Army 2040: Conceiving an Army for the 21st Century

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Without a destination, any road will get you there

Lewis Carroll

INTRODUCTION

The future cannot be predicted to any useful degree as uncertainty rules. Indeed, uncertainty is a predominate characteristic of the 21st century global security environment and defence establishments around the world continue to strive to understand and define how their national security policies fit within this paradigm. In this age of complexity, military planners, for all their good intentions, often get caught in the trap of attempting to diminish uncertainty rather than learning how to function with uncertainty. Indeed, Colin Grey points to the peril when military planners misunderstand this issue:

> The challenge is to cope with uncertainty, not try and diminish it. That cannot be achieved readily. Such ill-fated attempts will place us on the road to ruin through the creation of unsound expectations.[3]

One might then sensibly ask that if the future can not be predicted and uncertainty rules how do military planners prepare for the future? A great deal of information exists that can yield guidance for understanding about the future; however, making sense of that information can be very difficult. For example, while politicians heralded the benefits of a peace dividend resultant of the end of the Cold War, few, if any, foresaw the dramatic increase in intrastate conflict and the coincident increased demand for armed forces during the 1990s. The proclamation of a "new world order" did not materialize quite how many had anticipated. While it is wrong to proclaim future will look like today only more so, it is equally wrong to predict a future that bears few hallmarks of conflict as we

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[1] The views expressed herein are those of the author and do not be represent or reflect the official view of the Canadian government, the Canadian Forces or the Department of National Defence. The results depicted herein are fictional and all reference material was obtained form open sources.

[2] This paper would not be possible without the fine work and assistance from LCol Brad Boswell, LCol Steve Larouche, LCol Ron Bell, Maj John Sheahan, Mr. Peter Gizewski, Mr. Regan Reshke, Mr. Neil Chuka, and Ms. Nancy Teeple.

[3] Colin Grey, "The 21st Century Security Environment and the Future of War", <u>Parameters</u>, Winter 2008-09: 15.

have known it. As such, a balanced yet proactive method of future analysis is required to stave off reactionary defence planning which can be costly in both blood and treasure.

The main purpose of armed forces is to fight and win state wars. In an environment where a state has a clearly defined enemy, there is often little difficulty in securing social and political support aimed at defeating that enemy, indeed, here the Cold War again provides an apt example. During the Cold War, military plans were abundant and equipment acquisitions were designed to defeat a familiar enemy – the Warsaw Pact. Today, however, the enemy is often not clearly defined and military planners are faced with a conundrum about how to plan for their future. Indeed, armed forces around the world are debating between structuring their forces for conventional warfighting, counter insurgency or stability and reconstruction to fit the current and future operating environment.

If military planners are to be proactive, thereby hedging costs in blood and treasure, a futures methodology may provide some capacity as noted below:

> The purpose of futures methodology is to systematically explore, create, and test both possible and desirable futures to improve decisions. It includes analysis of how those conditions might change as a result of the implementation of policies and actions, and the consequences of these policies and actions. Futures research can be directed to large or small-scale issues, in the near or distant future; it can project possible or desired conditions. It is not a science; the outcome of studies depends on the methods used and the skills of the practitioners. Its methods can be highly quantitative or qualitative. It helps to provide a framework to better understand the present and expand mental horizons.[4]

Several futures research methods exist and greater rigour is obtained when one or more methods are employed. This was the case for the Army 2040 project which employed Trend Impact Analysis and Futures Wheel. The former included the extrapolation of historical trends into the future while the latter, through structured brainstorming, aimed to derive second and third order effects of interaction between those same trends. While this study does not claim to be prophetic, a careful study, using the methods described above, may highlight certain areas that could inform policy decisions today in order to meet expectations in the future. As Colin Grey explains, 'We do not just discover the truth about future warfare as time passes. In addition, we construct the truth through the decisions we make."[5]

The Army 2040 team fully expects that much of their analysis will be wrong. But it does not matter that it is wrong as it is the process that is important, not necessarily the product. Indeed Dwight D. Eisenhower highlighted this issue when he proclaimed: "In preparing for battle I have always found that plans are useless, but planning is indispensable." Further, the Army 2040 team fully expect that surprises (shocks) will

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[4] Jerome C. Glenn, "Introduction to Futures Research Methodology", <u>AC/UNU Millennium Project Futures Research Methodology – V2.0</u>: 3.
[5] Colin Grey, <u>Another Bloody Century</u>, (London: Weidenfeld & Nicolson: 2005): 39.

occur. Military planners win when the effects of surprise do not inflict lethal damage. As surprise comes from known trends interacting in an unexpected way resulting in unanticipated consequences, the Army 2040 team must provide analysis to military decision makers that will allow them to get it right quickly when the time comes thereby mitigating surprises. In is commonly understood that the further we view into the future the less confident are our analysis. However, it is also understood that without a path, "any" road will take you to the future.

This paper will begin with a brief overview of the capability development process which is the process through which the Army attempts to study the future. A description of futuring or foresight methodology, a key initiating component of the concept development process, will follow thereby describing the framework used to develop Army 2040. This framework commences with a description of the future strategic environment described through seven lenses commonly used in futuring: security, science and technology, demographics, the economy, international law, the physical environment and the social and political environment. Several trends emerge form this analysis that converged creating second and third order affects which in turn point to several potential outcomes for the Army and in turn the Canadian Forces (CF). These outcomes are reflected in alternate future frameworks of which one will be described in this paper. It must be cautioned at this point that this is one potential framework of several and no one framework is considered a panacea. The reader is reminded of Eisenhower's sage advice, plans are useless but planning is indispensable.

The Capability Development Process

In dealing with the future, the Army utilizes a capabilities based development process. For Army purposes, the condition of being capable is derived through fulfillment of specific human, scientific, doctrinal, infrastructural, environment, material and institutional conditions necessary for successful service; in effect, the ability to achieve an effect. In developing capabilities, a three step process is used (see figure 1):

- Conceive – concepts are conceived and translated into capability requirements;
- Design – selected capability requirements are translated into validated designs for future use;
- Build – validated designs for force capabilities are refined for use in the field.

The objective of the process is to meet defence requirements allowing the Army to remain relevant and effective in the current and future operating environments. While each step in the process is considered a distinct activity, considerable overlap occurs as a capability is first conceived, then designed and finally built over a number of years.

The capability development process is also aligned with three separate time horizons:

- Army of Today which encompasses a 0-5 year outlook and is roughly correlated with the Build stage of the process,

- Army of Tomorrow which encompasses a 5-15 year outlook and is roughly correlated with the Design stage of the process, and
- Future Army which looks beyond is beyond 15-30 year outlook and is roughly associated with the Conceive stage of the process.

Land Capability Development Continuum

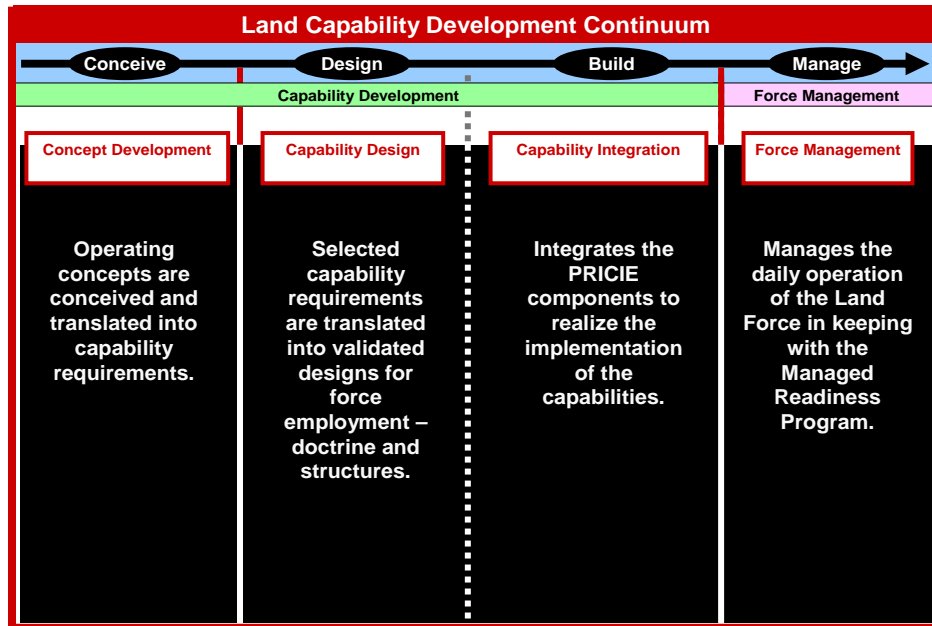| Conceive	Design	Build	Manage
Capability Development			Force Management
Concept Development	**Capability Design**	**Capability Integration**	**Force Management**
Operating concepts are conceived and translated into capability requirements.	Selected capability requirements are translated into validated designs for force employment – doctrine and structures.	Integrates the PRICIE components to realize the implementation of the capabilities.	Manages the daily operation of the Land Force in keeping with the Managed Readiness Program.

Figure 1

While each time horizon represents its own set of challenges and outcomes, it is the Future Army outlook, 15-30 years into the future, which perhaps requires the greatest degree of abstract thinking. Indeed, the individuals working in this realm can be considered futurists[6] engaging in what is commonly referred to as foresight. This group within the Army – known as the Concepts Team – examines the future security environment and identifies areas requiring more focussed research which in turn will lead to capabilities required to operate in the future. In turn, the team will propose alternative concepts and technologies to achieve desired capabilities.

The Concepts Team consists of a scientific advisor, strategic analysts, an operations researcher, and operational function[7] experts (Command, Sense, Act, Shield, and

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[6] To study the future is to study potential change - not simply fads, but what is likely to make a systemic or fundamental difference over the next 10 to 25 years or more. Studying the future is not simply economic projections or sociological analysis or technological forecasting, but a multi-disciplinary examination of change in all major areas of life to find the interacting dynamics that are creating the next age. AC/UNU Millennium Project Futures Research Methodology – V2.0: 6.

[7] Everything the Army does is reflected under one of five operational functions: **Command**: the operational function that integrates all the operational functions into a single comprehensive strategic, operational or tactical level concept; **Sense**: the operational function that provides the commander with knowledge; **Act**: the operational function that integrates manoeuvre, firepower and offensive information operations to achieve the desired effects; **Shield**: the operational function that provides for the protection of a force's

Sustain). The Team may also include functional area experts as needed such as lawyers, personnel selection officers, and demographic experts. The focus of this paper is on the process of the Concepts Team over the last two years and not necessarily the product. As mentioned above, this small team can be referred to as futurist engaged in futuring or foresight methodology, the focus of the next section.

Futuring, Foresight and Forecasting[8]

Futuring and foresight are growing international discipline designed to "…critically examine the difficulties associated with making decisions with long term future consequences in conditions of uncertainty and to provide methods through which these difficulties can be minimised."[9] While several methods exist in this growing field, the Concepts Team employed Trend Impact Analysis and Futures Wheel in order to better understand the possible outcomes for the Army in the 2040 timeframe.

Trend Impact Analysis (TIA). TIA is a quantitative process developed in the 1970s to address issues of future research. Based on historical data, TIC allows for an extrapolation of data into the future where future events have little or no affect on the extrapolated trend, indeed, the forces at play in history are assessed to be the same for the future. While this is acknowledged as a weakness of the method, it remains a useful starting point for examining the future. The United Nations' Millennium Project provides an apt description of the method:

> TIA is a forecasting method that permits extrapolations of historical trends to be modified in view of expectations about future events. This method permits an analyst, interested in tracking a particular trend, to include and systematically examine the effects of possible future events that are believed important. The events can span widely to include technological, political, social, economic, and value-oriented changes."[10]

In applying this method, the Army 2040 team selected eight focus areas which were assessed the most important to the Army in the 2040 timeframe. Each focus area was then researched and studied through horizon scanning in attempt to better understand the trends contained within each area. The team did not engage in TDI per se but rather researched and studied trend data and projections from other notable research centres

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survivability and freedom of action; **Sustain**: the operational function that integrates strategic, operational and tactical levels of support to generate and maintain force capability.

[8] Some prefer the term "futures research" and by that mean the use of methods to identify systematically the consequences of policy options and to identify alternative futures with policy implications for decision makers. Others prefer the term "future studies" and by that mean any exploration of what might happen and what we might want to become. Still others, ostensibly in Europe, and Francophone Africa prefer "prospective studies" [8] and by that mean the study of the future to develop a strategic attitude of the mind with a long-range view of creating a desirable future. AC/UNU Millennium Project Futures Research Methodology – V2.0: 7.

[9] Philosophy, Aims and Objectives of the MA Foresight and Futures Studies, Leeds Metropolitan University (10 May 1999).

[10] AC/UNU Millennium Project Futures Research Methodology – V2.0: 3.

such as the Conference Board of Canada and Environment Canada. This research provided each team member with an understanding and view of what future trends were emerging in the 2040 timeframe. For example, demographics are of considerable importance to the Army from a recruiting perspective. As such, a population growth trend sustained through immigration leads to several potential outcomes thirty years into the future. The focus areas selected and researched by the Army 2040 team are as follows: Science and Technology, Social, Political, Economic, Legal, Physical Environment, and Security:

- Science and Technology. Although its benefits are not shared equally amongst all societies, the exponential growth in science and technology has lead to unprecedented global prosperity and an enrichment of the quality of life for humankind. Yet while so many aspects of human health and welfare are dependent upon continued progress in science and technology, the very survival of the species is imperiled by its potential destructive power.

- Social. Social characteristics of importance in assessing the nature and dimensions of future threats and challenges typically include: population growth, location, age, ethnicity, general health (i.e. mortality and fertility rates), literacy, socio-economic status, and/or religious characteristics. Additional indicators include individual views regarding key issues of importance in life (survival vs. self awareness/actualization) as well as attitudes and orientations toward the outside world (insular vs. cosmopolitan, religious vs. secular).[11]

- Political. Trends in the area of politics are numerous and can be tracked on a number of indices. Key indicators of importance include the overall configuration of power - or the basic structure - of the international system, the processes which characterize its ongoing development and character, the nature, diversity, stability and legitimacy of the political units or organizations that make it up and the basic issues which generate political action and competition.

- Economics. Today, and perhaps more so in the future, the first step in understanding one's national economy is to understand global economic issues. This is perhaps best illustrated by globalization and the divergence between prosperity in the Northern hemisphere (developed states) and disparity in the Southern hemisphere (developing states). While prospects for global markets, partnerships and alliances contribute to international cooperation and peace through increased mutual-dependence in the North, poverty and subjugation of human rights in the South create conditions for increased global insecurity. This dichotomy and its global impact singularly highlight the necessity to first understand the global economy prior to any study of a national economy.

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[11] See for instance, Ronald Inglehart, *Modernization and Postmodernization: Cultural, Economic and Political Change in 43 Societies*, (Princeton: Princeton University Press; 1997) and Ronald Inglehart and Chris Welzel, *Modernization, Cultural Change and Democracy: The Human Development Sequence*, (Cambridge: Cambridge University Press; 2005).

- International Law. In discussing law into the future, the legal profession, domestic law, international law, supranational law and cyber law are of particular interest. Key to emergent legal issues are the enforcement mechanisms used to garner compliance. While this issue is well established and articulated within domestic law, mechanisms in international law, supranational law and cyber law are substantially weaker. While progress is being made in each of these areas, mechanisms to garner compliance are anticipated to evolve at a slower rate. This rate of progress is perhaps best exemplified by the increasingly permissive nature of international law sanctioning the use of outside force to intervene in state affairs based on humanitarian grounds.

- Physical Environment. For more than a decade there has been some debate about the role that physical geography plays in the broad context of international security. Some have argued that the resources present in our natural environment (and the natures of their utilization) can have a contributing impact on the development of collective violence. The implications of physical geography are measured by examining global resource scarcities, climate trends and the subsequent implications for the Canadian Arctic.

- Security. Industrial war - masses of people and machines in a trial of national or alliance strength - is no longer truly practiced; rather, since the end of WW II, what we have now is "war among the people" - more a struggle or clash of collective wills. The peace-crisis-war-resolution cycle is replaced by continuous confrontation punctuated by outbreaks of conflict. Approaches to these situations range from amelioration within the environment, through to deterrence and coercion, to destruction of opponents. Rather than achieving strategic political aims through crushing the capability of a state to resist the imposition of an outside political will, now the often unstated goal of intervention on the international stage is to create conditions in which containment or management of the situation is enhanced. This general description of the global security environment seems likely to hold sway for the foreseeable future.

An important component of this study was acknowledging the inherent weakness of the TIC methodology noted above. As such, each team member was asked to identify shocks and uncertainties in conjunction with the driver's and trends in order to further understand our future environment. For example, within the science and technology realm, the accidental misuse of biotechnology ("green or grey goo")[12] could represent a shock where as a key uncertainty might involve whether cyber security efforts remain ahead of cyber attack proliferation.

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[12] Green Goo - The fusion of nanotechnology and biology may also allow us to grow products such as solar collectors and liquid crystal displays from living material. Altering living species and creating special-purpose organisms is ethically complex, especially if designed organisms are advanced enough to be considered conscious. It is also possible that such creatures might reproduce in an uncontrolled manner - generating visions of "Green Goo" just as nanotechnology envisaged "Grey Goo"- Ipsos MORI For a more detail description see ETC's: *Green Goo: Nanobiotechnology Comes Alive!,* viewed 19 May 09 at http://www.etcgroup.org/upload/publication/174/01/comm_greengoo77.pdf.

While trends, drivers, uncertainties and shocks provide a robust perspective about the future environment, it was determined that in order to provide useful data to Army decision-makers today, a more robust approach was required. Indeed, it is well acknowledged in futures research that "[n]o single method should be trusted; hence, cross referencing methods improves foresight."[13] As such, the Concepts team applied their TIA to a second futures methodology designed to investigate second and third order effects of trends interacting upon one another – Futures Wheel.

Futures Wheel. The futures wheel methodology is one of the most common methods employed by futurists. It is simple way of organizing thoughts and questioning the future. It can be compared to what is more commonly referred to as structured brainstorming and is aligned closely with mind mapping, a similar futures methodology. It is a simple graphic organizer that allows for a representation of complex interrelationships between trends (see figure 2). It can be described as follows:

> The futures wheel is a simple futures research method designed to systematically capture qualitative expert knowledge. The futures wheel allows researchers to identify and present secondary and tertiary consequences of trends and events.[14]
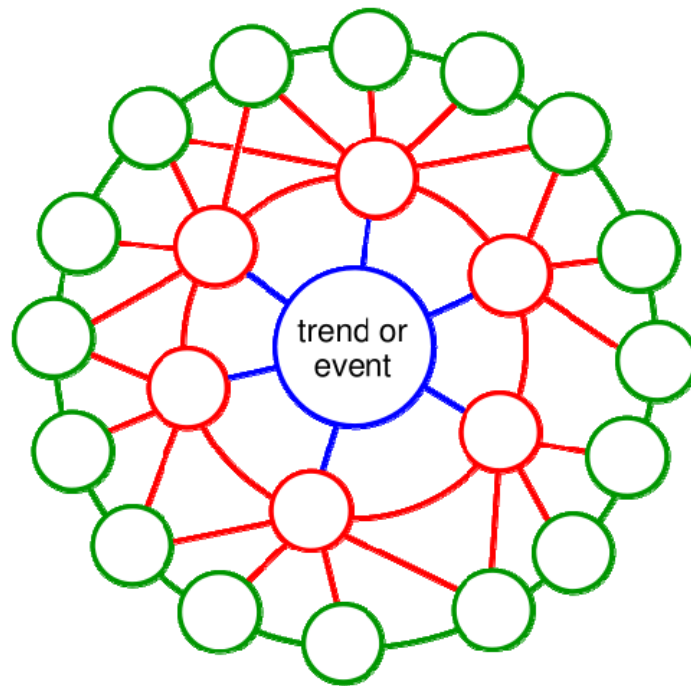

Figure 2

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[13] Jerome C. Glenn, Chapter : Introduction to The Futures Research Methods Series, AC/UNU Millennium Project Futures Research Methodology – V2.0: 6.

[14] Jerome C. Glenn, Chapter 4: The Futures Wheel, AC/UNU Millennium Project Futures Research Methodology – V2.0: 3. Further details can be found at http://www.palgrave-journals.com/thr/journal/v8/n1/full/thr20082a.html.

While easily grasped by participants in the futures wheel process, an undisciplined approach can result in what is referred to as "intellectual spaghetti" thereby complicating the implications of the trend. While this methodology is limited to the knowledge of the participants and information overload can also occur, by keeping to the primary, secondary and tertiary rings, one is able to visualize a vast amount of qualitative information that has both depth and contextual richness.[15] For example, considering the political focus area, a second and third order affect resultant from the accelerating global interconnectedness trend might include the decline of the state as we know it and the rise of regional super states leading to new international law or supranational law dynamics.

The use of TIA and the Futures Wheel methodologies allowed the Concept's team to refine their thinking about the future environment in more concrete terms though focusing on the convergence of trends rather than simple extrapolation of a trend itself. The many trends discussed within the futures wheel resulted in key change drivers deemed significant for the Army in the 2040 time frame which are represented here[16]:

1. Shifting international power balance, and
2. Exponential technology growth.

While a significant amount was learned form the development of these change drivers, the next challenge became how to represent this knowledge in a useable form. Thus the development of alternative futures - a logical, coherent, detailed, and internally consistent description of a plausible future operating environment - was chosen as the best method to transfer the Concept team's work and experience into a more useful format.

Alternative Futures. As described above, an alternative future is a logical, coherent, detailed, and internally consistent description of a plausible future operating environment. Alternative futures will allow the Army to hedge against uncertainty and perhaps envision a range of possible future requirements. The term alternate future is often used interchangeably with alternate worlds, future worlds and future scenarios. For our purposes alternative futures describes in objective terms what a future might look like. A scenario, the next step in the process, in effect tells a story incorporating the components of the alternative futures. The probability of each alternative future is not assessed; rather, we consciously argue that each future meets a "not implausible" standard.[17]

There exist several approaches to creating alternative futures all of which resemble, to a certain degree, the six step process described below:

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[15] Jerome C. Glenn, Chapter 4: The Futures Wheel, AC/UNU Millennium Project Futures Research Methodology – V2.0: 4-6. Further details can be found at http://www.palgrave-journals.com/thr/journal/v8/n1/full/thr20082a.html.

[16] Due to the fact that the Army 2040 project is due to be completed early Fall 2009, the results could not be promulgated at this time. As such, a fictional solution is offered for demonstrative purposes. Only two key drivers are shown as this is the optimal number required to develop an alternate futures framework.

[17] It should be noted here that this is the same assessment used by John Gordon IV and Brian Nichiporuk, "Alternative Futures and Their Implications for Army Modernization", (RAND: Santa Monica, 2003): vii.

Step 1: Identify the Focal Issue and Timeframe. An alternative future is most useful when a focal issue and timeframe are identified. In our case the timeframe is 30 years into the future, 2040, and our focal point is articulated as follows: how should the Army evolve in order to remain a key instrument of national power in 2040?

Step 2: Explore the External World. This step is characterized by the research undertaken within the eight focus areas described above and coupled with the TIA and Futures Wheel methodologies also described above. This results in several key change drivers chosen for further development within the alternative futures framework. Once again, only two key change drivers are used to demonstrate the process.

Step 3: Identifying & Clarifying Critical Uncertainties. Critical uncertainties are the "big questions" that are most critical to the focal issue at hand; that is, how should the Army evolve in order to remain a key instrument of national power in 2040? A solid alternative future framework ultimately rests on two critical uncertainties affecting the Army and relevant to the focal issue.

The polarities or endpoints of the change drivers were first established to further define and understand the change driver itself. This resulted in the following polarities for each change driver:

1. Shifting international power balance – cooperative(less friction) vs. competitive(more friction); and
2. Exponential technology growth – set the pace vs. fall behind.

Upon establishing the polarities for each ranked change driver, the team then followed a process whereby each change driver was subjectively assessed to its level of "uncertainty" and its "impact" in the future on a low, medium and high scale. This subjective assessment allowed the team to collectively understand the position of each change driver with respect to impact and uncertainty. The focus of the alternate futures frameworks thus rests with those change drivers that are both high on impact and uncertainty; in our case, exponential technology growth vs. shifting international power balance (see Figure 3).
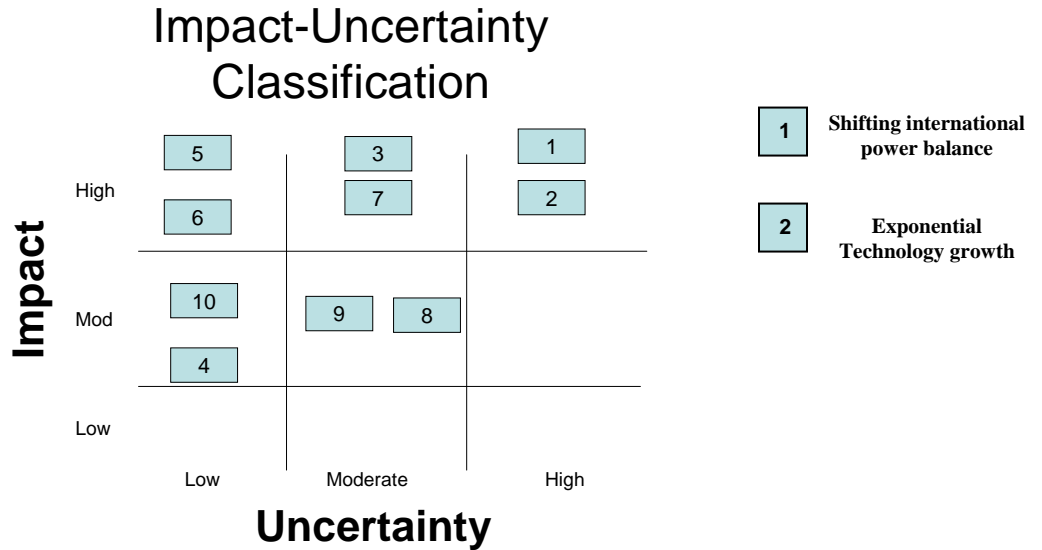
Impact-Uncertainty Classification

Figure 3

Step 4: Developing the Alternative Future Framework. Having established the axis of the framework to be developed based on the two critical uncertainties (see Figure 4), the team then commenced brainstorming the four potential futures: the good, the bad, the not so good, and the not so bad. These four alternative futures will eventually be given relevant names based on the message to be relayed within each quadrant.

Alternate Future Space
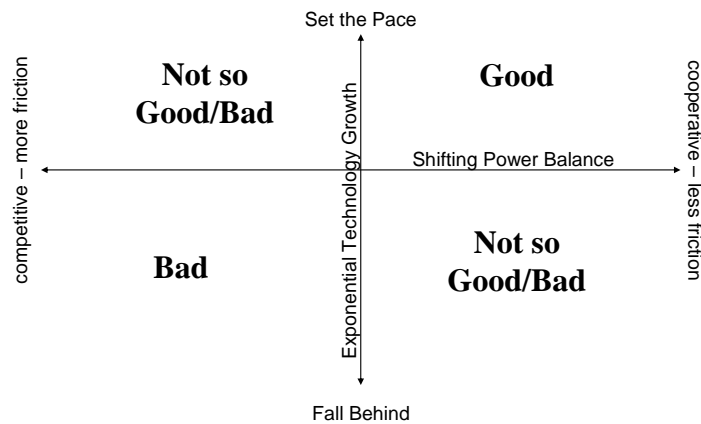## (Power Balance & Exponential Tech Growth)

Figure 4

Step 5: Writing the Alternative Futures. The good quadrant (the power balance is cooperative and Canada sets the pace for technology growth) might reflect more responsible multinational corporations and see Canada as a world leader in developing alternative energy sources. The bad quadrant (the power balance is

competitive and Canada falls behind technology growth) might reflect increased global competition for scarce energy resources and a greater need to protect Canada's Arctic region. The other two quadrants would represent a mix of these two extremes. Further, in each of the four alternative futures, consideration is given to those change drivers that are reflected in the high impact but low to medium uncertainty – hypothetically represented in Figure 4 (3 through to 10). This allows for a more robust alternative future and will assist in the process of crafting scenarios as the next step.

From the alternative futures frameworks, scenarios can be developed. Scenarios are essentially stories about the future which are underpinned by the work done to support the alternative futures. Scenarios will have a plot and a hero or heroine and essentially tell a story. A process of storyboarding – articulation of a series of events from today until the selected point in the future – can be used. Shocks - an unexpected event, such as a revolutionary discovery or a natural disaster, which can cause a rapid shift in direction – can be used to add substance to the scenario and potentially allow for exploration of contingency plans.

Shocks refer to the onset of extraordinary developments and events which have major consequences for individuals groups and/or communities. Such phenomena can dramatically alter the trajectory of subsequent events and generally prompt a fundamental reconsideration of one's outlooks, approaches and options. Shocks are, in essence, unforeseen events that change the expected direction of planning and policy.

Consideration of such events and their possible occurrence provides useful means for challenging conventional thinking. A focus on the emergence of shocks demonstrates how radical changes to the world as we know it are not impossible – encouraging greater flexibility of mind in considering potential futures as a result. In fact, engaging in careful consideration of such phenomena can serve as a crucial first step in the construction of alternative future scenarios to more fully inform sound planning and policy development.

Step 6: Identifying Implications and Options. As a final step in the process, the scenarios should be widely communicated as they can provide the foundation for further exploration or even testing - less formal discussion through to more formal seminar war games - with a view to refining results. At a predetermined time in the future, the process should commence once again thereby completing the lifecycle.

Developing alternative futures is an important activity for an organization an increasingly complex world; and the Canadian Army can not to be excluded. Alternative futures are a long range planning tool designed to highlight changes in the operating environment that could influence the Army capabilities 30 years from now. While it is anticipated that several aspects of the alternative futures may be wrong - simply put we can not predict the future - the development of alternative futures can assist in guiding long-range plans for the Army, in essence, the process represents a hedging strategy against uncertainty.

The Human Dimension[18]

In discussing the future, there is often the tendency to focus on technology due to its glitz and glamour at the expense of all else. However, in the 2040 time period, it must go without saying that the Army's foundation will continue to be its people. Its effectiveness will be achieved by the collective efforts of its people, and the success of its outputs will be measured in the human domain. Thus, humans will continue to be the capital upon which the institution exists, functions, succeeds, and endures. The Army draws its human capital from the very society that it is entrusted to safeguard; therefore, the Army's strength and continued success will be directly dependant upon its ability to provide value, to be seen as relevant, and be seen to be a constituent part of the evolving Canadian population. To continue to achieve these goals, there will be enduring characteristics that the Army as an institution must recognise, cultivate, nurture, and sustain within its human capital, and ultimately, it must reflect the best of Canadian society and evolve with the mosaic that is Canadian culture.

War is characterized as routine, typical, and thus, a normal human activity.[19] Notwithstanding the human origins of war, humans rarely engage in hand-to-hand combat, choosing instead to employ science and technology that increases their reach and lethality while protecting them. Moreover, continued exponential growth of knowledge and advancement of science and technology has been identified as one of the key trends that will define the security environment in the 2040 time period. While many observations have been advanced regarding the influences that these developments will have on the character of the world, the overriding factor that will bind their influence and military effectiveness in future conflict will be the ability and capacity of the human to interface with technological enablers, internalise and manipulate their outputs, and react and act accordingly. It is, therefore, important to understand the place and potential influence of science and technological advancement and its place within the human dimension.

Conclusion

The future can not be predicted and uncertainty remains extant. A great deal of effort through research and development aims to reduce uncertainty and has thus far achieved variable results. Arguably, the increasing pace of change and resultant complexity of the world holds little promise for complete understanding. As such, organizations must learn to operate within uncertainty – the Army is not excluded from this conundrum.

In coping with uncertainty, futuring and foresight are gaining international recognition as disciplines which assist with understanding our increasingly complex world. Perhaps the greatest benefit is not from the results of this new discipline but rather the process itself as noted below:

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[18] This section is based on the work of Col John Crosman and LCol Steve Larouche of the Directorate of Land Concepts and Design.

[19] Arthur H. Westing, Research Communication: War as a Human Endeavour: The High-Fatality Wars of the Twentieth Century Journal of Peace Research 1982; 19; 261 http://jpr.sagepub.com/cgi/reprint/19/3/261

> The value of futures research is less in forecasting accuracy, than in usefulness in planning and opening minds to consider new possibilities and changing the policy agenda. Its purpose is not to know the future but to help us make better decisions today via its methods which force us to anticipate opportunities and threats and consider how to address them. And strategically it is better to anticipate, rather than just respond to change.[20]

Reactive planning can result in high costs of blood and/or treasure. Adoption of a futuring research agenda and methodology can assist with a more proactive approach allowing organizations to anticipate and possibly highlight certain areas that require policy decisions today in order to meet expectations in the future. While the Army has always looked to the future, there is little evidence to suggest the distant future was approached in a systematic methodological manner.

The Army has employed a Concept's Team in an attempt to better understand the distant future (2040). Through the use of Trend Impact Analysis and Futures Wheel, a small dedicated team worked towards providing information on key drivers and critical uncertainties articulated through alternative futures allowing Army decision makers to asses and act today in order to hedge against the future. Indeed, if we accept the dictum that the "the future is not something that just happens ... it is something we do, by the choices we make or avoid", maintaining a small dedicated team investigating distant future makes sense. While much of the research and conclusions may eventually prove to be wrong, the intention was never to get it fully right – indeed an impossible undertaking. The underpinning philosophy was to provide valuable insight enabling the Army to get it right when it mattered. Here, Sir Michael Howard's claim is instructive:

> I am tempted to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they got it wrong. What does matter is their capacity to get it right quickly when the moment arrives.[21]

To restate, military planners win when the effects of surprise do not inflict lethal damage. As surprise comes from known trends interacting in an unexpected way resulting in unanticipated consequences, the Army 2040 team attempts to provide analysis to military decision makers that will allow them to get it right quickly when the time comes thereby mitigating surprises. It is commonly understood that the further we view into the future the less confident are our analysis. However, it is also understood that without a path, "any" road will take you to the future.

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[20] Jerome C. Glenn, Chapter 1: Introduction to The Futures Research Methods Series, AC/UNU Millennium Project Futures Research Methodology – V2.0: 4.
[21] Michael Howard, "Military Science in an Age of Peace," *RUSI, Journal of the Royal United Services Institute for Defense Studies* 119 No.1 (March 1974): 7.