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FROM CHECKERS TO CHESS: AN APPROACH TO RISK FOR THE CONTEMPORARY OPERATING ENVIRONMENT

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ABSTRACT

The current operating environment is drastically different from the battlefields witnessed throughout history: technology, changing actors, size and scope, have all led to recognition that warfare can no longer be governed by traditional models. While many aspects of how Western militaries approach the conflicts of today have changed, the field of risk management has been the exception and, as a result, has consistently failed to support decision making in this dynamic and uncertain environment. Western militaries generally define or view risk as a function of probability of occurrence and the impact of the outcome of an event, which experience has shown does not set the conditions to enable success in the complexity of contemporary conflict.

An extensive understanding of modern risk approaches from across a variety of communities is overlaid with a critical analysis of Western military doctrine to identify to what degree formal risk methodologies utilized by Western militaries are relevant, support, and enable decision making in the contemporary operating environment. This work was intended to identify and reinforce existing and relevant doctrinal concepts, learn from wider civil society view on risk, and extend these notions to break down current barriers to the conduct of competitive and successful operations. The outcome is an attempt to identify and further develop an approach or framework for risk that is more suitable to support decision making in complex environments.

The research demonstrated that defining risk as a function of probability and consequence has become the primary perspective through which Western militaries approach risk and has overridden some of the extant doctrinal concepts that modernize defence risk thinking and bring it in line with the wider risk community. The conclusion of this work intends to provide a renewed frame of risk thinking for Western defence communities: one, which develops a risk culture that accepts or tolerates risk grounded in three aspects: systemic approach, communication, and anticipation.

CHAPTER 1: INTRODUCTION

> *... predicting the future is inherently difficult. The future operating environment will be affected by the interplay of state and non-state actors, be shaped by a number of strategic drivers, and will exhibit the characteristics of a Complex Adaptive System. Such a system involves the interplay of multiple, diverse actors all competing to influence the allegiances and behaviours of individuals, groups and societies. At each level there is learning and adaptation. Consequently the inter-connected character of future war is known as Complex War.*[1]
>
> - Australian Army's Future Land Operating Concept

1.1 Introduction

Antoine Bousquet, in *Scientific Way of Warfare*, examines the connection between science and warfare. Most importantly, his work seeks to highlight how scientific thought has affected military thinking and organization.[2] This interplay between science and warfare is critical in how risk is perceived in the military context. In the chapter on Cybernetic warfare, Bousquet covers the Cold War period and the role that computers had on the military and the conduct of warfare. Bousquet presents a command and control loop (Figure 1.1) from James Constant's *Fundamentals of Strategic Weapons*:

> [t]he behaviour of a threat (T) is registered by early warning system (EW) which passes on the information to command and control (C2) which can then indicate the appropriate actions, if any, to be initiated by the weapon systems (W). This will likely result in a changed state or behaviour in the threat triggering a new cycle of the loop. The different early warning, command and control, and weapon systems are all connected together by a flow of information transmitted via communication links (C).[3]

This style of warfare was characterized by networked systems, which were subject to rules of math and logic.[4]

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[1] Australia, Department of Defence, *Army's Future Land Operating Concept*, (Canberra, AUS, Head Modernisation and Strategic Planning – Army (Australian Army Headquarters): September 2009), iii.

[2] Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*, (London, UK: Hurst & Company, 2009, 136.

[3] *Ibid.*, 136.

[4] *Ibid.*, 137.

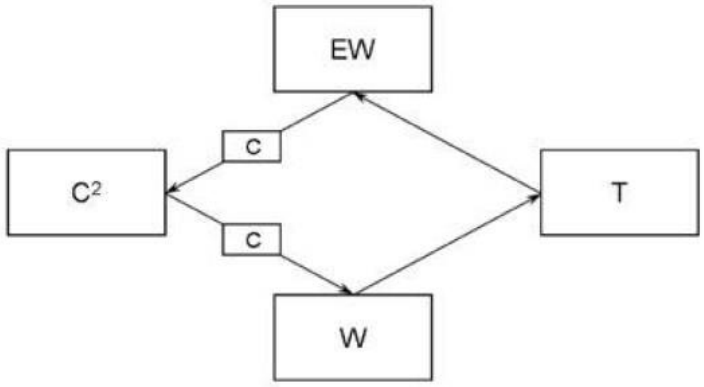

Figure 1.1 - Command and Control Loop[5]

When this concept of warfare is contrasted with the Australian Army's description of the operating environment that is characterized by a variety of actors who are likened to a complex adaptive system, it is clear that the uncertainty and complexity that our collective militaries are facing on a daily basis must play by a different set of rules. This environment is further complicated by actors who operate differently than our adversaries did in the past. Khalid Sheikh Mohammed, believed to have coordinated, planned, and executed the attacks on 11 September 2001 and served as a key figure in the developing of al Qaeda's operations thereafter, stated:

> I know that the materialistic Western mind cannot grasp the idea, and it is difficult for them to believe that the high officials in al Qaeda do not know about operations carried out by its operatives, but this is how it works… This is unacceptable in operations administered by the West… I know that running an operation in the West demands specific administrative work. Yet, you must believe that the same operation could be run successfully with simple primitive means.[6]

It is clear that the operating environment is no longer defined by math and logic, and the rules that were in place to provide order are no longer applicable. Bousquet turns to describe this new

[5] Bousquet, *The Scientific Way of Warfare*, 137.

[6] BBC News, "Substitution for the Testimony of Khalid Sheikh Mohammed", 06 April 2006, 55. http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/06_04_06_testimony.pdf

operating environment, one that is defined by non-linear sciences – chaos and complexity, and the former Newtonian concepts no longer apply.[7]

1.2 Background

In the past, it was linear relationships and logic that brought order to the battlefield, an order that seems to have been lost with the changed characteristics of war. If the abundant altered systems that exist in the current operating environment and the complex connections between them mean that a cause and effect relationship cannot be established, then the liner approaches and logic that brought order in the past is no longer useful. These factors, interconnectedness and complexity, increase the overall risk associated with our actions.[8] In the current context and in an attempt to restore order, risk has been used to understand and quantify the uncertainty that is present as a result of the complexity of warfare. Warfare has also largely become a deliberate choice and in the military context, risk has been used to rationalize the use of resources in a constrained environment, understand the differences between desired and possible futures, and quantify uncertainty.

1.3 Problem Statement

As a result of a changing security environment, since the end of the Cold War risk has now become the principal frame for Western security thinking. Military risk identification, assessment, and management must support the Commander to succeed. Given that the contemporary operating environment and the actors operating in it have transformed, have our risk processes managed to keep pace? Western militaries generally define or view risk as a function of probability of occurrence and the impact of the outcome of an event, which

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[7] Bousquet, *The Scientific Way of Warfare*, 199.

[8] International Risk Governance Council, *Introduction to the IRGC Risk Governance Framework*, (Lausanne, CHE: International Risk Governance Council, 2017), 7.

experience has shown does not set the conditions to enable success in the complexity of contemporary conflict.

1.4 Objectives

A critical analysis of doctrine will set the conditions to identify to what degree formal risk methodologies utilized by Western militaries are relevant and meaningful to the challenge of decision making in the contemporary operating environment. To that end, the questions which guided this study included:

1. What aspects of risk doctrine should be reinforced, emphasized, captured, and shared to increase competitiveness in the contemporary operating environment?

2. What can western militaries learn from approaches to risk found in the wider civil society (academic or other public organizations)?

3. What barriers exist in current Western military risk thinking and how can they be broken down to ensure success?

The research demonstrated that defining risk as a function of probability and consequence has become foundational to the Western military approach to risk and has eclipsed the concepts of anticipation, communication, and a systemic approach that is currently found in doctrine. The preponderance of the discussion will seek to provide a renewed frame of risk thinking for Western defence communities, by developing a risk culture that seeks to accept or tolerate risk grounded in three aspects: systemic approach, communication, and anticipation.

1.5 Thesis

In order to remain competitive with our adversaries, who exhibit the ability and desire to take risk, Western defence organizations must adopt a more dynamic and holistic approach to

risk. A renewed perspective of risk will see it as a factor to be considered, analyzed, and leveraged to gain advantage and to win.

1.6 Scope of study

In Chapter Two, a broad understanding of risk from a theoretical and practical perspective from across a variety of communities is overlaid with that of the United States, United Kingdom, and Australian defence organizations in Chapter Three. From these two perspectives a critical analysis of current doctrinal models and the partial definition of risk employed by Western militaries is be conducted, in Chapter Four. The outcome is an attempt to identify and further develop an approach or framework for risk that is more suitable to succeeding in the current operating environment.

The intent of the study is not to transform Western defence organizations into a place where they lead the discussion on risk, but rather update the risk thinking to be consistent with modern risk approaches across a variety of communities. Western defence organizations have continually answered the call when asked by civil society to respond to threats throughout history, however, the response has, at times, been confused or lost, largely a result of poor risk analysis practices. Improving the risk framework will improve innovation, adaptability, critical thinking, and use of resources, keys to success on the battlefield of today.

CHAPTER 2 RISK AS A FRAMEWORK

2.1 Introduction

In an era defined by wars of choice, risk, rather than threat, has emerged as the perspective through which the public and government have viewed the contemporary operating environment. The result has meant that the development of defence policy and strategy has been consumed with attempts to quantify, manage, control, and describe risks involved to inform strategic decision making. The discussion of risk is prevalent across a variety of disciplines – social, political, and economic communities all provide unique insights which challenge current risk doctrine in the defence realm. By developing a broader understanding of risk, a critical analysis of current doctrinal models and the partial definition of risk employed by Western militaries can be conducted. The outcome is an attempt to identify and further develop an approach or framework for risk that is more suitable to the current operating environment.

Given the interest of a wide assortment of communities when it comes to risk, it is no surprise that there is no consensus on the definition of risk. In order to appropriately discuss risk, identifying, as a minimum, the common characteristics of risk, is required to begin understanding how risk is applied to the current security environment. From a defence perspective, risk has been used for a variety of purposes: to justify demands and expenditure of resources, the use of probability theory to bring order and certainty to a complex battlespace, develop an understanding of how best to achieve a desired future end state, or categorize gaps in strategy. There has been an emerging discussion in civilian sectors, particularly after recent strategic shocks which have had global impacts, to attempt to deal with risk in a more comprehensive and coherent manner. The core principles of concepts such as Enterprise Risk Management or Risk Governance may provide some useful tools for situations which require cooperation, coordination, and trust between varieties of actors who all have different views of the associated risks. Finally, a discussion about risk in the security context cannot be complete without exploring the interaction

between risk and strategy. Understanding how militaries approach and develop strategy directly impacts how militaries view risk. Most Western militaries develop strategy with or using a variation of the Lykke Model (Ends-Ways-Means); this methodology has led to a constrained view of risk by defence professionals. The current focus of policy and strategy means that there is an institutional attempt to impose order on an uncertain, volatile, and changing environment.

2.2 Defining Risk

The underlying challenge with risk, its management, and its impact on security decision making, particularly as it relates to strategy is the wide ranging understanding of risk and how best to describe it. The Concise Oxford Dictionary defines risk as, "[h]azard, chance of bad consequences, loss, exposure to chance of injury or loss."[9] This is consistent with the military doctrinal definitions and how risk is described and understood across many Western defence communities. This traditional definition clearly focuses on negative aspects of risk: hazard, bad consequences, loss, injury, and exposure. As will be demonstrated in Chapter Four, examining, weighing, considering, managing, and communicating risk from alternate perspectives is an important factor that requires consideration.

The Project Management community takes a different approach, at least from a definitional standpoint. The United States Project Management Institute (PMI) defines risk as, "an uncertain event or condition that, if it occurs, has a positive or negative effect on a project objective."[10] Similarly, the United Kingdom Association for Project Management (APM) views risk as, "an uncertain event or set of circumstances that, should it occur, will have an effect on the achievement of the project's objectives."[11] This perspective of risk ensures that practitioners are not constrained to focusing on negative aspects of risk and inevitably striving for options which

[9] Stephen Ward and Chris Chapman, "Transforming project risk management into project uncertainty management", *International Journal of Project Management* 21 (2003): 98.
[10] *Ibid*., 98.
[11] *Ibid*., 98.

reduce or minimize risk, but understand that even risk may offer an opportunity to capitalize on events. The International Standard Organization (ISO) takes an even broader view, defining risk as, "the effect of uncertainty on objectives."[12] It should be noted that the subtext of this definition qualifies effects as both positive and negative, but characterizes risk as a function of potential events and consequences. There are many sources of risk and as a result, the inclusion of uncertainty in the project management definitions is an important distinction. This uncertainty can be a product of a number of factors: lack of understanding, probability, or consequence.[13]

Each defence organization has a unique definition of risk, some in line with a balanced view of positive and negative consequences, but the common thread through all definitions, is the perspective that risk is a function of probability and consequence.[14] More generally, all the defence definitions highlight that there is a cost to risk attributed to some uncertainty. Christopher Coker, in his book *War in an Age of Risk*, discusses this uncertainty, if risk is the gap between reality and possibility, then the uncertainty arises from the an uneasiness about the outcomes of our actions, the *unintended* consequences.[15] The familiar result based on actions taken in the past can no longer be translated to achieve similar results in the future. This uncertainty about the consequences and results of our actions is magnified by the costs associated them, our actions have a greater influence on the world around us. These definitions, which relate probability to consequence, are ultimately based on the work done by Frank H. Knight, the American Economist and author of *Risk, Uncertainty and Profit*, who in 1921, recognized that outcomes of

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[12] International Organization for Standardization, "Risk management – Vocabulary," *ISO/Guide 73:2009(en)*. https://www.iso.org/obp/ui/#iso:std:iso:guide:73:ed-1:v1:en.

[13] *Ibid*.

[14] United States, Office of the Chairman of the Joint Chiefs of Staff, *Joint Risk Analysis – CJCSM 3105.01* (Washington D.C: October 2016), B-1; United Kingdom, Ministry of Defence, *Allied Joint Doctrine for Operational-level Planning Allied Joint Publication 5 with UK Elements* (Shrivenham, UK: Development, Concepts and Doctrine Centre, June 2013), 2-10; Australia, Department of Defence, *Plans Series ADFP 5.0.1 – Joint Military Appreciation Process AL 2* (Canberra, AUS: 2016), 1C-1.

[15] Christopher Coker, *War In an Age of Risk* (Malden MA: Polity Press, 2009), 69.

uncertain situations could be governed by probability distributions.[16] Knight sought to categorize, regulate and monitor these situations by using probability to bring order to uncertainty.

While there is no consistent definition of risk, particularly in the defence community, there are two aspects to risk, which can be drawn from the wide ranging attempts to describe risk: risk involves assigning value to an objective and determining the cost, both upside and downside that may result from the occurrence of an uncertain event.

2.3 The Concept of Risk

Taking this definition which links the concepts of cost and uncertainty forward and applying it to the contemporary operating environment signals that there will be a spectrum of risk. At one end of the spectrum there are simple risks, risks with low uncertainty or ambiguity, a linear cause and effect relationship that can easily be understood and quantified.[17] At the other end of the spectrum there are more complex risks, where uncertainty, ambiguity, and ignorance are high for any number of reasons, the relationship between the factors is unclear and there are a variety of consequences which must be considered.[18] The challenge comes when attempting to decide if certain risks are acceptable and understanding the assumptions which establish the foundation of the treatment of the uncertainty in complex risk.

Ulrich Beck and Anthony Giddens have both written extensively on the concept of the *risk society*, and how modern society deals with risk. Both authors identify the fact that humans have always been exposed to danger and threats, but the distinction in modern society and modern risk is how it is treated and how it is manifested through the process of modernization. Giddens, in particular, identifies that, this traditional notion of simple risk, "implies that [it is]

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[16] Marjolein B.A. van Asselt and Ortwin Renn, "Risk Governance", *Journal of Risk Research* 14 no. 4 (April 2011): 436.

[17] Ortwin Renn, Adnreas Klinke, and Marjolein van Asselt, "Coping with Complexity, Uncertainty and Ambiguity in Risk Governance: A Synthesis", *AMBIO* 40 (2011): 234.

[18] Andrew Stirling, "Risk at a Turning Point?" *Journal of Environmental Medicine* 1 (1999): 122.

understood as rationally manageable."[19] Risk is something to be reduced, minimized and prevented. The true question is whether these traditional concepts of risk and the methodologies associated with treating them are applicable when dealing with complex risk that is ever more present in modern society. Particularly when it comes to a security perspective and the contemporary operating environment, the interdependency of factors may undermine the traditional approaches.

Beck uses the analogy of working in the dark when discussing modern risk.[20] These modern risks cannot be dealt with as a calculation, but must be understood as a combination of emotions, interests, and values.[21] Despite efforts to extract more and better data, the nature and concept of modern risk will not mean improved prevention or more readily acceptable risk. Giddens view of modern society is one that it is preoccupied with the future and the related uncertainty. This is why, in his view, traditional cultures did not have a concept of risk, it was not necessary because these cultures were not future oriented. The development of probability and statics theories has attempted to bring order and certainty to a future which was considered beyond our control. This calculative approach is only applicable as along as the future is similar to the past.[22] As previously identified, the assumptions that are made in the face of uncertainty to assist with understanding risk in terms of probability, inhibits modern decision making.

Using Beck's work as a framework, two aspects of complex risk which separates them from simple risk is the fact that it is not possible to predict the outcome or understand the consequence and constraining the risk to a given time and space is impossible.[23] It is easy to see how this applies in the current security environment; the consequences of our actions are rarely, if

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[19] Jens Oliver Zinn, "Living in the Anthropocene: towards a risk-taking society", *Environmental Sociology* 2, no. 4 (2016): 385.

[20] Mads P. Sørensen, "Ulrich Beck: exploring and contesting risk", *Journal of Risk Research* 21 no. 1 (2018): 10.

[21] Adam Burgess, Jamie Wardman, and Gabe Mythen, "Considering risk: placing the work of Ulrich Beck in context", *Journal of Risk Research* 21 no. 1 (2018): 2.

[22] Zinn, "Living in the Anthropocene", 387.

[23] Sørensen, "Ulrich Beck", 9.

ever, immediately known. The latency of the impact of our actions means that risks are extended over time and the interconnectedness of our society and the transnational nature of the threats we are facing mean that risk transcends our operational environment. Defence professionals need to question whether or not the strategic decisions that are made lean toward clarity and calculability or toward ambiguity and ambivalence when it comes to probability and consequence. Have we come to a point where the uncertainty and complexity of situations and the risk associated with it has surpassed extant methodologies which attempt to control and measure it?[24] The obscurity that results when defence professionals attempt to apply approaches that characterize risk as a function of probability and consequence has meant that there has been a greater preoccupation with risk than has been experienced previously.

2.4 Risk Governance

Literature has long posited the idea that risk be dealt with in more holistic and coherent manner. Much like defining risk, defining risk management has been an equally challenging task, whether it is industry, rating organizations, standards setting organizations like, Standard & Poor's, the International Organization for Standardization, or Committee of Sponsoring Organization, or academic literature, there is agreement that risk must be managed as a portfolio, as opposed to individually and the risk management must be part of the decision making process, not a separate activity.[25] Risk management must be, "the totality of actors, rules, conventions, processes, and mechanisms concerned with how relevant risk information is collected, analyzed, and communicated."[26] Particularly as risk goes beyond simple risks, more robust concepts were required to deal with systemic and complex risk.

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[24] Ulrich Beck, *Risk Society, Towards a New Modernity* (London: Sage Publications, 1992), 271.

[25] Philip Bromiley, et al, "Entreprise Risk Management: Review, Critique, and Research Directions", *Long Range Planning* 48 (2015): 267-268.

[26] van Asselt and Renn, "Risk Governance", 432.

Risk governance highlights the challenge created by uncertainty, complexity, and ambiguity when dealing with risk. These three factors have all led to the social construction of risk.[27] It is this social construction or imagined aspect of risk that makes it difficult to treat; this risk does not have the simple, linear relationship. Risk governance identifies a number of principles when dealing with complex risk: communication, integration, and reflection. Communication in risk is more than a one way transfer of information from the leadership to members of the organization. By involving different and diverse stakeholders in the decision making process, not only is it is possible to build trust, ensure that information is exchanged and shared among all the participants, it leads to a collective ownership of the process and the risk. Communication also ensures that across the enterprise, the concept, an understanding of the causes and executive perspective about risk are understood.[28] The aspect of integration will be further developed in Chapter Four and involves framing, characterizing, evaluating and managing risk through a consistent risk culture across the organization. Gathering all the pertinent knowledge and understanding of the actors involved helps to balance against the uncertainty, complexity, and ambiguity of modern risk as well as modifying the process to be more holistic. The importance of this contextualization will become clear in Chapter Four. This means that risk must be appraised on its tolerability and persistence, as opposed to the probability and consequence, to ensure that both the assessment and management of risk are captured. Scientific methodologies fail to treat a number of unique risks, each with a different opportunity and cost, as opposed to one single risk.[29] Reflection ensures that risk governance supports innovation as risk changes with time. By understanding the opportunities and threats as a result of risk, organizations endorse that the right amount of protection and security of objectives as captured in the process. This allows an organization to change perspectives from unnecessarily attempting to

[27] Renn, Klinke, and van Asselt, "Coping with Complexity, Uncertainty and Ambiguity", 236-237.

[28] van Asselt and Renn, "Risk Governance", 432; Bromiley et al, "Entreprise Risk Management", 269-271.

[29] van Asselt and Renn, "Risk Governance", 442; Bromiley et al, "Entreprise Risk Management", 271.

mitigate or reduce risk to acceptance of uncertainty and falsely treating complex situations as a simple risk.[30]

Risk governance offers the defense professional options and principles for dealing with modern risk that is more complex than cause and effect. Commanders need to allocate and communicate regarding their risk threshold throughout the decision making process to create understanding and commitment to solutions. By involving different and diverse stakeholders in the decision making process, not only is it is possible to build trust, ensure that information is exchanged and shared among all the participants in a holistic and comprehensive process that deals with a variety of complex risks and focuses on tolerability and persistence, not probability and consequence. These principles ensure that defense professionals support innovation by not hampering subordinate organizations with excessive risk controls and embracing uncertainty, or at least understanding the causes of uncertainty and how it impacts operations. Commanders at all levels need to establish a culture of accepting risk, by viewing risk not as a negative, but as something to be embraced and understood.

2.5 Risk in the Security Context

If it is accepted that simple risk, risk that can be dealt with by linear and convergent processes which transform comparatively certain outcomes into probabilistic and realistic objectives and can be managed rationally, have a place within the contemporary operating environment, but should occupy a proportionally small quantity of staff effort, then complex risks require a completely distinct approach. These simple systems have shown they are not useful or relevant as uncertainty in the environment increases.[31] The United States Chairman of the Joint Chiefs of Staff Manual on Joint Risk Analysis highlights this explicitly, "[s]imply stating that a

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[30] van Asselt and Renn, "Risk Governance", 442; Bromiley et al, "Entreprise Risk Management", 271.

[31] Christopher R. Paparone, "Beyond End-Based Rationality: A Quad-Conceptual View of Strategic Reasoning for Professional Military Education", In Teaching Strategy: Challenge and Response, ed. Gabriel Marcella (Carlisle, PA: US Army War College, March 2010), 310.

strategy, scenario, or crisis is high or low [risk] without context can cause confusion and imprecise guidance."[32] An approach to risk, based on accepted definitions and an appropriate perspective, ensures that commanders operate with discipline. Douglas C. Lovelace, Jr, former Director of the Strategic Studies Institute at the United States Army War College, in his forward to *Strategic Theory for the 21st Century: The Little Book on Big Strategy* encourages defence professionals to be future oriented. The result is the development of strategy, a vision of the direction forward for the organization.[33]

By focusing on threats or hazards, as highlighted by a more negative definition of risk, one which fails to capture opportunities as well as downside consequences, strategists are failing to set the conditions for a careful evaluation of the interaction between risk and reward, fundamental for any strategic decision.[34] The strategist has failed to remember that the very nature of war and conflict involves a relationship with at best thinking actors, but more likely, at worst, a thinking adversary. The strategist must seize the opportunities of this new era of warfare to make it work for us, rather than against us.[35] This involves replacing the logic of threat with the logic of risk, which includes opportunities. Risk must be viewed as much as an opportunity as a consequence, our adversaries have demonstrated in countless conflicts that they are willing to take risk. As Western militaries, choosing instead to attempt to eliminate risk causes new risks to proliferate.

As outlined by Catherine Mei Ling Wong, risk problems are, however, more often than not, mutable entities; impacted by development of new knowledge or technology, varied and

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[32] Joint Chiefs of Staff, *Joint Risk Analysis*, A-3.

[33] Harry R. Yarger, *Strategic Theory for the 21st Century: The Little Book on Big Strategy*, (Carlisle, PA: US Army Strategic Studies Institute, February 2006), v.

[34] Michael J. Mazarr, *Fixes for Risk Assessment in Defense*, War on the Rocks, 22 April 2015, https://warontherocks.com/2015/04/fixes-for-risk-assessment-in-defense/?singlepage=1.

[35] Michael J. Mazarr, *The Revolution in Military Affairs: A Framework for Defense Planning*, (Carlisle, PA: US Army Strategic Studies Institute, June 1994), 6.

changing concerns, interests, systems, and stakeholders.[36] With this in mind, decision makers are challenged now, more than ever, to understand how to express the acceptability of risk. Given the factors of previously discussed, better data or methodologies do not necessarily translate into how or at what level risk should possess or own risk. It is evident that as defence professionals, there is a requirement to be forward thinking and focus on possible future outcomes, but the complex operating environment provides a cloud of uncertainty and ambiguity. The riddle to be solved is whether a given set of risks should be accepted or tolerated, not mitigated or avoided.

2.6 Risk and Strategy

Graham Crow examines strategy in sociological literature and says, strategy is, "… normally taken to imply the presence of conscious and rational decisions involving a long-term perspective."[37] While the long-term perspective of Crow's definition is applicable in a military context, we have to consider both the work that Sir Rupert Smith has done on the utility of force in modern conflict and the work of Antoine Bousquet as he examines the impact of non-linear sciences on the modern theories and practices of war. Smith says that the main objective of war in the modern context is, "not to lose the force rather than fighting … at any cost to achieve the aim."[38] That said the rationality of military strategy must result from the connection to political level and political objectives. The civil-military relationship is foundational to linking military resources in a strategically coherent way to achieve security objectives. Bousquet reinforces this, "[m]ilitary force is only one of the instruments of statecraft and its rational and measured

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[36] Catherine Mei Ling Wong, "The Mutable Nature of Risk and Acceptability: A Hybrid Risk Governance Framework", *Risk Analysis* 35 no. 11 (2015): 1971.

[37] Crow, Graham, "The Use of the Concept of 'Strategy' in Recent Sociological Literature", *Sociology* 23, no. 1 (Feb 1989): 19.

[38] Rupert Smith, *The Utility of Force: The Art of War in the Modern World* (London: Penguin, 2006), 17.

employment demands that its use be commensurate with the overall objective to which it is intended to contribute."[39]

When it comes to military strategy, Colonel Arthur F. Lykke Jr., quotes General Maxwell Taylor in his characterization of strategy as, "[s]trategy equals *ends* (objectives toward which one strives) plus *ways* (courses of action) plus *means* (instruments by which some end can be achieved)."[40] Lykke refines this to provide a definition for military strategy being equal to military objectives plus military strategic concepts plus military resources. Using a stool, he goes further to represent objectives, concepts, and resources as the legs which support primarily military strategy but also National strategy, which are different but not separate. Any imbalance in the legs of the stool represents risk to the overall strategy.[41] This analogy of strategy continues to be utilized by Western militaries today. It is beyond the scope of this work to examine the issues with this approach to strategy development and the criticism that this approach has become a, "perfunctory exercise in allocating resources. This approach … is not a recipe for critical and creative thinking."[42]

If risk identification and assessment is about the assumptions that underline strategy development and planning, then it is essential to understand how strategy is developed and how this impacts the perception of risk.[43] Strategy, by and large, is developed using and ends-based rationality. From Paparone, "[t]he strategist attempts to make sense of complex, ambiguous world events, with an end game view - selecting a desired end and then choosing to employ resources in a variety of manners to achieve the selected objectives and ultimately the desired ends."[44] The current security environment is an era of persistent conflict characterized by great uncertainty,

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[39] Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity*, (London, UK: Hurst & Company, 2009), 10.

[40] Arthur F Lykke Jr., "Defining Military Strategy" , *Military Review* 77, no. 1 (Jan/Feb 1997): 183.

[41] Lykke, "Defining Military Strategy", 184-185.

[42] Jeffrey W. Meiser, "Are Our Strategic Model Flawed? Ends + Ways + Means = (Bad) Strategy", *Parameters* 46, no. 4 (Winter 2016-2017): 82.

[43] Nathan P. Freier, et al, *At Our Own Peril: DoD Risk Assessment in a Post-Primacy World*, (Carlisle, PA: US Army Strategic Studies Institute, June 2017), 8.

[44] Paparone, "Beyond End-Based Rationality", 310.

growing volatility, and an increasingly complex range of threats spanning the spectrum of conflict. Governments can no longer master or control the ends, only the means. Risk needs to be objective based, with strategic ends linked to national security objectives, as opposed to desired future end states or threats to enable a flexible and adaptable approach to risk.

2.7 Conclusion

As the tension between means and ends in the strategy-making process changes with the contemporary security environment, formal risk processes are used to offset and maintain balance. The danger in using formal risk processes to quantify complex risk, which begs a requirement to use a unique approach, to reinforce strategic planning assumptions that have been made in the absence of a clear policy framework is clear. The assumptions used in the existing formal methodologies are inherently subjective. Despite this fact, risk is treated as an objectively determinate quantity to determine the preferred option as opposed to a multidimensional factor to be considered in the decision making process.[45] Viewing risk in this new light is risk that can be apportioned and allocated appropriately, as opposed to attempting to calculate risk where the only certainty is uncertainty. This frame allows defence decision makers to account for the most important defence risks, both threats and opportunities, how the risks are related to defence objectives, and the relationships between the two. This allows the defence professional to gain the advantage through innovation and adaptation in the complex contemporary operating environment.

[45] Stirling, "Risk at a Turning Point?", 120.

CHAPTER 3 DOCTRINAL OVERVIEW

3.1 Introduction

The current security environment is characterized as complex, unknown, connected, interdependent, and requires innovation and adaptability to be successful. This type of environment demands strategic thinkers, who can articulate enduring interests and values, while capitalizing on opportunities and understanding associated threats. Risk is a social construction; one that results from, as Giddens identifies, a preoccupation with the future and an anxiety which surrounds the uncertainty, complexity, and ambiguity which is associated with the unintended consequence of our actions.[46] From the previously broad overview and review of risk as developed by a variety of communities, the discussion narrows to examine how the United States, the United Kingdom, and Australian defence communities understand risk, in theory and practice.

Starting with an overview of key aspects of strategy development unique to each nation, a link is then developed to risk, to explore the symmetry and incongruity in the relationship between risk and strategy. Risk is as much about strategy as the inverse is held to be true. If strategy seeks to bring linearity and rationality to divergent concepts, like policy, then risk is the limitations imposed on the objectives, concepts, and resources used to develop strategy.[47] This overview of doctrine will set the conditions to identify to what degree formal risk methodologies utilized by Western militaries are relevant and meaningful to the challenge of decision making in the contemporary operating environment. This chapter will move closer to answering the overall question of whether current risk management processes that are captured in doctrine support Commanders to succeed in the modern security environment?

Despite carrying with it a military connotation, it must be clearly understood, as Lykke and others have identified, that military strategy must support a greater political strategy. This balance can be challenging to navigate, has Hew Strachan indicates, "[t]he word 'strategy' has

[46] Coker, *War In an Age of Risk*, 69; Zinn, "Living in the Anthropocene", 387.
[47] Yarger, *Strategic Theory*, 1.

acquired a universality which has robbed it of meaning, and left it only with banalities."[48] Without attempting to revisit the arguments made by Strachan, and others regarding the tension or confusion that has emerged between strategy and policy or more accurately civil-military relations, it is important to note that, both the United Kingdom, with the release of the *Report of the Iraq Inquiry (2016)* and the United States, with the National Defence University publication of *Lessons Encountered: Learning from the Long War (2015)*, have sought to focus on lessons learned or relearned at the strategic level given the shared experiences in Iraq and Afghanistan.

3.2 The United States (US)

Then Director of the US Army War College, Strategic Studies Institute, Douglas C. Lovelace, Jr., describes Harry R. Yarger's 2006 monograph, *Strategic Theory for the 21st Century: The Little Book on Big Strategy*, as a framework for considering strategy at a variety of levels, from grand strategy to regional or theatre strategy.[49] It is clear from Yarger's work that the US views strategy as a system that requires a thorough understanding of the environment. By understanding the environment, the strategist can focus on the interdependencies and the interactions between the actors. The Chairman of the Joint Chiefs of Staff Manual 3105.01 – *Joint Risk Analysis*, serves to provide guidance on identifying, assessing, and managing risk, particularly as it relates to the provision of military advice by the Chairman of the Joint Chiefs of Staff in the Joint Strategic Planning System.[50] Explicit and tangible articulation of risk ensures that *strategy* (ends-ways-means) is aligned and the US can achieve its policy objectives.[51] There are three components of the Joint Risk Analysis Method (Figure 3.1): Risk Appraisal – generation of knowledge and understanding; Risk Management – decisions and actions to manage or

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[48] Hew Strachan, "The lost meaning of strategy", *Survival* 47, no. 3 (Autumn 2005): 34.
[49] Yarger, *Strategic Theory*, v.
[50] Joint Chiefs of Staff, *Joint Risk Analysis*, 1.
[51] *Ibid*., A-3.

mitigate risk; and Risk Communication – the exchange of risk perspectives across processes and among leadership.[52]

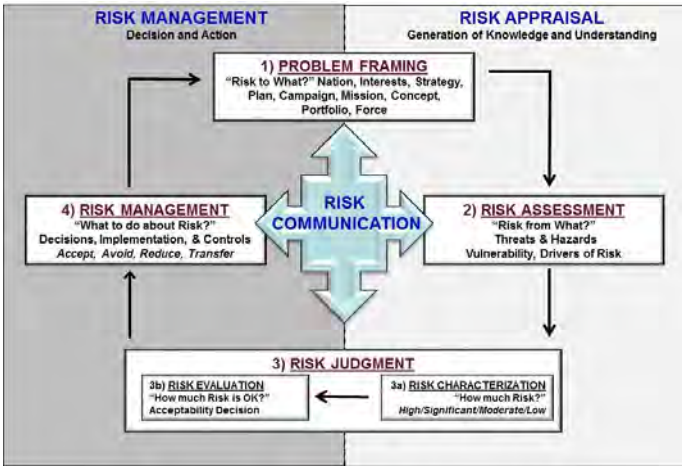

Figure 3.1 – US Joint Risk Framework[53]

Yarger is explicitly clear that strategy is not planning and requires a completely different mindset and focus. If planning is an inherently linear process, capitalizing on certainty and order then the strategist must embrace uncertainty, by clarifying, influencing, and managing the environment.[54] This uncertainty must lead to an approach to risk that allows for innovation and adaptation to support the achievement of the strategy. The goal of risk evaluation cannot be solely risk mitigation, but should be focused on risk acceptance, not as a result of a given or identified risk level, but as a result of a complete understanding of risk. *Joint Risk Analysis* highlights the fact that complexity, uncertainty, ambiguity, and time horizon will be challenges to the risk analysis process. The decision-maker, through their experience and judgment apply intuition and perspective to reduce the impacts of these challenges. By attempting to establish cause and effect relationships (complexity), based on incomplete knowledge or ill-founded assumptions

[52] Joint Chiefs of Staff, *Joint Risk Analysis*, B-1.
[53] *Ibid*., B-1.
[54] Yarger, *Strategic Theory*, 47-48.

(uncertainty), and incoherent or unaligned interpretation or view of risk drivers (ambiguity) can generate more risk.[55]

The concept of the time horizon as it relates to risk is an interesting one. Beck is clear in that constraining modern risk to a given time and space is impossible.[56] In order to reduce the impact of time as a challenge when it comes to risk, Yarger proposes that strategy must be proactive in its nature; the consequence is strategic decisions that help to influence and shape, as opposed to react to the environment. It is only through careful study of the strategic environment that the strategist can identify options to anticipate and manipulate the future environment.[57] In the current operating environment there has evidently been a merging of strategy, operational art, and tactics. The Joint Risk Analysis process attempts to move away from the time horizon by attempting to understand, identifying, and defining the risk 'to what' or 'to whom' in military terms. Defining the impact of the identified risk helps to balance the risk over time, instead of attempting to accept, avoid, or mitigate risks which will change or potentially increase the risk exposure in the future as the environment or situation changes and develops.[58] Related to the concept of time, is a clear understanding of purpose. For objectives to remain valid, Yarger proposes that strategy must focus on the root purposes and causes of an issue through well-developed understanding. This allows the strategist to focus on the objectives to be accomplished in order to yield strategic effect.[59] This results in an ends that should be based on national security objectives, as opposed to desired future conditions or state. The emphasis on root causes and objectives to be accomplished should drive the decision maker to focus on risk as it relates to objectives. The current system of risk analysis links risks directly to a list of potential threats. The Risk Assessment stage of the Joint Risk Analysis process focuses on two sources of risk, threats (state or non-state entity with the capability and intent to cause harm) and hazards (security,

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[55] Joint Chiefs of Staff, *Joint Risk Analysis*, B-6-B-7.
[56] Sørensen, "Ulrich Beck", 9.
[57] Yarger, *Strategic Theory*, 6.
[58] Joint Chiefs of Staff, *Joint Risk Analysis*, B-7.
[59] Yarger, *Strategic Theory*, 53-55.

environmental, demographic, political, technical, or social conditions with potential to cause harm).[60] Ultimately, if risk is too focused on near term threats that lack meaningful connection to concrete defence objectives, strategy will fail to support innovation and adaptation and means that leaders fail to account for more appropriate objective based risks which capitalize as much on opportunities as identifying threats.

The assumptions which serve as the foundation to strategy are often a source of risk. These assumptions must ensure that strategy is based in reality and a function of available resources. Strategy that is based, "on false constructs, or beliefs, or an inconsistency with acceptability criteria at home or abroad, is at greater risk."[61] In fact, by balancing what is known, assumed, and unknown against the objectives to be achieved and the resources, it is easy to identify the risk. The Joint Risk Analysis seeks to be clear in the description of risks to ensure that the underlying assumptions are well developed by the Joint Force and it's Commanders.[62] Inherent in this is how Commanders communicate. Once risks are appraised and managed, they must be communicated. It is a continuous process and ensures that there is no misunderstanding and helps to create confidence and trust both in subordinates and in the Commander.[63] Our view of risk and risk assessment needs to be agile enough to manage a continuously changing environment.[64] By communicating risk and developing trust with our subordinates, Commanders can create opportunities for innovation and adaptation in a rapidly changing environment, critical factors moving forward in developing a new approach to risk culture that is developed in Chapter Four.

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[60] Joint Chiefs of Staff, *Joint Risk Analysis*, B-3.
[61] Yarger, *Strategic Theory*, 41.
[62] Joint Chiefs of Staff, *Joint Risk Analysis*, A-3.
[63] *Ibid*., B-6.
[64] Freier, et al, *At Our Own Peril*, 70.

3.3 The United Kingdom (UK)

As previously mentioned, the UK Ministry of Defence developed and updated a number of doctrinal publications on the heels of the Report of the Iraq Inquiry (Chilcot Report) which identified a number of shortcomings in the strategic decision making process that led to the 2003 deployment of UK forces to Iraq. This demand for updated doctrine on higher level decision making, combined with the continued obligation to develop strategic thinkers the Royal College of Defence Studies (RCDS) developed *Getting Strategy Right (Enough)*, a 'handbook' to reinforce key themes presented by key civilian and military thinkers and ingrain the lessons of the Chilcot report in doctrine.[65] It is evident that the approach to strategy development taken by the UK is somewhat more linear and is derived from understanding the issue requiring the strategy initially, developing options, choosing a course of action, and finally implementing the strategy. The focus of strategy development is from an evidence based perspective, but the intuition of leaders and strategists is exploited to ensure that calculated risks can be taken in the face of ambiguity and uncertainty. It must also be noted that there was a conscious decision to align UK doctrine with North Atlantic Treaty Organization doctrine, so the UK Ministry of Defence has adopted the NATO Comprehensive Operations Planning Directive along with the NATO Allied Joint Doctrine for *Operational Level Planning* (AJP-5) and included specific comments for UK national elements. For the purposes of this study, these publications, along with the archived UK Joint Doctrine Publication (JDP) 5-00 (archived), *Campaign Planning*, were examined.

From a UK perspective, strategy development is described in general terms as a dynamic and proactive exercise that is based on a realistic assessment and decisions made on the balance of probabilities.[66] In an effort to thwart some of the challenges, identified by Strachan and alluded to earlier, and recommendations from the Chilcot report, the Royal College of Defence Studies

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[65] United Kingdom, Defence Academy of the United Kingdom, *Getting Strategy Right (Enough)*, (Shrivenham, UK, Royal College of Defence Studies: September 2017), v;vii.

[66] Defence Academy of the United Kingdom, *Getting Strategy Right (Enough)*, 22.

has identified a number of characteristics unique to UK strategy development, the most fundamental is clarity of purpose, but includes two key additional aspects: continuous constructive challenge and acknowledgement of uncertainty and anticipation of unforeseen outcomes. Both of these concepts directly impact the risk culture of an organization. The first of these key aspects of risk relates to the challenge aspect of strategy development. There is an expectation of strategists and military commanders 'speak truth to power' and provide reasonable challenge to strategy.[67] So explicit is this expectation, that a *Guide to Reasonable Challenge* is included in the handbook – Getting Strategy Right (Enough), for both those receiving and offering challenge to an issue. The second facet of strategy that is highlighted in UK defence doctrine is the anticipation of unforeseen circumstances. As a means to offset risk created by uncertainty in the environment and due to the consequences of actions, the guide also encourages strategists to ensure a reserve of available resources. This strategic flexibility and adaptability again link back to the Chilcot report.[68] There is danger of risk aversion when decision makers are faced with uncertainty and gaps in knowledge; while accepting that unforeseen circumstances are inevitable, UK doctrine encourages leaders to view risk as an opportunity. These unintended consequences, if properly resourced and understood through formal red teaming can create a situation that may be capitalized on to gain an advantage over the adversary, the environment, or another actor. The concept and expectation to seek opportunities to take measured risk to unhinge specifically the adversary, but any actor is very clear. UK strategy development, while somewhat more linear than the US perspective, seeks to make calculated decisions, based on evidence and subject to challenge at every step. The intent is to create an understanding of decisions and the associated consequences in order to create the space and ensure freedom of manoeuvre for subordinates.

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[67] Defence Academy of the United Kingdom, *Getting Strategy Right (Enough)*, 16-17.
[68] *Ibid*., 20-21.

The activity which captures the requirements of reasonable challenge and ensuring a resource reserve is formal red-teaming. As outlined in the UK Ministry of Defence *Red Teaming Guide*, "plans are based on assumptions … assumptions are based on understanding … the better the understanding, the better the plan."[69] Red teaming helps the strategist to identify vulnerabilities and opportunities, identify second- and third-order effects and consequences, ensure a deeper understanding of the environment, test the strength of the evidence base of the quality of the information, identify bias, group-think, and flawed assumptions.[70] The link between scenario based planning to develop strategy or an operational approach and risk management is strong, but Coker highlights it even further, "[t]he risk age puts a premium on anticipating events; scenario planning has become the norm … A scenario is a tool for ordering one's perceptions about alternative future environments in which today's decisions might play out."[71] With the complexity of the security environment, innovation and constant learning are essential as the environment and situation continually changes. Brigadier Deakin, who served as the International Security Assistance Force Joint Command Headquarters J5 highlights the role of wargaming as an aspect of red teaming specifically:

> [Wargaming] enabled the planners to think at the strategic, operational and tactical levels identifying and developing understanding of the risks to the plan and how they should be mitigated. The tool challenged planners to think laterally, attacked group-think and challenged cognitive dissonance. The outcomes directly informed commanders' decision-making processes.[72]

Red teaming supports Brig Deakin's comments by attempting to confirm analysis and challenge judgements as early and as often as possible. The specific outcomes of red teaming include an assessment of risk and resiliency of a plan.[73] Challenging the evidence and understanding of the situation helps the Commander to make decisions, but

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[69] United Kingdom, Ministry of Defence, *Red Teaming Guide 2nd Edition*, (Shrivenham, UK: Development, Concepts and Doctrine Centre, January 2013), 1-6.

[70] UK Ministry of Defence, *Red Teaming Guide*, 1-6.

[71] Coker, *War In an Age of Risk*, 2.

[72] United Kingdom, Ministry of Defence, *Wargaming Handbook*, (Shrivenham, UK: Development, Concepts and Doctrine Centre, August 2017), 56.

[73] UK Ministry of Defence, *Red Teaming Guide*, 4-1.

more importantly take risk; more often than not, this risk allows the Commander to capitalize on opportunities. From a UK perspective, risk analysis and management must support the taking of calculated risk, vice looking to reduce risk to the point where overly cautious decision making leads to missed opportunities.[74] This mindset enables subordinates to innovate and identify solutions in a rapidly changing environment through communication and understanding by the Commander. It is critical that the Commander understands what might affect their own and their subordinates' perception of risk.

The UK Ministry of Defence defines risk as, "an expression of the probability and implications of an activity or event, with positive or negative consequences taking place."[75] While this definition includes the upside characteristics of risk, the remainder of the NATO publication focuses on severity as it relates to consequence of an event occurring from a negative perspective. In fact, for each course of action, a risk assessment is completed which outlines the source, and associated consequences and probability of risks.[76] However, the archived JDP 5-00 includes a risk matrix that includes both risks as threats and opportunities (Figure 3.2). While the risk matrix appears to treat both high impact and high likelihood risks the same, in both the threat and opportunity context, it at least enables the defence professional to consider both aspects of risk. Risk analysis process outlined in JDP 5-00 (archived) includes risk identification, assessment (probability and consequence), reduction, mitigation, and exploitation, and management. While these analytical approaches treat risk predominantly as a threat, they can also be used to better understand any opportunities that might present themselves. Each risk can be analyzed both for

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[74] United Kingdom, Ministry of Defence, *Campaign Planning Joint Doctrine Publication 5-00 2nd Edition (Archived)*, (Shrivenham, UK: Development, Concepts and Doctrine Centre, July 2013), 2H-3.

[75] United Kingdom, Ministry of Defence, *Allied Joint Doctrine for Operational-level Planning Allied Joint Publication 5 with UK Elements*, (Shrivenham, UK: Development, Concepts and Doctrine Centre, June 2013), 2-11.

[76] United Kingdom, Ministry of Defence, *Allied Joint Doctrine for Operational-level Planning Allied Joint Publication 5 with UK Elements*, (Shrivenham, UK: Development, Concepts and Doctrine Centre, June 2013), 3-61-3-62.

adverse outcome, but also for the likelihood and impact of favourable advantages that might be gained.[77]

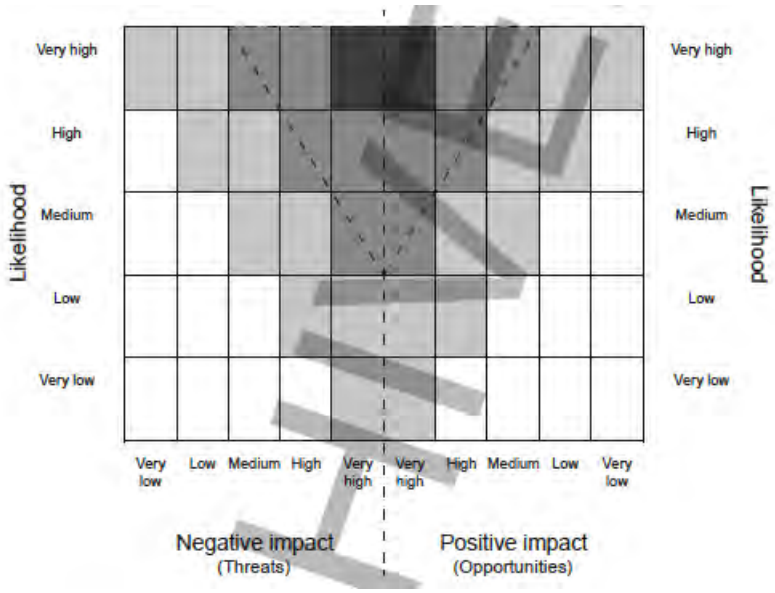

Figure 3.2 – Risks as threats and opportunities[78]

UK JDP 4, defines understanding as, "the perception and interpretation of a particular situation in order to provide the context, insight and foresight required for effective decision-making. Understanding helps us to make decisions; it also helps us to manage any associated risks and any second and subsequent order effects."[79] These effects are highlighted in JDP 5-00 (archived) by relating them to consequences, which includes opportunities (Figure 3.3).

[77] UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2H1-1-2H1-7.
[78] UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2H1-5.
[79] United Kingdom, Ministry of Defence, *Understanding and Decision-making Joint Doctrine Publication 04*, (Shrivenham, UK: Development, Concepts and Doctrine Centre, December 2016), 3.

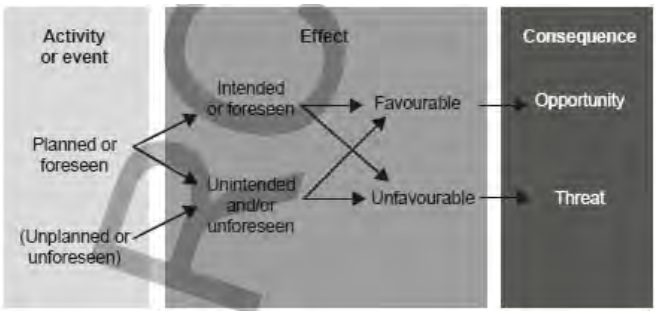

Figure 3.3 – Effects and Consequences[80]

By developing a more fulsome understanding of the environment and an unbiased view of the plan through reasonable challenge and red teaming, commanders can develop an appreciation for potential opportunities which may present themselves. Whether the opportunities are a result of intended or unintended consequences, they present the commander with the chance to gain an advantage by taking risk.

3.4 Australia

The 2016 Australian Defence White Paper captures the essence of a middle power's role in a complex security environment, "Australia has the capability to make a difference in the world wherever our Strategic Defence Interests are engaged. Australia cannot expect others to bear, on our behalf, the burden of ensuring that the world is a safe and secure place."[81] The policy is clear that Australia must work with partners and allies in a global context, but be ready to respond to act independently in the region. LTCOL Trent Scott discusses the *operational art* as it applies to the Australian Defence Force (ADF) given this strategic narrative in the Defence White Paper. When it comes to global missions of choice, as a junior member of the coalition, the ADF is not in a position to direct or develop the overall Coalition campaign plan, however, LTCOL Scott reinforces comments made by the Chief of Joint Operations at the time, that the challenge lies in how the ADF links or translates strategic direction and long term ADF objectives into clear

[80] Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2H-2.
[81] Australia, Department of Defence, *2016 Defence White Paper*, (Canberra, AUS: 2016), 35.

guidance to deployed elements.[82] General Vance and others have written about 'contribution warfare' and the difficultly, for middle powers, associated with providing an operational wrap to tactical actions, when it is merely the deployment that meets the strategic objective, not any actual tactical action. In the case of Australia, the requirement to be able to conduct independent military action in the region, as missions of necessity, the ability to conduct and execute the operational art becomes an imperative, as the ADF establishes a theatre campaign plan.[83] The ADF publication, *Joint Operations for the 21st Century*, discusses the importance of operational art,

> [It] is at the centre of our thinking on the conduct of war. Operational art is the skillful employment of military forces to attain strategic goals through the design, organisation, sequencing and direction of campaigns and major operations. It translates strategy into operational and ultimately tactical action.[84]

The ADF uses the Joint Military Appreciate Process (JMAP) to design and arrange operations, which achieves the objectives of contemporary operational art.

The JMAP is a linear five step process (Figure 3.4). Despite the linearity, throughout the ADF publication, ADFP 5.01 AL 2 – the Joint Military Appreciation Process, the reader is cautioned about the linearity and is provided reminders about the requirement to utilize feedback loops to reframe the situation and assess new information. In general, the JMAP utilizes some aspects of design methodologies in the initial stages of the process to help 'answer the right question'. Scoping and framing allows planners to frame the current and desired states of both the problem and the environment, creating a greater understanding of the problem to be solved by the Commander and staff.[85] The mission analysis step of JMAP sets the conditions for the development of an operational design. It is this step that helps to sequence and organize tactical

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[82] LTCOL Trent Scott, *The Lost Operational Art: Invigorating Campaigning into the Australian Defence Force*, (Canberra, AUS: Land Warfare Studies Centre (Australia), 2010), 8.

[83] Scott, *The Lost Operational Art*, 10-11.

[84] Australia, Department of Defence, *Joint Operations for the 21st Century – ADDP D.3*, (Canberra, AUS: May 2007), 20.

[85] Australia, Department of Defence, *Plans Series ADFP 5.0.1 – Joint Military Appreciation Process AL 2*, (Canberra, AUS: 2016), 2-1.

tasks or operations, depending on the context, to achieve the desired end state. The remainder of the JMAP refines the creative and critical thinking done in the first two steps and compares and weighs options to form the basis of the actionable operational plan. This allows for a contextualization of the tasks and associated risks by the defence professional to analysis and consider risks from a new perspective developed in Chapter Four. The JMAP intends to operationalize defence strategy based on the guidance captured in defence and government policy. Ultimately, the JMAP attempts to align campaign or operational end states with a strategic objective, in order to nest the process within strategic planning processes.[86]

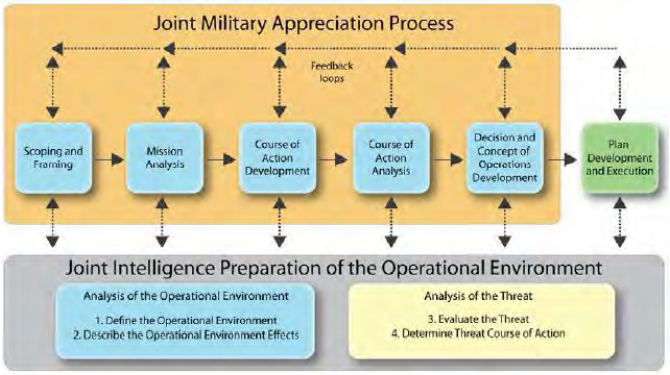

Figure 3.4 – The ADF Joint Military Appreciate Process[87]

A key aspect of the JMAP is the treatment and consideration of operational risk throughout the process.[88] In general, the ADF uses a conventional risk management model, one that complies with Australian/New Zealand Standard (AS/NZS) 31000:2009 Risk Management.[89] This allows the department to meet compliance requirements as outlined in the Joint Directive by Chief of Defence Force and Secretary, Department of Defence on the Management of Risk in Defence. This Joint Directive intends to outline a consistent approach across the Department when it comes to risk management and in doing so attempts to support an enterprise risk

[86] AUS Department of Defence, *JMAP*, 3-1.
[87] *Ibid*., 1-2.
[88] *Ibid*., 1-3.
[89] *Ibid*., 1-11.

management process and aggregate the risks in a risk profile.[90] Applying this to the JMAP as, "… a decision-making tool that focuses on achieving objectives, while identifying and analyzing associated potential hazards and applying risk mitigation strategies …",[91] the process ultimately attempts to answer the question of whether "… achieving the objective is worth the possible price that may have to be paid?"[92] The JMAP publication takes a negative view of risk, as something that conflicts with force protection and the success of operations, and goes further to highlight that it is through control and treatment of threats and hazards using an analytical and systematic process balanced with intuition and experience to offset the potential impacts to mission success, personnel, capabilities, or the environment. Much like other Western militaries, JMAP does include a short statement on the importance of seeking opportunities to capitalize on fleeting situations which may enable the Commander to gain advantage.[93] However, the doctrine is based on a conventional risk management process that attempts to integrate and standardize risk across the establishment, much of the discussion surrounding risk and risk management returns to a familiar process of weighing probability and consequence using standardized definitions in an attempt to establish clarity. By attempting to establish enterprise risk management or portfolio of aggregated risk, the ADF does include the concepts of risk culture, threshold, ownership, and opportunity in the doctrine. These concepts absolutely require communication and understanding by the Commander, their staff and subordinate organizations. The intent is to create an environment that is focused on risk, without becoming too risk averse, by balancing the identified risks within the framework of the operation.[94] The JMAP does this well by recognizing that it is both a decision support and risk management tool. By addressing risk at each stage of the JMAP, planners are able to contextualize the risk within the operation as a whole through critical and

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[90] Australia, Department of Defence, *Joint Directive by Chief of Defence Force and Secretary, Department of Defence on the Management of Risk in Defence – Joint Directive 30/2015*, (Canberra, AUS: June 2015), 1-2.

[91] AUS Department of Defence, *JMAP*, 1-11.

[92] AUS Department of Defence, *JMAP*, 1-10.

[93] *Ibid*., 1-1C1.

[94] *Ibid*., 1-1C12.

creative thinking.[95] This contextualization of the risk within an operational framework, even if employing a conventional risk management process, helps to drive commanders to communicate about risk. These are essential steps in establishing a culture of risk and may go a long way in ensuring that subordinates have the space to not only seize opportunities but to be innovative in their approach to solving problems encountered in the current operating environment.

3.5 Conclusion

After conducting a review of risk management doctrine, the concept of probability and consequence as the principal means to quantify risk has clearly been established as a foundation across the defence community.[96] These established risk management processes are a simple way to identify, treat, and communicate risk, particularly for those who are inexperienced or may be constrained by other environmental factors. As a result, this makes it an appealing approach, one that creates convergence in a complex environment through a linear process and distils information into something consumable. While each organization may focus on risk from a different perspective, highlighting upside as much as downside costs to risk and the opportunities that may result as an example, the emphasis on contextualizing or understanding underlying assumptions is critical to defence risk management, particularly in light of recent experience in Afghanistan and Iraq which has resulted, in some cases sweeping, change to doctrine. This contextualization attempts to modernize our approach to risk, unfortunately that approach, firmly based on early twentieth century concepts authored by Frank Knight, seeks to reduce uncertainty by applying probability distributions.

If it can be agreed that modern risk is a social product, as is outlined by the risk society thesis – a product of society's consternation with the future and the uncertain hazards or threats that may be presented, then the perception of risk has to be affected by more than just developing

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[95] *Ibid*., 1-1C15.

[96] Joint Chiefs of Staff, *Joint Risk Analysis*, B-1.; UK Ministry of Defence, *AJP 5*, 2-10; AUS Department of Defence, *JMAP*, 1C-1.

our understanding of the situation. By failing to appropriately account for the uncertainty and complexity in the current security environment objectively, defence risk doctrine explicitly and implicitly constrains defence professionals to over risk aversion. The nature of conflict has changed and as stewards of the profession, we must adapt our processes to ensure that the defence strategy secures the stated strategic objectives. By being 'ends' focused in the development of strategy and the understanding of associated risk, there is an attempt to calculate risk, as opposed to understanding risk as a factor to be considered, apportioned and allocated in the decision making process. This allows defence professionals to support the Commander's decision making, particularly by enabling innovation and adaptation for subordinate elements.

CHAPTER 4 A NEW RISK APPROACH FOR THE CONTEMPORARY OPERATING ENVIRONMENT

4.1 Introduction

The contrast between elements of risk governance in modern academic literature and the doctrine of Western militaries is stark. Across the board, military doctrine has reverted to the utilization of risk matrices in an attempt to demonstrate or weigh the impact of an occurrence against the probability that an event occurs. These matrices oversimplify the relationship as the environment becomes increasingly complex. If risk is seen as a spectrum with simple and linear risk at one end and complex, uncertain, and ambiguous risk at the other; there is a place for describing risk as a function of probability and consequence, but it clearly belongs in the domain of simple risk. These types of evaluations tend to inappropriately highlight the inexact nature of probabilities and the impact of control measures for decision making; too often an attempt is made to linearly extrapolate the impact of unknown hazards against established concepts and plans. From this perspective, risk, as it relates to uncertain future events, can only be quantified in scenarios where the future is similar to the past.[97]

This begs the question of how might we better think about risk in the contemporary operational environment of the twenty-first century? In the defence context, the fact that in general, risk is defined as a function of probability of occurrence and the impact of the outcome of an event has caused other aspects of risk culture to be overlooked. As identified in Chapter Three, the concepts of systemic approach, communication, and anticipation already exist in defence doctrine; reframing or redefining risk is a first step in changing our risk thinking. Probabilistic risk assessment has its limitations, particularly when the questions of acceptability and tolerability are more relevant in the current environment. The assumptions which underpin subjective judgments concerning probability and impact of events lead defence professionals into a dangerous dichotomy of risk aversion and overconfidence as it relates to uncertain future

[97] Ward, “Transforming project risk management”, 100.

conditions. By being ‘ends’ focused in the development of strategy and the understanding of associated risk, there is an attempt to calculate risk, as opposed to understanding risk as a factor to be considered, apportioned and allocated in the decision making process. This more flexible approach allows defence professionals to support the Commander’s decision making, particularly by enabling innovation and adaptation for subordinate elements.

Despite the fact that Western militaries focus on the probability and consequence of an event as it relates to risk, these militaries have matured their approach to risk in some other respects. All the Western militaries whose doctrine was studied attempt to develop a greater level of understanding of the problem by identifying and focusing on root purposes and causes. By embracing a more iterative and holistic approach to risk assessment and focusing on objectives as opposed to threats, defence professionals focus on placing elements in context and understanding risk as a factor to be analyzed. Additionally, as commanders increase their understanding of the situation and develop their acceptability or tolerability for risk, not as a subjective and calculated level of risk, but as a potential opportunity to be seized, the door is opened for subordinates to innovate and adapt within a constantly changing environment without having to seek approval or permission. Continuously challenging the assumptions and the plan itself, ensures that the defence team builds resiliency into the solution and a realistic and evidence based assessment is conducted. By understanding the intricacies associated with the plan, particularly the unintended consequences, the Commander can capitalize on opportunities that may present themselves, thereby providing an advantage over the other actors in the environment. These aspects must be underlined by a consistent and clear communication of risk and the development of an appropriate risk culture, both of which are directed and curated by the commander.

Implementing and reinforcing these concepts in military doctrine, in addition to redefining risk, will provide a more appropriate framework and approach to risk for defence professionals navigating the current complex operating environment. If risk becomes something to be analysed and understood in context, commanders can communicate about acceptability and

tolerability of risk, something to be seized as part of measured and evidence based decisions. This renewed focus on risk levels the field with our adversaries in the current environment, but it is not a simple change and requires a deliberate approach to how operations are conducted.

4.2 Contextualized Risk Assessment

If risk has overtaken threat as the frame through which conflict is viewed in the contemporary operating environment, then defence professionals have become preoccupied with attempting to quantify risk in the simplest means possible. Returning to the concept that risk is a social product; if risk is a result of our perceptions, then it must be influenced by a variety of factors: social, political, and cultural.[98] The International Risk Governance Council (IRGC), is "… a private, independent, not-for-profit Foundation … [who] supports governments, industry, NGOs and other organisations in their efforts to deal with major and global risks facing society and to foster public confidence in risk governance."[99] In 2005, the IRGC developed a white paper, *Risk Governance: Towards an Integrated Approach*, which proposes a new risk framework. This framework provides some additional considerations for the risk field; in particular, the framework includes consideration for the societal context of risk. In addition to the typical assessment, management and communication of risk, the intent is to underlay these processes with an understanding and consideration for the contextual aspects. This includes understanding the actors, their perception of risk, to include consequences, and the role of policy or standard setting organizations in the risk process.[100]

Mikkel Vedby Rasmussen, in *The Risk Society at War*, frames threat from a defence perspective, highlighting specifically how threat continues to form the foundation of how defence views risk, "[a] threat is a specific danger which can be precisely identified and measured on the

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[98] Renn, Klinke, and van Asselt, "Coping with Complexity, Uncertainty and Ambiguity", 237.
[99] International Risk Governance Council, *Risk Governance: Towards and Integrative Approach*, (Geneva, CHE: International Risk Governance Council, 2005), 5.
[100] *Ibid*., 11.

basis of the capabilities an enemy has to realise a hostile intent."[101] The concept of objective based risk is one of the key recommendations from a US Army War College Strategic Studies Institute paper, *At Our Own Peril: DoD Risk Assessment in a Post-Primacy World*. The author's view is that by focusing risk assessment on near term threats, as opposed to objectives, defence professionals will either fail to account for many of the hazards that will actually beg a military response because of traditional biases held by military members. These biases result in planners and commanders focusing on the hazards or threats that they want to have, vice the ones that will be present in reality.[102] From a defence perspective this desire to focus on threat to underscore risk, causes challenges to operating in a complex environment. In order to move away from threat based risk assessment, creating understanding and putting risk in a context transitions defence professionals toward a more objective based risk assessment. This contextualization of risk needs to occur early in the risk process, particularly as risks are identified and assessed.

The IRGC proposes that a preassessment phase enables the decision maker to appropriately frame the risk problem, particularly by developing a common understanding of the risk issue. In order to do this, it is critical that all parties understand the underlying intent or objective that is to be achieved. As part of the preassessment process, the decision maker also highlights the major assumptions and processes for screening the risks involved and identifying which are the most pressing or important in the overall risk problem.[103] By understanding the context and achieving a consensus on risk that is related to essential objectives, the consequences of either tolerating or accepting risk is better understood over a protracted time period and in a constantly changing environment. At Our Own Peril emphasises the requirement to understand the intimate connection between objectives and the environment in order to make risk based decisions over time and at different levels.[104] As has been demonstrated, the environment is

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[101] Mikkel Vedby Rasmussen, *Risk Society at War*, (Cambridge: Cambridge University Press, 2006), 1.
[102] Freier, et al, *At Our Own Peril*, 94.
[103] IRGC, *Risk Governace: Towards an Integrative Approach*, 13.
[104] Freier, et al, *At Our Own Peril*, 95.

constantly changing and if risk decisions are informed by threat, as opposed to risk decisions based on objectives, which place our risk decisions in a context, the ability to generate freedom of manoeuvre for the Commander and their subordinate organizations becomes challenging. Contextualizing risk must occur during the initial stages of risk assessment, as risks are identified and preliminary assessment and screening of risk occurs. The doctrine from the three countries studied includes a framing step as part of the risk assessment process to understand the risk issues. When this step is supported by an approach to strategy that appropriately frames the problem, defence professionals should be postured to make risk recommendations and decisions that are based on a thorough understanding of the issues.

The US approach to strategy is one that is proactive and enables the Commander to influence and shape the environment to achieve short, medium, and long term objectives. By studying and assessing the environment, opportunities and threats can be identified, influenced, or shaped.[105] This approach is overlaid with the Joint Risk Assessment Method (JRAM) which includes an initial problem framing step intended to identify, "the item or idea which is "valued" and has the potential to be "harmed."… In order to frame a problem properly, one must answer the question "risk to what?"[106] Once the problem is framed, from a US perspective, an understanding of factors that affect risk are developed. These factors may include vulnerability (how much harm over a given period), resilience (ability to recover), criticality (importance), and accessibility or recognition (ability to reach/identify a capability by the adversary).[107] In fact, the US JRAM is strikingly familiar to the IRGC framework proposed in 2005 as indicated in Figures 4.1 and 4.2.

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[105] Yarger, *Strategic Theory*, 6.
[106] Joint Chiefs of Staff, *Joint Risk Analysis*, B-2.
[107] *Ibid*., B-3.

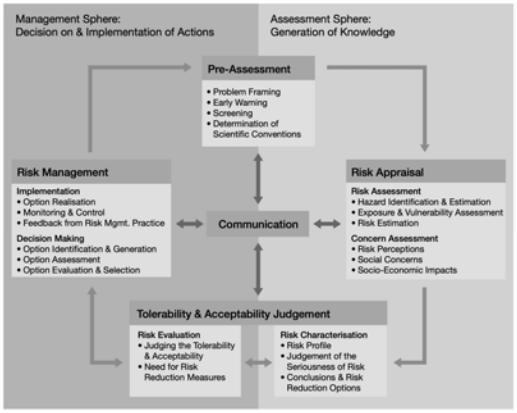

Figure 4.1 - 2005 IRGC Risk Governance Framework [108]

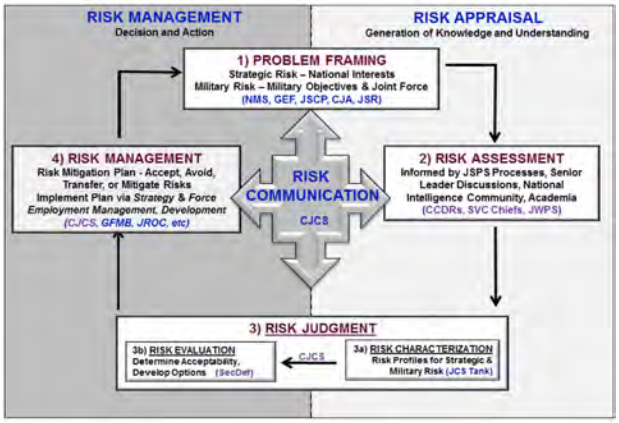

Figure 4.2 - The U.S. Joint Risk Framework [109]

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Figure 4.3 - Risk to What, To Whom?

108 IRGC, *Risk Governance Towards an Integrative Approach*, 13.

109 Joint Chiefs of Staff, *Joint Risk Analysis, B-2*

110 UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived) 2-45.*

111 Joint Chiefs of Staff, *Joint Risk Analysis, B-9*

Both the UK and ADF focus on developing risk throughout the strategy development or the conduct of operational art; by linking both processes closely, it is possible for the defence professional to contextualize the risk, or at least understand how risks are linked to achieving objectives or the mission. From a UK perspective, risk is separated into strategic (failure to achieve a strategic objective at an acceptable cost) and operational risk (time, space, forces, and informational factors which may affect the accomplishment of the mission).[112] The UK approach integrates risk into the operational or strategy development process, identifying risks throughout, from the initial stages of understanding the situation, through mission analysis, and continues as courses of action are formulated, developed, and evaluated. It is determined what and how objectives may be impacted, from both an individual and collective risk analysis, to understand how lower level risks may have influence at the strategic level.[113] The ADF attempts to implement a systematic risk identification process in an attempt to capture as many relevant risks as possible which may impact the accomplishment of identified objectives. The process attempts to identify the source and the impact of the risk. By understanding the risks, an analysis can be conducted to determine which risks are acceptable and which risks require action. This analysis is conducted throughout the joint planning process, using feedback loops and other processes to further develop the identified risks. Suitable scales and methods for combining the identified and analyzed risk should be consistent when establishing the context of risk in earlier steps.[114]

This contextualization of the objectives within the environment and the approach to achieve them relates the objectives to the appropriate hazards and the consequences and opportunities that may present themselves in order to achieve them.[115] The fallibility of probabilistic analyses has been demonstrated in complex, uncertain, and ambiguous environments. It is essential to take a systemic approach and understand the interactions and

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[112] UK Ministry of Defence, *AJP 5*, 3-18.
[113] UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2H1-1-2H1-2.
[114] AUS Department of Defence, *JMAP*, 1C-5-1C-6.
[115] Freier, et al, *At Our Own Peril*, 95.

follow on, both intended and unintended, consequences of our actions, and how our actions may affect other risks. It is only through a holistic approach to not only identification, but assessment of risk that risk can be placed in a larger context.[116] Defence professionals must be reminded that other actors attempt to implement, subvert, or disrupt their own strategies, and resiliency in our risk approaches ensures that despite a changing situation, the actions of subordinate organizations can remain innovative and adaptable. Rasmussen goes on to remind the defence professional that, "[f]rom a risk perspective a danger is much less computable than from a threat perspective."[117] It is clear that as our adversaries continue to operate below the threshold of war to influence and affect the decision making of Western governments, the military is only one instrument of national power. As a result, military planners need to be able to anticipate other threats than the ones that they may be used to seeing as potential disruptions to achieve stated security objectives.
By taking systems approach or view to strategy, the strategist is able to highlight and focus on the root purposes and causes for the strategy in order to achieve strategic effect.

4.3 Creating a Risk Culture to Enable Communication

If contextualizing risk is essential to understand and develop an appropriate approach to risk, a commander's ability to communicate about risk is foundational. The IRGC places risk communication at the centre of their framework (Figures 4.4 and 4.5), but it is more than communication of risk in one direction, from the leadership down. Establishing a conversation of risk means not only identifying to stakeholders and others the results of risk decisions, it involves enabling others to be involved in the making of risk based decisions. An open discussion about risk supports conflicting viewpoints and the resolution of risk perceptions and creates a sense of trust, by ensuring that those who may be impacted by a given risk process are best prepared to

[116] van Asselt and Renn, "Risk Governance", 436.
[117] Rasmussen, *Risk Society at War*, 2.

deal with consequences. This communication must involve all the stakeholders at all levels for a common understanding of risk.[118] This is reinforced by Pidgeon, in van Asselt and Renn,

> One of the most consistent messages to have arisen from social science research into risk over the past 30 years is that risk communication … needs to accommodate far more than a simple one-way transfer of information … the mere provision of 'expert' information is unlikely to address public and stakeholder concerns or resolve any underlying societal issues.[119]

The most recent IRGC framework for risk governance, from 2017, discusses communication from an internal and external perspective. Internal risk communication enables those involved in risk decision to enhance their understanding and role in the risk process. This communication helps to not only contextualize the risk as previously discussed, but ensures that those involved have a clear picture of how the leadership views the risks involved. External communication is twofold: it involves and engages outside agencies and stakeholders in the risk process, allowing their voice to be heard, and following a risk decision, it ensures that those impacted by the decision understand both the rationale and their role in the management of that risk. This engagement both internally and externally develops trust around the risk process, particularly as the decisions involve greater complexity, uncertainty, and ambiguity.[120]

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[118] IRGC, *Risk Governace: Towards an Integrative Approach*, 15.

[119] van Asselt and Renn, "Risk Governance", 439.

[120] International Risk Governance Council, *Introduction to the IRGC Risk Governance Framework*, (Lausanne, CHE: International Risk Governance Council, 2017), 27.

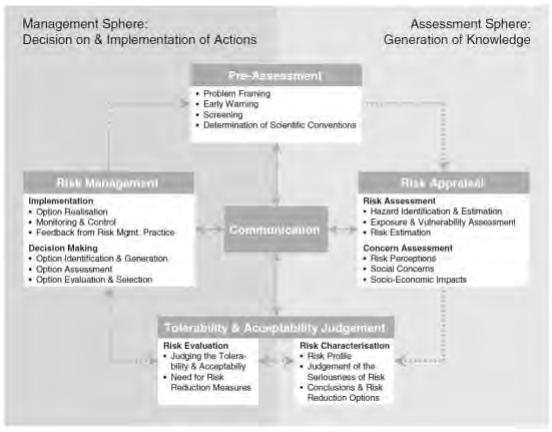


Figure 4.4 – 2005 IRGC Risk Governance Framework[121]

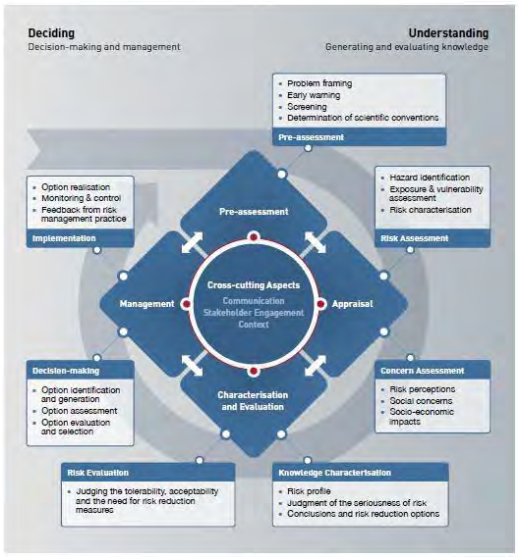


Figure 4.5 – Visual Representation of 2017 IRGC Risk Governance Framework[122]

If communication is central to the risk process and understanding and contextualizing risk occurs early as part of a framing or pre-assessment process, communication in the appraisal and characterization process is critical to ensure that defence professionals can accurately assess and analyze risk. The Commander needs to express their appetite for or tolerability of certain risks, and ensure that all involved understand the level of risk that the Commander is willing to operate under.

The US JRAM highlights the role that communication plays in the risk process by identifying that it is essential to ensure that all risk stakeholders are involved to reduce misunderstanding and create confidence. As previously identified, much like the original IRGC risk framework, the US JRAM places communication at the centre of the process to demonstrate that it is critical in each step of the process.[123] Using the definitions of probability and consequence defined in framing and an understanding of the source of risk either threat (state or non-state entity with the capability and intent to cause harm) or hazard (security, environmental, demographic, political, technical or social conditions with the potential to cause harm) and the

[121] IRGC, *Risk Governance: Towards an Integrative Approach*, 13.
[122] IRGC, *Introduction to the IRGC Risk Governance Framework*, 10.
[123] Joint Chiefs of Staff, *Joint Risk Analysis*, B-4; Joint Chiefs of Staff, *Joint Risk Analysis*, C-18.

factors which may affect the probability, frequency, or consequence of risk, an assessment of risk is conducted. The risk judgment stage of the JRAM captures two aspects, risk characterization (risk as a function of probability and consequence) to identify the level of risk and risk evaluation (acceptability of risk). The Chairman of the Joint Chiefs of Staff Manual specifically identifies that the risk judgment stage, "… serves to bound, not measure risk… [It is] an effort aimed at determining a decision-maker's degree of acceptable risk."[124] Risk characterization establishes the risk level through a subjective judgment of risk by placing it on a risk contour graph, an example at Figure 4.6, and clearly has inherent problems. Risk evaluation should inform the decision maker about the acceptability and management of the risk.[125] As identified, the Commander must make it clear what their definition, perception, and acceptability or tolerability of risk is throughout the process. The staff must engage with stakeholders, subordinate organizations, and the wider whole of government community to enhance their understanding, the impacts and outcomes of risk decisions, and define the roles of all involved in the risk process.

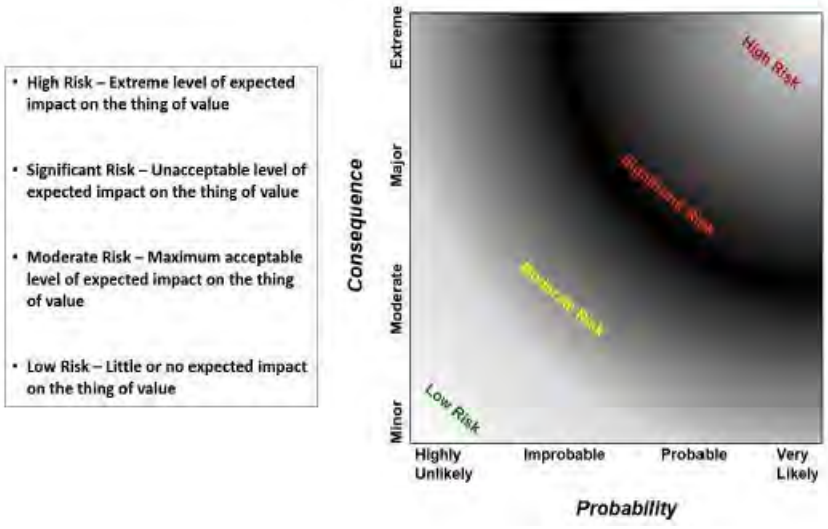
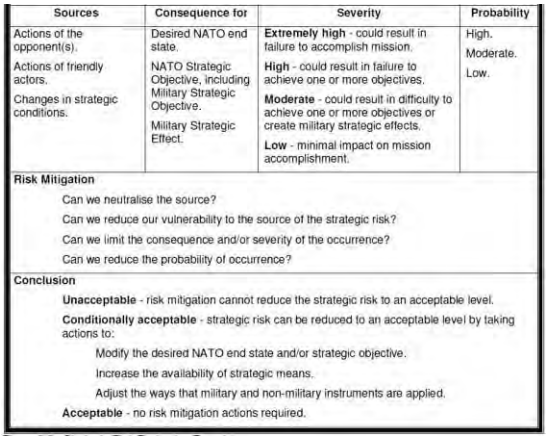


Figure 4.6 – Generic Risk Contour Graph[126]

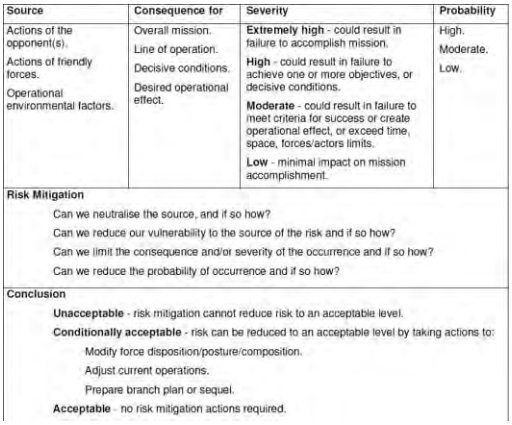
[124] Joint Chiefs of Staff, *Joint Risk Analysis*, B-4.
[125] *Ibid*., B-3-B-5.
[126] *Ibid*., B-5.

It is clear that there has been a concerted effort to capture a culture of risk in the UK Ministry of Defence; risk analysis and management must support the taking of calculated risk, vice looking to reduce risk to the point where overly cautious decision making leads to missed opportunities.[127] This mindset enables subordinates to innovate and identify solutions in a rapidly changing environment through communication and understanding by the Commander. This culture of risk enables conversation and communication about risk. As previously discussed, in line with NATO doctrine, the UK views risk at the strategic (related to achievement of strategic objectives) and operational (related to the accomplishment of the mission) differently. Figures 4.7 and 4.8 outline how the Supreme Headquarters Allied Powers Europe (SHAPE) Comprehensive Operations Planning Directive outlines risk evaluation at the strategic (Figure 4.7) and operational (Figure 4.8) levels.



Sources	Consequence for	Severity	Probability
Actions of the opponent(s). Actions of friendly actors. Changes in strategic conditions.	Desired NATO end state. NATO Strategic Objective, including Military Strategic Objective. Military Strategic Effect.	**Extremely high** - could result in failure to accomplish mission. **High** - could result in failure to achieve one or more objectives. **Moderate** - could result in difficulty to achieve one or more objectives or create military strategic effects. **Low** - minimal impact on mission accomplishment.	High. Moderate. Low.
Risk Mitigation Can we neutralise the source? Can we reduce our vulnerability to the source of the strategic risk? Can we limit the consequence and/or severity of the occurrence? Can we reduce the probability of occurrence?			
Conclusion **Unacceptable** - risk mitigation cannot reduce the strategic risk to an acceptable level. **Conditionally acceptable** - strategic risk can be reduced to an acceptable level by taking actions to: Modify the desired NATO end state and/or strategic objective. Increase the availability of strategic means. Adjust the ways that military and non-military instruments are applied. **Acceptable** - no risk mitigation actions required.			

Figure 4.7 – NATO Risk Evaluation of Strategic Risk[128]



Source	Consequence for	Severity	Probability
Actions of the opponent(s). Actions of friendly forces. Operational environmental factors.	Overall mission. Line of operation. Decisive conditions. Desired operational effect.	**Extremely high** - could result in failure to accomplish mission. **High** - could result in failure to achieve one or more objectives, or decisive conditions. **Moderate** - could result in failure to meet criteria for success or create operational effect, or exceed time, space, forces/actors limits. **Low** - minimal impact on mission accomplishment.	High. Moderate. Low.
Risk Mitigation Can we neutralise the source, and if so how? Can we reduce our vulnerability to the source of the risk and if so how? Can we limit the consequence and/or severity of the occurrence and if so how? Can we reduce the probability of occurrence and if so how?			
Conclusion **Unacceptable** - risk mitigation cannot reduce risk to an acceptable level. **Conditionally acceptable** - risk can be reduced to an acceptable level by taking actions to: Modify force disposition/posture/composition. Adjust current operations. Prepare branch plan or sequel. **Acceptable** - no risk mitigation actions required.			

Figure 4.8 – NATO Risk Evaluation of Operational Risk[129]

From these risk evaluation tables, a risk matrix (Figure 4.9) is developed and commanders are encouraged to include a risk tolerability line, as a means to communicate their view of acceptable levels or their tolerability of risk. Reinforcing the risk culture within the UK Ministry of Defence, the Joint Force Commander is cautioned that the risk must be balanced within the context of the

[127] UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2H1-3.

[128] North Atlantic Treaty Organization, Supreme Headquarters Allied Powers Europe, *Allied Command Operations Comprehensive Operations Planning Directive (COPD) interim V2.0*, (Brunsum, BEL: October 2013), 3-48.

[129] *Ibid*., 4-50.

campaign.[130] The culture of risk is routinely highlighted in UK doctrine, while identifying that risk must be considered, there is awareness that risk cannot be calculated with certainty, but based on the information available, the Joint Force Commander must take risk, to "apply combat potential in a coherent manner which is faster than the opposing actors' ability to react."[131] This clear recognition of seeing the upside of risk as something that is balanced against the downside of risk that is prevalent throughout UK doctrine and supports a culture where risk can be communicated effectively.

Impact	Likelihood				
	Very high	High	Medium	Low	Very low
Very high	E	E	H	H	M
High	E	H	M	M	M
Medium	H	M	M	L	L
Low	M	M	L	L	L
Very low	M	L	L	L	L

Legend
- Risk tolerance line
- E Extremely high risk; Mission likely to fail
- H High risk; Inability to accomplish all parts of the mission
- M Moderate risk; Mission accomplishment likely but possibility of reduced capability
- L Low risk; Little or no impact on accomplishment of the mission

Figure 4.9 – UK Risk Assessment Matrix and Tolerance Line[132]

As identified in Chapter Three, the ADF uses a structured risk management process that complies with Australian/New Zealand Standard (AS/NZS) 31000:2009 Risk Management, but is integrated and informed by the JMAP (Figure 4.10).[133]. This process attempts to create understanding by defining and use of accepted terms and practices that are based on internationally recognized standards. It is through the systematic application of identifying, analyzing, evaluating, treating and monitoring risk that risk is managed. The ADF does highlight, like the IRGC, that internal and external communication is required to understand the perceptions of risk by other parties, which are likely to change as the situation develops with increased

[130] UK Ministry of Defence, *AJP 5*, 3-63.
[131] UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2-43.
[132] *Ibid*., 2H1-3.
[133] AUS Department of Defence, *JMAP*, 1-11.

understanding and identification of risk. This communication helps to develop trust and support for risk decisions.[134] While a structured process helps particularly inexperienced members work through a problem set critically, the nature of the process means that the result is not dynamic and adaptable. Instead of creating collaborative and open communication about risk, the process results in oversimplified relationships.

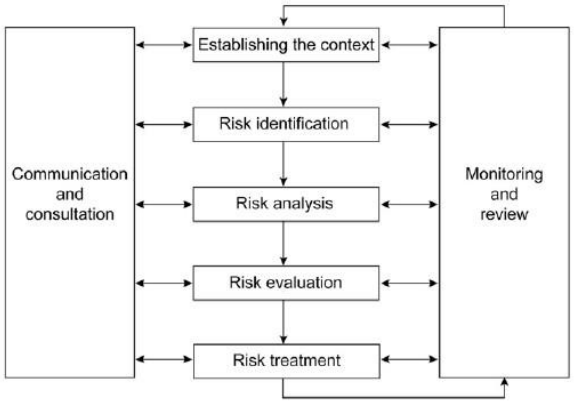


Figure 4.10 – ADF Operational Risk Management Process[135]

The ADF, similar to UK doctrine, highlights the fact that risk appetite has as much to do with fleeting opportunities as it does with being prepared for possible setbacks.[136] Risk is an integral part of all Defence activities and has both upside (opportunity) and downside (threat) implications. ADF's view is that by adopting a consistent approach to risk management it permits partners across the Defence Community to better view all aspects of risk from the same perspective. The intent is that a consistent approach to risk management supports decision making at all levels and ensures that senior decision makers in Defence have the required visibility of risks and their impact on the mission.[137] Joint Directive by CDF and Secretary, Department of Defence on the Management of Risk in Defence explicitly highlights the threshold levels when it comes to defence risk. The danger is that the subjective assumptions may undervalue or

[134] AUS Department of Defence, *JMAP*, 1C-4.
[135] *Ibid*., *JMAP*, 1C-4.
[136] UK Ministry of Defence, *JDP 5-00 2nd Edition (Archived)*, 2H1-4; UK Ministry of Defence, *AJP 5*, 2-3; AUS Department of Defence, *JMAP*, 1C-12.
[137] AUS Department of Defence, *Joint Directive 30/2015*, 1.

underestimate risk to remain below identified threshold levels so as not to have to elevate risk decisions to a higher level for acceptance or adjudication by higher authorities.

While the ADF doctrine discusses the requirement to communicate about risk to ensure a shared understanding by both commanders and subordinates, it is explicit in a negative view of risk. The ADF specifically mention risk culture as a means to ensure that effective risk management is implemented, however, the tone of the doctrine regarding supervision of *compliance* with risk procedures to avoid *bypassing* and *disregard* of risk decisions must be met with *adverse administrative* or *disciplinary* measures and *early* and *firm* action is in glaring opposition to the tone of UK doctrine regarding risk.[138] In the risk evaluation step of the process risk matrices are used to outline risk level descriptions, both before and after treatment. This is directly related to the shared understanding by commanders at all levels. In order to communicate risk and ensure shared understanding, the ADF uses risk threshold descriptions and endorsing authority tables (Figure 4.11). These tables outline the risks by priority, identify the risk level, establish the responsible approving authority, and give a description of the risk threshold. This description could include adverse consequences and mitigation measures, as well as opportunities that may be a result of situations to be exploited. If you accept that risk is fundamentally a belief or attitude, a way to think about the world, by creating a risk culture that sees risk as something to be exploited then it becomes less a world where avoidance or mitigation and downside risks take primacy.

[138] AUS Department of Defence, *JMAP*, 1C-11-1C-12.

Risk Index	Risk Level	Endorsing/Approval Authority	Risk Threshold Description
1-2	Extreme	Secretary / CDF / Chief of Service / Chief Joint Operations / Group Heads	**Unacceptable without treatment.** Exposure to these risks would normally be immediately discontinued except in extreme circumstances. The decision to accept residual risk at this level must be made by the relevant endorsing authority. Risk controls must be applied as part of a documented risk management plan—for example, orders/instructions/directives with JMAP notes/risk appreciation summary, that is continuously monitored and risk controls adapted as required to accommodate changing risk levels.
3-5	High	Functional / Formation Commander / National Command / Commander Joint Task Force / 1–2 Star / SES Band 1–2	**Unacceptable without treatment.** Exposure to these risks should be discontinued as soon as reasonably practicable. The decision to tolerate residual risk at this level must be made by the relevant endorsing authority. Risk controls must be applied as part of a documented risk management plan—for example, orders/instructions/ directives with JMAP notes/risk appreciation summary, that is continuously monitored and risk controls adapted as required.
6-9	Substantial	Commanding Officer / Independent Officer Commanding / Director EL2 / O4–O6	**Acceptable with continual review.** Unnecessary exposure to these risks should be discontinued as soon as is reasonably practicable and continued exposure would only be considered in exceptional circumstances. The decision to accept residual risk at this level must be made by the relevant endorsing authority. Risk controls must be applied as part of a documented risk management plan—for example, orders/instructions/directives with JMAP notes/risk appreciation summary, that is continuously monitored, reviewed and risk controls adapted as required.
10-16	Medium	O3–O4 / Deputy Director / EL1	**Acceptable with periodic review.** Exposure to these risks may continue provided it has been appropriately assessed, has been mitigated SFARP, and is subject to periodic review to adjust risk controls if the risk level increases. Long-term measures to reduce the risk are appropriate (changes in standard operating procedure, doctrine, etc). The decision to accept residual risk at this level must be made by the relevant endorsing authority with rationale required to be documented (orders will suffice).
17-25	Low	Team Leader APS4–6 / CPL–O3	**Acceptable with periodic review.** Exposure to these risks is acceptable for the relevant endorsing authority without additional risk controls but is subject to periodic review to ensure the risk does not increase. SFARP guidance defaults to low for the relevant endorsing authority at this level unless otherwise stipulated by a higher commander with rationale required to be documented (orders will suffice).

Figure 4.11 – ADF Indicative risk threshold descriptions and endorsing authorities table[139]

[139] AUS Department of Defence, *JMAP*, 1C-12-1C-13.

Risk communication must be about developing trust across the organization and in order for the trust that is developed to be lasting; it must be supported by an appropriate risk culture. Löfstedt is quoted by van Asselt and Renn, in that communication must amount to, "meaningful interactions in which knowledge, experiences, interpretations, concerns, and perspectives are exchanged."[140] This open communication and fosters a culture of trust, which enables those involved in risk decisions to anticipate and treat risk in a more effective manner.[141]

In 2018, the IRGC released a document, *Guidelines for the Governance of Systemic Risk*, where systemic risk is characterized as, "[h]ighly interconnected risks with complex causal structures, non-linear cause-effect relationships," and there is a, "[l]ack of knowledge about interconnections in an interdependent and complex environment, prevention."[142] These risks are usually underestimated because the causality of these risks is rarely associated in time and space and no one actor bears ownership for the entire system, merely elements within it.[143] The proposed framework for treating systemic risks does not include communication explicitly, as has previously been the case, even for simple risk, but it is understood that communication is critical throughout all stages of the framework. The guidelines go further to say that a common understanding by all participants in the risk process is fundamental, particularly for systemic risk given the complex nature and characteristic of systemic risks.[144]

As commanders communicate about risk, in the absence of a culture that accepts that risk may present opportunities or where calculated risks should be embraced, it must be done cautiously; especially if risk tolerability is communicated using risk matrices. Both the 'threshold line' identified in UK Ministry of Defence doctrine and the Risk Endorsing Tables utilized by the ADF may, instead of establishing clear communicating about risk, result in more harm than good.

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[140] van Asselt and Renn, "Risk Governance", 439-440.
[141] International Risk Governance Council, *Guidelines for the Governance of Systemic Risks*, (Lausanne, CHE: International Risk Governance Council, 2018), 59.
[142] *Ibid*., 12.
[143] *Ibid*., 11.
[144] *Ibid*., 18-19.

As previously discussed, the simple, linear relationship between probability and consequences may not accurately describe risk in the current operating environment. Another obstacle to supporting the Commander's decision making is the danger that as subjective assumptions are made, risk may be undervalued or underestimated in an effort to not elevate risk decisions to a higher level, or even indirectly, the matrices are used as legitimizing tools for decisions already made.

4.4 Scenario Based Planning to Hedge Against Uncertainty

The use of scenario based planning started in the 1950s with Hermann Kahn at the RAND corporation to support Cold War planning, but has been further developed by a number of communities to support planning under conditions of uncertainty.[145] These scenarios are not intended to predict outcomes or the future environment, but by giving a range of possibilities, it allows the planner to conduct analysis to test potential strategies.[146] Going back to UK Ministry of Defence doctrine, red teaming helps the strategist to identify vulnerabilities and opportunities, identify second- and third-order effects and consequences, ensure a deeper understanding of the environment, test the strength of the evidence base and the quality of the information, identify bias, group-think, and flawed assumptions.[147]

The IRGC framework (Figure 4.12) that was developed in, *Guidelines for the Governance of Systemic Risk*, involves a seven step process. In general terms, the second step develops possible future scenarios, how the organization evolves and how risks might affect them over time.[148] The future scenarios help planners to understand the risks and opportunities

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[145] Paul K. Davis, "Defense planning and risk management in the presence of deep uncertainty", In Managing Strategic Surprise: Lessons from Risk Management and Risk Assessment, eds. by Paul Bracken, Ian Bremmer, and David Gordon, (Cambridge: Cambridge University Press, 2008), 184.

[146] Donna Dupont and Leon Young, "Strategic Conversations for Strategy Development: Horizon Scanning, TOWS & Scenarios", The Archipelago of Design: Researching Reflexive Military Practices, 17 September 2018, http://militaryepistemology.com/strategic-conversations-for-strategy-development/.

[147] UK Ministry of Defence, *Red Teaming Guide*, 1-6.

[148] IRGC, *Guidelines for the Governance of Systemic Risks*, 24.

associated with achieving long term goals by analyzing the impacts to the organization, clearly outlining and highlighting the ability of the organization to adapt, react, or absorb to changes in a variety of future conditions.[149] The IRGC proposes that useful, "… scenarios are not necessarily quantitative but are rather narratives that 'play' with different trigger-consequence relationships within the risk landscape. Scenarios must thus be forward-looking ('foresight') but also look to horizontally interconnected systems ('broadsight'), to develop alternative futures."[150]

Figure 4.12 – 2018 IRGC Guidelines for Systemic Risk[151]

Scenario based planning is practiced in all three of the defence doctrines that were studied, however, as indicated in Chapter Three, it is fundamental to UK Ministry of Defence risk processes. The goal of scenario based planning is to enable evidence-based decision making, not decision based evidence making in safe to fail environments to explore the strengths and weaknesses of a strategy. This is accomplished by establishing a 'challenge culture', led from the top, which encourages the constructive challenge. As highlighted in the UK Red teaming guide,

[149] IRGC, *Guidelines for the Governance of Systemic Risks*, 27.
[150] *Ibid*., 25.
[151] *Ibid*., 19.

"[t]his challenge attempts to build the resilience of a solution by the applying directly adversarial or competitive techniques."[152] The resilience is built through feedback and critical thinking about the problem. Identifying strengths and weaknesses in the plan by understanding intended and unintended consequences of the activities of all actors in the environment. The concept of robustness and resilience are important given the complex nature of the contemporary environment. As identified in Chapter Two, this is a key aspect of risk governance, governance does not attempt to merely minimize or reduce risk, governance looks to understand risk and build resilience to ensure that surprises can be tolerated.[153] By testing strategies and plans against a variety of appropriately selected futures, futures that are based as much as in data as in imagination, brings to light opportunities and risks that may result from greater order consequences.[154]

4.5 The Calculation of Risk as an Impediment to Decision Making and a New Model for Risk Evaluation

The bulk of this chapter has sought to identify and reinforce many of the aspects of defence risk methodologies that bring them in line with a governance approach. An approach that considers more of the social aspects of risk, contextualizes risk, sees the opportunities that may result from embracing risk, and how an appropriate risk culture enables effective communication about risk. Despite many of the aspects of doctrine which could serve to enable decision making, the bulk of Western military doctrine concentrates primarily on the concept of probability and consequence as the principal means to quantify risk.[155] If the US approach to risk judgment is in fact about bounding, not measuring risk; an approach that seeks to understand the extent to which a decision maker accepts or tolerates risk, then Western militaries need to fundamentally change

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[152] UK Ministry of Defence, *Red Teaming Guide*, 3-8.

[153] van Asselt and Renn, "Risk Governance", 439.

[154] Dupont, "Strategic Conversations for Strategy Development: Horizon Scanning, TOWS & Scenarios", http://militaryepistemology.com/strategic-conversations-for-strategy-development/.

[155] Joint Chiefs of Staff, *Joint Risk Analysis*, B-1; UK Ministry of Defence, *AJP 5*, 2-10; AUS Department of Defence, *JMAP*, 1C-1.

how risk is portrayed.[156] This new approach starts by changing the definition of risk ,to understand that it is the acceptability and tolerability of risk that needs to be determined not a subjective assumption about a level of risk. The current construct, which relates probability to consequence, oversimplifies the relationship for some areas of risk which have elements of complexity, uncertainty, and ambiguity. By assessing the acceptability and tolerability of risk, both downside and upside aspects of risk can be weighed together, there is no longer a requirement to look at them differently, merely as factors which affect the accomplishment of the mission. There is no question that understanding the consequences or impact of risk is essential, particularly as risk is allocated to different levels in order to create freedom of manoeuvre for subordinate organizations.

As previously discussed, in 2017, the IRGC updated their framework for risk governance (Figure 4.13). In the new framework, the appraisal of risk is covered by two sub steps: risk and concern assessment. This appraisal then informs a risk characterizations and evaluation.

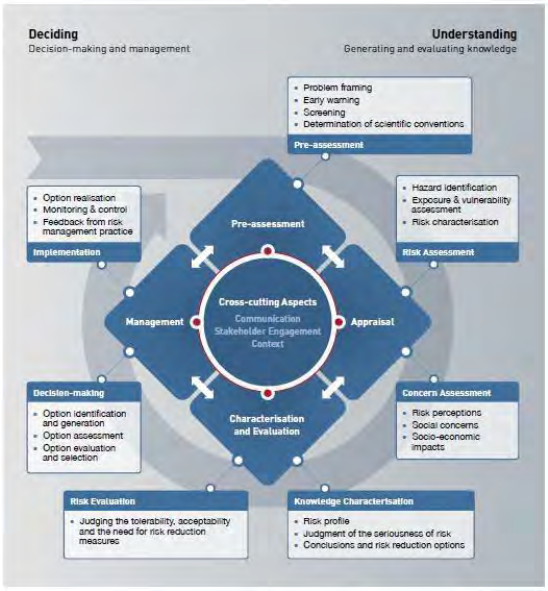

Figure 4.13 – Visual Representation of 2017 IRGC Risk Governance Framework[157]

[156] Joint Chiefs of Staff, *Joint Risk Analysis*, B-4.
[157] IRGC, *Introduction to the IRGC Risk Governance Framework*, 10.

According to the IRGC, risk assessment is considering the likelihood of occurrence given the characteristic of the risk and the susceptibility of the entity that is protected. The source and the impact of the risk are considered separately. The source of the risk attempts to define the potential of a hazard to cause harm, whereas the impact examines both the potential that and the ability of the entity that is exposed to risk to accept or absorb the hazard and the cost associated. The concern assessment takes into consideration the concerns and perceptions that the interested parties relate to the causes and consequences of the hazard. The concern assessment is unique to the IRGC framework, by including social aspects into the assessment. Past experience, perceptions, and values all affect how risk is viewed, by understanding the context of the risk, risk assessors gain insight on risk attitudes and culture. In short, the IRGC sees risk as a combination of the potential of a hazard to influence and the potential exposure to the hazard of an object and the ability of a system to absorb the impact of the hazard.[158]

Following the appraisal of risks, the risks are characterized and evaluated. The IRGC characterizes risk in four categories (Figure 4.14):

1. Simple Risk can be managed with routine, policy, or operational controls. The traditional risk framework of probability and severity can accurately describe and quantify the linear relationship of these risks;

2. Complex Risk requires risk based decisions based on available expert or scientific input develops a strategy that is robust[159] to achieve objectives despite gaps in knowledge. It may be difficult to identify the cause of certain effects;

3. Uncertain Risk results from lack of clarity or quality of information and knowledge. Managing these risks involve avoiding exposure to risk by building resilient[160] strategies.

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[158] IRGC, *Introduction to the IRGC Risk Governance Framework*, 13-15.

[159] *Ibid*., 24. Robustness refers to the degree of reliability of the risk-reduction measures to withstand threatening events or processes even when those have not been fully understood or anticipated.

These risks are characterized by high uncertainty and consequence situations involve precautionary approaches that support reversibility of critical decisions or increase the ability of the system to react to surprises; and

4. Ambiguous Risk is related to conflicting perspectives because of differing values or perception of likelihood and severity. Risk management involves discourse based decisions that includes all stakeholders impacted by the risk to create understanding of potential conflicting views and values and seeks to reconcile them.

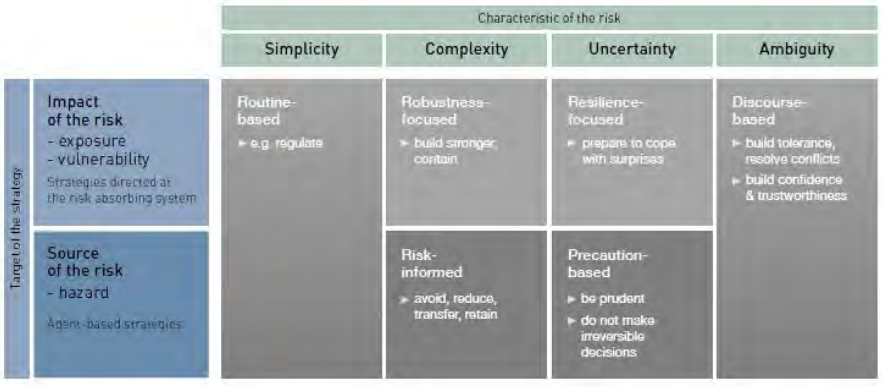

Figure 4.14 – IRGC Risk Management Strategies[161]

Each of these risks demands a unique risk management strategy, and the characterization of the risk may change over time.[162] Once characterized, risks can be evaluated to determine the acceptability or tolerability of risk (Figure 4.15). Risk evaluation involves both decision makers and stakeholders, if risks are acceptable (no mitigation is required), if risks are tolerable (some mitigation may be required), or if risks are intolerable (must be avoided). This evaluation is conducted based on the risk and concern assessments conducted in the previous step to make an evidence based risk decision.[163]

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[160] IRGC, *Introduction to the IRGC Risk Governance Framework*, 24. Resilience is the ability of the system to sustain or restore its basic functionality following a risk event.

[161] *Ibid*., 25.

[162] *Ibid*., 17-18; *Ibid*., 24-25.

[163] *Ibid*., 20.

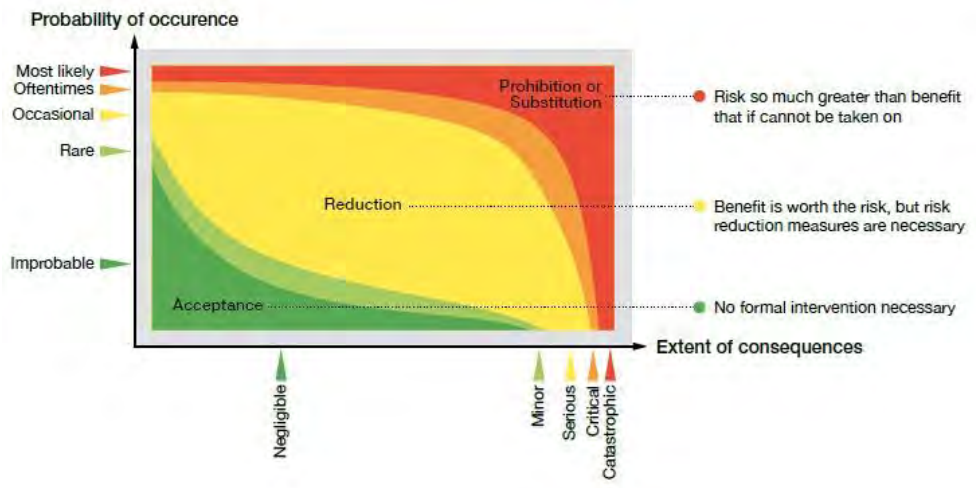

Figure 4.15 – Risk Evaluation[164]

This risk evaluation procedure that is proposed by the IRGC provides an option which is more suitable for the more challenging contemporary environment. While the probability of occurrence is included in the risk evaluation, it is clear that the risks assessed by the IRGC framework are different from the risks faced in the military context. In the case of the IRGC, whether it is scientific data, stakeholder engagement, or expert opinion, a body of knowledge, even if it is incomplete, can be generated to support decision making. In a military context, whether it is a factor of time or the environment, this depth of data collection is unlikely. Despite being well defined in the IRGC publications, complexity, uncertainty, and ambiguity are often used as synonyms and are likely not useful in the military context, particularly with personnel who are inexperienced in the field of risk governance and risk assessment more generally.

In order to be more applicable in the military context, adapting the IRGC risk evaluation to evaluate and weigh the perceived consequences of a risk, both positive and negative, against the risk strategy means that commanders are able to risk based decision, as opposed to risk informed decisions that use subjective assumptions to define a certain risk level (Figure 4.16). In this model, the risk strategies are defined as:

[164] IRGC, *Introduction to the IRGC Risk Governance Framework*, 20.

1. Operational control – using administrative procedures (policies, SOPs), education, training, physical control, control measures, rehearsals, or other measures that amount to tactics, techniques, or procedures risk can be accepted;

2. Robustness-focused – the acceptance of these risks is due to the fact that the risk reduction remains within the control of the organization; the resources or capabilities are integral to the organization. On the low end, the reprioritization of resources has no effect on the main effort, on the upper end, the reprioritization of resources may impact the main effort for a short period of time. The strategy for these risks is about maintaining or increasing strength and containing the risk. This is in line with the IRGC view of robustness, in that, "the risk-reduction measures to withstand threatening events or processes even when those have not been fully understood or anticipated."[165]

3. Resilience-focused – the tolerability of these risks relates to an organization's ability to be allocated the resources from elsewhere in a relatively timely fashion. These resources ensure that the organization, "can restore its basic functionality following a risk event."[166] A higher headquarters or a flanking organization may have the resources or capability to treat the risk, so the organization directly impacted must have the capacity to withstand the consequence for a short period of time while supporting organizations reorganize; and

4. Discourse-based – these risks are intolerable by the impacted organization. The organization will need support from the strategic or political level to reconcile conflicts, or build trust and confidence with partner or Allied organizations. The impacted organization will have to transfer these risks to a higher authority.

[165] IRGC, *Introduction to the IRGC Risk Governance Framework*, 24.
[166] *Ibid*., 24.

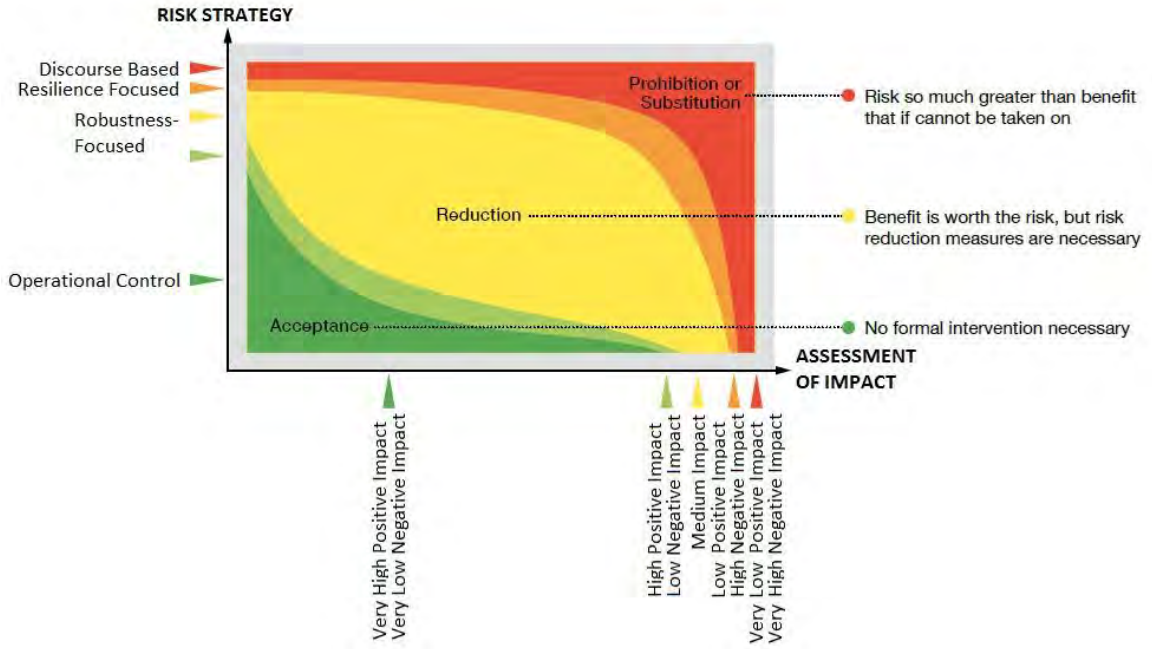

Figure 4.16 – Risk Consequence weighed against Risk Strategies to determine Acceptability or Tolerability (Adapted from IRGC 2017 by Author)

This proposed model for evaluating risk culminates in a decision on whether risk is acceptable, tolerable, or not, based on the impact and the strategy involved to treat the risk. This risk evaluation takes the contextualized risk that is reviewed and updated as a persistent and integral aspect of decision making, not an additional process or product. The intent is to do away with identifying subjective risk levels which merely aim to inform decision making and support the Commander in a risk based decision that is based on communication and a culture of seeing risk as a factor to be analyzed across a variety of potential futures and embraced, as opposed to mitigated and avoided; a decision that is at a minimum robust, but resilient enough to respond to risk events. Martin van Creveld, highlights in *Command in War*, that an organization must choose between two approaches if there is insufficient information to complete an assigned task: "one is to increase its information processing capacity, the other to design the organisation, and indeed the task itself, in such a way as to enable it to operate on the basis of less information."[167] The

[167] Martin van Creveld, *Command in War*, (Cambridge MA: Harvard University Press: 1987), 269.

objective is that these recommendations can be combined to enable the defence community to operate in the complex and uncertain contemporary operating environment.

4.6 Counter Arguments

As the concepts for a new approach to defence risk are developed, they are balanced against several key arguments. If risk and strategy are related, it may not be possible to change how risk is approached and managed without a drastic change in how strategy, or more accurately how policy is developed. Given the challenges that exist in the current operating environment, defence professionals cannot allow themselves to be prisoners of their experience and revert to how operations were conducted during the 'long wars'. In 2009, Nathan Freier offered some insight into how strategy may be developed within the changing operating environment, recognizing that the most dangerous security challenges will be drastically different from what has been experienced in the past and offers some limitations to strategy development: fiscal restrictions will constrain Defence Departments in Western militaries, defence will be focused on risk management and allocation and will this form the basis for strategy development, and there will be a variety of competing defence challenges. These limitations led Freier to propose some principles for defence planners and leaders to consider in the defence decision making space. There will be a requirement to enhance key defence capabilities as a counter to violent unconventional threats that are presented by the contemporary adversary. In support of this principle, Freier proposes that due to the complexity of the environment, 'the art of the possible and necessary' will overtake 'the desirable and ideal.' In order for these scenarios to be useful, they must incorporate plausible, but also some high consequence and low probability threats or hazards.[168]

[168] Nathan P. Freier, *Toward a Risk Management Defense Strategy*, (Carlisle, PA: US Army Strategic Studies Institute, August 2009), 2-4.

These recommendations led toward Capability Based Planning, which has been implemented by many Western governments in the context of policy development. Capability Based Planning has at its very core planning under uncertainty, but as identified in a RAND corporation report on Capabilities-Based Planning, the intent is to respond to a range of challenges in a constrained environment. Ultimately, the objective of Capabilities-Based Planning is to make resource decisions in the present that will meet the requirements of the future. In the past, the use of scenarios to assess options was used extensively.[169] If the conclusion is that defence professionals must contextualize or relate risk to concrete strategic objectives, this may be challenging given the approach to developing policy that Western governments have adopted, given the realities that are being faced today. Without attempting to distract from the risk argument, developing strategy in this fashion, removes the context from strategy and risk decisions. In his critique of the 2001 US Quadrennial Defence Review, Hew Strachan takes this one step further, identifying that Western defence policy needs to answer, "where are these wars to be fought, against whom, and above all, for what purpose?"[170]

The reality is that Western governments are required to make resource decisions or choices which must respond to an unknown and uncertain future environment; as a result, these governments have used *risk* to rationalize certain policies and capability choices.[171] As discussed, the use of scenarios in Capability Based Planning assists defence professionals in testing assumptions and decisions against potential future environments. Having a common set of scenarios focuses planning across the enterprise, ensuring that all parties are using the same set of assumptions and specific threats to develop plans. This prevents generalization and refines the discussion and planning activities. The challenge with the scenarios that are typically selected is

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[169] Constantine Samaras and Henry H. Willis, *Capabilities-Based Planning for Energy Security at Department of Defense Installations*, (Santa Monica CA: The RAND Corporation, 2013), xi-xii.

[170] Hew Strachan, "Making strategy: Civil-military relations after Iraq", *Survival* 48, no. 3 (Autumn 2006): 62.

[171] Edmunds, Timothy Edmunds, "British civil-military relations and the problem of risk", *International Affairs* 88, no. 2 (2012): 265.

that they are in fact not representative of a range of potential futures that force the defence professional to test and adjust their plan, but instead the scenarios support or reinforce the plan.[172] Donna Dupont writes about developing and selecting scenarios to support strategy development, identifying that the scenarios are a balance of analysis and data on one hand, and imagination on the other. Dupont recommends the use of 'horizon scanning' as a tool to develop future scenarios. Horizon scanning involves understanding weak signals in the environment and developing an understanding the impact these trends may have in the future.[173] Understanding that military power is only one potential response and by taking a more integrated approach to risk identification and assessment, one that combines input from a variety of stakeholders, ensures that the defence professional put risk decisions in context and develop an understanding of the higher order effects and impacts of the decision, as opposed to relying solely on past experience or a narrow view of the problem. By developing scenarios that enable better decision making about how to shape and influence potential futures helps to build robustness and resilience throughout planning.

To simplify Ulrich Beck's risk society thesis, "… the driving force in the class society can be summarized in the phrase: *I am hungry!* The movement set in motion by the risk society, on the other hand, is expressed in the statement: *I am afraid!* The commonality of anxiety takes the place of the commonality of need."[174] This anxiety is a result of the unintended consequences of society's modernization; these consequences now have wide reaching impacts and are complex based on the interconnectedness of the issues. A further challenge based on the scale of this modernization is the inability of institutions to manage these growing problems.[175] It is evident that Beck takes a very negative view of risk, by combing natural or environmental risk (which Beck argues has always been present) with the industrial or manmade risk (created through

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[172] Davis, "Defense planning and risk management in the presence of deep uncertainty", 194-195.

[173] Dupont, "Strategic Conversations for Strategy Development: Horizon Scanning, TOWS & Scenarios", http://militaryepistemology.com/strategic-conversations-for-strategy-development/.

[174] Beck, *Risk Society,* 49.

[175] Burgess, Wardman, and Mythen, "Considering risk: placing the work of Ulrich Beck in context", 1.

modernization), results in a very dark view of the prospects for our future. While the modern risks are certainly complex, a safe and orderly past has not been transformed into one of exposure and hesitation.[176] The opportunities presented by modernization cannot be discounted, just as the opportunities that may result from taking risk. Probability and statistics formed the basis of attempting to reduce the uncertainty associated with the future. Before the work of Frank Knight, this was thought to be beyond our influence. One of the key critiques of Beck's risk society is the homogeneousness of his view of how Western society views risk. However, Beck has helped risk professionals understand that risk is more than something to be calculated and highlights the role of social factors when it comes to risk. Ultimately risk perceptions are informed by different, "… social factors including class, gender, age, ethnicity and location."[177] The defence professional must consider these factors when looking at risk assessment.

Bromley is clear in his statement that Enterprise Risk Management (ERM) is still a new concept, whose impact has not been empirically understood in great detail.[178] There are some clear disadvantages to a risk governance approach to risk decision making. Collective decision making often means that there is no one single decision maker or decisions become bogged down in attempting to integrate wide ranging perceptions.[179] The IRGC provides a number of publications dealing with the issues associated with a risk governance approach, breaking down the deficits into two clusters, the first associated with developing knowledge about risks and perception of risks and the second related to the management of risk.[180] While a number of the challenges presented may relate to any risk identification, analysis, and management process, there are some that are unique to risk governance.

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[176] Gabe Mythen, "Reappraising the Risk Society Thesis: Telescopic Sight or Myopic Vision?", *Current Sociology* 55, no. 6 (November 2007): 799.

[177] Mythen, "Reappraising the Risk Society Thesis", 800-801.

[178] Bromiley et al, "Entreprise Risk Management", 265.

[179] Renn, Klinke, and van Asselt, "Coping with Complexity, Uncertainty and Ambiguity", 237.

[180] International Risk Governance Council, *Risk Governance Deficits: An analysis and illustration of the most common deficits in risk governance*, (Geneva, CHE: International Risk Governance Council, 2009), 6-7.

In the risk identification and assessment phase of risk governance, engaging with stakeholders to make evidence based decisions are critical. This is a complicated the process for decision makers that may result in a number of challenges. By involving as many stakeholders as possible in the risk identification and assessment process, decision makers may incorrectly interpret risk perceptions of stakeholders or the perceptions of stakeholders may be different than factual evidence. Additionally, it may not be possible or may be difficult to bring the appropriate stakeholders into the risk discussion depending on the sensitivity of the risk problem, time, or distance. It is critical that decision makers are deliberate in their approach not only in selecting stakeholders, but understanding the biases or subjectivity of the information that these stakeholders bring forward for consideration. In the current environment, the situation is changing quickly, risk governance is meant to be iterative, but decision makers may not always recognize or integrate the changes in the environment and consider the impacts to the process.[181]

As previously identified, collective decision-making may challenge a clear and direct approach to risk management. By integrating stakeholders into the risk decision process, the intent is to create trust and ownership for risks by facilitating the integration of a variety of perspectives of those who may be impacted by the risk decision. The challenge, particularly in the defence context, is the degree of transparency that can be achieved with stakeholders; it may be a result of confidential nature of operations, or conflicting ideologies or approaches to operations. The conflict that may arise between different stakeholders is something that must be reconciled as quickly as possible. If not, the ability of decision makers to move through the process becomes increasingly challenged. The complex nature of the contemporary operating environment is particularly susceptible to risk management by disparate and often unrelated organizations. In the defence context, the military may not be the appropriate response in a certain situation, but based on the command and control structure that has been created, it may be the only organization in a

[181] International Risk Governance Council, *Risk Governance Deficits: Analysis, illustration and recommendations*, (Geneva, CHE: International Risk Governance Council, 2010), 7-9.

position to respond. As was previously discussed, the complex nature of these problems means that not one organization will have responsibility for or the ability to influence the whole system.[182]

Some of the concepts that have been previously identified are specifically identified as solutions to dealing with these challenges to the risk concepts that have been developed. By establishing a risk culture that supports risk taking and developing trust between different levels of decision making by constantly communicating about risk help to create a view of risk that sees risk in context and as a potential opportunity, defence professionals can overcome the identified challenges with the risk governance approach.

4.7 Conclusion

The previously implicit conclusion that the formal risk methodologies in many respects do not support the Commander to be successful in the modern security environment has been brought to an explicit conclusion. While there are aspects of Western military doctrine which reflect the principles and values of a Risk Governance approach and provide some useful tools for situations which require cooperation, coordination, and trust between varieties of actors who all have different views of the associated risks. These aspects tend to be an afterthought or footnote in the discussion of risk and are largely overshadowed by the utilization and application of risk matrices in an attempt to demonstrate or weigh impact of an occurrence against the probability that an event occurs.

The traditional methodologies for assessing, managing, and communicating risk are unable to capture the perceptions, impact, and role of a wide ranging set of actors.[183] In the contemporary operating environment, the notions of acceptability and tolerability are more relevant to support decision making and enabling innovation and adaptation for subordinate

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[182] IRGC, *Risk Governance Deficits 2010*, 14-15.
[183] Renn, Klinke, and van Asselt, "Coping with Complexity, Uncertainty and Ambiguity", 231-232.

elements to achieve security objectives and unbalance the malign actors operating in the environment. Understanding that current doctrine falls short of meeting the requirements of the Commander to fight and win, the intent was to provide some solutions to close the gap between risk adverse Western militaries and adversaries who seek opportunities to capitalize on risk.

Contextualizing risk ensures that defence professionals recognize that other actors attempt to implement, subvert, or disrupt their own strategies, and resiliency in our risk approaches ensures that despite a changing situation, means that military planners can anticipate other threats and opportunities which may be present in the environment. It is essential that commanders create a culture that embraces risk; this culture must be based on trust and effective communication. How commanders communicate their risk tolerance must be done carefully, to ensure that risk is not used to justify decisions or assumptions in relation to planning. The concept of robustness and resilience are important given the complex nature of the contemporary environment. Both can be effectively built by embracing a wargaming and challenge culture that is based on potential futures which highlight opportunities and risks by understanding the consequences of decisions. These adjustments in the approach to risk will bring the defence professional to the point of evaluating risk on the bases of acceptability and tolerability, as opposed to subjectively calculating risk, based on probability and consequence that requires mitigation to achieve a desired level. This brings the defence professional back to a situation where risk is considered as a factor in the decision making process, seeking to bound risk, not calculate it.

CHAPTER 5: CONCLUSION

5.1 Introduction

If the number and sophistication of the connections between different systems is what separates our contemporary operating environment from those of the past, and these connections have increased the complexity to levels where the cause and effect between events cannot be easily determined; then it is clear that the defence community needs change our approach to how we see and operate in this environment. These factors, interconnectedness and complexity, increase the overall risk associated with our actions.[184] No longer can the effects of our actions be constrained in time and space, and the higher order impacts of a seemingly inconsequential action are difficult to anticipate. In an attempt to restore order, risk has been used to understand and quantify the uncertainty that is present as a result of the complexity of warfare. Unmistakably, defence risk processes have not managed to keep pace with the changing environment.

Current military risk identification, assessment, and management methodologies do not support the Commander to succeed, by creating either risk aversion or overconfidence in options by distilling risk into a simple and linear relationship between probability and consequence. While there are aspects of Western military doctrine which reflect the principles and values of a Risk Governance approach and provide some useful tools for situations which require cooperation, coordination, and trust between varieties of actors who all have different views of the associated risks. These aspects tend to be an afterthought or footnote in the discussion of risk and are largely overshadowed by the utilization and application of risk matrices in an attempt to demonstrate or weigh impact of an occurrence against the probability that an event occurs.

[184] RGC, *Introduction to the IRGC Risk Governance Framework*, 7.

5.2 An Approach to Risk for the Contemporary Operating Environment

In order to remain competitive with our adversaries, who exhibit the ability and desire to take risk, Western defence organizations must adopt a more dynamic and holistic approach to risk. A renewed perspective of risk will see it as a factor to be considered, analyzed, and leveraged to gain advantage and to win. The overall conclusion is that Western militaries must develop a risk culture that seeks to accept or tolerate risk, and be grounded in three aspects: systemic approach, communication, and anticipation.

Contextualizing risk ensures that defence professionals recognize that other actors attempt to implement their own strategies, which may not complement or reinforce but in fact disrupt our own. Both the ability to reprioritize resources with minimal impact to the main effort and an ability to return to basic functionality, in our risk approaches ensures that despite a changing situation, the Commander can be flexible in their response. Robustness and resiliency means that military planners can anticipate threats and opportunities, ones which are outside the traditional ones, which may be present in the environment. This contextualization of the objectives within the environment and the approach to achieve them relates the objectives to the appropriate hazards and the consequences and opportunities that may present themselves in order to achieve them.[185] The fallibility of probabilistic analyses has been demonstrated in complex, uncertain, and ambiguous environments. It is essential to take a systemic approach and understand the interactions and follow on, both intended and unintended, consequences of our actions, and how our actions may affect other risks. It is only through a holistic approach to not only identification, but assessment of risk that risk can be placed in a larger context.[186]

The concept of robustness and resilience are important given the complex nature of the contemporary environment. Establishing a conversation of risk means not only identifying to stakeholders and others the results of risk decisions, it involves enabling others to be involved in

[185] Freier, et al, *At Our Own Peril*, 95.
[186] van Asselt and Renn, "Risk Governance", 436.

the making of risk based decisions. An open discussion about risk supports conflicting viewpoints and the resolution of risk perceptions and creates a sense of trust, by ensuring that those who may be impacted by a given risk process are best prepared to deal with consequences. This communication must involve all the stakeholders at all levels for a common understanding of risk.[187] As identified, the Commander must make it clear what their definition, perception, and acceptability or tolerability of risk is throughout the process. The staff must engage with stakeholders, subordinate organizations, and the wider whole of government community to enhance their understanding, the impacts and outcomes of risk decisions, and define the roles of all involved in the risk process. Risk is an integral part of all Defence activities and has both upside (opportunity) and downside (threat) implications. This open communication fosters a culture of trust, which enables those involved in risk decisions to anticipate and treat risk in a more effective manner.[188] How commanders communicate their risk tolerance must be done carefully, to ensure that risk is not used to unduly justify decisions or assumptions in relation to planning.

The use of scenario based planning started in the 1950s with Hermann Kahn at the RAND Corporation to support Cold War planning, but has been further developed by a number of communities to support planning under conditions of uncertainty.[189] Scenario based planning is practiced in all three of the defence doctrines that were studied, however, based on the critical review of defence doctrine it is clearly fundamental to UK Ministry of Defence risk processes. Resilience is built through feedback and critical thinking about the problem and helps to identify strengths and weaknesses in the plan by understanding intended and unintended consequences of the activities of all actors in the environment. The IRGC reinforces the utility of scenario based planning identifying that, "… scenarios are not necessarily quantitative but are rather narratives that 'play' with different trigger-consequence relationships within the risk landscape. Scenarios

[187] IRGC, *Risk Governace: Towards an Integrative Approach*, 15.
[188] IRGC, *Guidelines for the Governance of Systemic Risks*, 59.
[189] Davis, "Defense planning and risk management in the presence of deep uncertainty", 184.

must thus be forward-looking ('foresight') but also look to horizontally interconnected systems ('broadsight'), to develop alternative futures."[190] Risk governance does not attempt to minimize or reduce risk, governance looks to understand risk and build resilience to ensure that surprises can be tolerated.[191] By testing strategies and plans against a variety of appropriately selected futures, futures that are based as much as in data as in imagination, brings to light opportunities and risks that may result from greater order consequences.[192] The intent of scenario based planning is to support, to some degree, the defence professional to anticipate potential impacts and unexpected factors by exploring the strengths and weaknesses of options. Ultimately, scenario based planning is essential to build robust and resilient options in a complex environment.

5.3 Implications and Recommendations to Apply Risk Governance and the IRGC Approach in Defence Contexts

This work was intended to identify and reinforce existing and relevant doctrinal concepts, learn from wider civil society view on risk, and extend these notions to break down current barriers to the conduct of competitive and successful operations in the contemporary operating environment. The bulk of the conclusions are based on work done by the International Risk Governance Council (IRGC) and proposes an approach that considers more of the social aspects of risk, contextualizes risk, sees the opportunities that may result from embracing risk, and how an appropriate risk culture enables effective communication about risk. In addition to some of the counter arguments identified earlier in Chapter Four, risk governance, more generally, has some challenges. Risk governance intends to inform risk professionals of a broader concept of risk, a process of gradual learning through understanding and characterization.[193]

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[190] IRGC, *Guidelines for the Governance of Systemic Risks*, 25.

[191] van Asselt and Renn, "Risk Governance", 439.

[192] Dupont, "Strategic Conversations for Strategy Development: Horizon Scanning, TOWS & Scenarios", http://militaryepistemology.com/strategic-conversations-for-strategy-development/.

[193] Renn, Klinke, and van Asselt, "Coping with Complexity, Uncertainty and Ambiguity", 236.

The IRGC specifically focuses on a wide range of risk topics, which is evident from a quick search of their 'issues', but none are directly related to security.[194] Additionally, the IRGC, in the *Guidelines for the Governance of Systemic Risks*, identifies, "[t]he scope of the project is on socio-technical and socio-ecological systems …"[195] In general, the work done by the IRGC is focused in three areas: emerging risks, risks that are new, unknown, or unfamiliar, slow developing catastrophic risks, that lead to perilous shifts in the world we know, and the development of resilience strategies, to deal with negative outcomes and consequences.[196] While all of these areas of focus by the IRGC have some crossover to the defence realm, the reality is that unlike the issues Western militaries deal with in the contemporary operating environment, the IRGC special areas of interest do not have the same challenges or limitations imposed on them. There may not be an opportunity to develop the depth of understanding and contextualization, engagement with stakeholders, or ability to communicate that is required to truly embrace risk governance and anticipate future scenarios. Issues like carbon capture and storage, bioenergy policies, or precision medicine can be developed over time, and do not necessarily depend on factors like speed, agility, adaptability, and flexibility; factors that are required to succeed on the battlefield today.

Ultimately, there are a number of areas of cross over between the IRGC framework and guidelines and current Western military doctrine. However, in order to be successful and leverage these concepts to the extent applicable and possible in the defence arena means that a new definition and approach to risk is required; an approach that sees risk as an advantage. By starting with a changed definition from a negative implication based on simple relationships to a positive and opportunistic one, sets the conditions for a risk culture that seeks to accept or tolerate risk, and be grounded in three aspects: systemic approach, communication, and anticipation. The

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[194] IRGC, "Issues", 2019, https://irgc.org/issues/; IRGC, "Reports on Special Issues", 2019, https://irgc.org/publications/reports-on-special-issues/.

[195] IRGC, *Guidelines for the Governance of Systemic Risks*, 1.

[196] IRGC, *Guidelines for the Governance of Systemic Risks*, 1.

proposed approach is based purely on a critical analysis of Western defence doctrine, supported by a review of literature from academic and public organizations alike. The next step will be to apply the concepts in practice, understanding that it will be difficult to determine a direct relationship between a revised risk approach and outcomes of operations. However, if this approach, in line with the Chairman of the Joint Chiefs of Staff Manual on the Joint Risk Analysis, seeks to bound risk and understand the degree of acceptance risk, then the intent is not to provide a universal liniment. The intent is to update and modernize the risk thinking in Western defence organizations; risk thinking that enables innovation, adaptability, critical thinking, and use of resources, keys to success on the battlefield of today.

5.4 Adopting a New Approach to Risk to Succeed in the Contemporary Operating Environment

The traditional methodologies for assessing, managing, and communicating risk are unable to capture the perceptions, impact, and role of a wide ranging set of actors.[197] The conclusion is that in order to be successful in the contemporary operating environment, a systemic approach, communication, and anticipation must be underscored by a risk culture that seeks to accept or tolerate risk, as opposed to reducing and mitigating it. By seeing risk as an opportunity, as a factor that must be considered during planning, Western defence communities can leverage risk to unbalance identified actors in the operating environment. It is the acceptability and tolerability of risk that needs to be determined not a subjective assumption about a level of risk.

The current construct, which relates probability to consequence, oversimplifies the relationship for some areas of risk which have elements of complexity. A new approach reframes risk as an advantage, changing the definition from a negative implication based on simple relationships to a positive and opportunistic approach. By assessing the acceptability and

[197] Renn, Klinke, and van Asselt, “Coping with Complexity, Uncertainty and Ambiguity”, 231-232.

tolerability of risk, both downside and upside aspects of risk can be weighed together, there is no longer a requirement to look at them differently, merely as factors which affect the accomplishment of the mission. This proposed model for evaluating risk culminates in a decision on whether risk is acceptable, tolerable, or not, based on the impact and the strategy involved to treat the risk. This risk evaluation takes the contextualized risk that is reviewed and updated as a persistent and integral aspect of decision making, not an additional process or product. The intent is to inform decision making and support the Commander in a risk based decision; a decision that is at a minimum robust, but resilient enough to respond to risk events.

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