well, the aircraft were used to project "Canadian values and interests abroad,"[56] as they

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[51] The Special Joint Committee on Canada's Defence Policy had previously suggested this.

[52] 1994 Defence White Paper, 48.

[53] M. Reyno, "Putting the 'sting' back into the Hornet," Wings 75th Anniversary Edition, 46.

[54] The Aurora was used to shadow a vessel that was caught offloading 29 tones of Hashish in Nova Scotia. J. Smith, "Canadian Forces Support War on Drugs," Forum 1992, 14.

[55] E. Cable, "Canadian Maritime Aviation: Requiem or Renaissance?" Canadian Defence Quarterly (Vol. 27, No. 4, summer 98), 13.

[56] Ibid., 15.

participated in the UN sanctioned 'Operation Sharp Guard' patrolling the Adriatic. Despite the versatility of the Auroras, their main purpose remained anti-submarine warfare, as capable submarines[57] continued to patrol the North American coasts.[58]

Moving onto the combat-support side of the air force, aircraft were slowly mothballed which left twenty-six T-birds in service by 1999. The T- birds were used for different support roles such as simulating drug smuggling aircraft, cruise missiles, bombers, and aircraft in distress. As well, the T-birds carried out electronic warfare training for CF-18s and towed targets for the Navy.[59] For their part, the combat support Challengers were scheduled for upgrades for EW training or coastal patrol, but neither materialized with the budget cuts. The EW Challengers were phased out in April 2000, leaving only six Challengers for VIP/utility transport in Ottawa.[60]

By contrast, the air force's transport fleet was fortunate to acquire several aircraft during the 1990s. These acquisitions benefited from their association with peacekeeping operations, an easier political sell. The aircraft purchased included five Hercules during the Gulf War, as well as five Airbus A-310s[61] in 1992 as part of a Canadian Airlines bailout. Two additional Hercules were purchased in 1996 as attrition replacements. These aircraft carried out the roles of tactical and strategic airlift, tactical air-to-air refuelling, VIP transport, evacuation of Canadians overseas, international humanitarian relief, and SAR. At the same time the air force's Boeing 707s were mothballed, and the Cosmopolitans were retired following an expensive upgrade.

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[57] In one example, an Aurora brought evidence of such submarine patrols in July 1995, "[while] on patrol over the Arctic Ocean photographed debris on the permanent ice pack from a ballistic missile fired from a Russian Typhoon-class submarine, only 350 km north of Ellesmere Island in the Canadian Arctic archipelago." Ibid., 12.

[58] Looking towards the north, Canada's air force also carried out a variety of operations in Canada's arctic. During the 1990s Aurora's did northern patrols, fighters deployed to forward operating locations (FOL's), Hercules aircraft flew re-supply to Alert, and Twin Otter's stationed out of Yellowknife provided airlift and SAR. All these are part of the air force's traditional presence in the north.

[59] M. Reyno, "Jacks of all Trades," Wing's 75th Anniversary Edition, 101-102.

[60] Email from Lieutenant Stephanie Godin, 1 CAD HQ/A5 Public Affairs, 19 October, 2000.

Looking at the air force's rotary wing aircraft, several acquisitions occurred, beginning with the purchase one hundred new utility helicopters in 1994. These helicopters carried out a variety of roles that included SAR, troop and VIP transport, surveillance, special operations, counter-drug operations, UN support, firefighting, and other aid to the civil power tasks.[62] However, the contract[63] was criticized as a political gift to Quebec, as well as being a net loss in capabilities for the air force. Shadwick highlighted this fact when he wrote:

> The drop from three Army-support types (i.e. the Kiowa [used for light observation], Twin Huey, and Chinook [used for heavy lift support]) to one (i.e., the Griffon) means a breathtaking loss of capability and flexibility. With even our smaller Allies loading up on Apaches, Cougars, Chinooks, and the like, our reliance on a comparatively modest UTTH could prove unwise.[64]

In April 1998, the government announced the purchase of fifteen CH-149 Cormorant SAR helicopters to replace the aging Labrador helicopter and the Buffalo aircraft.[65] It was no surprise politically that both the UTTH and SAR helicopters were acquired before a new shipborne aircraft (NSA), despite the latter being identified for replacement several years earlier. The NSA platform suffered the association with the Cold War role of ASW which contributed to its cancellation in 1993.

The air force's culture had trouble overcoming public apathy for spending on a warfighting platform. As was the case of the Canadian peace alliance arguing that the EH-101 (Canada's proposed NSA under the Conservatives) was being built to counter threats that no longer existed. As part of election politics, the Liberals promised to axe

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[61] Four of the five A310-300 were converted to combi configuration.

[62] www.airforce.dnd.ca

[63] The Griffon was part of a 1.29 billion-dollar contract with Bell Helicopters.

[64] M. Shadwick, "Air Force Blues," Canadian Defence Quarterly (Vol. 25. No. 1, Sept 1995), 32.

[65] The decision in part was a function of negative press reports that highlighted the helicopter's inability to hover on one-engine. The Cormorant included advanced features such as reduced vibrations, three-engine redundancy, and de-icing capabilities. These

the program if elected. As a result, the program suffered from bad timing. The cost of defaulting on the EH-101 contract was four hundred and seventy million dollars, not to mention the net loss of capabilities for the Navy for another decade.[66] Today, the Sea King replacement remains a priority, and a political liability. The logic of procuring one airframe for the multiple naval/SAR roles, as was the case with the original decision, remains in place.[67] This naturally dictates a follow-on purchase of the Cormorant. Unfortunately, this would mean the government would be buying the very system it cancelled. As a result, the decision is stalled, and it would not be surprising if the final choice is another platform despite the additional costs.

ORGANIZATIONAL THEORY

The post-Cold war timeframe is unique in the study of the air force, as the turbulent external environment did not bring about significant changes in the organization's roles. This is largely due to the organization's culture. It did not overreact and mirror the instability of the environment. The only significant roles that were abandoned were strategic air-to-air refuelling and heavy-lift helicopter operations. Moreover, the new roles that emerged merely expanded upon previously assigned roles. Such as, the use of PGMs within the air-to-surface attack role, tactical air-to-air refuelling replaced strategic, airspace control came to include counter-narcotics operations, and flying training was expanded to include client states as it had in the past.

The consistency in roles can be attributed to the vision air force leaders maintained throughout the period. The policy statement of every Commander of the air force reflected the same views as outlined by General Clements in 1992; to maintain its

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features make the SAR platform more reliable in bad weather. F. Bamford, "The technological edge," Canadian Defence Quarterly (Vol. 27, No. 1, autumn 1997), 45.

[66] A. Knight, "Coping with a Post-Cold War Environment," 19-48.

[67] P. Haydon, "The EH-101 Helicopter," Forum April 1993, 25. www.dnd.ca, 'Defence Planning Guidance 2001' K. Pole, "Looking at Options," Wings 75th Anniversary edition.

core-combat capabilities. Regrettably, the assumptions behind the vision may have cost too much in the end. When the vision was formulated, the thinkers could not have predicted the monumental spending cuts that would follow. In the end they did manage to maintain the air force's core-combat roles, albeit at near negligible levels. The ability to deploy a dozen operational fighter platforms for half a year is not much of a punch for the eighth largest industrial power. Moreover, cutting the MPA fleet from twenty-one to sixteen, considering Canada's vast coastline, is comical. Compounding the impact of these cuts is how modern warfare does not allow much opportunity for mobilizing additional assets; war is now come as you are. The time required to acquire more aircraft is measured in years. Similarly, it takes several years to train a combat ready fighter pilot.[68] Defence planners have tried to address this deficiency by allowing a five year mobilization period in the event of a major war.[69] Even if the air force had been given accurate budget estimates at the beginning of the 1990s, it is unlikely its vision would have changed, with more roles eliminated in order to ensure capability in the remaining roles. The air force's culture prefers its wide array of combat roles.

More evidence of how the air force's culture was dominant during the period was its participation within US-led NATO air operations. There is little doubt that NATO tutelage was preferred by the CAF over UN operations. Similarly, the CAF's organizational culture pushed for NORAD renewal given its cost effectiveness, and contributes to the many ties it shares with the USAF.

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[68] The post-Cold War era showed how "airpower. . . can influence the environment in which a political settlement must be reached." R. A. Mason, "Air Power in Transition," Canadian Defence Quarterly (Vol. 27, No. 1, autumn 97), 6. However, such a valuable tool is not something that can be turned off and on when desired. As a military loses highly complex capabilities, years and lots of money are required to regain the expertise and equipment. W. Yost, and D. Mainguy "It's time to get serious about defence," Forum 1992, 18-19.

[69] www.dnd.ca, see both 'Strategy 2020' and 'Defence Planning Guidance 2001' sections on mobilization.

Establishing the dominant roles that emerged during the period points to the air force's participation in international stability operations, under the auspices of both NATO and the UN. Following closely behind these operations would be Canada's more traditional NATO commitments and its NORAD alert forces. Subjectively naming the air force's preferred roles leads towards combat roles and SAR. More specifically, the socialization of the air force's leaders is exclusively from fighter flying. Not surprisingly, the CF-18 is capable of doing all three roles assigned to the air force in 1930s: air control, battlefield air interdiction (BAI), and CAS. By contrast, SAR operations have emerged as a preferred non-combat role, politically at least, as the media coverage is overwhelmingly positive.

The post-Cold War also saw the air force organization resist change. The airforce sought to purchase a NSA and SAR platform simultaneously, not least of all to ensure its combat capability. Similarly, the air force was ready to cut its air demonstration team to preserve budget dollars for combat related forces. However, in both these cases the politicians reversed the air force's decisions.

Looking at the sub-cultures within the air force, some of the negative impacts that resistance leads to were also evident. Not surprising as Katz and Kahn argued, groups that stand to lose power, or expertise that took years to develop, resist change. Such sub-groups institutionalized their activities, even though they no longer keep up with the times. For instance, the tactical helicopter leadership continued to display what it valued as Vietnam-style tactics, as well as trying to fit weapons on a helicopter that was not designed to do anything of the sort. Canada's air force never acquired a platform capable of helicopter combat, nor did it ever perform such a role in the past. Once the contract for a hundred Griffons was signed, the focus should have shifted to efficient use of the capabilities, rather than dwelling on the past by hanging guns on it. Similarly, the Navigator Officer community was successful in resisting their fate as a specialization

from the past. Current aircraft have a wide variety of reliable navigation systems based on both internal and external sources.[70] The only tasking the Navigator trade adequately fulfils is that of sensor operators on Auroras; a job that most of Canada's allies use non-commissioned members to fulfil.

Expanding on the turbulence of the era, as a mature organization the air force faced its own version of a downturn leading to what organizational theorists call a turnaround crisis. Mature organizations must do several things to resolve these types of problems: streamline, become more flexible, and adapt to the external environment. The air force definitely took steps to streamline through outsourcing, fleet rationalization, decreasing its fleet size, cutting headquarters staff, and closing bases. Moreover, doing a better job at marketing its non-combat roles with its warfighting platform provided some added justification for the assets and showed its flexibility during peacetime.

General Paul Manson commented that public apathy and political neglect are signs of the times.[71] Some viewed the air force as striving to justify its existence by fulfilling non-military roles. The reality was that fulfilling some non-military roles in peacetime was what the air force had done in the past. The difference was that now the air force emphasized its participation in these activities through planning documents and the media. These roles are referred to as assistance to the civil authorities, which is the same official role the air force was given in 1924. Moreover, in the 1920s-30s the air force performed non-military tasks to maintain basic skills. It was the air force's ability to serve the dual purpose of civilian and military flying that appealed to the politicians

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[70]Internal systems are called 'Inertial reference systems' (IRS) which are usually laser based gyroscopes. External sources have become primarily satellite based such as the 'Global Positioning System' (GPS) accurate to within one meter. Other external systems are radio wave based either low frequency such as the 'Loran' system, or high frequency such as omni-directional beacons.

[71]P. Manson, Wings 75th Anniversary Edition, 8.

during the Interwar Period.[72] These marked the foundations of similar duties in the 1990s. Consequently, peacetime use of a military air force does not always make economic sense, nor should it, as long as combat related training is not cut below acceptable levels. For instance, a Hercules that flies one sick baby from PEI to Halifax for emergency care is expensive: yet, Canada did not need that aircraft to fulfil our foreign policy goals on that day, so why not use these opportunities for crew proficiency.

As Shadwick argues, the military:

> Must avoid the temptation to jettison key quasi-military and non-military tasks. The judicious retention of such tasks can enhance military professionalism and contribute to the preservation of the core combat capabilities of the Canadian forces.[73]

His comments can be interpreted as support for SAR and the Snowbirds, because these high profile roles keep the billions flowing to the rest of the air force. It is a necessary, albeit political, trade-off.

During the post-Cold War period it has been the external environment that ended up dictating capabilities, or lack thereof, as Canada's operational fighter force was cut by 40 percent. Similarly, Canada did not keep up with like-minded nations in defence spending either. Thus, the external environment determined the size of the air force's fleet. Dissecting the external environment, the dominant factor was the government's defence spending cuts, that led to a less capable air force for Canada. Reflecting upon the task environment, the dominant event was the end of the Soviet threat. Such a change could have significantly impacted the roles of the air force. However, Canada's commitments to NATO, NORAD, and the UN, due in part to the air force's vision, ensured the organizational roles changed little.

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[72] Few criticized the RCAF when it was mapping the north, doing SAR, delivering mail, stopping smugglers, fisheries patrols, and firefighting during the 1920s and 30s.

[73] M. Shadwick,"A Constabulary Future," 32.

Looking at the four dimensions of goal setting outlined in Chapter One, all were present during the post-Cold War era. The importance of the historic dimension became evident in the early 1990s as the future directions of defence forces were put into question. The Liberals, while in opposition, hinted their future direction would be towards the UN and peacekeeping, similar to Canada 21, as opposed to traditional alliance based warfighting commitments. However, once elected, the Liberal government published a comprehensive White Paper. In it, Canada's historic, or more traditional values prevailed as Canada embraced its collective defence agreement in NORAD and NATO. Moreover, the government pledged to do so with multi-purpose combat-capable forces, as it had done in the past. In this respect, the post-Cold War era was similar to that following the Second World War as Canada's economics, culture, and policies tied it to its traditional allies. Claxton defence objectives of 1946 were very similar to today. In 1999, the Liberals were true to their word. They did not hesitate to back up NATO with firepower from Canada's air force. Similarly, the latest vision statement from DND, 'Strategy 2020', outlines a combat focus for the next two decades.

The reactionary dimension was also present during the period as the government changed the defence budget on a yearly basis. The previous year's planning had to be redone each time; there was no long-term plan. When faced with incremental cuts to defence spending, the air force opted for the rational dimension of goal setting to help decision-making. The air force did so by drawing up a business plan for the whole air force. This consisted of a list of capabilities with the associated costs, after which it prioritized them all, this list formed the basis for cuts.

As for the normative dimension, it was the air force's vision, stemming from the organization's culture, which emphasized the retention of its current roles. However, the air force had less room to maneuver than previously as government policy documents effectively micro-managed the air force in some cases. Four examples of such

government interference were when the fighter force was specifically targeted for a 25 percent budget cut, the Griffon was acquired as the sole replacement for Canada's tactical helicopter fleet, the Polaris was bought with little consultation, and the NSA was cancelled outright following a change in government.

Discussing the budget cuts again, these were the key factor operating upon the organization's external environment, and drastically reduced the CAF's capabilities. Making matters worse was the rather confused and incremental nature of the spending cuts. As the air force's funding remained inconsistent over the last decade, one assumption that emerged was that the Defence Development Plan (DDP) was a rather useless document to be amended annually to reflect the following year's force structure. Also, the lack of funding for the air force resulted in interoperability problems, as mid-life updates were put on hold. In coalitions such as NATO, leadership must cater to the weakest link in the chain, and having radio communications in battle transmitted in the clear,[74] is not only embarrassing, but also dangerous for all involved. Spending on interoperability is not a new argument either. It is the same reason that Major-General MacBrien gave in 1923 to ensure the emerging RCAF could fight alongside the RAF. 'Strategy 2020' highlights that the United States is Canada's most important ally, and interoperability with its forces is a must.[75]

Also linked to funding cuts is the shortage of combat-ready fighter pilots. This shortcoming stems from two main reasons; a lack of pay, and the desire to extend the life of the CF-18. Canada's politicians want to put off any discussions of acquiring a new fighter aircraft. This resulted in the decision to keep the CF-18s longer by flying fewer hours, and doing so in part by having fewer pilots in squadrons. However, the real result is a much less potent force in times of need as this leads to a lack of deployable crews for

[74] Meaning the radio transmission is not electrically coded. Bashow, "Mission Ready" 55-62.

a warfighting operation.[76] Surely, Canada should be able to man the limited assets it has; it is almost as if a façade of capability is the desired result.

[75] www.dnd.ca, 'Strategy 2020'
[76] Similarly highlighted in Bashow, "Mission Ready" 55-62.

CONCLUSION

Reflecting on the entire case study, the body of theory on organizations provides a useful tool in the analysis of Canadian air force roles. The theoretical framework helped identify the driving forces behind change in the organization. Moreover, the two points posited as the most influential in changing roles were indeed the environment and culture. These two factors appeared consistently over the case history. It is notable that the air force's external environment dictated most of the changes in roles, except in the last period studied, where the organization's culture was of greater influence.

Beginning with the inception of the RCAF in 1924, the dominant influence upon the roles adopted was the environment. It permitted more civilian roles as Canada had no military threats in the 1920s and became the means to legitimize itself. By contrast, the structure of the air force was shaped by its culture, or the socialization of Canada's airmen during World War I. It was these veterans who contributed to the establishment of an independent Canadian air force in 1924. As the Interwar Period came to a close, a shift in roles occurred primarily due to changes in the organization's task environment, as war in Europe became likely. Only then did the RCAF begin adopting a series of combat roles. Nonetheless, the structure of the air force could not effectively deal with the influx of new money, which led to a general level of unpreparedness when the war finally broke out. The leadership of the air force in the 1920s was selected based on flying exploits, and thereafter did little to develop the managerial skills involved in mobilizing a nucleus type air force.

In studying the World War II period, the RCAF witnessed a transformation in its size and roles. The most significant change was the adoption of strategic bombing with sizeable resources. This new role was not debated by Canadians prior to or during the conflict. It was, in effect, imposed by the RAF upon the RCAF. Helping the RAF in this

matter was Canada's politicianss desire to avoid conscription. Similarly, Canada's Prime Minister promoted the BCATP as the best solution for Canadian spending at home, which produced fewer casualties. However, as a product of this plan, Canadian aircrew ended up as warm bodies for British air strategy. Canada simply did not want, nor even tried to play a role in Grand Strategy. Here again, this highlights the dominant influence the external environment played upon the roles adopted by the organization. Similarly, the advent of major power warfare upon the RCAF task environment also brought about a host of new tactical roles. By contrast, the RCAF's culture did not influence the roles very much, as they allowed the organization to grow. Moreover, its leadership had been exclusively socialized in the RAF's military institutions which had promoted the virtues of strategic airpower.

The Cold War began very much as a reactive period. Demobilization left the RCAF very weak as 1946 was the time for a peace dividend. However, the 'Iron Curtain' and the Soviet's actions in Eastern Europe impacted upon the air force task environment. A new threat emerged. With the advent of the Korean war and the explosion of an atomic device by the Soviet Union, NATO was born. Hence, it was the turbulent environment that lead to changes in Canada's air force roles yet again. The 1950s were unique as Canada could afford to spend on defence without cutting other government programs. However, as the Cold War progressed, the Canadian government repeatedly cut air force strength, right up until the present. Consequently, government spending began dictating capabilities, but to a lesser extent the RCAF's roles. One significant exception was the adoption of tactical nuclear weapons as armament for Canada's fighter aircraft in the 1960s. This led to a great debate in Canada, in which the RCAF's culture proved effective at convincing the politicians to accept a nuclear role, albeit only for the short-term. Thus demonstrates how the environment and culture contributed to changes in roles of the air force organization.

Also of significance in the 1960s was the perceived lack of government control over the air force during the Cuban missile crisis. This misunderstanding led, in part, to the re-organization of the military that left the air force without any overarching authority. Nonetheless, 'unification' did not significantly impact upon the roles of the air force. However, it was not the best long-term solution to maintain and develop the unique contribution air power had in the military equation. It was only after the air force's culture pushed to convince senior politicians that the air force finally received its unified voice once again with AIRCOM in 1975.

In the late 1980s it was once again events acting upon the air force's environment that affected the air force capabilities, but surprisingly not so much its roles. This can only be explained by the consistent vision expressed by the leaders of the air force when faced with adversity. These two key events were the fall of the Berlin Wall in 1989, and Canada's spiraling deficits.

Using the lifespan model, it can be seen that during the three earlier periods, it was predominantly the environment that shaped the roles. As the air force organization went from its inception in the birth stage, through its leadership crisis in the late 1930, to the youth stage, it was the environment that dictated most changes in roles. At the beginning of World War II, once again, mainly environmental factors brought about both the transition to the midlife stage and finally mature stage of the organization. Not until later on, in the1990s, did the air force's culture have a greater influence upon its roles. In a way the environment was constrained by the organizations culture, but such influence is usually short-lived should an organization wish to survive.

Regrettably, the air force leadership did not foresee the extent of cost cutting as they formulated their vision in the early 1990s. At present, the air force's roles remain largely the same as during the Cold War, but with much fewer assets to perform them. As Douglas Bland wrote "Sometimes, cultural responses may become so dogmatic that

problems will be manipulated to fit the culture's preferred expectations and solutions. Cultures can define and defy reality."[77] The real conclusion of this period remains uncertain, but will depend largely on how the economy does in the next few years. Should a continued prosperous period occur, that would likely perpetuate the status quo.

However, should a recession arise, Canada's air force would not likely maintain all its current warfighting roles as its culture would prefer. More reductions across the board would be one proposal, but that would be a naïve solution. The environment has already rendered the current vision unrealistic. Having fewer assets flying less hours yet maintaining the air force's current commitments and roles is simply masking the reality of irrelevant force levels.

A change in vision is required. The air force must meet its objective while buying new platforms, not by cutting flying hours. Hence, the new vision must contemplate the fiscal realities. The three-to-one rotation ratio of NATO and UN commitments is unrealistic with Canada's air force assets; it is time to abandon NATO air force commitments. To remain in the combat aircraft business effectively means that Canada's fighter assets would serve the sole purpose of the protection of North America. For this, two squadrons of twenty upgraded aircraft is adequate.[78] Moreover, selling one third of the UTTH fleet is a reasonable answer to budget cuts. Canada simply bought too many of this purely support platform. Moreover, the remaining UTTH must focus exclusively on peacekeeping, not quasi-warfighting roles. Similarly, the NSA can be scaled down to the acquisition of fifteen platforms for enhanced coastal defence instead of NATO naval obligations. The status quo must remain with transport and SAR squadrons for political reasons. By contrast, MPA should be upgraded and fully utilized off Canada's coasts, these platforms are important to Canada's sovereignty. All other air

[77] Bland, Chiefs of Defence, 5.

[78] To include planning for a replacement in 2015, and a training squadron of 12 aircraft.

force roles should be terminated to allow funds for new acquisitions. The new Canadian air force would have many roles cut, yet, preserve sensible force levels in the roles that remain.

A more drastic approach, that the culture would likely oppose, is to move away from combat roles towards predominantly peacekeeping and assistance to civil power. Such an approach would gain support if relative peace were to continue another two decades and Canada's economy were to slow. In such a scenario the air force's warfighting labeled platforms would have to be replaced because of age, yet, would not be. If such a drastic shift in focus was adopted a name change and new cultural foundation would be required. It would not simply be a re-shaping of the past air force organization. No matter the future outcome, it is the environment and culture which will shape the roles of Canada's air force.

Selected Bibliography

Books:

Bashow, D., Canada and the Future of Collective Defence. Kingston: McGill-Queen's University Press, 1998.

Bercuson, D., Maple Leaf Against the Axis. Toronto: Stoddart Publishing Co. Ltd., 1995.

Bland, D., Chiefs of Defence. Toronto: Brown Book Company Limited, 1995.

Bland, D., The Administration of Defence Policy in Canada 1947 to 1985. Kingston, Ontario: Ronald P. Frye & Company, Publishers, 1987.

Blau, P., and Scott, R., Formal Organizations: A comparative approach. San Francisco: Chandler Publishing Company, 1962.

Builder, C., The Masks of War: American Military Styles in Strategy and Analysis. Baltimore: Johns Hopkins University Press, 1989.

Burack, E., Organization Analysis: Theory and Applications. Hinsdale, Illinois: The Dryden Press, 1975.

Buzan, B., An Introduction to Strategic Studies, Military Technology and International Relations. Great Britain: St-Martin's Press, 1987.

Byers, R., Aerospace Defence: Canada's Future Role? Toronto: Canadian Institute of International Affairs, 1985.

Canadians at War. Toronto: Readers Digest [1969.]

Carzo, R., and Yanouzas J., Formal Organization: A System Approach. Homewood, Illinois: The Dorsey Press, 1967.

Clausewitz, C., On War. Translated by Michael Howard and Peter Paret, New Jersey: Princeton University Press, 1976; reprint paperback, 1989.

Clearwater, J., Canadian Nuclear Weapons. Toronto: Dundurn Press, 1998.

Coon, D., Introduction to Psychology. 3rd ed. San Francisco: West Publishing Company, 1983.

Cox, D., Canada and NORAD. Ottawa: Center for Arms Control and Disarmament, 1985.

Childs, J., ed. A Dictionary of Military History. Cambridge: Blackwell Publishers, 1994.

Christie, C., Ocean Bridge: The History of RAF Ferry Command. Toronto: University of TorontoPress, 1995.

Cutherbertson, B., Canadian Military Independence in the Age of the Superpowers. Ottawa: Supply and Services Canada, 1987.

Daft, R., and Steers, R., Organizations: A Micro/Macro Approach. Glenview, Illinois: Scott, Foresman and Company, 1986.

Deal, T., and Kennedy, A., Corporate Cultures: The Rites and Rituals of Corporate Life. Menlo Park, California: Addison-Wesley Publishing Company, 1982.

Denison, D., Corporate Culture and Organization Effectiveness. New York: John Willey & Sons, 1990.

Diamond, C., Arctic Sovereignty at any price? Kingston: National Defence College, 1980.

Diefenbaker, J.G., One Canada: The Years of Achievement 1957-1962. Toronto: Macmillan of Canada, 1976.

Diefenbaker, J.G., One Canada: The Tumultuous Years 1962-67. Toronto: Macmillan of Canada, 1977.

Douglas, M., How Institutions Think. Syracuse N.Y.: Syracuse University Press, 1986.

Douglas, W. A. B., The Creation of a National Air Force. Toronto: U of T Press, 1986.

Dunmore, S., and Carter, W. Reap the Whirlwind: The untold story of No. 6 Group. Toronto: McClelland and Stewart, 1991.

Dyer, G. and Viljoen, T., The Defence of Canada. Toronto: McClelland and Stewart Inc., 1990.

Eayrs, J., In Defence of Canada. Toronto: University of Toronto Press, 1964.

Ellis, F.H., Canada's Flying Heritage. Toronto: University of Toronto Press, 1954.

English, A., The Cream of the Crop: Canada's Aircrew 1939-45. Montreal: McGill-Queen's University Press, 1996.

French, W., Fremont E., and Rosenzweig, J., Understanding Human Behavior in Organizations. New York: Harper & Row Publishers, 1985.

Frost, P. et al., Organizational Culture. Beverly Hills: Sage Publications, 1985.

Graves, D., Corporate Culture--Diagnosis and Change: Auditing and Changing the Culture of Organizations. New York: St. Martin's Press, 1986.

Greenhous, B., Harris, S., Johnston, W., and Rawling, W., The Crucible of War, 1939-45: The Official History of the Royal Canadian Air Force Volume III. Toronto: University of Toronto Press, 1994.

Guest, R., Hersey, P. and Blanchard, K., Organizational Change Through Effective Leadership. 2nd ed. New Jersey: Prentice-Hall, 1986.

Haglund, D., ed. Canada's Defence Industrial Base. Kingston: Ronald P. Frye & Company, 1988.

Haydon, P., The 1962 Cuban Missile Crisis: Canadian Involvement Reconsidered. Toronto: CISS, 1993.

Hellyer, P., Damn the Torpedoes: My Fight to Unify Canada's Armed Forces. Toronto: MacClelland & Stewart Inc., 1990.

Hillmer, N. and Granatstein, J.L., Empire to Umpire. Toronto: Copp Clark Longman Ltd., 1994.

Hitchins, F., Air Board, Canadian Air Force and Royal Canadian Air Force. Ottawa: National Museum of Man, 1972.

Hofstede, G., Culture's Consequences: International Differences in Work-related Values. Beverly Hills: Sage Publications, 1980.

Honderich, J., Arctic Imperative: Is Canada Losing the North? Toronto: U of T Press, 1987.

Hurley, A. F., Billy Mitchell: Crusader for Air Power. New York: Bloomington, 1975.

James, S., The Formation of Air Command: A Struggle for Survival. Master's thesis, Kingston: RMC, 1989.

Jockel, J., No Boundaries Upstairs. Vancouver: UBC Press, 1987.

Katz, D. and Kahn, R., The Social Psychology of Organizations. New York: John Wiley, 1978.

Kinder, H., ed. The Atlas of World History. Toronto: Penguin Books Canada Ltd., 1978.

Klepak, H. and Letourneau, P., ed. Defence and Security: Eleven National Approaches. Montreal: Meridian press, 1990.

Luttwak, E., Strategy: The Logic of War and Peace. London: Harvard University Press, 1987.

Mangham, I., The Politics of Organizational Change. Westport: Greenwood Press, 1979.

Mills, J. and Murgatroyd, S., Organizational Rules: A framework for understanding organizational action. Philadelphia: Open University Press, 1991.

Moorhead, G. and Griffin, W., Organizational Behavior. Boston: Houghton Mifflin Company, 1989.

Morin, J. Gimblett, R., The Canadian Forces in the Persian Gulf: Operation 'Friction' 1990-91. Toronto: Dandurn, 1997.

Morton, D., A Military History of Canada. Edmonton: Hurtig Publishers Ltd., 1985.

Neatby, H.B., William Lyon Mackenzie King: The Prism of Unity. Toronto: University of Toronto Press, 1976.

Niskanen, W., Bureaucracy:Servant or Master? Great Britain: William Gibbons & Sons Ltd., 1973.

Nolan, B., King's War. Toronto: Random House, 1988.

Orvik, N., Canadian Defence Policy: Choices and Directions. Kingston: McGill-Queen's University, 1980.

Paret, P., Makers of Modern Strategy. New Jersey: Princeton, 1986.

Peters, T. and Waterman, R., In Search of Excellence. New York: Harper & Row, 1982.

Porter, G., In Retreat: The Canadian Forces in the Trudeau Years. Toronto: Deneau and Greenberg, 1978.

Preston, R.A., The Defence of the Undefended Border. Montreal: McGill-Queen's University Press, 1977

Sackmann, S., Cultural Knowledge in Organizations: Exploring the Collective Mind. London: Sage Publications, 1991.

Sarty, R., The Maritime Defence of Canada. Toronto: Canadian Institute for Strategic Studies, 1996.

Schein, E., Organizational Culture and Leadership. 2nd Ed. San Francisco: Jossey-Bass Publishers, 1992.

Schermerhorn, J., Hunt, J. and Osborn, R., Managing Organizational Behavior. New York: John Wiley & Sons, 1985.

Selznick, P., TVA and the Grass Roots: a Study of Politics and Organization. Berkeley: University of California Press, 1980.

Shafritz, J. and Ott, S., Classics of Organization Theory. Chicago, Illinois: The Dorsey Press, 1987.

Snyder, J., The Ideology of the Offensive. London: Cornell University Press, 1984.

Stacey, C.P., Arms, Men and Governments. Ottawa: Minister of National Defence, 1974.

Stanley, G., Nos Soldats. Montreal: Les Editions de L'homme, 1974.

Swettenham J., McNaughton. Vol. 1, Toronto: Ryerson Press, 1968.

Teed, P., ed. Dictionary of 20th Century Politics. Oxford: Oxford University Press, 1992.

Thompson, Organizations in Action. New York: Mc Graw-Hill, 1967.

Tucker, M., Canadian Foreign Policy: Contemporary Issues and Themes. Toronto: McGraw-Hill Ryerson Ltd., 1980.

Weber, M., On Charisma and Institution Building. Edited by S.N. Eisenstadt, Chicago: The University of Chicago Press, 1968.

_____. The Theory of Social and Economic Organization. Translated by A. Henderson and T. Parsons, London: Collier-Macmillan, 1947.

Weiss, P., Hierarchically Organized Systems in Theory and Practice. New York: Hafner

Publishing Company, 1971.

Weissenberg, P., Introduction to Organizational behavior: A Behavioral Science Approach to Understanding Organizations. Toronto: Intext Educational Publishers, 1971.

Wise, S.F. Canadian Airmen and the First World War: The Official History of the Royal Canadian air force Volume 1. Toronto: University of Toronto Press, 1980.

Zaltman G., Duncan R., and Holbek, J., Innovations and Organizations. New York: John Wiley & Sons, 1973.

Journals-Periodicals:

Bamford, F., "The technological edge" Canadian Defence Quarterly, Vol. 27, No. 1, Autumn 1997.

Barnett, M., "Institutions, Roles, and disorder: The case of the Arab States System" International Studies Quarterly, Vol. 37, No. 3, September 1993.

Bashow, D. et al., "Mission Ready: Canada's Role in the Kosovo Air Campaign," Canadian Military Journal Vol. 1, No. 1, Spring 2000.

Belzile, C., "Defending an Independent Quebec" Forum, October 1991.

Bland, D., "A sow's ear from a silk purse" International Journal, Vol. 1, Winter 1998-99.

Buteux, P., "Commitment or Retreat" Canadian Defence Quarterly, Vol. 23, No. 2, December 1993.

Buteux, P., "Sutherland Revisited: Canada's Long-Term Strategic Situation" Canadian Defence Quarterly, Vol. 24, No. 1, September 1994.

Cable, E., "Canadian Maritime Aviation: Requiem or Renaissance?" Canadian Defence Quarterly, Vol. 27, No. 4, summer 1998.

"Canada's Defence Policy" Aviation week, September 1987.

"Canada's air force: past, present, future" Wings, Special 75th anniversary souvenir edition, 1999.

Came, B., "Going to War" Macleans, 5 April 1999.

Cassanova, T., "Seek & Save" Wing's, Special 75th anniversary souvenir edition.

Cohen, L., "Learning the lessons of UNPROFOR" Canadian Foreign Policy, Vol. 6, No. 2, winter 1999.

Collenette, D., "Canada's International Relations" Canadian Defence Quarterly, Vol. 25, No. 2, December 1995.

Crickard, F., "Upholders, Core Capabilities and Multi-Purpose, Combat-Capable Forces" Canadian Defence Quarterly, Vol. 27, No. 4, Summer 1998.

Evraire, R., "Developments in NATO" Forum, January 1993.

Fergusson, J., "Getting it right: The American National missile defense program and Canada" Canadian Defence Quarterly, Vol. 27, No. 4, Summer 1998.

Galvin, J., "Trans-Atlantic partnership for Security: Canada in NATO" Canadian Defence Quarterly, Summer, 1988.

Guidinger, R., "Maintaining Fighter Pilot Morale" Forum, 1992.

Hannah, M., and Freeman, J., "The Structural Inertia and Organizational Change" American Sociological Review, April 1984.

Haydon, P., "The EH-101 Helicopter" Forum, April 1993.

Hobson, S., "Renewing the CF-18" Canadian Defence Quarterly, Vol. 27, No. 2, Winter 1997.

Holman, F., "The State of the Canadian Forces: The Minister's Report of March 1997" Canadian Defence Quarterly, Vol. 26, No. 4, Summer 1997.

Huddleston, D., "Canada's Airforce: A Flight Plan for the Future" Forum, September 1992.

Knight, A., "Coping with a Post-Cold War Environment" Canadian Foreign Policy, Vol. 6, No. 2, Winter 99.

Lepgold, J., "NATO's Post-Cold war Collective Action Problem" International Security, Vol. 23, No.1, Summer 1998.

Macnamara, D., "Canada's Domestic Strategic Interests" Canadian Defence Quarterly, Vol. 34, No. 4, June 94.

Mason, R. A., "Air Power in Transition" Canadian Defence Quarterly, Vol. 27, No. 1, Autumn 1997.

Nastro, L. and Nossal, K., "The Commitment-Capability Gap: Implications for Canadian Foreign Policy in the Post-Cold War Era" Canadian Defence Quarterly, Vol. 27, No. 1, Autumn 1997.

Pennie, K., "Canada's Changing Air Force: Balancing Fiscal Reality with Tomorrow's needs" Canadian Defence Quarterly, Vol. 24, No. 3, March 1995.

Piotrowski, J., "The Future of NORAD" Forum, April 1990.

Pole, K., "Looking at Options" Wings, Special 75th anniversary souvenir edition.

Pole, K., "Spreading our wings" Wings, Special 75th anniversary souvenir edition.

Reyno, M., "Putting the 'sting' back into the Hornet" Wings, Special 75th anniversary souvenir edition.

Richter, A., "The Sutherland Papers: A Glimpse into the thinking of Canada's preeminent strategist" Canadian Defence Quarterly, Vol. 27, No. 1, Autumn 1997.

Rioux, J., "Canadian Foreign Policy" International Journal, Vol. 1, Winter 1998-99.

Russell, W., "The next logical step after establishment of air command: a support command" Canadian Defence Quarterly, Spring 1975.

Shadwick, M., "A Constabulary Future" Canadian Defence Quarterly, Vol. 26, No. 1, Autumn 1996.

Shadwick, M.,"Air Force Blues" Canadian Defence Quarterly, Vol. 25, No. 1, September 1995.

Shadwick, M.,"Air Force or Air Constabulary" Canadian Defence Quarterly, Vol. 27, No. 1, Autumn 1997.

Shadwick, M., "Interesting Times" Canadian Defence Quarterly, Vol. 26, No. 2, Winter 1996.

Shadwick, M., "Of Cormorants...and Ice" Canadian Defence Quarterly, Vol. 27, No. 3, Spring 1998.

Smith, J., "Canadian Forces Support War on Drugs" Forum, 1992.

Thompson, J., "Unsettling Thoughts: The security implications of an independent Quebec" Forum, October 1991.

Weston, W., "CF-18 Systems Life Extension Need or Nonsense?" Canadian Defence Quarterly, Vol. 27, No. 2, Winter 1997.

Yost, W. and Mainguy D., "It's time to get serious about defence" Forum, 1992.

Canadian Government Publications:

Acts of the Parliament of Canada, Chap. 96, 1966-67 statutes.

Department of National Defence, 1994 Defence White Paper, Ottawa: Canada Communication Group, 1994.

Department of National Defence, Challenge and Commitment, Ottawa: Dept Supply and Services, 1987.

Department of National Defence, Defence 87, Ottawa: Supply and Services Canada, 1988.

Department of National Defence, Defence 90, Ottawa: Supply and Services Canada. 1991.

Department of National Defence, Fighter aircraft history, development, and tactics, Ottawa: AIRCOM CFACM 2-322.

Department of National Defence, War and the Military Profession, 3C-8.

Dominion of Canada Official Report, Debates House of Commons. Ottawa: Printer of the King's most excellent Majesty, 1924.

Dominion of Canada Official Report, Debates House of Commons. Ottawa: Printer of the King's most excellent Majesty, 1937.

Dominion of Canada Official Report, Debates House of Commons. Ottawa: Printer of the King's most excellent Majesty, 1945.

Dominion of Canada Official Report, Debates House of Commons. Ottawa: Printer of the King's most excellent Majesty, 1946.

Dominion of Canada Official Report, Debates House of Commons. Ottawa: Printer of the King's most excellent Majesty, 1947.

Hellyer, P., White Paper on Defence. Ottawa: Queen's Printer, 1964.

Masse, M., "Canadian Defence Policy" presented to the House April 1992.

Masse, M., "Defence Policy 1991" presented to the House 17 September 1991.

Medves, J., 4 Wing Cold Lake historic booklet, published by the military base, 1990.

Organization and Policy of the RCAF, Published by the Canadian Government in 1924, Obtained through the Air Command History Department in 1994.

Young, D., "A benchmark study of the armed forces of Australia, Italy, the Netherlands, Sweden, the United Kingdom, and Canada" presented to the Prime Minister 25 March 1997.

Other Sources Consulted:

CNN, "Headline News," Bill Clinton's speech at NATO's 50th Anniversary summit, 30th April 1999.

CNN, "NATO press Briefing" reported from Belgium, 9th May 1999.

"Military Downsizing" reported in USA today, based on "Fiscal 2000 report to the President and Congress by the Secretary of Defence" 2000.

"NATO enlargement contributes to the broader goal of a peaceful, undivided and democratic Europe." Report to Congress on NATO Enlargement, by the Bureau of European and Canadian affairs, U.S. Department of State, February 24, 1997.

-www.airforce.dnd.ca/eng/modern.htm.

-www.archives.ca

-www.canada.gc.ca

-www.cbc.ca 'Canada hastens renewal of NORAD deal' webposted, 24 March 2000.

-www.dnd.ca "Defence Spending Matrix for 1998-99."

-www.parl.gc.ca