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Refining the Headquarters: An Analysis of Army Operational and Tactical Level Command and Control.

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Abstract.

The importance of the headquarters has increased due to the complexity of modern-day warfighting. This increased importance has led to significant growth at the operational and tactical levels. The increase has been driven in part by a surge in the complexity and volume of information within a battlespace. The resulting growth creates headquarters that are far too large to function without hindering command and control. This study aims to show that headquarters size has grown extensively and has strained command and control at the tactical and operational level, thereby reducing the commanders' decision-making cycle, and the dissemination of information to subordinates.

To analyse this issue, extensive research was conducted looking mainly at the British involvement in the 1991 Gulf War and the 2003 Iraq invasion. These conflicts were selected as they were the last two near-peer conflicts faced by Western forces. Research interviews were also conducted with senior British Army officers in order to gain first-hand accounts of modern command and control issues. The research has shown that, to fix these command and control issues, a headquarters must look to reduce staff, streamline processes, and gather information in a timelier manner to gain advantage in decision-making.

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Author's Declaration.

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Print Name: Joshua Fordham

Disclaimer.

As a serving member of the Canadian Army, the views and opinions presented in this thesis are solely those of the author and are not those of the Canadian Army, Canadian Armed Forces or the Government of Canada.

List of Abbreviations.

ABB – Asea Brown Boveri.

AI – Artificial Intelligence.

Alt HQ – Alternate Headquarters.

ANGLICO – Air Naval Gunfire Liaison Company.

AO – Area of Operations.

BBC – British Broadcasting Corporation.

BAOR – British Army on the Rhine.

CAR – Combined Arms Rehearsal.

CAX – Computer Assisted Exercise.

CBRN – Chemical, Biological, Radiologic, and Nuclear.

CGS – Chief of the General Staff.

CMX – Clothe Model Exercise.

CNN – Cable News Network.

COA – Course of Action.

COS – Chief of Staff.

CP – Command Post.

CPX – Command Post Exercise.

DCOS – Deputy Chief of Staff.

DDoS – Distributed Denial of Service.

DIMG – Divisional Information Manoeuvre Group.

DNR – Donetsk People’s Republic.

DPA – Donetsk People’s Army.

DSACEUR – Deputy Supreme Allied Commander Europe.

eFP – Enhanced Forward Presence.

EW – Electronic Warfare.

FBCB2/BFT – Force XXI Battle Command Brigade and Below/Blue Force Tracker.

FLOT – Forward Line of Own Troops.

FPoL – Forward Passage of Lines.

G1 – Continental Staff System Personnel & Administration.

G2 – Continental Staff System Intelligence.

G3 – Continental Staff System Operation.

G4 – Continental Staff System Logistics.

G5 – Continental Staff System Plans (Future Operations)

G6 – Continental Staff System Communications.

G7 – Continental Staff System Training.

G8 – Continental Staff System Finance.

G9 – Continental Staff System Influence Activities.

GMLRS – Guided Multi – Launcher Rocket System.

GOC – General Officer Commanding.

GPS – Global Positioning Satellite.

GRU – Main Directorate of the General Staff of the Armed Forces of the Russian Federation.

HUMINT – Human Intelligence.

IADS – Integrated Air Defence System.

ISAF – International Security Assistance Force.

ISR – Intelligence, Surveillance and Reconnaissance.

ISTAR – Intelligence, Target Acquisition, Surveillance and Reconnaissance.

IT – Information Technology.

JADC2 – Joint All Domain Command and Control.

JDAM – Joint Direct Attack Munition.

LNR – Lugansk People’s Republic.

LOD – Line of Departure.

LPA – Luhansk People’s Army.

Main HQ – Main Headquarters.

MD – Military District.

MLRS – Multi– Launcher Rocket System.

MoD – Ministry of Defence.

NATO – North Atlantic Treaty Organization.

NGO – Non-government Operations.

OSK – Operational/Joint Strategic Command.

OODA – Orientate Observer, Decide, Act (loop).

PNT – Positioning, Navigation, and Timing.

RC (S) – Regional Command South (Afghanistan).

RAF – Royal Air Force.

ROE – Rules of Engagement.

RUSI – Royal United Services Institute.

SACEUR – Supreme Allied Commander Europe.

SATCOM – Satellite Communications.

SHAPE – Supreme Headquarters Allied Powers Europe.

SIGINT – Signals Intelligence.

SOF – Special Operations Forces.

SpOC – Space Operations Centre.

Tac HQ – Tactical Headquarters.

UAV– Unmanned Aerial Vehicle.

UKSF – United Kingdom Special Forces.

USMC – United States Marine Corps.

Introduction.

Introduction, Problem Statement and Research Questions.

With the increasing complexity of today's battlespace, the headquarters and its staff are more crucial than ever to the success of manoeuvre units on the ground. This renewed importance on the headquarters has led to significant growth at the operational and tactical level. For example, between Gulf War One and 2003 Iraq Invasion, one of the British Army's armoured brigade headquarters increased by 25%, rising to a size of 650 personnel and 240 vehicles.¹

Helping to drive this increase in a headquarters' size has been an increase in the complexity and volume of information within a battlespace. The ability for an army to gain information advantage over its adversary is crucial to success. Collecting, deciphering, and disseminating information faster than an enemy allows commanders to affect their adversaries' decision-making cycle, and dictate the tempo of the battle. New sensor and information processing tools, which enable these functions, require additional staff and contribute to headquarters growth.

However, this swelling of staff complements risks, creating headquarters that are too large to function without hindering command and control. Furthermore, such significant growth in a relatively short amount of time runs contrary to what many Western powers, including the United Kingdom, are calling for: a decrease in the military's geographic footprint and manpower. Additionally, early anecdotal evidence suggests that the usefulness of many headquarters staff has declined in tandem with the growth in absolute numbers of personnel. One British report, found that "40% of the staff do nothing useful, and a further 20% produce considerable nugatory output."²

Since graduating from the Canadian Army Command and Staff College in 2017 and deploying as headquarters staff in a British Army battlegroup as an exchange officer, the author has witnessed this issue first-hand in several modern armies. It was this observation that made one wish to study command and control issues further, with the hope of examining processes which could help the British Army, and North Atlantic Treaty Organisation (NATO) as a whole. The reason for focusing this study on the British

¹ James Storr, *The Command of British Land Forces in Iraq, March to May 2003* (Wiltshire: British Army Directorate General of Development and Doctrine, 2004), 6.

² Ibid, 6.

Army is that, for the last thirty-five years, they have been involved in almost constant warfighting, either in a coalition or independently. Further, as a significant portion of research has focused on insurgency and counterinsurgency operations, a focus on command and control in conventional war, the type which the British Army has found itself in with the 1991 Gulf War and the 'war-like' phase of the 2003 Iraq invasion, is warranted.

This thesis will argue that the size of a formation headquarters has grown extensively over a relatively short period of time and that this has strained command and control. The increase in headquarters size has slowed commanders' decision-making cycles, and the dissemination of information to subordinates. To remedy this issue, a formation must look to reduce staff, streamline processes, and gather information in a timelier manner in order to gain advantage in decision-making. To help support these arguments, one has identified two research questions this thesis aims to answer. They are as follows:

- 1) How can the size, structure, and operating procedures of a headquarters improve command and control?
- 2) How can information within and across domains help feed the decision-making cycle and improve command and control?

Thesis Structure.

With respect to the context for this paper's examination of the influence of headquarters design and information management on command and control, the author has chosen to consider the ongoing tensions between the United Kingdom and its near-peer adversary, Russia. This decision reflects the fact that Russia has been named as a significant adversary in United Kingdom defence policy because of its recent expansionist actions, the increasingly frequent use of misinformation and psychological operations campaigns, and the country's geographic proximity to the United Kingdom and other Western powers.

To establish how the British Army's command and control might be influenced by information management and certain characteristics of headquarters design in a near-peer conflict with an adversary such as Russia, this thesis will define and describe what has become known as 'new generation Russian warfare'. It will also consider the evolution of British defence policy through the lens of the British Army's actions across a range of historical conflicts including the 1991 Gulf War, the 2003 Iraq invasion, and the

Afghanistan campaign, before turning to a discussion of information advantage and its importance in command and control.

This thesis consists of seven parts: an introduction, five chapters, and a conclusion. As the British Government proclaimed that Russia is the greatest threat to the United Kingdom, it is only fitting that their current way of warfighting is examined.³ The British Army's 'seven questions' estimate for military planning prompts commanders to ask, '*who is my enemy and what are they doing and why?*'; chapter one opens with the same question. This chapter will be used to compare and contrast British military doctrine with that of a contemporary enemy. Ultimately, chapter one will aim to answer the question: *what is the 'new generation of Russian warfare' and how is it being employed?*

The second chapter focuses on command and control doctrine. Here, the thesis will look at the size and structure of a headquarters, focusing on the brigade and divisional levels. It will examine how and why a headquarters have grown and the problems this has caused. It will give suggestions on streamlining size and to make it productive on a modern battlefield. This will be done by looking at what other nations have done to fix these issues, as well as the business sector and civil service. Finally, it will answer: *how can a headquarters be configured to increase effectiveness in the realm of command and control?*

Chapter three examines how command and control can be made more efficient. It will investigate the evolution of mission command and the importance of this concept in modern war. It will also look at operational orders and how to reduce their size, employing other methods to improve command and control. Chapter three will answer the research question: *how can operating processes be rationalised to better conduct command and control?*

In the fourth chapter, this thesis will examine the idea of information advantage, with a focus on importance of gathering and disseminating information as quickly as possible in order to win. It will look at how intelligence feeds the decision-making cycle, which is then used to execute command and control functions. It will also argue that modern wars will be fought *amongst the people* and that people are one of the greatest

³ Ministry of Defence, *Multi-Domain Integration: Joint Concept Note 1/20* (London: Ministry of Defence, 2020), vii; House of Commons Committee for Defence, *Russia: Implications for UK Defence and Security: First Report of Session 2016-2017* (London: Her Majesty's Government 2016), 5.

sources of information a commander can utilise. This chapter will consider: *how can information be leveraged to enable command and control, and how can it be used to gain advantage over one's adversary?*

The fifth chapter looks at future conflicts and multi-domain operations. It highlights the points of the *Integrated Review* and surveys the evolution of multi-domain integration. It also highlights the importance of mission command as a tool for command and control, in this environment. It touches on the space domain and highlights its importance in modern conflicts. It also seeks to outline why defending space is important and why dominating in this domain should be a goal. The final chapter answers the question: *how does one conduct command and control in a multi-domain environment, and how can multi-domain integration be further used to gain information advantage?*

Literature Review.

Since this thesis is focused on examining command and control against a potential near-peer adversary, the function of the literature reviewed is twofold. Firstly, one examined literature to determine what is the 'new generation of Russian warfare' and how it is being employed. Secondly, one studied command and control theories with the aim of applying them to current British Army structures against the new generation of Russian warfare.

As a relatively new concept, the number of monographs available on the 'new generation of Russian warfare' is quite limited. This is understandable as the concept only began to be scrutinised thoroughly after the invasion of the Crimea in 2014. However, there is no real shortage of writing on the topic, with several prominent defence and security think-tanks and academic journals publishing on the topic regularly. Ofer Fridman (2018) published a monograph on the current Russian system of warfighting. This work explores the thought behind Hybrid Warfare. It looks at how the West has exploited the term, using it to explain the actions by Russia in Ukraine, while at the same time the Russians believe the Americans are using it against them.⁴ Additionally, the goal of the book, is "to explain the reasons behind these mutual criminations...[it] tries to grasp how political forces have shaped conceptual thinking, which has made it easier for one side to accuse the other of illegal actions, while, simultaneously, enabling one side to fend off

⁴ Ofer Fridman, *Russian Hybrid Warfare: Resurgence and Politicisation* (Oxford: Oxford University Press, 2018), 2.

their adversary's criticism of any wrong doing.”⁵ Fridman does not look at the tactics behind hybrid warfare, but investigates how it is internalised by both Russia and the West and where their understanding may come from.

Amos Fox has provided numerous articles in which he discusses Russian operational and tactical level warfighting in Georgia and Ukraine. His article *Cyborgs at Little Stalingrad* examines the battles of the Donetsk Airport in the Donbass. This article is of interest as it highlights a theory that Russia is adopting more of a positional style of warfare at the tactical level. This is counterintuitive to the Manoeuvrist approach Western armies are more prone to adapt. Mark Galeotti also contributed several studies on this style of warfare. Galeotti's (2016) article argues that what Russia is practicing is not new at all and can be dated back to the pre-Soviet era.⁶ Woo Pyung-Kyun's (2015) article provides great analysis of the operational and tactical-level factors of the conflict in Ukraine. In this article, Woo acknowledges that hybrid warfare is not new, and its elements have been prominent throughout several wars in history. However, he does believe that Russia is conducting a new form of hybrid war, changing how war will be fought in the twenty-first century.⁷ These two scholars have been instrumental in the understanding of the new generation of Russian warfare.

Works on information operations are prominent to understanding Russian warfare. T.S. Allen and A.J. Moore (2018) argue that information operations are a prominent factor in the Russian new way of warfare.⁸ Scott McIntosh (2015) seconds the significance of Russia's information warfare in his article. However, contrary to these articles Maria Snegovaya (2015) argues that “Russia's information warfare is overestimated... implemented with poor quality and decreased efficiency.”⁹ Despite all the works reviewed by the author on Russian new generation warfare, there is very little on how the West is dealing with this issue militarily.

The second portion of the literature reviewed examines command and control doctrine. There have been widespread monographs and journal articles analysing and

⁵ Ibid., 2.

⁶ Mark Galeotti, “Hybrid, ambiguous, non-linear? How new is Russia's ‘new way of war’?” *Small Wars & Insurgencies* 27, no. 2 (2016): 283.

⁷ Woo Pyung-Kyun, “The Russian Hybrid War in the Ukraine Crisis: Some Characteristics and Implications,” *The Korean Journal of Defense Analysis* 27, no. 3 (September 2015): 383.

⁸ T.S. Allen and A.J. Moore, “Victory without Casualties: Russia's Information Operations,” *The United States Army War College Quarterly* 48, no. 1 (2018): 60.

⁹ Maria Snegovaya, *Putin's Information Warfare in Ukraine: Soviet Origins of Russia's Hybrid Warfare* (Washington: Institute for the Study of War, 2015), 21.

addressing this topic. However, there has been very little in recent years written specifically on the British Army. This is where one has focused their research.

A staple monograph for any researcher on command and control is Martin van Creveld's classic *Command in War*. In his manuscript, van Creveld argues that, through the analysis of prior conflicts' command structures, and commanders, we "hope to gain a better idea of how it was done, successfully or otherwise."¹⁰ He continues, "we may reasonably expect to deepen our understanding of the effect of technological and other change on command systems, and of the role of command itself, among the other factors that give war its shape."¹¹ He believes doing so will not eradicate command problems but "may well shed some additional light on their nature, identify the main factors involved and the way they [were] interacted through change, and help [to] indicate the direction in which reform should move."¹² Anthony King (2019) argues for a new form of command, referred to as *Collective Command*.¹³ According to King, headquarters have become so large that that command now becomes the responsibility of a committee, not one individual.¹⁴ This is a relatively new idea but, through additional research, it is clear most believe that in a headquarters there can only be one commander. Additionally, this book provides an in-depth history of command and control at the divisional level, a level of war that inclines to be less engaged by researchers.

A topic that has been discussed in recent times regarding command and control is the concept of operating in a coalition. This has become problematic, according to numerous authors. General Rupert Smith (2005) argues that a commander in this type of organisation must be aware of the number of different political aims from the countries involved. He argues that each country may have conflicting motives and its command will have a different position as to the risks and rewards.¹⁵ This was echoed in Daniel Marston's (2021) article, which analyses modern day command and control in a coalition. Christopher Elliot (2015) addresses a similar issue in his book where he describes a number of the complications within the Ministry of Defence (MoD), including foreign policy and strategic goals. He also highlights the differences in political goals, noting the

¹⁰ Martin Van Creveld, *Command in War* (Cambridge: Harvard University Press, 1985), 15

¹¹ *Ibid.*, 15.

¹² *Ibid.*, 5.

¹³ Anthony King, *Command: The Twenty-First-Century General* (Cambridge: Cambridge University Press, 2019), 18.

¹⁴ *Ibid.*, 71.

¹⁵ Rupert Smith, *The Unity of Force: The Art of War in the Modern World* (London: Penguin Books, 2005), 302.

United Kingdom was withdrawing from Iraq at the same time the United States was surging forces.¹⁶

Encompassed in command and control doctrine is the relatively new concept of information advantage. One recent publication on the topic by Eli Berman, Jacob Shapiro, and Joseph Felter (2018) focuses on information advantage in asymmetric warfare. However, their theories can be applied to all types of conflict. The authors argue that the way information is leveraged has a significant impact in determining the outcomes in war; the side with the accurate information quickest has the upper hand.¹⁷ Christopher Paul (2020) also examines information advantage and provides a model to best employ it. One way in which a commander can gain information advantage is through people. People are a great source of Human Intelligence (HUMINT). Both Smith (2005) and Berman, Shapiro, and Felter (2018) argue that it is important for an army to gain the trust of the people in order to gain required information. This argument was also discussed in various other publications such as Stanley McChrystal's (2013) memoir.

Several books highlighting recent changes the British Army has been involved in were also examined. *Transforming Military Power since the Cold War* looked at the evolution of Western militaries from 1991 to 2012. The book is broken down into three sections each discussing a different army, focusing on the United States, United Kingdom and France. The chapter's discussed doctrine, technology, and strategy. The book focuses on understanding the process and outcomes of transformation, "seeking to provide a comparative and authoritative study on how these three armies have transformed since 1991."¹⁸ One of the most in-depth accounts of the Iraq and Afghanistan conflicts by former British officer Benjamin Barry (2020). In his book Barry looks to show how the character of both conflicts changed between 2001 and 2020. It seeks to "illustrate the factors that explain the ebb and flow of the military campaigns identifying lessons, as necessary. As far as practicable, the book attempts to understand the decisions that were made in context of the situation at the time"¹⁹ Additionally, Hew Strachan's (2003) monograph, looks at strategy, examining Western experiences since 2001. He argues that "if war is an

¹⁶ Christopher Elliot, *High Command: Military Leadership in the Iraq and Afghanistan Wars* (Oxford: Oxford University Press, 2015), 21.

¹⁷ Eli Berman, Joseph Felter and Jacob Shapiro, *Small Wars, Big Data* (New Jersey: Princeton University Press, 2018), 16.

¹⁸ Theo Farrell, Sten Rynning, and Terry Terriff, *Transforming Military Power since the Cold War: Britain, France, and the United States, 1991-2012* (Cambridge: Cambridge University Press, 2013), 3.

¹⁹ Ben Barry, *Blood, Metal and Dust: How Victory Turned into Defeat in Afghanistan and Iraq* (Oxford: Osprey Publishing, 2020), 15.

instrument of policy, strategy is the tool that enables us to understand it and gives us our best chance of managing and directing it.”²⁰ The aim of his book is to understand how strategy has changed, looking at “what is really changing as opposed to, what only seems to be changing.”²¹ These three books provide a wealth of knowledge on how the British Army, the nature of war, and command and control changed, and were key to the foundation of understanding the evolution of modern conflict.

Research Ethics and Research Methodology.

Since the author’s time as an undergraduate, oral history has been of significant interest. As an army officer, the author would read and listen to interviews by other officers from past conflicts in order to learn from their experiences. The author maintains that it is important to champion these individuals and let them tell their stories so that they are not lost for future generations.

This is why the author has chosen the qualitative method of oral history interviews for a significant portion of this research. Furthermore, oral history is a highly effective technique for obtaining significant amounts of information. This is due to specificity of questions, and the flexibility the verbal method offers in terms of being able to adapt questions to emerging information in real time.

In addition to the interviews, this thesis relies on a collection of primary source documents including government reports, British and Canadian Army doctrine publications, operation orders, and training plans. It also relies upon memoirs of other military leaders for first-hand information.

There were two goals of these interviews. Firstly, the author wanted to gain insight as to how the interviewees’ particular headquarters practiced command and control, mission-specific planning, and the management of information entering and leaving their headquarters during their respective conflicts. Correspondingly, the author wanted to gain a professional, and experienced, opinion on how the British Army can better gain information advantage, deploy Intelligence Surveillance and Reconnaissance (ISR) assets, and how they fight future wars. To obtain the required material, six senior British Army officers were interviewed.

²⁰ Hew Strachan, *The Direction of War: Contemporary Strategy in Historical Perspective* (Cambridge: Cambridge University Press, 2013), 23.

²¹ *Ibid.*, 9.

The author believes that the officers selected are the most influential and best suited to answer questions on command and control and British defence policy within the context of this inquiry. All interviewees have commanded at, the battlegroup, brigade or divisional level. They have gone on to fill a number of significant roles within the British Army ranging from Commander Field Army to the Chief of the General Staff (CGS). Unfortunately, not all who were asked to participate accepted the invitation. Some believed that their knowledge may be out-dated, or that they were not in a position to express their opinion on the questions being asked.

There are both strengths and weaknesses inherent to the oral history methodology. One advantage of oral history is that it allows one to focus on the meaning and significance of an event. This provides insight into unknown areas of history or daily life that can be further investigated.²² Oral history allows subjects to share a narrative about what people did, why they did it, and what they think of it now.²³ With this method comes some scrutiny. One risk is that a narrator may provide a narrowed view. For example, one historian interviewed several people who survived the Great Depression. From these interviews they received information about how the subjects persisted during this period, rather than about the failure of the economic structure at the time. That is, they saw a personal perception rather than an all-inclusive one.²⁴

Another problem identified by some traditional historians with this type of methodology is the deliberate omission of information by the narrator. The narrator may slant a story towards the interviewer's favour, or their own, or may exaggerate to make it more interesting. However, this argument is moot as the same observation can be made for memoirs, diaries, or meeting minutes. This issue can also be further investigated by consulting supporting sources.²⁵ While this may be the case for some oral history projects, the author does not suspect it was the case here. Being a fellow officer allowed for greater rapport with the interviewees and led to a professional relationship that helped structure the interviews. It also allowed the interviewer and interviewees to better understand the concepts being discussed.

²² Alessandro Portelli, "What Makes Oral History Different?" in *The Oral History Reader: Second Edition*, ed. Robert Peaks and Alistair Thomson (New York: Routledge Publishing, 2006), 36.

²³ Ibid., 36.

²⁴ Valerie Raleigh-Yow, *Recording Oral History: A Guide for the Humanities and Social Sciences, Second Edition* (Lanham: Rowman & Littlefield Publishing, 2005), 17.

²⁵ Ibid., 19.

Due to the Coronavirus Pandemic, the oral history interviews were carried out in person through online platforms such as Microsoft Teams and Zoom. The duration of the interviews was anywhere between one to three hours. The interviews were conducted in accordance with the University of Glasgow's Ethics Committee protocol. Each interviewee was contacted by letter in the form of electronic mail (e-mail) asking for their participation in the research. They were then provided with a participant information sheet, Ethics Committee's approved consent form, and question bank compiled by the author. All interviews were conducted in a safe and professional manner, at a time and date agreed upon by both parties. All permissions and consent were finalised before the interviews commenced. As this thesis references relatively recent conflicts, and the interviewees are all retired senior British Army officers, the subjects and author agreed that any classified or sensitive topics related to the United Kingdom, Five Eyes Alliance,²⁶ or NATO would not be discussed in a way that jeopardised any individual or the security of these organisations.

As mentioned above, the author developed a question bank of 85 questions to ask each interviewee. Out of the question bank roughly 30 to 45 questions relevant to the individual were selected. Such criteria as rank, experience, position, and conflict all went into consideration when selecting the appropriate questions. An individualised question bank was then distributed to the interviewee a couple of weeks before their scheduled interview. The questions followed a structured approach that progressed from the interviewee's biographical information to more in-depth topics such as command and control, defence policy and international affairs, and strategy and tactics. Effort was made to avoid asking a series of questions, but rather to allow the interviewee to flow freely and tell their story and opinions. This allowed for a better dialog between interviewees and the author.

Additionally, to protect the interviewees, all interviews were anonymised in accordance with University of Glasgow policy. The data was stored on an encrypted external hard drive, which was stored securely in a personal safe. All data collected has remained only in the possession of the author.

²⁶ Five Eyes is an intelligence sharing organisation consisting of the United Kingdom, Canada, United States, Australia and New Zealand.

After the interviews, the author referred to several government documents and official sources. These include, but are not limited to, British Army doctrine, operation orders and planning directives, speeches and presentations, and correspondence in the form of e-mail. These documents were used to substantiate and provide context to several points iterated by the interviewees.

Selecting oral history proved to be useful. The bond of officership allowed for both parties to have more of a discussion rather than follow the traditional question and answer approach. Through these interviews one was able to gather a significant amount of information required to answer the research questions. The interviewees' insightfulness allowed for further topics to be examined adding to the substance of the thesis.

Terminology.

Throughout this thesis, there are numerous sources from the United Kingdom, Canada, and the United States. For continuity of this thesis, the British/Canadian style of spelling is used consistently. The only exception to this is in a direct quote from a written source, or in titles such as the *Ministry of Defence* or *Department of Defense*. Additionally, as the author is a Canadian officer, some of the definitions are based on doctrinal terms and concepts taught to the Canadian Officer Corps. However, through standardisation across NATO the concepts will be the same. Where there is an institutional difference, a definition and reference will be provided. The reader will also see an abundance of acronyms throughout this thesis; the explanation of these abbreviation can be found in the first section of this thesis.

Additionally, there are various Russian language primary sources cited in this thesis. The author is not a Russian speaker and did not translate the documents. Translated versions of these documents were provided through government sources such as the Russian Federation English website and the United States Army. The author assumes the accuracy of translations coming from these sources. Issues with translation should be addressed to the organisation from which the document is cited.

Chapter One.

Know your Enemy: Russia and their New Generation of Warfare.

Introduction.

On December 26, 1991, the Soviet Union came to an end. The fall of the union was gradual, with Estonia being the first nation to seek its independence. Shortly thereafter, Latvia and Lithuania followed suit in what has come to be known as the *Singing Revolution*.²⁷ There was no singular source for the collapse, but rather a series of events that gathered momentum over time. The idea of *glasnost*,²⁸ *perestroika*,²⁹ the arms race with the United States, and the war in Afghanistan, accompanied by various social and political factors all contributed to its demise.

During a 2014 speech to oligarchs and diplomats, President of the Russian Federation Vladimir Putin made a statement that would be heard around the world: that Russia aims to protect all ethnic Russians wherever they may be. Putin elaborated saying “our country will continue to actively defend the rights of Russians, our compatriots abroad, using the entire range of available means – from political and economic, to operations under international humanitarian law and the right of self-defence.”³⁰ Some believe this declaration was the beginning to policy reforms which led to the annexation of Ukraine territory. To highlight this point further, Putin stated in the same speech,

In Ukraine, as you may have seen, at threat were our compatriots, Russian people ... when I speak of Russians and Russian-speaking citizens I am referring to those people who consider themselves part of the broad Russian community, they may not necessarily be ethnic Russians, but they consider themselves Russian People. We could not allow our access to the Black Sea to be significantly limited; we could not allow [NATO] forces to eventually come to the land of Crimean and Sevastopol, the land of Russian military glory, and cardinaly change the balance of forces in the Black Sea area. This would mean giving up practically everything that Russia had fought for since the times of Peter the Great, or maybe even earlier.³¹

Though not specifically mentioned prior to this speech, a number of leaders, and academics believe the quest to protect and unite ethnic Russians was the rationale for

²⁷ The *Singing Revolution* is a collection of events which led to independence from the former Soviet Union, for the nations listed above.

²⁸ *Glasnost* means openness. This was a policy within the former Soviet Union to show transparency within the government.

²⁹ *Perestroika* was a term used to describe the restructuring of Communist Party policies in the 1980s.

³⁰ Vladimir Putin, “President of Russia Speech, Conference of Russian Ambassadors and Permanent Representatives,” last modified July 1, 2014, <http://en.kremlin.ru/events/president/news/46131>.

³¹ Ibid.

Russia to become involved in other conflicts, such as the wars in Chechnya and, the invasion of Georgia.³²

Through these conflicts, a new structure of warfighting has emerged. Over the last ten years or so, this type of conflict has been described by military leaders and historians as *Hybrid Warfare*, *Asymmetrical Warfare*, *Non-linear Warfare*, operating ‘under the threshold of war,’ and conducting operations in the *Grey Zone*. In this thesis, these terms will be referred to simply as the ‘new generation of Russian warfare.’

The purpose of this chapter is to highlight the key elements of Russian doctrine. The reasoning for this is twofold. First, it projects how Russia will fight future wars by looking at examples from recent conflicts in Ukraine and Georgia. Second, in order to set the context for an examination of British Army command and control doctrine, and to answer the research questions, it is critical to understand the nature of the conflict that the doctrine will be responding to. The chapter aims to answer the question: *what is the ‘new generation of Russian warfare’ and how is it being employed?* The chapter will also be used throughout this thesis as a framework from which to ‘wargame’ or compare and contrast British and Western doctrine and policy with that of the Russian Federation.

Defining the ‘new generation of Russian warfare’.

Since becoming identified, there has been a number of academics, politicians, and military leaders attempting to define the system of warfare being conducted by the Russian Federation. As an evolving concept, many have debated its origins and definition. The first endeavour at a definition was by United States Marine Corps (USMC) Lieutenant-Colonel Frank Hoffman, from whom the term *Hybrid Warfare* first appeared. Originally developed to describe the type of war being conducted in the 2006 Israel and Hezbollah conflict, Hoffman’s description has made a comeback with the system of war being conducted by Russia in places like Georgia and Ukraine. He defines *Hybrid Warfare* as a type of conflict that,

incorporates a range of different modes of warfare, including conventional capabilities, irregular tactics and formations, terrorist acts including indiscriminate violence and coercion, and criminal disorder. The multi-modal activities can be conducted by the same unit but are generally operationally and

³² Amos Fox and Andrew Rossow, *Making Sense of Russian Hybrid Warfare: A Brief Assessment of Russo-Ukrainian War* (Arlington: The Institute of Land Warfare, 2017), 3; Robert Seeley, *A Definition of Russian Conflict: How does the Kremlin Wage War?* (London: Henry Jackson Society, 2018), 11.

tactically directed and coordinated within the main battlespace to achieve synergistic effects.³³

Under Hoffman's definition, Russia is conducting a *Hybrid War*. However, what Hoffman has described are all the subtleties of war in the general sense. This statement is also the proposition of Chiara Libiseller and Lukas Milevski, who argue "if hybrid warfare is understood to be simply the mixture of conventional and unconventional means in war, it would be difficult to find a war that was not hybrid."³⁴ The term hybrid is catchy and can encompass anything. What Russia is creating is not a system of *Hybrid Warfare* but rather a more complex and politically driven form of contention.³⁵

What is being referenced is what the Russians call 'new-generation war.' The new-generation of Russian warfare differs from *Hybrid Warfare* in the sense that it is not limited to the battlefield.³⁶ According to Ofer Fridman, the new-generation war has two parts; traditional war, and *gibridnaya voya*.³⁷ The *gibridnaya voya* measures are used as a preparatory phase before planned conflict takes place "in an attempt to create favourable military-political and economic conditions for the employment of armed forces."³⁸ Additionally, *gibridnaya voya* approaches can be conducted independently of war.³⁹ This allows for "ambiguity in Russian actions, and [provides Russia] with an asymmetric tool to [weaken] Western advantage."⁴⁰ It looks to challenge the West by other means since it is unable to win in a conventional fight.⁴¹ This notion was echoed by Tatyana Malyarenko and Stefan Wolff, who argue that Russia "instrumentally used societal destabilisation as a set of tools in the framework of its military and security doctrine of managed escalation [and] de-escalation in order to avoid the consolidation of a stable, pro-Western regime in Kyiv as a second-best option short of achieving a stable pro-Russian regime."⁴² Russia was able to shape the viewpoint of Ukrainian foreign and domestic policy through a means of information operations and diplomatic pressure using a gradual escalation of influence that

³³ Frank Hoffman, *Conflict in the Twenty-first Century: The Rise of Hybrid Wars* (Virginia: Potomac Institute for Policy Studies, 2007), 14.

³⁴ Chiara Libiseller and Lukas Milevski, "War and Peace: Reaffirming the Distinction," *Survival: Global Politics and Strategy* 63, no. 1 (2021): 103.

³⁵ Galeotti, "Hybrid, ambiguous, non-linear? How new is Russia's 'new way of war'?" 287.

³⁶ Fridman, *Russian Hybrid Warfare: Resurgence and Politicisation*, 93.

³⁷ *Gibridnaya voya* (Hybrid Warfare) is a term used to describe the Russian style of confrontation that uses "ideological, informational, financial, political, and economical methods that dismantle the social-cultural fabric of society, leading to its internal collapse." Ibid., 93, 131.

³⁸ Ibid., 131.

³⁹ Ibid., 132.

⁴⁰ Andrew Monaghan, "The 'War' in Russia's Hybrid Warfare," *Parameters* 45, no. 4 (Winter 2015): 66.

⁴¹ Ibid., 66.

⁴² Tatyana Malyarenko and Stefan Wolff, "The Logic of Competitive Influence-seeking: Russia, Ukraine and the Conflict in the Donbas," *Post-Soviet Affairs* 34, no. 4 (2018): 192.

also looked to increase Russian influence across the government.⁴³ These examples highlight the methods demonstrated in Ukraine, and confirm that, despite being employed currently, the new generation of Russian warfare is not a new concept. Therefore, it is important to examine one document which is said to be the influence for the re-emergence of the new generation of Russian warfare: *The Gerasimov Doctrine*.

Understanding the Gerasimov Doctrine.

After the 2008 conflict in Georgia, the Russian Federation underwent a period of reform, examining its doctrine and how it would fight future wars. Out of this period came one document that has arguably changed the way the West has viewed Russia's rationale behind the conduct of war. Written by then CGS, Valery Gerasimov, this document titled *The Value of Science is in the Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying out Combat Operations* has become known as the *Gerasimov Doctrine*. Since its introduction in 2013, the document has caused controversy, with some proclaiming the manuscript is a new Russian doctrine of how to fight future wars. While others state it is merely a warning to the Russian military as to how Gerasimov thinks war universally will be fought.⁴⁴ However, from examining the 2014 conflict in Ukraine, it is easy to see why many think it is an outline for a new generation of Russian war.

In the document, Gerasimov states that wars are changing, and that the world is moving from the traditional state-on-state conflicts of the past, into a new all-encompassing system of warfare, as seen in Ukraine. Gerasimov, emphasises the importance of non-lethal effects in conducting war, Gerasimov states,

The very rules of war have changed. The role of non-military means of achieving political and strategic goals has grown, and, in many cases, they have exceeded the power of force of weapons in their effectiveness. The focus of applied methods of conflict has altered in the direction of the broad use of political, economic, informational, humanitarian, and other non-military measures – applied to coordination with the protest potential of the population.⁴⁵

He goes further, asking the Russian military to examine how war has evolved and how one should prepare to fight it. He argues that, to understand this, one needs to examine

⁴³ Ibid., 205.

⁴⁴ Monaghan, "The 'War' in Russia's Hybrid Warfare," 68.

⁴⁵ Valery Gerasimov, "The Value of Science is the Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying out Combat Operations," trans. Robert Coalson. Translator, *Military Review* 96, no. 1 (January-February 2016): 24.

methods being witnessed in places like Africa and the Middle East were according to Gerasimov,

military actions are becoming more dynamic, active, and fruitful. Tactical and operational pauses that the enemy could exploit are disappearing. New information technologies have enabled significant reductions in the spatial, temporal, and informational gaps between forces and control organs. Frontal engagements of large formations of forces at the strategic and operational level are gradually becoming a thing of the past. Long distance, contactless actions against the enemy are becoming the main means of achieving combat and operational goals.⁴⁶

Gerasimov also calls for greater use of Special Operations Forces (SOF) and proxies to create instability through diversion and secrecy, arguing “asymmetrical actions have come into widespread use, enabling the nullification of an enemy’s advantages in armed conflict. Among such actions are the use of [SOF] and internal opposition to create a permanently operating front through the entire territory of the enemy state, as well as informational actions, devices and means that are constantly being perfected.”⁴⁷ These types of actions were witnessed first-hand during the 2014 conflict with Ukraine.

Gerasimov proclaims Russia must look at ways of exploiting enemies to gain success: “I would like to say that no matter what forces the enemy has, no matter how well developed his forces and means of armed conflict may be, forms and methods for overcoming them can be found. He will always have vulnerabilities, and that means that adequate means of opposing him exist.”⁴⁸ He concludes by stating that Russia “must not copy foreign experience and chase after leading countries, but we must outstrip them and occupy leading positions ourselves.”⁴⁹ Making reference to the fact that Russia must use science and industry to develop its own technologies and doctrine to defeat their enemies.⁵⁰ As one will see in the following sections of this chapter, an argument can be made that the tenets of the *Gerasimov Doctrine* have been employed with success against Ukraine and Western allies.

Russian Information Operations: Propaganda and the Media.

Since the Russian Revolution, and some may argue earlier, the Russian way of war has not changed. It may have evolved with technological advancement but the basic tenets

⁴⁶ Ibid., 24.

⁴⁷ Ibid., 25.

⁴⁸ Ibid., 29.

⁴⁹ Ibid., 29.

⁵⁰ Ibid., 26.

such as an aggressive and complex information campaign have not. An information campaign is a crucial component to the new generation of Russian warfare. It “encompasses all the uses of information and disinformation, by state or non-state actors, as a tool of state power and includes military information support operations, cyberspace operations, electronic warfare, military deception, psychological operations, public affairs and strategic communications good.”⁵¹ Gerasimov echoes its importance in his memorandum, calling on the Russian military to dominate information operations. Gerasimov believes information operations need to be mastered as they grant Russia the ability to open “asymmetrical possibilities for reducing the fighting potential of the enemy,” thus leveraging an advantage in their favour.⁵²

Russia uses information warfare in a clandestine fashion with the “aim to undermine enemy state and societal functions, coerce adversaries, and disseminate a pro-Russia narrative of the ensuing conflict.”⁵³ This has evolved to such a prominent tool in Russian warfare, it was officially integrated into updated government policies in February, 2010. Here, several reforms were established including the creation of a military organisation dedicated to information warfare.⁵⁴ The world saw the success of this in Ukraine. Here, the then Supreme Allied Commander Europe (SACEUR) General Philip Breedlove described it as “the most amazing information warfare blitzkrieg we have ever seen in the history of information warfare.”⁵⁵ Some believe this is how “Russia has maintained its position as a great power, despite its relative material weakness, through its superior use of information as a tool of asymmetric statecraft.”⁵⁶ This is why the Russian government considers information operations a decisive tool for gaining and maintaining power.⁵⁷

Russia’s information operations are intended to obscure its actual objectives through propaganda, misinformation and intelligence designed to confuse an adversary allowing them to refute particular incidence, such as they did in Ukraine.⁵⁸ Therefore,

⁵¹ T.S. Allen and A.J. Moore, “Victory without Casualties: Russia’s Information Operations,” *The United States Army War College Quarterly* 48, no. 1 (2018): 60.

⁵² Gerasimov, “The Value of Science is the Foresight,” 27.

⁵³ Azhar Unwala and Shaheen Ghori, “Brandishing the Cybered Bear: Information War and the Russia-Ukraine Conflict,” *Military Cyber Affairs* 1, no.1 (2015): 2-3.

⁵⁴ *Ibid.*, 2.

⁵⁵ Scott McIntosh, “Kyiv, International Institution, and Russian People: Three Aspects of Russia’s Current Information Campaign in Ukraine,” *The Journal of Slavic Military Studies* 28, no. 2 (2015): 300.

⁵⁶ Allen and Moore “Victory without Casualties: Russia’s Information Operations,” 59.

⁵⁷ *Ibid.*, 59.

⁵⁸ Maria Snegovaya, *Putin’s Information Warfare in Ukraine: Soviet Origins of Russia’s Hybrid Warfare* (Washington: Institute for the Study of War, 2015), 9.

information operations are used as an all-encompassing mechanism to warfighting, as “a prelude to war, an alternative to war and a handmaiden to war.”⁵⁹ The idea of the information campaign being part of an inclusive approach is echoed by many observers of the Ukraine conflict. Here Russia is seen “linking tactical level actions with information operations in order to achieve an operational level deception.”⁶⁰ That is “Russia's new way of war can be considered simply a recognition of the primacy of the political over the kinetic - in that if one side can disrupt the others’ will, and ability to resist, then the actual strength of their military force becomes irrelevant.”⁶¹ Therefore an information campaign “opens asymmetrical possibilities for reducing the fighting potential of the enemy.”⁶²

To get the propaganda messages across Ukraine, Russian media outlets joined the information operation. On September 9, 2009, Russia established “a longstanding policy of state influence over the media, arguing that the government must ensure pro-Russian messaging regardless of whether media sources are state controlled or private.”⁶³ In Russia, there are few privately owned television channels, and the ones that do exist are heavily regulated, monitored by the government, or available only on the internet.⁶⁴ Additionally, Russian media has been able to reach wider English audiences through state run media outlet *Russia Today*. This station has been receiving great financial backing from Russia, even having its budget overtake the British Broadcasting Cooperation (BBC) and Cable News Network (CNN). *Russia Today* has been observed playing a key role in the Russo-Ukrainian conflict representing a pro-Russian commentary and targeted disinformation.⁶⁵

The influence of state-run media was exploited by Russia at the onset of the 2014 annexation, with the aim of disrupting Ukraine’s response to their actions. They were able to do so by creating false narratives. The media “portrayed the [Ukraine] mobilizations drive as failing, the home front unstable, and encouraged flight to Russia for evading [military] call-up.”⁶⁶ According to many, the false narrative campaign was successful. One

⁵⁹ Seeley, *A Definition of Russian Conflict: How does the Kremlin Wage War?* 14.

⁶⁰ John Davis, “Continued Evolution of Hybrid Threats: Russian Hybrid Threat Construct and the Need for Innovation,” *The Three Swords Magazine* 28, (2015): 22; Allen and Moore, “Victory without Casualties: Russia’s Information Operations,” 59.

⁶¹ Galeotti, “Hybrid, ambiguous, non-linear? How new is Russia’s ‘new way of war’?” 288.

⁶² Gerasimov, “The Value of Science is the Foresight,” trans. Robert Coalson, 27.

⁶³ Unwala and Ghorl, “Brandishing the Cybered Bear,” 1.

⁶⁴ Heidi Reisinger and Aleksandr Golts, “Russia’s Hybrid Warfare: Waging War below the Radar of Traditional Collective Defence” (Rome: NATO Defence College, 2014), 7.

⁶⁵ *Ibid.*, 7.

⁶⁶ Woo Pyung-Kyun, “The Russian Hybrid War in the Ukraine Crisis: Some Characteristics and Implications,” 388.

study, “revealed that 84% of Ukrainians and ethnic Russians in the [peninsula] became favourable to annexation after Russian propaganda, through inoculation by the media, spreading the perception that ethnic Russians would become second-class citizens [under] Ukraine.”⁶⁷ To further emphasise the weight Russia puts on the media contribution to its information campaign, “Putin awarded medals to about 300 journalists, cameramen and technicians who were involved in reporting events in Crimea. All were working for state media outlets. The group also included the head of the Russian consumer organization responsible for the shutting down of unwanted websites.”⁶⁸ As demonstrated in this fragment, the information and propaganda tools and procedures established by the Russian Federation are far more developed and complex than their counterparts in the former Soviet Union.

The Russian Federation in Cyberspace.

As previous sections have shown, a solid information campaign is vital to the way Russia conducts war. Though not a new concept to them, the way in which Russia conducts information warfare has certainly changed. With the advancement in computers and the electromagnetic realm, cyberspace has become the new forecourt for the Russian Federation. Since the latter part of the 2000s, Russia has been conducting cyber-attacks against the West and former Soviet Bloc countries. Most notably was the attack on Estonia in 2007. In spring of 2007, the Estonian government decided to remove monuments put in place by the former Soviet Union, including a statue of a Soviet soldier from central Tallinn. However, the decision to grant this permission was overturned by Estonia’s president, some believe because of pressure from Moscow.⁶⁹ This action led to protests and riots by both Estonians and ethnic Russians, which resulted in the statue being relocated to a military cemetery. The day after, Estonia was “hit with a massive cyber-attack, their networks and servers flooded with so much data that they shut down.”⁷⁰ The attack spread throughout the country and many citizens were unable to use mobile phones and bank accounts. State-run organisations such as parliament, public records and military networks, were all crippled.⁷¹

⁶⁷ Alexandra Tâlván, “Particulars in Developing Hybrid War in Ukraine,” *National Defence University*, (2015): 182.

⁶⁸ Reisinger and Golts, “Russia’s Hybrid Warfare,” 5.

⁶⁹ Fred Kaplan, *In Dark Territory*, 162.

⁷⁰ *Ibid.*, 162.

⁷¹ *Ibid.*, 163.

Georgia also faced a series of cyber-attacks. In August 2008, Georgian Internet Security Company detected a system of cyber-attacks known as a distributed denial of service (DDoS).⁷² These attacks mirrored ones detected on previous occasions. However, this wave was linked to an increase of Russian soldiers in South Ossetia. These DDoS attacks shutdown Georgian government websites and internet communications.⁷³ In order to mitigate the attacks, which were linked to Moscow and St Petersburg, a number of websites were transferred to servers of allied countries including the United States and Poland, who allowed Georgia to house their government information on their English government website.⁷⁴

Similarly, a number of attacks were also conducted against Ukraine. Shortly after Russian forces entered Crimea in 2014, they piloted an attack disrupting critical communications infrastructure, interrupting the passage of information, and in the end allowed Russia to obtain vital intelligence.⁷⁵ They also conducted antagonistic cyber operations looking to disrupt government relationships and commerce in Ukraine, focusing on Ukrainian businesses, as well as foreign partners and investors.⁷⁶ These included attacks on media outlets, the shutting down of the mobile phone network, and hacking or blocking the phones of parliamentary officials.⁷⁷ These incidents caused a number of issues for the Ukrainian government and armed forces, as they were unable to give direction, communicate with allies, or counter pro-Russian propaganda efforts.⁷⁸ Additionally, after the Crimean invasion, Russia was hit by economic sanctions from the West. Nonetheless, Russia was able to find relief from several allies, and countered the West with their own sanctions. During this period, there was an increase of cyber-attacks against United States banks and internet sites coming out of Russia.⁷⁹

Operational & Tactical Level Force Composition, Deployment and Posture.

A key characteristic of Russian warfighting is the use of regular and irregular forces operating in concert with one another. This is not a new tactic, but one that has

⁷² Carolina Vendil-Pallin and Fredrik Westerlund, "Russia's war in Georgia: Lessons and Consequences," *Small Wars & Insurgencies* 20, no. 2 (2009): 404; Steven W. Korn and Joshua E. Kastenburg, "Georgia's Cyber Left Hook," *Parameters* 38, no. 4 (2008): 60.

⁷³ Korn and Kastenburg, "Georgia's Cyber Left Hook," 60.

⁷⁴ Peter Svensson, "Georgian president's Web site moves to Atlanta," *USA Today*, August 11, 2008, Technology, https://usatoday30.usatoday.com/tech/products/2008-08-11-2416394828_x.htm.

⁷⁵ Davis, "Continued Evolution of Hybrid Threats," 22.

⁷⁶ Robert Angevine et. al, *Learning Lessons from the Ukraine Conflict* (Virginia: Institute for Defense Analyses, 2019), 13.

⁷⁷ Unwala and Ghori, "Brandishing the Cybered Bear," 6.

⁷⁸ Ibid., 6.

⁷⁹ Timothy Thomas, "Russia's Military Strategy and Ukraine: Indirect, Asymmetric and Putin Led," *The Journal of Slavic Military Studies* 28, no. 3 (2015): 449.

become crucial to the new Russian doctrine. Experts observing the Russo-Ukrainian conflict have noted Russia's use of irregular forces, such as Chechens and Russian Cossacks, supported by government forces. This was initially denied by the Russians and demonstrated their use of the Soviet tactic of *maskirovka* 'masked warfare,' which is designed to use active and passive measures to deceive an adversary.⁸⁰

This model has become well-known in Ukraine. Initially, Russia denied having forces in the country, though during the initial stages of the conflict there were several so called *little green men* seen assisting irregular soldiers.⁸¹ As the Deputy Supreme Allied Commander Europe (DSACEUR), General Richard Shirreff wrote on witnessing the invasion happening in real time,

I watched the clips on CNN and BBC News 24 on the [television] in my office in [Supreme Headquarters Allied Powers Europe] (SHAPE). It showed soldiers in green uniforms with no identifying unit insignias, faces obscured with balaclava helmets, driving similar unidentified vehicles. As my fellow commanders and I watched we all knew who those vehicles belonged to and who was operating them- but proving it was another thing. It was highly professional, and expertly implemented and we couldn't even consider doing anything to counter it as Ukraine was not a member of NATO.⁸²

Not only was this systematic approach used in Crimea, it was also used in the occupation of the Donbass. Shortly after the invasion, officials from the West, Ukraine, and the media, had gathered a significant amount of evidence signifying that Russia had advisors, training teams and command personal working with the Donetsk and Lugansk People's Republics (DNR and LNR) forces. Also identified were regular Army Battalion Tactical Groups (BTG) draw from multiple Russian brigades.⁸³ The soldiers were operating without identifiers which led to conjecture by Ukraine, and the West, that the invasion was actually sanctioned by Russia.⁸⁴ The observation was amplified by the battles of Iloias, Donetsk Airport, Luhansk Airport and Debal'tseve. Here, Russian conventional forces "openly assisted the separatists in defeating Ukrainian Armed Forces. The Donbass campaign was directed from Stavropol, Russia by the 49th Army who in conjunction with the 6th Tank Brigade provided the preponderance of Russian Battalion Tactical Groups..."⁸⁵ As many

⁸⁰ Merle Maigre, *Nothing New in Hybrid Warfare: The Estonian Experience and Recommendations for NATO* (Washington: The German Marshall Fund of the United States, Foreign Policy Program, 2015), 3.

⁸¹ Snegovaya, *Putin's Information Warfare in Ukraine*, 11.

⁸² Richard Shirreff, Preface to *War with Russia: An Urgent Warning from Senior Military Command* (New York: Quercus, 2016), 14.

⁸³ Galeotti, "Hybrid, ambiguous, non-linear? How new is Russia's 'new way of war'?" 286.

⁸⁴ *Ibid.*, 284.

⁸⁵ Fox and Rossow. *Making Sense of Russian Hybrid Warfare*, 5.

have noted, these actions were carried out by trained soldiers, under a professional command and control structure, and not a spontaneous militia.⁸⁶

The Russo-Ukrainian conflict has seen participation from several different irregular organisations. These can be broken down into distinct categories: pro-Russian separatists that are local to the Donbass or Crimea regions, and those who are Russian-affiliated fighters.⁸⁷ In the Donbass region, Russia divided its separatists into groups based on their affiliated provincial (oblast) boundaries for better command and control. Out of this came the DPR and Donetsk People's Army (DPA) from Donetsk Oblast, and the LPR and Luhansk People's Army (LPA) from the Luhansk Oblast.⁸⁸ Using these fighters adds to the success of Russian operations. It allows the Russian Federation to hold ground without committing a large portion of its own forces, which they can then deploy to other locations. It also gives the Russian regular forces an intelligence sensor from the local populace, able to help define the area of operations, the atmospherics, and networks.

The irregular soldiers have had moderate success in both contested areas of the Ukraine. For an example, one can look to the second Battle for the Donetsk Airport. After the initial Ukrainian success of the first Battle of the Donetsk Airport, separatist forces backed by regular Russian SOF took part in a four-month attritional contest resulting in the destruction of the Donetsk Sergei Profiev International airport and leaving the remnants in separatist hands.⁸⁹

The second battle for the Donetsk airport was a long-drawn-out affair, lasting from September 28, 2014 to January 21, 2015. At the onset of the battle the Ukrainian volunteer battalions from the 43rd Mechanised Brigade were holding the airport. Simultaneously, the urban area surrounding the facility was under the influence of the separatists and their Russian advisors, who would periodically use indirect fire against the airport.⁹⁰ The purpose of the harassing fire was twofold: it aimed at gathering information on Ukrainian indirect fire assets through counterbattery and, through firing back into the urban area,

⁸⁶ Pyung-Kyun, "The Russian Hybrid War in the Ukraine Crisis: Some Characteristics and Implications," 390.

⁸⁷ Angevine et. al, *Learning Lessons from the Ukraine Conflict*, 6.

⁸⁸ The abbreviation for the Donetsk and Lugansk People's Republics has appeared in sources as both DPR and DNR and LPR and LNR respectively. Amos Fox, "Cyborgs at Little Stalingrad": *A History of the Battles of the Donetsk Airport* (Arlington: The Institute of Land Warfare, 2019), 2; Galeotti, "Hybrid, ambiguous, non-linear? How new is Russia's 'new way of war'?" 286.

⁸⁹ Fox, "Cyborgs at Little Stalingrad," 3.

⁹⁰ Ibid., 5.

diminished the Ukrainian forces credibility with the Donetsk citizens, helping to keep the region unstable.⁹¹

After small initial contacts with the Ukrainian forces the day prior, on September 29, 2014, the separatists, with their Russian counterparts conducted a deliberate attack on the airport, seizing key infrastructure. Most of the Ukrainian forces had been pushed back from the old terminal to the airport's new terminal by mid-October, and by end of the month the separatists had made lodgement and were collocated with the Ukrainians.⁹² The separatists then consolidated their forces around the airport and cut-off the Ukrainian forces, in what would become a "positional battle sought to exhaust the Ukrainians through a slow attritional siege."⁹³ This siege would go on for weeks with both sides attiring each other's forces until the separatists and Russian SOF conducted a major assault between November 28, and December 5, 2014, by which time they had ousted the Ukrainians from the old terminal. The fighting eventually became sparse. In January 2015, the separatists, reinforced by two Russian BTGs consisting of 600 soldiers and armour, launched a series of attacks on the remaining Ukrainians. By January 21, 2021, the separatists and Russian counterparts had control of the Donetsk Airport.⁹⁴

The BTG has become the Russian's preferred combined-arms⁹⁵ tactical grouping. Composed for mission-specific tasks, they are Russia's primary manoeuvre unit and have proven to be relatively successful through ground operations in Ukraine.⁹⁶ These units are not the same formation or grouping as the Brigade Tactical Group, also described in Russian doctrine. The advantage of this grouping is the fact that the BTG can manoeuvre quickly, conduct long range tactical and operational fires, and reconnoitre to "locate, target, and strike while providing for their own defence."⁹⁷ The normal grouping of the BTG is consistent with a British Army battlegroup, which normally comprises an armoured squadron, several mechanised infantry companies, and an anti-armour capability. These sub-units would be supported by multiple batteries of self-propelled artillery, a

⁹¹ Ibid., 5.

⁹² Ibid., 7.

⁹³ Ibid., 7.

⁹⁴ Ibid., 9.

⁹⁵ Combined-arms is the concept of integrating several arms such as infantry, armour, aviation, artillery, and engineers in a complementary fashion normally under a single command. Canadian Armed Forces, *Land Operations* (Kingston: Army Publishing Office, 2008), 32.

⁹⁶ Angevine et. al, *Learning Lessons from the Ukraine Conflict*, 7.

⁹⁷ Ibid., 14.

single battery of multiple-launch rockets and an air defence capability.⁹⁸ One factor that is unique to the BTG is that operational level assets are pushed down to the tactical level. The integration of air-defence and rocket artillery batteries allows the BTG impressive stand-off distances from its adversaries, giving a tactical unit the capability achieve operational effects.⁹⁹

With the introduction of AirLand Battle (addressed in chapter five) by the United States, and then NATO, the integration of air and manoeuvre assets has become integral to Western doctrine. However, this has become more difficult with tactical level units possessing air defence capabilities. The beginning of the conflict in the Donbass was evidence of this. On numerous occasions Ukrainian forces attempted to employ air assets for casualty evacuation and close air support only to have them shot down.¹⁰⁰ On July 14, 2014, a Ukrainian military cargo plane believed to be out of Russian missile range was knocked out of the sky. A couple days later two ground-attack fighters, used extensively against separatist in the region, were also shot down.¹⁰¹ The air defence capabilities housed within in the BTGs have allowed Russia to gain air superiority in Ukraine.

The Russian Army's employment of Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) capabilities has evolved well. Russia now uses a complex number of sensors grouped together in what is being called Russia's reconnaissance strike model.¹⁰² These assets use an integrated organisation termed Integrated Air Defence System (IADS). This system uses a combination of SOF, drones, cyber, geo-locating technology, and indirect fires.¹⁰³ This combination of fires, ISTAR and other technologies has caused some difficulty for Ukrainian forces. On one occasion, a drone was used to locate Ukrainian positions in the Donbass region and within fifteen minutes of a target being identified it was destroyed by Russian Multi-Launcher Rocket System (MLRS).¹⁰⁴ This example demonstrates Russian advancements in defence technology.

⁹⁸ Fox and Rossow, *Making Sense of Russian Hybrid Warfare*, 6; Ministry of Defence, *Battlegroup Tactics* (Warminster: Land Warfare Centre, 2014), 21-23.

⁹⁹ Fox and Rossow, *Making Sense of Russian Hybrid Warfare*, 6-7.

¹⁰⁰ *Ibid.*, 7.

¹⁰¹ Economist, "Collateral Damage: MH17 and the War in Ukraine," *The Economist*, July 26, 2014, Briefing, <https://www.economist.com/briefing/2014/07/24/collateral-damage>.

¹⁰² Fox and Rossow, *Making Sense of Russian Hybrid Warfare*, 10.

¹⁰³ *Ibid.*, 10.

¹⁰⁴ Phillip Karber, *Lessons Learned from the Russo-Ukrainian War* (Vienna: The Potomac Foundation, 2015), 13.

The force posture of the Russian army has transformed since the invasion of Georgia. They have learned from past conflicts; and are doctrinally making an impression in their warfighting capabilities. With these advancements came improvements in their command and control structure.

Command and Control Structure.

When looking at the new generation of Russian war it is important to understand the army's command and control structure. After the 2008 conflict in Georgia, Russia identified several shortcomings. These included out-of-date equipment, poor training, an overemphasis on the importance of the mass mobilisation of conscripts and the archaic Soviet style command and control structure which did little to effect success on the battlefield.¹⁰⁵

The period from 2008 to 2012 saw significant changes in Russian doctrine, including the decrease on the reliance of reservists and conscripts. To counter this, the Russian army would look to form new units of regular soldiers capable of deploying at short notice.¹⁰⁶ By 2013 Russia was able to meet this requirement with highly equipped and trained professional soldiers filling positions in airborne, marine, and special operations able to conduct rapid deployments.¹⁰⁷

Prior to 2014, Russia's new capability and doctrine had been demonstrated several times through snap exercises. This included a massive exercise conducted every four years called ZAPAD. The purpose of these exercises is twofold; to practice command and control and new doctrine, and to demonstrate their ability to project expeditionary forces. In 2017 ZAPAD (West), the first one held since the invasion of the Ukraine, involved 100,000 soldiers, and extended across the Russian Military District - West and into Belorussia. To highlight the importance, this is the exercise in which the 1st Guards Tank Army was trialled after its reorganisation.¹⁰⁸ Snap exercises have also been conducted to exercise Russia's ability to mobilise at short notice. One such exercise took place in April, 2021 when Russia moved a sizable force, estimated by the European Union at 100,000 soldiers including the 58th and 41st Armies and several airborne divisions, close to the

¹⁰⁵ Snegovaya, *Putin's Information Warfare in Ukraine*, 9.

¹⁰⁶ Reisinger and Golts, "Russia's Hybrid Warfare," 8.

¹⁰⁷ Ibid., 8.

¹⁰⁸ Economist, "Russia's biggest war game in Europe since the Cold War alarms NATO: Putin the boots in Belarus," *The Economist*, August 12, 2017, Europe, <https://www.economist.com/europe/2017/08/10/russias-biggest-war-game-in-europe-since-the-cold-war-alarms-nato>.

Ukraine border.¹⁰⁹ These exercises are concerning to the West as they have been previously utilised as deception plans for the invasions, as demonstrated in Georgia and Ukraine.

To better effect command and control, the Russian army has been organised into five military districts (MDs) and operational/joint strategic commands (OSK). The OSK/MD are a command and control structure that encompasses all military branches. The OSK commanders and staff are trained to deploy task tailored groupings in support of operations as seen in Ukraine and expeditionary in the Middle East.¹¹⁰ The Russian armed forces also established the National Defence Management Centre (NDMC) in 2014 as its main headquarters. Based in Moscow, the purpose of this headquarters is to “serve as a central peacetime and war-time command post and situation centre – the central hub of all military activities.”¹¹¹ Since its establishment, “the [NDMC] has improved the situational awareness of the MoD leadership and their ability to manage operations and peacetime activities with greater speed and clarity.”¹¹² The first exercise to test this command and control structure was ZAPAD 2013, and its first real-time implementation occurred in 2014 with the invasion of the Crimea. OSK Southern Military district headquarters was the command authority, and after annexation, was given command responsibility of the peninsula.¹¹³

At the operational and tactical level, Russian ground forces have been organised into Army Groups. Army Groups have no set capabilities and differ between districts.¹¹⁴ In these groupings are several combined-arms brigades, similar to a Western army brigade structure. The idea of going away from the division and adapting the brigade structure helped the Russian army reduced the bureaucracy caused by divisional level command, allowed for the reduction of the over staffed officer corps.¹¹⁵ This seems to be the command and control headquarters Russian forces have adapted. However, recently there

¹⁰⁹ British Broadcasting Corporation, “Russia to pull troops back from near Ukraine,” *British Broadcasting Corporation*, April 22, 2021, [https:// www.bbc.com/news/world-europe-56842763](https://www.bbc.com/news/world-europe-56842763).amp.

¹¹⁰ Greg Whistler, “Strategic Command and Control in the Russian Armed Forces: Untangling the General Staff, Military Districts, Service Main Commands (Part Three),” *The Journal of Slavic Military Studies*, 33:2 (2020): 256.

¹¹¹ *Ibid.*, 248.

¹¹² *Ibid.*, 254.

¹¹³ *Ibid.*, 250.

¹¹⁴ Lester Grau and Charles Bartles, *The Russian way of War: Force Structure, Tactics and Modernization of Russian Ground Forces* (Fort Leavenworth: Foreign Military Studies Office: 2016), 30

¹¹⁵ *Ibid.*, 31.

seems to be a renewed recognition on the importance of the division, just as the West is making the same observation.¹¹⁶

Conclusion.

The ideas behind the new generation of Russian warfare are not necessarily new; they are more evolutionary than they are revolutionary. The use of deception and information operations mixed with a ground war of irregular soldiers, backed by professionals, has been witnessed through history from Tsars to Bolsheviks.¹¹⁷ The only mechanism that has changed is the fact that technology has broadened their range of influence and opened new fronts in such domains as space and cyberspace. That is not to say the Russian Army is not improving in other domains, as successes in Ukraine have demonstrated. Russia understands that it cannot compete with the West in high-intensity warfighting; however, through new initiatives, Russia's sphere of influence is increasing. This was recently highlighted by the British government, which stated "A strategy of political warfare is being used by our pacing threat (Russia), which is designed to undermine our cohesion erode economic, political, and social resilience, and challenge our strategic position in key regions of the world.... their goal is to achieve their objectives below what we call war."¹¹⁸

This chapter has two purposes. One is to answer the question *what is the new generation of Russian warfare and how are they employing it?* This was accomplished through a series of recent examples from conflicts in Ukraine, Georgia and Estonia. The second is to set the context for an examination of British Army command and control doctrine from which the reader can compare the new generation Russian warfare with British Army policy, posture, and projection. These elements will be discussed in forthcoming chapters.

¹¹⁶ Ibid., 33.

¹¹⁷ Galeotti, "Hybrid, ambiguous, non-linear? How new is Russia's 'new way of war'?" 296.

¹¹⁸ Ministry of Defence, *Multi-Domain Integration: Joint Concept Note 1/20*, 3.

Chapter Two.

Command: Headquarters Size and Structure.

Introduction and Definitions.

The previous chapter examined the evolution of Russian military doctrine. The purpose of this was to understand the nature of conflict to which the doctrine in the forthcoming chapters is meant to respond. This is important, especially as the latest white paper has identified Russia as the greatest threat to the United Kingdom stating, “Russia continues to pose the greatest nuclear, conventional military and sub threshold threat to European security. Modernisation of the Russian armed forces, the ability to integrate whole of state activity and a greater appetite for risk, makes Russia both capable an unpredictable actor.”¹¹⁹ In order to fight in complex environments an army must have a solid command and control structure at all levels. A critical component of this structure is the headquarters and its staff, which are crucial to the success of the manoeuvre units on the ground. However, one problem with today’s headquarters is that they have grown so large they are becoming a hindrance to a formation’s warfighting ability. Chapter two will examine the growth and processes of the modern headquarters, focusing on the divisional and brigade levels of command. It will analyse historical evidence to highlight the problems experienced by army headquarters and make recommendations for the best application in the future. Though most of the historical information comes from a British perspective, examples from other armies will be used to validate the points. Therefore, this chapter will aim to answer the question: *how can a headquarters be configured, to increase effectiveness in the realm of command and control?*

As the topic of command makes up a significant portion of this research, it is important to examine the concept in detail. In the *Unity of Force*, General Rupert Smith places a noteworthy amount of importance on the topic. Smith writes,

command is a crucial element in the use of force, for it is the commander who will decide both the structure of the forces and the use of force.... It is he who makes the military decisions and should carry all authorities to do this; in turn he is responsible for the outcome, win or lose.¹²⁰

Martin van Creveld also outlined the importance of command, claiming command has two key principles,

First, command must arrange and coordinate everything an army needs to exist - its food supply, its sanitary services, its system of military justice, and so on.

¹¹⁹ Ministry of Defence, *Defence in a Competitive Age* (London: Ministry of Defence, 2021), 5.

¹²⁰ Smith, *The Unity of Force*, 64-65.

Second, command enables the army to carry out its proper mission, which is to inflict the max amount of death and destruction on the enemy within the shortest possible period of time and at a minimum loss to itself; to this part of command belong, for example the gathering of intelligence and the planning and monitoring of operations.¹²¹

Van Creveld also highlights commanders' responsibilities. He believes these include, but are not limited to: information gathering, filtering, and analysing the information; using that information to conduct an estimate; identifying objectives; and finally making a decision.¹²² According to both Smith and van Creveld's definitions, command is the key function to an army's success, and the key element to command is decision-making. Therefore, in order to make good decisions a commander must have the right structures, processes, and team in place.

Headquarters Size: A Private and Public Sector Perspective.

In both the public and private sector there has been continuous debate about the size of a business' headquarters versus optimal effectiveness and profitability. Size and effectiveness of a headquarters has been a topic of frequent discussion within military circles as well, most recently within the last twenty years with conflicts in Iraq and Afghanistan. This section will examine the size of an organisation's headquarters and the effect it has on productivity.

Percy Barnevik the chairman of Swedish-Swiss electronic company *Asea Brown Boveri* (ABB), once said, "I believe you can go into any traditionally centralised corporate headquarters and cut its headquarters staff by 90% in one year."¹²³ He was not light-hearted; when his company acquired *Combustion Engineering* in late 1989, the Connecticut headquarters dropped from 600 to 100 people. After purchasing Strömberg, he cut their headquarters from 880 to 25. Finally, the headquarters of ABB went from 1,600 people at its creation in 1988 to just 100 by 1991. Barnevik completed these changes because he believes a company needs "a structure at the top that facilitates quick decision-making and carefully monitors developments."¹²⁴ A 2014 *Economist* article also highlighted the need for big business to cut their headquarters after a turn of the century increase, which the article blamed on globalisation. This was due to firms having more comprehensive operations to manage. However, with more economic stability, some

¹²¹ Van Creveld, *Command in War*, 6.

¹²² *Ibid.*, 7.

¹²³ William, Taylor, "The Logic of Global Business: An Interview with ABB Percy Barnevik," *Harvard Business Review* 69 no. 2 (March/April 1991), 99.

¹²⁴ *Ibid.*, 99.

companies such as *General Electronics*, planned to reduce costs of corporate headquarters by 45%, including a reduction in staff.¹²⁵

In the public sector there has been much examination of the ratio of organizational size to performance output. One study focusing on American state governments conducted that for certain state organisations to increase their performance, downsizing would be necessary.¹²⁶ The same study found that having a larger headquarters staff meant higher costs in terms of both money and time. This was due to leadership attempting to coordinate work and hold meetings, which resulted in leaders spending time away from their assignments and consequently, being too busy assisting subordinates.¹²⁷ This highlights the fact that having a smaller organisation to manage leads not only to an ease in coordination and management, but also increased business performance.

Additionally, having a smaller organisation reduces the amount of time-consuming red-tape, or administration. Jung and Kim found that effort is needed to reduce excess administration which imposes hardships on the employee and needlessly occupies time. By doing so, excess administration weakens employees' attitudes towards job satisfaction, workplace involvement, commitment, and reduces organisational performance.¹²⁸ In the early 1990s American government organisations made an effort to minimise red tape. One organisation made efforts in "reducing rules and constraints in human resource management and procurement procedures, serving public service customers, empowering public employees, decentralizing public service systems and fostering excellence in government agencies" resulting in worker satisfaction and productivity.¹²⁹ Also, the study demonstrated that organisations with more employees become less flexible, resulting in increased difficulty in coordinating outcomes and relationships with other branches and labour.¹³⁰ Therefore, in addition to size, if an organisation's headquarters wishes to increase performance they must also look at streamlining procedures and decreasing the amount of excess administration.

¹²⁵ Economist, "Fighting the Flab: Corporate Headquarters have put on weight and need to slim down again," *The Economist*, March 22, 2014, Business, <https://www.economist.com/business/2014/03/22/fighting-the-flab>.

¹²⁶ Chan Su Jung and Seok Eun Kim, "Structure and Perceived Performance in Public Organizations," *Public Management Review* 16, vol. 5 (2014), 636.

¹²⁷ Ibid., 636-637.

¹²⁸ Ibid., 626.

¹²⁹ Ibid., 626.

¹³⁰ Ibid., 637.

Another study conducted in 1975 by Frederick Brooks, a software engineer, examined the worker to output ratio on a software development project; this study has come to be known as *Brooks' Law*. He found that adding a significant amount of people to a project does not always result in the product being superior or completed quicker. This is due to all workers needing to be read into a project and understand their piece of the end result. Brooks writes “each worker must be trained in the [subject], the goals of the effort, the overall strategy, and the plan of work. This training cannot be partitioned, so this part of the added effort varies linearly with the number of workers.”¹³¹ Additionally, Brooks argues that with more people involved in a project, more coordination is required. This results in time being taken away from the project because there is too much time spent communicating through meetings and planning groups. The study found that “three workers require three times as much pairwise intercommunication as two; four require six times as much as two. If, moreover, there need to be conferences among three, four, etc., workers to resolve things jointly, matters get worse.”¹³² In comparison to an army headquarters, a large portion of planning processes and staff work is a series of conferences and briefings. Communications occupies much of a headquarters' time. According to Brooks, for a planning team be more productive, they need to be smaller, not larger. This is significantly import to a leader if they are trying to get a plan to subordinates as quickly as possible. As Brooks concludes, adding more people to a project increases the timeline, not condenses it.¹³³

An Army Headquarters: Structure, Function and History.

Before examining the structure of a headquarters, it is important to understand its function. The main role of an army headquarters is to provide command and control to its subordinate units, or sub-units. The headquarters staff executes the planning and dissemination of the commander's orders and intent. The headquarters provides direction, synchronisation, and battlespace management for the formation, enabling the commander to make decisions.¹³⁴ In order to complete these tasks, a formation will normally have three distinct headquarters. These are the tactical headquarters (Tac HQ), the main headquarters (Main HQ), and the alternate headquarters (Alt HQ). The Tac HQ is a small manoeuvrable headquarters which consists of the commander and his key advisors (artillery, engineers, etc.). The Main HQ is the brains of a formation and where the planning, analysis, and

¹³¹ Frederick Brooks, *The Mythical Man-Month: Essays on Software Engineering* (Reading (MA): Addison-Wesley Publishing Company, 1975), 18.

¹³² Ibid., 18.

¹³³ Ibid., 19.

¹³⁴ Ministry of Defence, *Land Operations* (Warminster: Land Warfare Centre, 2016), 167-169.

information passing is conducted. The Alt HQ is a smaller variant of the Main HQ and is used to assist with command and control when the Main HQ is unable to so.¹³⁵

In order to understand the workings of a British Army headquarters it is important to give a brief history of their staff system. In modern army headquarters the continental staff system is the main structure used to help support the commander's decision-making. This system can date its origins back to Napoleon's French Army. However, the British initially modelled their staff system off the Prussians, which divided their headquarters into manageable sections.¹³⁶ Initially, the British system consisted of three branches: a General (G) Staff to plan operations, an Adjutants (A) Staff to handle personnel, and a Quartermasters (Q) Staff to plan logistics. Another way to think of this is *mission, men, material*.¹³⁷ The A and Q (AQ) staff were traditionally paired together under one principal officer. The commander then essentially had two principal staff officers that reported to him directly. This system would remain in place until the Second World War, at which point a Chief of Staff (COS) or Brigade Major at the brigade level, was introduced by Field Marshal Montgomery.¹³⁸ While Montgomery was a fan of the COS position, General Viscount William Slim, who commanded British forces in Southeast Asia during the same period was not, stating,

I never adopted the Chief of Staff system... under this system the Chief General Staff Officer not only coordinates the work of the whole staff but is the mouthpiece of the commander to the other principal staff officers and heads of services, interpreting to them his commander's intent and wishes. I prefer to stick to the old British method of the commander dealing directly himself with his principal staff officers. Command is the projection of the commander's personality and, as such, is an extremely individual matter.¹³⁹

In a modern headquarters the COS system has become the standard. One British officer highlighted how successful this system was to managing the planning in his brigade headquarters,

The COS staff system in the British army, and the Canadian Army is actually vital. The [COS] would kick off whatever bits of planning we needed, and we divided the HQ into plan, refine execute model. A G5, G35 and a G3 and they were very clearly set up so we could hand plans across. The G5 planning very long term, The G35 planning the next month ahead, the G3 fighting the daily battle.¹⁴⁰

¹³⁵ Ibid., 171.

¹³⁶ Paul Johnston, "Staff Systems and the Canadian Air Force: History of the Western Staff System Part 1," *The Canadian Air Force Journal* 1, no. 2 (Summer 2008): 21.

¹³⁷ Ibid., 21.

¹³⁸ Ibid., 21-22.

¹³⁹ William Slim, *Defeat into Victory*, (London: Pan Macmillan, 2009), 240.

¹⁴⁰ Officer C (Major-General) British Army, interviewed by author, May 24, 2021.

The relationship between the commander and the COS is important for a headquarters. It needs to be a human and intellectual one. They need to be able to think through problems together and work well for a headquarters to succeed.¹⁴¹

In the 1980s, just before the Falklands War, the British Army began to phase in the current continental staff system used by the United States since the 1920s. This system was evolving to become the NATO standard. However, upon announcement of the Falkland Islands invasion, Brigadier Julian Thompson, Commander 3 Commando Brigade (3 Brigade), resorted his headquarters back to the familiar British staff system. He and his staff did not wish to trial a new system at war which had not been practiced extensively.¹⁴² However, upon return from the Falklands conflict, 3 Brigade conformed to the rest of the army and utilised the continental system. The continental staff system follows a structure like the British system; however, the branch functions are broken down further. The continental staff functions are as follows; G1 (Personnel and Administration), G2 (Intelligence), G3 (Operations) G4 (Logistics), G5 (Future Plans), G6 (Communications), G7 (Training/Lessons Learned), G8 (Finance), G9 (Influence Activities). A headquarters will also now have several specialist advisors such as a POLAD (Political Advisor) LEGAD (Law), and Padre/Chaplain (Spiritual Leader). These specialty advisors will report direct to the commander. With this increase of branches also came the increase of headquarters personnel.

Staff education is also important for a headquarters to succeed. In an army there are two streams of officer: those in 'line' positions (the frontline units) and 'staff' (those who fill planning and administration roles). An officer throughout their career will move between line and staff to gain experience. Therefore, it is important to define the staff officer's role and function. According to the British Army Staff Officer Handbook, the role of the staff officer is to assist a commander in constructing plans and putting the mechanics of those plans into action.¹⁴³ In order to successfully function on a commander's staff, an officer will attend Staff College. These colleges educate officers in the art of planning complex operations, and filling branch positions within a headquarters. The British Army has two institutions, the Land Warfare Centre and The Joint Services Command and Staff College.

¹⁴¹ Officer C (Major-General) British Army, interviewed by author, May 24, 2021.

¹⁴² Julian Thompson, *No Picnic: 3 Commando Brigade in the South Atlantic: 1982* (London: Pen and Sword Publishing, 1992), vi.

¹⁴³ Ministry of Defence, *Staff Officers Handbook* (Warminster: Land Warfare Centre, 2013), vi.

Headquarters Size.

Now that the evolution of the British Army staff system has been explained, one will examine the gradual growth of the headquarters. To highlight the growth, this section will use historical examples from two major conflicts, the 1991 Gulf war and the 2003 Iraq invasion. These engagements have been selected as they are the last two near-peer conflicts faced by Western conventional armies. This will be a similar type of conflict the British Army will face if confronted by Russia, so it is important to draw on these conflicts for data.

In 1991 the British Army deployed a division-size force to augment the United States. This combined force was looking to push the Iraqi military out of Kuwait. The division deployed consisted of two manoeuvre brigades, 7 Armoured Brigade (7 Brigade) and 4 Armoured Brigade (4 Brigade) under command of 1 (UK) Division. During this conflict these formations saw their headquarters size increase significantly. 1 (UK) Division increased by roughly four times that of a similar-sized headquarters at the end of the Second World War.¹⁴⁴ General Rupert Smith, the General Officer Commanding (GOC) 1 (UK) Division, saw his headquarters of 76 officers increase by 100 augmented personnel.¹⁴⁵ During the same conflict, 7 Brigade also saw their headquarters increase significantly. Brigadier Patrick Cordingley, the 7 Brigade commander, expected an increase, as his establishment was normally at reduced numbers during peacetime. On notification that his brigade would be deploying as the initial land component for Operation GRANBY,¹⁴⁶ 7 Brigade headquarters staff saw their establishment increased from twenty-three to nearly eighty.¹⁴⁷ 4 Brigade also saw their headquarters double over night. This was mainly in the way of an increase to the G2 shop, and the addition of a Deputy Chief of Staff (DCOS), Liaison Officers (LO), and signals squadron attached to the headquarters.¹⁴⁸ During the same conflict, General Peter De La Billere, the Joint Force Commander,¹⁴⁹ responsible for all deployed British forces to the region, noted his headquarters was continuously growing unsystematically and that officers were arriving from all three services either unannounced or unrequested. No one in the three services at

¹⁴⁴ King, *Command: The Twenty-First-Century General*, 146; Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 17.

¹⁴⁵ King, *Command: The Twenty-First-Century General*, 146.

¹⁴⁶ Operation GRANBY was the codename given to the United Kingdom's mission in the 1991 Gulf War.

¹⁴⁷ Patrick Cordingley, *In the Eye of the Storm: Commanding the Desert Rats in the Gulf War* (London: Hodder & Stoughton, 1996), 9.

¹⁴⁸ Officer A (Brigadier) British Army, interviewed by author, May 21, 2021.

¹⁴⁹ Joint Forces or Joint Capabilities is the doctrinal term used to describe Royal Navy, Royal Air Force (RAF), British Army, and United Kingdom Special Forces (UKSF) elements working in concert with each other.

the MoD had thought through what was needed in De la Billere's Headquarters. His COS, eventually analysed what staff were required, and sent redundant officers back to the United Kingdom.¹⁵⁰

Between the Gulf War in 1991 and the 'war-like phase' of Iraq in 2003, the headquarters size of a British armoured brigade increased by almost 25%. According to the 2003, 7 Brigade war diary, the headquarters reached around 650 members, with 383 of those being personnel in the command post (CP). Its war establishment of officers was forty-two in accordance with doctrine, but was manned to ninety-six for the 2003 Iraq invasion. In Operation GRANBY the total size of 4 and 7 Brigades were 288 and 306 respectively.¹⁵¹ This increase was due to "unnecessary duplication and unconstrained growth."¹⁵² A similar observation was made by a senior British officer who, when in command of a brigade, was given several people that were not asked for, such as Chemical, Biological, Radiologic, and Nuclear (CBRN) advisors and an increase of Watch Keepers. The commander stated that they had these positions filled in his headquarters, but they were secondary jobs, and the headquarters was functioning well without the additions.¹⁵³ A study conducted by the British Army shortly after the 2003 Iraq invasion found that a formation headquarters at war establishment, or that saw little personnel increases, found to be manageable. However, when there was unplanned or ill-advised growth problems were identified.¹⁵⁴ This echoes the findings of Brooks Law.

The growth is not just in the form of staff, but also vehicles. In a period where manoeuvrability is key to fighting a conventional war, having a large headquarters is counterintuitive. A large staff also means a large footprint on the ground. The headquarters of 7 Brigade reportedly held 240 vehicles during the 2003 Iraq invasion.¹⁵⁵ Not only is this hard to conceal from threats, such as aerial reconnaissance, it also produces a large electronic signature which could give away a position even if well hidden. Moving this organisation, which is regularly needed in a conventional conflict, would be difficult. With today's battlespace, there is an increase of fighting in densely populated and built-up areas. Under these conditions it would be extremely difficult to manoeuvre a large group of vehicles without congestion and under concealment. A smaller more dispersed

¹⁵⁰ Peter De La Billiere, *Storm Command: A Personal Account of the Gulf War* (London: Harper Collins Publishers, 1992), 131.

¹⁵¹ 7 Brigade War Diary, cited in Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 6.

¹⁵² *Ibid.*, 6.

¹⁵³ Officer B (Major-General) British Army, interviewed by author, May 22, 2021.

¹⁵⁴ Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 6.

¹⁵⁵ *Ibid.*, 6.

headquarters would minimise these issues. Furthermore, from previous experience working in Canadian and British Army headquarters, a CP with all its computers, map boards and radios needs to be torn down and moved in under an hour. Set up at the new location requires about an equal amount of time. Though this will obviously change with the size of the headquarters. Nevertheless, this will be harder to meet with the amount of equipment a larger staff possesses.

Siting, setting up in the new location, and establishing control of the formation is no different. With the consistent advancing that often occurs in a conventional war, a commander needs an agile headquarters. This was reiterated by one British divisional commander who said “the expectation was that if you stayed anywhere, on a [conventional] battlefield for more than about eighteen hours you are going to get hit. So, there was a strong initiative to keep moving and step-up, main, tac, those building blocks which are replicate in Western militaries headquarters. And that is more or less what we had in Iraq when I was the GOC.”¹⁵⁶ This was also highlighted by Brigadier Cordingley stating,

In the Gulf I believed a tank would be more appropriate...In war, when you know where you are going but have very little idea what the enemy will do, a distinction between command and control very quickly appears. The control measures are given out in the opening orders; command is coping with a fast-moving fluid battle. Clearly, while initial orders were being prepared, I needed to be with my staff to direct and advise. Once the operation was underway, I had to be able to talk to the troops and also my staff, which meant I needed to be on the radio net. I had to be able to see, sense, the battle the brigade was fighting. If I could not actually see it, I had to be poised to go to the problem area so that people would not have to waste time describing the ground to me.¹⁵⁷

Cordingley, would command his brigade by Challenger Tank and his Tac HQ. The Main HQ would be a short distance behind, usually a few kilometres and would join Cordingley when he stopped for an hour or more.¹⁵⁸ As 1 (UK) Division never stopped moving, and the brigades continuously leap-frogged each other conducting sequential attacks, the Alt and Main headquarters were continuously moving and setting up. Therefore, it was the correct decision to command from a more manoeuvrable headquarters.

The debate over the merits of a decrease in headquarters size is not a historically new one. But it is an issue that armies seem never to correct or get right. General Slim addressed this issue in a paper presented at the United States Army Command and General

¹⁵⁶ Officer E (General) British Army, interviewed by author, June 1, 2021.

¹⁵⁷ Cordingley, *In the Eye of the Storm*, 69.

¹⁵⁸ *Ibid.*, 210.

Staff College in 1952. He stated that “All British and all American headquarters are too big and should be cut down [and that] unless you constantly keep your eye on the size of your headquarters, it will grow out of all knowledge and usefulness.”¹⁵⁹ In the *Bartholomew Committee Final Report*, a lessons-learned document based on the 1940s events in Flanders stated that all formation headquarters were too large and that “this [was] mainly due to attached personnel, most of whom must be shed when mobile operations begin.”¹⁶⁰ The British Army Review also investigated the headquarters in the 1970s and found that confusion within a headquarters was due to the excessive size, and that formation headquarters should be reduced by roughly 50%.¹⁶¹

This is not just a British Army conundrum. Other NATO countries have been having similar issues with headquarters inflation. A Canadian Army mechanised brigade has seen a headquarters growth to an estimated 350 members and 80 vehicles.¹⁶² Furthermore, USMC officer, General James Mattis identified that a brigade headquarters in the USMC during war could be in excess of 200 members. For his Marine Expeditionary Brigade, he cut his headquarters down to 32 which is just over 25% of its wartime establishment.¹⁶³

Why the Growth?

Above, one has demonstrated how formation headquarters have become too large and that there is an institutional plea for a reduced headquarters. Therefore, it is important to recognise why a headquarters has grown. For the author, there are two fundamental reasons for this growth: technological advancement and institutional change.

Over the last two decades a formation headquarters and the battlefield have become more digitised. This leads to more positions dedicated to dealing with technology. For example, twenty years ago, a headquarters may have a half dozen computers and a photocopier to duplicate staff products such as orders for dissemination to subordinates.¹⁶⁴

¹⁵⁹ William Slim, “Higher Command in War,” *Military Review* 100 no. 3, (May-June 2020): 65-66

¹⁶⁰ United Kingdom Historical Sections Office of the Cabinet, *Bartholomew Committee: Final Report on lessons learnt from the operations in Flanders*, (Kew: United Kingdom Nation Archives, 1940), <https://ia800803.us.archive.org/8/items/FinalReportOfTheBartholomewCommitteeOnLessonsToBeLearntFromTheOperationsInFlanders/Final%20report%20of%20the%20Bartholomew%20Committee%20on%20lessons%20to%20be%20learnt%20from%20the%20operations%20in%20Flanders.pdf>.

¹⁶¹ Dermot Rooney, “Can we make Headquarters Simpler?” *British Army Review* 142, (Summer 2007): 64.

¹⁶² “Command and Movement: Brigade Tactical Movement,” (PowerPoint Presentation, Canadian Army Command and Staff College, Kingston, ON, created February 17, 2017).

¹⁶³ James Mattis and Bing West, *Call Sign Chaos: Learning to Lead* (New York: Random House, 2019), 59

¹⁶⁴ Officer E (General) British Army, interviewed by author, June 1, 2021.

This required very little in the way of information technology (IT) support. Today, almost everyone present in the headquarters has a laptop computer. With this growth in digitisation came the need for more IT and communications experts in a formation's signals squadron. This argument is reinforced by one British officer stating "communications were clearly going to be the issue. So, on the communications side in particular the radio side and the telephone system we had, that took up a lot of the manpower that was coming in [to the headquarters]." ¹⁶⁵ Another British officer who commanded a British battlegroup under American command in Iraq highlighted the same issue. His headquarters increased as he needed American communications equipment to talk to his higher headquarters and with American air support. So, with this technology came more people to run it, and staff to help plan and integrate the enablers. ¹⁶⁶

A formation has also added other technological tools. The arrival of the Unmanned Aerial Vehicles (UAV) has caused headquarters to grow. With the artillery using UAVs for target acquisition, there is now a dedicated staff employed to receive, analyse and disseminate the information being produced by this technology. ¹⁶⁷ Furthermore, mechanisation of armies has also led to the increase of staff. Though armies have been slightly mechanised going as far back as the First World War, this has increased to complete divisions being motorised. ¹⁶⁸ With manoeuvre warfare as the chosen doctrine of Western armies, consistent movement on the battlefield is key and, as previously identified, vehicle numbers have increased. With a significant vehicle fleet comes a need for an increase in maintainers and vehicle support staff.

A second reason for the size increase is institutional change. This includes the shift from the British staff system to the continental system. This change saw the increase from the G, A and Q branches to four staff branches (G1-4), and eventually the current establishment of nine separate branches. With the increase of branches came the increase of staff. There has been some criticism of the continental system arguing it consists of redundancies. Having the more substantial branches absorb less significant ones would streamline processes decreasing an overall headquarters size. ¹⁶⁹

¹⁶⁵ Officer A (Brigadier) British Army, interviewed by author, May 21, 2021.

¹⁶⁶ Officer C (Major-General) British Army, interviewed by author, May 24, 2021.

¹⁶⁷ Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 8.

¹⁶⁸ Smith, *The Unity of Force*, 119.

¹⁶⁹ Paul Johnston "Staff Systems and the Canadian Air Force: Part Two a Convolved Evolution," *Canadian Air Force Journal* 1, no. 3 (Fall 2008): 28.

The need for a joint headquarters also plays a part in institutional growth. The implementation of maritime and air personnel placed in headquarters to help with planning and support, a headquarters may grow because assets that were previously held at higher level of command are pushed down to lower-level headquarters. For example, where the coordination of helicopters or fighter aircraft is needed, these assets would previously be coordinated at the corps level. Now they may appear at the divisional level, or even as far down as battlegroup.¹⁷⁰ This does have its benefits for a commander, giving them the ability to use capabilities without request. Though, with these enablers come the staff and equipment to manage, plan and integrate, all leading to a headquarters increase.

Additionally, there has been a big push for multinational headquarters, especially when a coalition is involved. This also adds to an increase of headquarters staff in the form of LOs designated to provide information, intentions, capabilities and situational awareness of an assisting nation's forces.¹⁷¹ One British officer claimed the LOs in his headquarters were vital in the coordination of America assets. They stated, "we had the [United States] Marine Corps Air Naval Gunfire Liaison Company (ANGLICO) team which meant we could access [American] fires for any task that we needed. You know, that was very helpful."¹⁷² This observation was echoed by another officer, "never under value the importance of liaison officers ...they are really important because if all else fails, these are the guys who have listen to you, understand your way of thinking, and go to the Commanding Officers and say you need to do X,Y, and Z. So, it is vitally important to have very high quality LOs, which we did."¹⁷³ Though vital to success, LOs have added to a headquarters increase.

Slimmer is Better: Suggestions for a Reduced Headquarters.

Previously this chapter identified several motives for headquarters growth. Now, it will examine methods to downsize. General James Mattis was able to downsize his brigade headquarters from 200 to 32 by using a system he called *skip-echelon*. Since there are the same staff functions at each level of headquarters, using Mattis' technique, a commander can eliminate certain functions based on duplication. Mattis observed these "duplications wasted time and manpower and added no value."¹⁷⁴ So Mattis cut positions he deemed

¹⁷⁰ Canadian Armed Forces, *Battlegroup in Operations* (Kingston: Army Publishing Office, 2011), 86; Carter, "The Divisional Level of Command," 17; Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 9.

¹⁷¹ Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 9.

¹⁷² Officer C (Major-General) British Army, interviewed by author, May 24, 2021.

¹⁷³ Officer A (Brigadier) British Army, interviewed by author, May 21, 2021.

¹⁷⁴ Mattis and Bing, *Call Sign Chaos: Learning to Lead*, 59.

redundant. He states “I decided we didn’t need our own Chaplain or Public Affairs Officer or a host of other repeating functions that were being carried out at lower levels. Ashore at Fleet Headquarters, when I was dealing with a legal issue, I consulted the Navy lawyer on Admiral Moore’s staff, at sea, I consulted with the lawyer on the Marine staff.”¹⁷⁵ Mattis argues that with skip-echelon, if a function is not adding value to the headquarters, a commander should remove it to align the headquarters and reduce friction.¹⁷⁶

One British officer who commanded a division in Iraq suggested that with current technology, and the amount of bandwidth that can be transmitted remotely headquarters could be cut significantly. The officer suggested an idea which he called ‘reach-back.’ He stated “You could take that reach-back concept anyway you like you could have a headquarters that was further back in a safe area or have it all the way back in the United Kingdom... you could send projects off to be solved, you could have certain types of data being managed, to inform the progress of operations ... That’s the way I would make these headquarters more slim.”¹⁷⁷ With today’s technology ‘reach-back’ is a credible method to moderate friction within a headquarters.

General Slim, also frustrated by headquarters size, provided a suggestion in cutting numbers, though his recommendations appear to be a little more draconian in nature. Slim asserted,

As far as I know, there are only three ways of cutting down headquarters. One is by a flat, overall cut—you reduce your staff by say, 10 percent. I do that about once a year to the War Office, and the excruciating noise of the corks coming out of the bottles is heart-breaking! Another way of doing it is by elimination of complete sections. That is possible because you do find, especially in wartime, that around your headquarters all sorts of fancy sections grow up that you can really very well do without, or you can push farther back.

Lastly, a way, which I recommend to your attention, is to cut out one complete tier of the staff hierarchy. That is, roughly speaking you get rid of say, all the captains, and send them back to their regiments where they are very badly wanted, or you get rid of all the majors, and you let the captains do their own job and the majors’ jobs. In a big headquarters what you will find is that in effect this merely means that there is one note less on the file, and that’s no harm. Unless you constantly keep your eye on the size of your headquarters, it will grow out of all knowledge and usefulness.¹⁷⁸

¹⁷⁵ Ibid., 59.

¹⁷⁶ Ibid., 242.

¹⁷⁷ Officer E (General) British Army, interviewed by author, June 1, 2021.

¹⁷⁸ Slim, “Higher Command in War,” 65-66.

Though Slim's methods are a little harsh they have some merit. Headquarters' reductions need to happen, but the question is where to start? As much as each position in a headquarters is arguably important, there is redundancy. For example, there is no need for a headquarters to have a DCOS. This position does not deputise the COS in their absence; it coordinates the G1 and G4 function within the headquarters. This role is also done by the principle G1 and G4 staff officers who already advise on human resources and logistics. One could also combine such functions as the Air and Aviation coordination centres into one distinct function instead of two. Though each headquarters needs to be looked at individually, there is a clear argument for reduction.

Conclusion.

A well-run headquarters is vital to the success of any formation. Having a well-established staff couple with solid procedures will enable a commander to be successful on the battlefield. This chapter has shown the importance of a slimmed down headquarters. It demonstrated the evolution of growth through both institutional and technological means, and has provided several suggestions for cutting down a headquarters. It highlighted the fact this issue is not just a military one. It has been experienced by both the private and public sectors, two organisations which the army may wish to examine in order to improve productivity. Now that this chapter has highlighted how the size and structure of a headquarters can improve command and control, the next chapter will look at how to streamline procedures to allow for better command and control.

Chapter Three. Mission Command.

Introduction.

In the previous chapter, the headquarters size and structure were examined as how to better conduct command and control. This is crucial to success on a modern battlefield. An additional aspect vital to success are the processes that feed the headquarters and their manoeuvre units. Chapter three will examine these processes. It will look at the evolution of mission command, and the importance it plays on the modern battlefield. It will also look at orders and how they are becoming cumbersome and actually hinder command and control. Chapter three will aim to answer the research question: *how can operating processes be rationalised to better conduct command and control?*

Mission Command and Orders.

Since one has examined how the size and function of a headquarters impacts command and control, it is important to also examine how a headquarters can streamline staff processes, making it more effective on the battlefield. One way is through *Auftragstaktik* or *Mission Command*. This philosophy is one of the foremost components of modern-day command and control. Captain (later General) Adolf von Schell, a German exchange officer with the United States Army in 1931 explains mission command,

In the German army we use what we term *mission tactics*; orders are not written out in the minutest detail; a mission is merely given to the commander. How it shall be carried out is his problem. This is done because the commander on the ground is the only one who can correctly judge existing conditions and take the proper action if a change occurs in the situation.¹⁷⁹

In modern terms, mission command refers to the practice of providing one's subordinates with a clear intent, decentralising command down, and trusting them to fulfil the task as they see fit.¹⁸⁰ This is what one British divisional commander called being "in command, but out of control."¹⁸¹ This revolutionary idea was first executed by Napoleon. Van Creveld writes "unlike previous Commanders in Chief, Napoleon on campaign no longer attempted to keep the bulk of his forces concentrated under his own hand."¹⁸² To make decentralisation work, Napoleon took a number of steps: he organised his army into all-

¹⁷⁹ Adolf von Schell, *Battle Leadership* (Fort Benning, GA: Military History Section of the Infantry School, 1933), 6, 17.

¹⁸⁰ Canadian Armed Forces, *Land Operations*, 199.

¹⁸¹ Officer D (Lieutenant-General) British Army, interviewed by author, May 29, 2021.

¹⁸² Van Creveld, *Command in War*, 96-97.

encompassing organisations, created a process of regular reporting, created headquarters large enough to deal with incoming information, and lastly, he created a system to cut down on “command hierarchy and take a look, at will, at any part of the army or obtain any kind of information required.”¹⁸³ This development was echoed later, by the 1870 Prussian Army under Field-Marshal Helmuth Graf von Moltke, who created a number of steps to deter battlefield confusion by decentralising command down to his company commanders, a process van Creveld says “stood behind many of the German successes in both world wars, a system that in a somewhat watered-down form continues to operate...”¹⁸⁴ Though this concept had been around for decades, it was not adapted by the British Army until the 1970s and 1980s under former British Army of the Rhine Commander (BAOR), General Nigel Bagnall.¹⁸⁵ One British officer stated,

[There was a great] intellectual change that was taking place when I was [instructing] at [Army] Staff College, and I brought that with me to [my regiment]. And what I am talking about here is [General] Nigel Bagnall had created, well he didn’t create, he was reverting us back to the German operational system of *Auftragstaktik* in which the commander creates a vision and the troops under that command, fight that vision, and don’t have to constantly come back [to the commander]. That’s my philosophy, and that’s my philosophy throughout the Gulf War... there were issues that arose [in the Gulf] that I am aptly convinced we were right, and Nigel Bagnall was correct.¹⁸⁶

Though not formally introduced to the British Army until Bagnall, mission command was not unfamiliar. Many great military leaders and thinkers practiced the idea, learning it through the study of history. General Slim, who always had his staff produce his operation orders, made sure to write the intent paragraph himself, stating “it is always the most important, because it states – or it should – just what the commander intends to achieve. It is the one overriding expression of will by which everything in the order and every action by every commander and soldier in the army must be dominated.”¹⁸⁷ For mission command to succeed a clear intend paragraph is vital.

Additionally, for mission command to flourish there must be trust between the commander and their subordinates. One way this can be accomplished is by issuing, accurate, brief, and clear orders. A commander does not need to wait until they have the 100% solution to issue orders, they can provide them with the 80% solution and trust the subordinates to make the right decision. The rest of the information “may be ‘drip-fed’...

¹⁸³ Ibid., 97.

¹⁸⁴ Ibid., 144.

¹⁸⁵ James Storr, “A Command Philosophy for the Information Age: The Continuing Relevance of Mission Command,” *Defence Studies* 3, no. 3 (2003): 122.

¹⁸⁶ Officer A (Brigadier) British Army, interviewed by author, May 21, 2021.

¹⁸⁷ Slim, *Defeat into Victory*, 242.

as it becomes available to allow the tempo of an operation to be maintained.”¹⁸⁸ Over time, operation orders have become increasingly large and cumbersome. Sometimes this may be the case prior to commencement of a major campaign but should decrease thereafter. The problem with orders size was highlighted by one former divisional commander, “we have gotten too bureaucratic, and we produce massive amounts of paper that hardly anybody reads. I don’t quite know why we do it because it is not needed, and the use of graphics can save millions of words. As well as synchronisation matrices and graphical fire plans and all that kind of stuff. Engineer overlays, communication overlays. These should reduce the amount of verbiage.”¹⁸⁹ While text-based communication is still critical in some areas, the use of overlays and other graphical means of communication can foster mission command with subordinates. To stress the effect one can achieve through this method, General George Patton limited his orders to a page of writing with a sketch highlighting only what needs to be completed.¹⁹⁰

Even with a staff to assist, a brigade or division commander still needs to study the orders themselves to provide planning guidance. During the initial phases of Operation TELIC the 1st United States Marine Expeditionary Force issued a base order for the Iraq invasion to 1 (UK) Armoured Division that contained two and a half pages of missions or tasks. From this 1 (UK) Armoured Division produced their own order of thirteen pages of possible missions to its subordinate brigades.¹⁹¹ A British battlegroup second-in-command stated that his “unit [headquarters] had produced an operation order one inch thick prior to G-Day,¹⁹² but about an hour after the beginning of the operation only one page was still relevant.”¹⁹³ In the same operation two separate formations saw their orders double in size between the first and second editions. The contents which increased the doubling of size were not warranted.¹⁹⁴ To highlight the need to decrease the length of orders, one British officer stated, “80-page operation orders? Nobody is going to read that. What is the executive summary? What do people really need to know? They need to know what the [commander’s] intent is, what resources they have and what are their freedoms and constraints. You can give them that picture in a much shorter document and convey it much more efficiently. So, let’s have some more rigour in our staff training, to work out

¹⁸⁸ Ministry of Defence, *British Army Planning and Execution Handbook* (Warminster: Land Warfare Centre, 2018), 68.

¹⁸⁹ Officer E (General) British Army, interviewed by author, June 1, 2021.

¹⁹⁰ George Patton, *War as I Knew It* (New York: Bantam Books, 1980), 374.

¹⁹¹ Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 3.

¹⁹² G-Day is the term used to signify the start of the ground operations of a major operation.

¹⁹³ Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 11.

¹⁹⁴ *Ibid.*, 11.

how to write less.”¹⁹⁵ From the author’s experience having worked on a staff in both Planning (G5) and Operations (G3) cells, large orders are difficult to read and analyse in a timely manner. They take up much needed planning time in accordance with the 1/3 - 2/3¹⁹⁶ rule. Furthermore, having multiple assigned missions goes against many armies’ doctrine. In Canadian doctrine, a mission statement will contain only one mission task verb.¹⁹⁷ In British doctrine “a subordinate should not be required to execute a mission, or plan a subsequent one, which contains more than one or two tasks (or at most three) and a unifying purpose.”¹⁹⁸ This allows understanding of the task at hand and limits confusion.

Optimising Mission Command.

To minimise the size of orders, there are several tools a commander may use, mission command being the most significant. Well-practiced drills are another. Brigadier Chris Hammerbeck stated that during his time as Commander, 4 Brigade in the 1991 Gulf War practiced several drills such as the regrouping of battlegroups on the move and at night and echeloning one battlegroup through another in order to keep momentum on the attack.¹⁹⁹ These drills were conducted in Kuwait prior to Operation DESERT SABRE. One British officer stated that conducting drills such as these “was a great saviour of time and made the manoeuvre battle much easier.”²⁰⁰ Hammerbecks’ superior commander, General Rupert Smith, also stressed the importance of drills. Smith only issued a detailed set of orders, up to the line of departure (LOD) to include the breaching the enemy barrier plan, and the conduct of a forward passage of lines (FPoL) with the 1 (US) Infantry Division. Upon completing the FPoL, Smith was able to fight his subsequent battles through a series of short radio orders and map overlays (containing objectives, boundaries, and report lines) issued with the initial order. Smith was able to fight in this manner because his division practiced drills and procedures as part of work-up training, allowing them to manoeuvre and react to complex situations without receiving orders.²⁰¹ The practicing of drills allows the attacking force to keep its momentum and get into the enemy’s OODA (Orient, Observe, Decide, and Act) loop.

¹⁹⁵ Officer E (General) British Army, interviewed by author, June 1, 2021.

¹⁹⁶ The 1/3 2/3 Rule is the concept that a commander uses 1/3 of their time available to conduct planning of an operation, allowing the remaining 2/3 of time to be used by subordinates.

¹⁹⁷ Canadian Armed Forces, *Staff Duties for Land Operations* (Kingston: Army Publishing Office, 2008), 393.

¹⁹⁸ Storr, *The Command of British Land Forces in Iraq, March to May 2003*, 5; A unifying purpose is the overarching reason to why an operation is taking place.

¹⁹⁹ Chris Hammerbeck, Manuscript. Commander 4 Armoured Brigade Operation Granby Training Directive, version 1.5.

²⁰⁰ Officer A (Brigadier) British Army, interviewed by author, May 21, 2021.

²⁰¹ Rupert Smith, “The Gulf War: The Land Battle,” *RUSI Journal* 137, no. 1 (1994): 4; Cordingley: *In the Eye of the Storm*, 140.

The OODA Loop is the creation of United States Air Force (USAF) fighter pilot Colonel John Boyd. According to Boyd, the premise of this theory is when a formation is in contact with the enemy, the commander must observe their adversary, orient their forces in a direction of advantage, decide when, where, and on what terms to engage, then act upon said decision. The force with the faster OODA reaction will be the victor.²⁰² The only way this type of action can be implemented is through mission command. Van Creveld echoes this idea, stating that commanders need to grant junior commanders the ability to select their own action by the situation on the ground. This will minimise the amount of time for a headquarters to analysis data and produce orders.²⁰³

Rehearsals are another method which can be used to minimise orders size. The Combined Arms Rehearsal (CAR) is a method of using a large-scale map broken down into grid squares, recreating the area of operations (AO). During a CAR the Formation commander, manoeuvre commanders, support-arms commanders, and staff officers, talk through their part of a plan under the guidance of the commander. This method ensures all participants understand each other's portion of the plan and know how the action will be sequenced. For this process a map creates a common operating picture allowing for collective visualisation and the understanding of one's part in the plan.²⁰⁴ The CAR is not the same as a *War Game* which is part of the planning process. The CAR is done after the Course of Action (COA) has been selected and orders distributed. That said, it may highlight some friction and sequence points which then maybe put into a subsequent Fragmentary Orders (Frag O), but this is not the purpose of the CAR.

During the 2003 Iraq invasion the 1st Marine Division of the USMC conducted a large CAR with every vehicle of the division represented by 8,000 Lego blocks. The 1st Marine Division had never moved a formation of that size before, with one officer stating "We'd never done it before. We were not familiar with it. We had to work out what it looked like. We had to imagine it."²⁰⁵ The CAR allowed the 1st Marine Division headquarters to see the physics and challenges of moving 8,000 vehicles, it allowed them

²⁰² Scott MacIntosh, "Wingman Philosopher of MiG Alley: John Boyd and the OODA Loop," *Air Power History* 58 No. 4 (Winter 2011): 27.

²⁰³ King, *Command: The Twenty-First-Century General*, 270.

²⁰⁴ Anthony King, *The Combat Soldier: Infantry Tactics and Cohesion in the Twentieth and Twenty-First Centuries* (Oxford: Oxford University Press, 2013), 291, 289.

²⁰⁵ Lieutenant-Colonel Clarke, 1st Marine Division Deputy Chief of Staff Operations quoted in King, *Command: The Twenty-First-Century General*, 272.

to visualise the time and space.²⁰⁶ Upon the conclusion of the CAR, Mattis affirms “the units knew the order of attack and which was priority... well-brief aviators knew the scheme of manoeuvre... Logistics officers were now alert to when we would be expending a lot of ammo or where we would need fuel, enabling them to anticipate how to keep us on the move.”²⁰⁷ In the end, the CAR allowed the subordinate commanders to understand Mattis’ intent and anticipate and exploit certain actions in lieu of formal orders.

Skill and experience also help with reducing orders size. According to Storr, this is the most significant tool a commander can utilise. He states, “skill and experience are far more important than the preparation of long operation orders.”²⁰⁸ One way to gain skill and experience is through intellectual development and problem-solving. This may seem arbitrary to any soldier, but exercises where a commander practices likely scenarios will make for ease on the battlefield. This does not have to be done with manoeuvring units on the ground; it can also be practiced through Computer Assisted Exercises (CAX), Cloth Model Exercises (CMX) or Command Post Exercises (CPX). During these exercises, instead of issuing an operation order and fighting through a scenario, a commander should “consider a wide range of problems in order to gain individual and collective understanding of how to deal with typical situations.”²⁰⁹ Brigadier Hammerbeck did just this prior to deployment. He conducted what he called ‘study days’ in Munster Germany, upon receiving warning he may be deployed. These study days were intended for all the commanders and staff within the brigade down to the squadron, battery and company level. Here, he sent out historical scenarios in which the officers ‘fought’ to gain the experience of manoeuvring a brigade.²¹⁰ Not only do these exercises improve problem-solving, but they also help with improving other important dynamics of warfighting such as building teamwork and unit cohesion.

Mission Command and our Adversaries.

A number of adversaries use the Soviet system of command and control. Where they conduct centralisation of planning, execution, decision-making, and command. This was witnessed in both 1991 and 2003. Here, Saddam Hussein and his sons had complete authority over military matters and were notorious for micromanaging their generals and

²⁰⁶ Ibid., 273.

²⁰⁷ Mattis and Bing, *Call Sign Chaos: Learning to Lead*, 88.

²⁰⁸ James Storr, “Short Orders,” *British Army Review* 143 (Autumn 2008): 55.

²⁰⁹ Ibid., 55.

²¹⁰ Chris Hammerbeck, personal e-mail to author, January 26, 2021; Chris Hammerbeck, Manuscript. Commander 4 Armoured Brigade Operation Granby Training Directive, version 1.5.

not consulting with military authorities. Additionally, these experts were afraid to offer advice, or offer negative situation reports for fear of repercussions.²¹¹ The “centralised power by Saddam and his sons meant that the necessary co-operation between the different forces was almost completely absent. For example, Iraqi corps commanders lacked the authority to move units or demolish bridges without permission from Saddam. Sometimes Baghdad ordered Iraqi units to move without informing the commanders of their parent corps.”²¹² Since the centralised system has proven to lack success, Russia is now re-evaluating its command and control methods.

Russia still uses a centralised system of command and control. However, there has been some speculation they are making a doctrinal shift towards mission command through lessons learned in Syria and Ukraine.²¹³ Their CGS, Valery Gerasimov has identified that the new generation of Russian officers needs to have the ability to quickly assess a situation and make timely decisions. He argues that Russian commanders need to use initiative and adopt a calculated amount of risk. If adopted into doctrine these traits of mission command would be a parting from their standard system.²¹⁴ Evidence of this shift can be observed on one of Russia’s major exercises, VOSTOK 2018. Here, small unit commanders were given an opportunity to practice mission command. On this exercise there was an assignment, where a small number of units conducted an amphibious landing. Once landed, sub-unit commanders were given the authority to practice “mission-command in performing long-range combat raids on challenging terrain.”²¹⁵ Though Russia is believed to be examining a theory similar to mission command, it has yet to implement one. This could be due to some senior leaders, both political and military, may be fearful of independent thought amongst junior commanders. Nonetheless, through the evidence mentioned above, Russia suggests it is looking to move away from “the previous tradition of the centralised command, [and allow for] more planning, decision-making and execution authority ... to the lower [levels] of command.”²¹⁶ Thus, a culture of mission

²¹¹ Barry, *Blood, Metal and Dust*, 178-179.

²¹² *Ibid.*, 179.

²¹³ Dmitry Adamsky “Discontinuity in Russian Strategic Culture? A Case Study of Mission Command Practice,” George C. Marshall European Center for Security Studies, accessed August 23, 2021, <https://www.marshallcenter.org/en/publications/security-insights/discontinuity-russian-strategic-culture-case-study-mission-command-practice-0>.

²¹⁴ *Ibid.*

²¹⁵ Daivis Pretraitis, “Russian Mission- Command in VOSTOK Strategic Exercises,” *Defence & Security Analysis* 35 no. 1 (2019): 101.

²¹⁶ Dmitry Adamsky “Discontinuity in Russian Strategic Culture? A Case Study of Mission Command Practice,” George C. Marshall European Center for Security Studies, accessed August 23, 2021, <https://www.marshallcenter.org/en/publications/security-insights/discontinuity-russian-strategic-culture-case-study-mission-command-practice-0>.

command may emerge in the near future. If this is the case, it could necessitate a significant change to the way the West conducts conventional warfighting.

Conclusion.

Chapter three identified how a commander can better conduct command and control. The use of small direct orders are key to mission success. As a number of sources have shown large orders are cumbersome and cause confusion, thus hindering command and control. The key to reduced orders is the use of mission command. This requires trust in subordinates and a clear intent for the mission. Providing these attributes will avoid large orders and micromanagement by commanders. In the end, this will result in a commander getting into an enemy's OODA loop and creating greater mission success. To make up for scaled down orders, more rehearsals, CARs or planning exercises are required. This will allow subordinates to visualise the commander's intent, and react to decisions without hesitation. Ultimately, the chapter demonstrated the importance of decentralised command, and highlighted the failures of what excessive centralisation can lead to in war. This chapter helped answer the research question: *how can operating processes be rationalised to better conduct command and control?* The coming chapter examines the importance information has on helping the decision-making cycle and improving command and control.

Chapter Four.

Intelligence Preparation of the Battlefield: Information Advantage and Enabling Command and Control.

Introduction and Definition.

Former British Prime Minister Benjamin Disraeli once said, “the most successful people in life are generally those who have the best information.”²¹⁷ So too is it on the battlefield. The commander who can gather information the fastest, analyse it, and then make a sound decision earlier than their enemy, will be the most successful. Having argued in the previous chapter that methods such as short orders and mission command are key to battlefield success, the goal of this chapter is to look at how information can be used to enable command and control, and how it can also be used to gain an advantage over one’s adversary.

Information is a significant factor in war, as a weapon, a means to feed decision making, and a tool to influence a desired outcome. As noted in chapter one, our adversaries are keen to dominate the information environment, using it to operate under the threshold of war. Therefore, it is key for a commander to get ahead of an adversary to out-manoeuver them in an information environment and gain information advantage. As General Nicholas Carter notes, “the character of politics and warfare is evolving rapidly, driven by the pervasiveness of information and the rate of technological change.”²¹⁸ That is why the United Kingdom has developed a new doctrine regarding information advantage.

According to the MoD, information advantage is defined as “the credible advantage gained through the continuous, adaptive, decisive and resilient employment of information and information systems.”²¹⁹ It is the “bedrock of decisive manoeuvre in the physical, virtual and cognitive dimensions. [One] will exploit information to improve understanding, decision-making, execution, assessment, and resilience... information advantage will anchor all other activities from tactical to strategic.”²²⁰ The manner which information is leveraged plays a significant role in how to defeat or contain an adversary.²²¹ Therefore, “defence must harness [information] or be left behind... Information is no longer just an enabler, it is a fully-fledged national lever of power, a critical [tool for] understanding,

²¹⁷ Benjamin Disraeli, *Endymion* (London: Longmans-Green & Company, 1880), 329.

²¹⁸ Nicholas Carter, “Annual Chief of the Defence Staff Lecture,” (Lecture presented at the RUSI, London, UK, December 11, 2018).

²¹⁹ Ministry of Defence, *Information Advantage* (London: Ministry of Defence, 2018), 7.

²²⁰ Ministry of Defence, *Integrated Operating Concept 2025 Primer* (London: Ministry of Defence, 2020), 9.

²²¹ Berman, Felner and Shapiro, *Small Wars, Big Data*, xiii.

decision-making and tempo, and a ‘weapon’ to be used from strategic to tactical level for advantage.”²²² This is why in a time of persistent engagement, information advantage must be leveraged to exploit success on the battlefield.

Information as a Command and Control Tool: Making Better Decisions Faster.

The most vital component a commander can possess on the battlefield is timely, and accurate information. Information is crucial to the aptitude of a commanders understanding and their ability for enhance decision-making. Information “can significantly enhance tempo and momentum, thereby offering significant advantage.”²²³ In order for information to enable a commander in their decision-making, it must be credible, and as complete as possible. When it cannot be complete, clarification on what information is lacking is key.²²⁴ Identifying this absence of information will allow the commander to allocate specific resources to fill the gap.

Credible, and complete information gives the commander situational awareness of the battlefield. Situational awareness is the essential information needs associated with operational goals that assist a commander on understanding the evolving chaos on the battlefield. This includes the locations of one’s own forces, the enemy force, human terrain and local populace and the natural environment and topography. This information can be provided by reports, data, and deployed ISTAR sensors. These combined factors assist the commander in making timely decisions.²²⁵ For example, a reconnaissance patrol may report back to a commander that a preferred route is not passable by wheeled vehicles, or a sub-unit in contact, can provide the disposition and location of an adversary. Information like this allows a headquarters to decide and act to defeat the enemy in a timely manner. Situational awareness also allows a subordinate commander to employ Boyd’s *OODA loop*, coupled with mission command to make their own decision, thus gaining advantage.

One way in which situational awareness can be harnessed is through technology such as the Force XXI Battle Command Brigade and Below/Blue Force Tracker (FBCB2/BFT). This is an American Global Positioning Satellite (GPS) system, used as a guided tracking tool which identifies the location of every friendly force unit on the ground and projects them on a digitised map. Additionally, enemy locations can be added by a

²²² Ministry of Defence, *Information Advantage*, iii.

²²³ Ibid., 9.

²²⁴ Ibid., 9.

²²⁵ Jennifer Riley et al, “Collaborate Planning and Situation Awareness in Army Command and Control,” *Ergonomics* 49, 12 (2006): 1141.

headquarters, or individuals on the ground through an e-mail system, allowing everyone on the battlefields to have real-time situational awareness. During the 2003 Iraq invasion, the United States provided the 3 (UK) Division with several BFT devices to install in their vehicles down to the company level. This addition to British forces aided in interoperability.²²⁶ One British officer who took part in the invasion praised this addition to British vehicles, stating “we had blue force tracker which had been fitted to elements of the brigade by the Americans, and we had the screens to go with them. So, in the initial phases, it made a hell of a difference, in that it allowed us to at least see more of the brigade from the headquarters, than we had previously been able to do so. It also gave us certainty about locations such that we could reduce the risk of fratricide.”²²⁷ This technology not only provided situational awareness, it also assisted in the reduction of casualties.

With the increase of situational awareness tools and ISR sensors (UAV, Snipers, Close Observation Platoon) in the possession of a commander, they and their staff must be cognisant on the growth, value and tempo at which information is flowing into the headquarters. Large streams of information may become lost or outdated as the situation changes, causing the analysis and action-cycle to become a waste. Additionally, it may take time for a headquarters to identify this waste, and staff may continue to process old, irrelevant, or duplicate information, again slowing down the decision-making cycle and causing loss of initiative for the formation in the fight.²²⁸ To highlight this fact, in the Vietnam War the American the Combined Intelligence Centre received roughly three million pieces of raw intelligence each month. Out of these documents, after analysis, an estimated 10% of these documents were actually viable and actionable information.²²⁹ Examples like this, coupled with the headquarters organisational structures resulted in commanders taking far longer than their less advanced adversary to completed decision-cycles.²³⁰ It is like Carl von Clausewitz wrote, “many intelligence reports in war are contradictory; and even more are false, and most obtained are uncertain.”²³¹ This point was echoed by one British officer stating,

This is about extraction of simplicity from complexity. You can overload the command and the staff, especially if you are operating a Chief of Staff system, of Battlegroup, Brigade, or Divisional level. He has really got to filter out what

²²⁶ Barry, *Blood, Metal and Dust*, 152.

²²⁷ Officer F (Lieutenant-General) British Army, interviewed by author, June 11, 2021.

²²⁸ Rooney, “Can we make Headquarters Simpler?” 66-67.

²²⁹ Van Creveld, *Command in War*, 246.

²³⁰ *Ibid.*, 251.

²³¹ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 117.

matters and what doesn't. And it is really hard, because you know sometimes it is obvious and other times what is actually important only appears important in hindsight. So how you extract out what to make useful, is really important because you can get absolutely bemused by that detail.²³²

Another senior officer emphasised this point saying,

My advice to commanders, although it is getting more and more complicated because they have more and more information, is that at some stage, you have to cut yourself off, because if you don't, you will get more information coming in, which may make you change your mind, and eventually you will bring yourself to a complete stand still. You have to say 'right that's enough information, I know roughly what I got to do, or I know exactly what I got to do, and I roughly have all the information I need, now let's get on with it, and get it right!'²³³

Making sure a commander has the right information is key. However, too much information can flood the decision-making process. This is where mission command can help. If a subordinate understands their commander's intent, they can step away from that information source when they have the adequate information, and act.

Additionally, the size of a headquarters has an impact on the flow of information. One study found that a battlegroup headquarters processes information from sensors in about half the time of a brigade, and a division takes twice as much time as a brigade. This is not because of the weight of information entering the headquarters, but because of the number of headquarters personnel. The study found if a headquarters reduced their staff by roughly 40%, the time to process information from sensors to doer was reduced by 30%, and errors were cut in half as the information travelled between less people.²³⁴ This stresses the point that a reduced staff can develop a quicker action cycle thereby, gaining information advantage. Furthermore, to prevent a bottleneck of data flow, information must vigorously be "sought by the top using its own independent means, [not] merely just demanding [one's subordinates] report on everything, all of the time."²³⁵ This will also help with getting the information immediately, instead of relying on subordinates pushing information through situation reports in an untimely manner thereby slowing down the decision-making cycle.

This section has demonstrated the importance of information management, and the value it has on situational awareness and gaining information advantage. It is important for a commander to avoid being bogged down with too much information, and it is his staff

²³² Officer C (Major-General) British Army, interviewed by author, May 24, 2021.

²³³ Officer B (Major-General) British Army, interviewed by author, May 22, 2021.

²³⁴ Rooney, "Can we make Headquarters Simpler?" 67-68.

²³⁵ Van Creveld, *Command in War*, 272.

officers who need to aid in this challenge. With the vast number of sensors on the modern battlefield this can be difficult. That is why it is better for a commander to receive 80% of the information upfront, rather than waiting for 100% at a later time. This will allow the commander to keep the initiative.

Human Intelligence and War Amongst the People.

With the release of the 2021 *Integrated Review*, the United Kingdom has acknowledged the changing nature of war. The paper recognises through recent conflicts in Ukraine and Iraq that wars will take place in highly populated areas, which are also highly connected via the internet and smart phones. Through these connections, people have become an intricate piece in establishing victory in war. As Hew Strachan highlighted “war has come to be seen in terms less of destroying the enemy than seeking influence.”²³⁶ How one seeks influence is twofold: one is by winning the trust of the people, which in turn can provide much needed intelligence; the second is by using information to win the cognitive victory over a population, at home and abroad, gaining the support needed to secure success. This is what General Rupert Smith refers to as *war amongst the people*.

War amongst the people is the idea that war will be fought with both the opponent and population in mind. The objective becomes to change intentions and will of both. Smith explains,

In the world of industrial war, the premise is of the sequence peace-crisis-war-resolution, which will result in peace again, with the war, the military action, being the deciding factor. In contrast, the new paradigm of war amongst the people²³⁷ is based on the concept of a continuous crisscrossing between confrontation and conflict, regardless of whether a state is facing another state or a non-state actor. Rather than war and peace there is no predefined sequence, nor is peace necessarily either the starting or the end point: conflicts are resolved, but not necessarily [the] confrontations.²³⁸

²³⁶ Strachan, *The Direction of War*, 125

²³⁷ According to Smith War Amongst the people has six characteristics: “1) *the ends for which we fight are changing* from tangible objectives of interstate war to more malleable objectives to do with individual and societies that are not states. 2) *We fight amongst the people*, a fact amplified literally and figuratively by the central role of the media: we fight in every living room in the world as well as the streets and fields of a conflict zone. 3) *A conflict tends to be timeless*, since we are seeking a condition which must be maintained until an agreement on a definitive outcome, which may take years or decades. 4) *We fight as not to lose the force*, rather than fighting by using the force at any cost to achieve the aim. 5) *On each occasion new uses are found for old weapons*, those constructed specifically for use in a battlefield against soldiers and heavy armaments, now being adapted for current conflicts since the tools of industrial war are often irrelevant to war amongst the people. 6) *The sides are mostly non state* since we tend to conduct our conflicts and confrontations in some form of multinational grouping, whether it is an alliance or coalition, and against some party or parties that are not states.” Smith, *The Unity of Force*, 17.

²³⁸ Ibid, 16-17; General Nicholas Carter also discusses *war amongst the people* in Nicholas Carter, “The Divisional Level of Command,” *British Army Review* 157, (Summer 2013): 9.

This defines the nature of war the West is encountering, not just with Russia, but around the world. In the sense that it is non-linear and fought amongst the population in the means of information, disinformation, deception, and subversion.

Berman, Shapiro, and Felter, agree with Smith that in modern conflict, the struggle “is fundamentally not over territory but over people,” because “the people hold critical information.”²³⁹ That is, “specifically the knowledge citizens possess... is the key factor determining which side has the upper hand...”²⁴⁰ Through the local population, a commander can gain influence and eventually information that can provide advantage. To emphasise the importance of winning over the people, United States Army General, Stanley McChrystal introduced the concept of *Courageous Restraint* to NATO’s International Security Assistance Force (ISAF) in Afghanistan. Here, McChrystal instructed commanders to cease escalating to the use of specific munitions unless it was necessary. Particularly artillery and close air support. Minimising the use of these weapons would reduce the risk of civilian casualties, thus helping to gain credibility amongst the population. These munitions were only to be used if the survivability of ISAF forces or civilian people or property was directly threatened, even if that meant an engagement with the enemy dragged on.²⁴¹ McChrystal’s reasoning for his policy was twofold: one, it was morally correct; and, two, he believed, like many, that the coalition would not win the war in Afghanistan, without the support of the people.²⁴² This is true, as one study found in war civilian casualties affect attitudes of the population and can have great operational impact. That is, the side that causes harm to the local populace will suffer from attacks itself. Evidence from the study indicated that casualties caused by coalition forces in Iraq led to increased violence against those forces.²⁴³

The British Army adopted a similar stance early in Helmand Province. When 52 Brigade arrived in Afghanistan in 2007, its commander, Brigadier Andrew MacKay had a new proposal for winning Helmand. His campaign plan was to use an effects-focused approach,²⁴⁴ called influence operations, to secure the province. Here, the Brigadier used

²³⁹ Berman, Felter and Shapiro, *Small Wars, Big Data*, 9.

²⁴⁰ *Ibid.*, 16.

²⁴¹ Stanley McChrystal, *My Share of the Task: A Memoir* (New York: Penguin Publishing, 2013), 312.

²⁴² *Ibid.*, 312.

²⁴³ Berman, Felter and Shapiro, *Small Wars, Big Data*, 199-200.

²⁴⁴ *Effects Based or Focused Approach* has two philosophies. First, operations do not focus on a physical objective or target; for example, holding ground. They look to achieve an end-state through a system of capabilities and activities to influence an outcome or actor. Second, they incorporate outside agencies such as the Foreign, Commonwealth & Development Office into planning, to help meet operational and strategic objectives. Farrell, Rynning, and Terriff, *Transforming Military Power since the Cold War*, 145.

non-lethal effects teams and assessed the impact of stabilisation activities in the province. When his brigade inevitably had to go into combat and clear the Taliban from an influential area, they designed a psychological operations campaign which reassured the local population and encouraged the Taliban to leave to minimise collateral damage.²⁴⁵

People are one of the greatest sources of intelligence. Most Western armies have now added a HUMINT branch to their Intelligence Corps. The purpose of these cells is to interact with the local population, gain their trust and exploit pertinent information on the enemy and human terrain. Consequently, a commander must focus not just on educating themselves about the enemy but must also learn about the local population. In a modern conflict where war is amongst the people, one needs to learn what separates the two. This will allow a commander to gain the advantage.²⁴⁶ Therefore HUMINT is vital as it helps with what one former Special Forces officer deemed *situational understanding* of the battlespace. He states,

The intelligence community looks for situational awareness, actually what you are looking for as a commander is situational understanding. So, if you do not understand the culture, you do not understand where the community is coming from, their past. If you go to Africa and don't look through a tribal lens, you will misunderstand what you are looking at. But that is situational understanding, not situational awareness. We seek situational awareness, who is where, doing what. Actually, the fact, understanding behaviours, inclinations, responsibility, relationships. All that substance matters more.²⁴⁷

Situational understanding can assist a commander in defining the problem in their AO. This was the approach taken in 2006 by the Regional Command South Commander (RC (S))²⁴⁸ in Afghanistan, Brigadier-General David Fraser.

Afghanistan is a country comprising several different tribes and factions influencing the land, including territories where coalition forces were operating. To be successful in these areas it was important to connect with the people, to demonstrate that you can be of greater value to them, than the warlords. To do this, Fraser looked to people with key skills within his organisation. Fraser believed that there was no one better trained, to get amongst the people and gain trust than a police officer. Fraser stated,

Who knows how to gain the trust [of people best]? Not the military. Not the diplomats. Not the NGOs. It's the police. Cops think differently than soldiers. They work a beat. They show up over and over. They get to know people. They

²⁴⁵ Ibid., 163-164.

²⁴⁶ Smith, *Unity of Force*, 390.

²⁴⁷ Officer D (Lieutenant-General) British Army, interviewed by author, May 29, 2021.

²⁴⁸ RC (S) consisted of the British (Helmand), Canadian (Kandahar) and Dutch (Uruzgan).

help people. In time, people learn to trust them, and they tell them things...a talented police officer can tap into local knowledge and gather personal opinions about what is going on [in a region].²⁴⁹

So, when Fraser was putting together his headquarters in Kandahar, he looked for someone with a policing background. He found this in army reserve officer and Vancouver City Police constable, Major Harjit Sajjan. A Sikh, with the background in organised crime, Sajjan gained the respect of the local population through mutual understanding and culture.

Assigned to the headquarters G2 cell, Fraser explained his logic for having Sajjan on his staff, “I need [a] police mentality to help my intelligence guys understand the Taliban. They’re not a formed army; they’re thugs, a bunch of pick-up guys running operations no different than gangs [back home].²⁵⁰ This method proved fruitful for RC(S). Sajjan was able to get amongst the population, gaining the trust of many prominent elders and locals. Fraser stated,

Harjit dug in. He started talking with everyone, and he was good at it. He got a whole bunch of information reported it in substantial detail. Stuff he gathered was primary source, from the Afghans themselves. We compared that evidence with our other data sources. If all those sources said the same thing, then the raw data became actionable intelligence. That's how, overtime, we built situational awareness. Based on that awareness, we came up with a plan to deliver the effects I was trying to achieve. Harjit had helped us connect with the locals.²⁵¹

Another source of HUMINT was Fraser’s Padre, Captain Sulyman Demiray who was of Muslim faith. Fraser comprehended Demiray’s greater importance when he recognised Demiray was the only member of the Task Force who could enter a mosque legitimately.²⁵² Fraser told Demiray to “engage the Muslim leadership. Talk to the religious leaders, professors and elders and start building relationships with them. Show them we are here to listen and help. That's exactly why we're all here. I can make that point in local political circles, but I can't in religious circles. You can.”²⁵³ Through attending local mosques and praying with the population, the Padre was able to gain trust leading to important intelligence. He discovered the Taliban were providing the funds to operate the mosques in Kandahar region, as well as key messages the imams were to preach.²⁵⁴ Demiray unearthed information which ISAF, who had been operating in the country for roughly four years, was unable to obtain. They were unaware the Taliban was that rooted

²⁴⁹ David Fraser and Brian Hanington, *Operation Medusa: The Furious Battle that saved Afghanistan from the Taliban* (Toronto: McClelland & Stewart, 2018), 39.

²⁵⁰ Ibid., 40.

²⁵¹ Ibid., 40-41.

²⁵² Ibid., 42.

²⁵³ Ibid., 42.

²⁵⁴ Ibid., 44.

in religious circles.²⁵⁵ Fraser states “In the campaign for hearts and minds, while we were dropping leaflets out of airplanes, the Taliban were preaching weekly to the faithful who were all at the mosque to learn what was going on, what it meant, and how they as devout Muslims should respond... No wonder we were making so little headway!”²⁵⁶ Following the Padre’s discovery, the funding to the mosques, and salaries of religious leaders would now be paid directly from the Minister of Hajj and Religious Affairs, the government established new training centres to re-educate religious figures in the teachings of the Qur’an, and not Taliban literature. Religious inspectors and intelligence officers would frequent the area engaging in dialogue with the population, and the imams and mullahs were paid a bonus for not teaching Taliban propaganda.²⁵⁷ These two examples demonstrate the importance of HUMINT and the part it can play on influencing the local population and contributing towards battlefield success.

Information Manoeuvre and the Information Battlespace.

Warfare is now seeing the evolution of a new manoeuvre space operating parallel to the physical realm, this is known as information manoeuvre.²⁵⁸ Before one discusses the notions of information manoeuvre, it is important that manoeuvre is defined in the context of warfare. Manoeuvre warfare or the manoeuvreist approach, is a concept implemented by the British Army through the doctrinal reforms of General Bagnall.²⁵⁹ The manoeuvreist approach as defined by the British Army is “an indirect approach which emphasises effects on the will of the enemy. It blends lethal and non-lethal actions to achieve objectives which shape the enemy’s understanding, undermine their will, and break their cohesion. It aims to apply strength against vulnerabilities.”²⁶⁰ This same concept has now been employed in the information realm and is being considered a form of lethal warfare. As General Nicholas Carter, stated, “[we] need to recognise that manoeuvre now is much more multi-dimensional than it once was; the notion of Information Manoeuvre is relevant...”²⁶¹ Therefore, information, if used quickly and logically can create advantage and deliver mass effects. It can be used by a commander to disrupt, confuse or influence an adversary.²⁶²

²⁵⁵ Ibid., 44.

²⁵⁶ Ibid., 44.

²⁵⁷ Ibid., 44.

²⁵⁸ David Kilcullen, “Evolution of Manoeuvre,” (Lecture presented at the RUSI Land Warfare Conference 2018, London, UK, June 19-20, 2018). https://www.youtube.com/watch?v=u7_yFh5b37s.

²⁵⁹ Elliot, *High Command: Military Leadership in the Iraq and Afghanistan Wars*, 15.

²⁶⁰ Ministry of Defence, *Land Operations*, 79.

²⁶¹ Nicholas Carter, “Chief of the General Staff’s Opening Address,” (Lecture presented at the RUSI Land Warfare Conference, London, UK, June 30, 2015).

²⁶² Ministry of Defence, *Information Advantage*, 1.

The dimensions Carter is referring to are the three distinctive dimensions in war, the physical, the cognitive, and the virtual. These are recognised in the information manoeuvre context as the cyber and electromagnetic realms (virtual dimension), the will to win the support of the population is the cognitive, and the physical is the actions by forces on the ground.²⁶³ For information manoeuvre to be successful “both physical and virtual manoeuvre must be coordinated, communicated and amplified, to deliver cognitive impacts.”²⁶⁴ The aim of Information Manoeuvre is to change the perception or behaviour of an audience along the lines of the commander's intent.²⁶⁵ Now with everyone having access to the internet and mobile phones, information manoeuvre proves to be a powerful tool in shaping awareness and bearing.²⁶⁶ This shaping action will take place in the realm of cyberspace.

In cyberspace every entity is vulnerable to attack; “no target remains static; no offensive or defensive capability remains indefinitely effective; no advantage is permanent; and well-defended cyber terrain is attainable but continually at risk. And adversary offensive activities are also said to persist because opportunity costs are low.”²⁶⁷ Therefore, the cyber domain is a weapon unto itself. The domain can allow for multiple avenues of attack in ways that can confuse, disrupt, and interrupt an adversary’s decision-making cycle.²⁶⁸ Synchronising both physical manoeuvre and “cyber operations across domains that present multiple dilemmas [is] a fundamental tenet of multi-domain operations.”²⁶⁹ Information manoeuvre relies on the idea of persistent engagement; that is, the idea of not waiting for an adversary to act, tracking their activities, understanding their intent, degrading their capabilities, and manoeuvring in a way to prevent attack.²⁷⁰

Information manoeuvre cannot be conducted in isolation. It needs to be considered by commanders alongside traditional manoeuvre warfare. When planning, information manoeuvre needs to be synchronised as if in a combined-arms operation. According to

²⁶³ Ministry of Defence, *Force Troops Command Handbook* (London: Ministry of Defence: 2018), 9.

²⁶⁴ *Ibid.*, 9.

²⁶⁵ *Ibid.*, 10.

²⁶⁶ *Ibid.*, 9.

²⁶⁷ Michael Fischerkeller and Richard Harknett, “Persistent Engagement, Agreed Competition, and Cyberspace Interaction Dynamics and Escalation,” *Cyber Defense Review*, (2019): 269.

²⁶⁸ Franz-Stefan Gady and Alexander Stronell, “Cyber Capabilities and Multi-domain Operations in Future High-Intensity Warfare 2030,” in *Cyber Threats and NATO 2030: Horizon Scanning and Analysis*, ed. A Ertan et al. (Tallinn: NATO Cooperative Cyber Defence Centre of Excellence Publications, 2020), 152.

²⁶⁹ *Ibid.*, 152.

²⁷⁰ George Meyer, “Persistent Engagement: The Phrase Driving a more Assertive US Spy Agency” *National Public Radio*, August 19, 2019, National Security, <https://www.npr.org/2019/08/26/747248636/persistent-engagement-the-phrase-driving-a-more-assertive-u-s-spy-agency>.

David Kilcullen “land forces are still central. If you can’t dominate the firefight, if you can’t manoeuvre against opposition, it doesn’t matter how [attractive] your information operations are, you are not going to survive.”²⁷¹ For information manoeuvre to be successful, it again has to be integrated with other functions such as intelligence, electronic warfare (EW), psychological, and command and control operations. In the modern battlespace these systems are merging, because “the targets of psychological operations are also information producers, they are equally targets for intelligence collection...”²⁷² An example of combining both information and physical manoeuvre, is the drone strike on the Iranian Revolutionary Guard commander, Qasem Soleimani. Here, the United States built a network of ISTAR assets, HUMINT and Signals Intelligence (SIGINT). Soleimani’s mobile phone was tracked in real-time, and routes mapped by satellite, before United States Central Command utilised lethal effects through UAV to kill the target, all while being tracked from Qatar to Washington D.C.²⁷³ As demonstrated, through linking virtual and physical actions a commander can gain greater advantage.

The British Army and Information Manoeuvre.

In the summer of 2019, the MoD announced the creation of the British Army’s new formation responsible for information manoeuvre and unconventional warfighting, 6 (UK) Division; formally known as Force Troops Command. The division consists of four brigades that are responsible to Commander Field Army on such matters as intelligence, counterintelligence, cyber, EW, and information operations.²⁷⁴ This formation is a non-deployable division, but when its capabilities are required, they can be attached ad hoc to the likes of the British Army’s warfighting formations, 3 (UK) Division, 16 Air Assault Brigade (16 Brigade) and 3 Brigade respectively. 6 (UK) Division will “build the networks, relationships and information channels through which the foundation of information manoeuvre will occur.”²⁷⁵ This linkage will be done through the “Divisional Information Manoeuvre Group (DIMG), which brings together dispersed lines of effort into a command and control hub able to support a warfighting formation.”²⁷⁶ The DIMG will also be the liaison to other nations and organisations such as the Five Eyes and NATO.

²⁷¹ David Kilcullen, “Evolution of Manoeuvre,” (Lecture presented at the RUSI Land Warfare Conference 2018, London, UK, June 19-20, 2018). https://www.youtube.com/watch?v=u7_yFh5b37s.

²⁷² Nick Reynolds, *Performing Information Manoeuvre Through Persistent Engagement* (London: Royal United Services Institute, 2020), 2.

²⁷³ William Merrin and Andrew Hoskins, “Tweet Fast and Kill Things: Digital War,” *Digital War* 1, (2020): 184.

²⁷⁴ Ivan Jones “Army restructures to confront evolving threats” Ministry of Defence, updated august 1, 2019, <https://www.gov.uk/government/news/army-restructures-to-confront-evolving-threats>.

²⁷⁵ Reynolds, *Performing Information Manoeuvre Through Persistent Engagement*, 20.

²⁷⁶ *Ibid.*, 21.

Additionally, the DIMG will also fill the command and control function used to support the warfighting formations in potentially engaging adversaries in the information and cyber domains.²⁷⁷

Deception in war has been around for centuries and is still a key factor today in both the physical and information sense. Britain's adversaries have no issue conducting these types of operations through the use of planting false information, propaganda, disinformation, or psychological operations. Disinformation seems to be a prominent tool used by adversaries, such as Russia. The aim of disinformation is "to destroy trust in the established system of government and between social groups"²⁷⁸ Though this is not an offensive action used by British forces, it is used by their adversaries. The British Army's lead formation to deal with this threat is 77 Brigade, part of the 6 (UK) Division. The formation is tasked with media messaging and countering disinformation as a defensive measure, as well as capitalising on opportunities to exploit information.²⁷⁹ Though other government organisations are also tasked with this, the British Army will inevitably be a target while deployed. This was the case in Estonia, where the British eFP Battlegroup is deployed. Here, they were confronted by adversaries, believed to be Russian, trying to discredit them with the local population through disinformation. These campaigns were also experienced by the Canadian eFP Battlegroup in Latvia.²⁸⁰

One issue that the MoD must address in countering information manoeuvre is the rules of engagement (ROEs).²⁸¹ Currently, adversaries are using disinformation, on the local population, against the British Government. An example is the March 4, 2018, poisoning in Salisbury, England. Here, a former Russian intelligence officer and daughter, were poisoned by two Russian GRU²⁸² agents with nerve agent. The main suspect was Russia, who refute the allegations outright. They instead began insisting that the poisoning was carried out by the British Secret Service. The Salisbury event led to the worst breakdown in relations between London and Moscow since the end of the Cold War.²⁸³

²⁷⁷ Ibid., 21.

²⁷⁸ Ibid., 14.

²⁷⁹ Ibid., 44.

²⁸⁰ Mark Hookman, "Troops face new enemy - Kremlin's fake news" *The Times (UK)*, March 19, 2017, <https://www.thetimes.co.uk/article/troops-face-new-enemy-kremlins-fake-news-q0dbnfq79>; Chris Brown, "Anti-Canada propaganda greets troops in Latvia," *Canadian Broadcasting Corporation*, June 16, 2017, World, <https://www.cbc.ca/news/world/latvia-propaganda-1.4162612>.

²⁸¹ Reynolds, *Performing Information Manoeuvre Through Persistent Engagement*, 26.

²⁸² Russian military intelligence unit.

²⁸³ Economist, "Britain holds Russia to account over the Skripal affair," *The Economist*, March 17, 2018, Britain, <https://www.economist.com/britain/2018/03/15/britain-holds-russia-to-account-over-the-skripal-affair>.

Russia launched a disinformation campaign by discrediting the claim even before it was formally accused. Within the week following the attack in Salisbury, the British Government was tracking eleven different stories about the poisoning, all coming from Russia.²⁸⁴ In the first four weeks following the incident, a total of 138 distinct narratives explaining the incident came from news outlets such as *Russia Today* and *Sputnik*. The narratives pushed included Russian innocence, Western guilt, and speculations on the motives of Western governments, as well as asserting other British partner nations like Ukraine may be responsible, and conspiracy theories such as the poisoning never actually took place. In total, 735 articles were written by the two news sources with only 116 not pushing a form of disinformation.²⁸⁵ According to the British Government, the goal of the Russian disinformation campaign was to “flood social media with false narratives and information that would cast doubt on the established British and Western positions, not with the goal of offering one particular alternative explanation, but simply too muddy the waters sufficiently to make people question their own government.”²⁸⁶ This use of inconsistent messaging influences targeted audiences. The Russian campaign seemed to have had reasonable success, as a significant portion of the British population did not believe Russia was behind the Salisbury poisoning. The most sceptical were in the 18-to-24-year-old demographic.²⁸⁷

These kinds of actions are consistently directed at the United Kingdom. The British Government has indicated that numerous information campaigns by the GRU have targeted British institutions and businesses. These attacks are designed to disrupt day-to-day operations and indiscriminately take place without much consequence.²⁸⁸ Therefore, organisations such as 6 (UK) Division need to examine ways in countering disinformation campaigns at home and develop a set of ROEs that comply with international law. The British Government needs to look to an offensive information campaign, designed to attack an adversary’s narrative and population, rather than using its resources to defend itself.²⁸⁹

²⁸⁴ Tom McTague, “Britain’s Secret War with Russia,” *The Atlantic*, December 3, 2019, Global, <https://www.theatlantic.com/international/archive/2019/12/britain-russia-nato-disinformation/602836/>.

²⁸⁵ Gordon Ramsay and Sam Robertshaw, *Weaponising News: RT, Sputnik and targeted disinformation* (London: The Policy Institute at King’s College, London, 2019), 25, 29, 32.

²⁸⁶ Tom McTague, “Britain’s Secret War with Russia,” *The Atlantic*, December 3, 2019, Global, <https://www.theatlantic.com/international/archive/2019/12/britain-russia-nato-disinformation/602836/>.

²⁸⁷ Ibid.

²⁸⁸ Reynolds, *Performing Information Manoeuvre Through Persistent Engagement*, 29-30; “Reckless Campaign of Cyber Attacks by Russian Military Intelligence Service Exposed,” *National Cyber Security Centre*, October 3, 2018, <https://www.ncsc.gov.uk/news/reckless-campaign-cyber-attacks-russian-military-intelligence-service-exposed>.

²⁸⁹ Reynolds, *Performing Information Manoeuvre Through Persistent Engagement*, 26, 31.

Conclusion.

One of the fundamentals of command and control is information gathering. Information feeds the decision-making cycle which allows a commander to make the best decision in a timely fashion. Chapter four has examined how information can be used to enable command and control and gain an advantage over one's adversary. There are several ways in which one can use information to gain advantage over an enemy. Information can be used as a tool for a commander to make fast, sound decisions at every level on the battlefield, allowing one to get into the OODA loop of the enemy and act quicker, thereby gaining the advantage. Information also allows for enhancing understanding of the battlefield, increasing situational awareness, and reducing fratricide. This can be done through a number of the sensors highlighted, including the local populace. The chapter examined the idea that war is now fought amongst the people. People are just as vital to winning a war as is gaining terrain and reducing the enemy's will to fight. Gaining the trust of the people can also provide needed intelligence, allowing one's forces to gain advantage. Finally, the chapter examined the current British stance on disinformation campaigns and why this policy needs to be re-examined. Chapter five will examine how command and control and information can be leveraged through the integration across multiple domains.

Chapter Five.

Multi-domain Operations: Command and Control and the Five Domains.

Introduction.

As Clausewitz states in his seminal work, *On War*, the nature of war never changes, it is “a true chameleon that slightly adapts its characteristics to the given case. As a total phenomenon its dominant tendencies always make war a paradoxical trinity – composed of primordial violence, hatred, and enmity... of the play of chance and probability... and of its element of subordination, as an instrument of policy, which makes it subject to reason alone.”²⁹⁰ In the simplest of terms, war’s nature will always comprise the elements of violence, and politics. Though the nature may not change, the method in which it is conducted has. Technology and geopolitical competition have seen to this.²⁹¹

Through his decades of studying conflict, Martin van Creveld argued that future wars would be less computerised, and technology based. He believed that they would be fought in line with primitive tribes than with ‘robots in space.’²⁹² This was because he believed adversaries would be operating amongst the populace. Therefore, weapons would need to be less sophisticated to prevent collateral damage.²⁹³ Though he was correct in the latter part of his observation, he was incorrect in the former. What van Creveld neglected to identify is that the conduct and instruments of war are always evolving. With the emergence of new technologies, nations have found themselves fighting not just in the realms of maritime, land, and air, but now in two new dimensions: space, and the cyber and electromagnetic domains. The West are now conducting war in what has been identified as an area ‘under the threshold of war,’ more commonly known as the *grey zone*.

To conduct war in the *grey zone*, the British Government has been developing a doctrine of multi-domain integration. The British Government describes multi-domain integration as “the posturing of military capabilities in concert with other instruments of national power, allies and partners; configured to sense, understand and orchestrate effects at the optimal tempo, across the operational domains and levels of warfare.”²⁹⁴ Britain’s adversaries are currently developing counterstrategies and technology to combat their advances in the physical domains. Much of this is through reverse engineering and

²⁹⁰ Clausewitz, *On War*, 89.

²⁹¹ Joseph Dunford, “The Character of War and Strategic Landscape have Changed,” *Joint Forces Quarterly* 89, no. 2 (April 2018): 2.

²⁹² Farrell, Rynning and Terriff, *Transforming Military Power since the Cold War*, 212.

²⁹³ *Ibid.*, 212.

²⁹⁴ Ministry of Defence, *Multi-Domain Integration*, 3.

studying Western doctrine, as they perceive it from recent conflicts. They know they cannot win against the United Kingdom and NATO head-on with hard power, so they are trying to configure a means to triumph through methods such as information and cyber, avoiding engagement in high-intensity conflict.²⁹⁵

Therefore, if the United Kingdom wishes to compete with these adversaries, it needs to be prepared to “war fight in a way that generates advantage through being better integrated across three levels of warfare²⁹⁶ in all five operation domains: maritime, land, air, space, in cyber and electromagnetic.”²⁹⁷ Russia is already making advances in the cyber domain, with success in their information campaign. They are doing so, not just militarily, but also through other non-military entities, across the domains in their home country and further abroad.²⁹⁸ Because of developments in tactics ‘below the threshold of war,’ the battlespace has been transformed. Lacking access to one domain can cause slippage in another which, in the end, can be disastrous.²⁹⁹ That is why it is paramount that the British Government not only integrate the domains militarily; they must utilise a whole-of-government approach to gain greater effect. The previous chapter examined the importance of gaining information advantage, and how it can improve command and control. This chapter will examine multiple-domain integration. It will answer the question: *how does one conduct command and control in a multi-domain environment, and how can multi-domain integration be further used to gain information advantage?*

AirLand Battle and the Evolution of Multi-domain Operations.

This section will begin by discussing the evolution of domain integration. Therefore, it is first important to understand what is meant by integration. Integration is the synchronisation of effects, timings, and tempo across multiple areas, in this case the five domains.³⁰⁰ This is essentially in line with combined-arms manoeuvre, in that a commander can harmonise all the domains to win. Integration of different domains is not an entirely new concept. It was first examined by the United States in the 1970s and 1980s

²⁹⁵ Ministry of Defence, *Multi-Domain Integration*, iii; Kyle Rempfer, “Air Force lays out Future fight against peer-level adversaries” *Air Force Times*, September 12, 2018, Your Air Force, <https://www.airforcetimes.com/news/your-air-force/2018/09/13/air-force-chief-lays-out-future-fight-against-peer-level-adversaries/>.

²⁹⁶ Strategic, Operational, and Tactical.

²⁹⁷ Ministry of Defence, *Multi-Domain Integration*, iii.

²⁹⁸ *Ibid.*, 4.

²⁹⁹ Jeffrey Reilly, “Over the Horizon: The Multi-Domain Operational Strategist,” *Over the Horizon Journal*, November 8, 2018, Feature, <https://othjournal.com/2018/11/08/oth-mdos-reilly/>.

³⁰⁰ Ministry of Defence, *Multi-Domain Integration*, 10.

with the creation of Active Defence, and then subsequently evolved into the concept of AirLand battle.

AirLand battle was a concept established in concert with the United States Army and Air Forces after the United States witnessed the results of the Yom Kippur War. Here, in 1973, Egypt and Syria, using Soviet tactics and equipment, were victorious over Israel. The United States, while still embroiled in Vietnam, observed how Soviet offensive doctrine evolved, and realised a new doctrine was needed to defend Europe. It was here that the United States recognised the Soviets could not be stopped without collaboration of both ground and air power.³⁰¹

AirLand battle was implemented as a manner to attack a peer adversary's second echelons in a large-scale conventional war. Through this concept came the idea of the integrated battlefield. For AirLand battle to work, the battlefield had to be envisioned as "a joint air-land endeavour, [that] had to include [close] and deep attack, and had to produce disruption, delay, and attrition."³⁰² This was executed by ground forces engaging with an adversary's first echelon or engaging in the close fight. While this was taking place, the second echelon, or deep³⁰³ fight, would be engaged by air and long-range fires to attrite and hold off the second echelon until victory could be achieved in the close fight. That is, divide the battlefield into two.³⁰⁴

For AirLand battle to succeed it would see its command and control structure at the corps level, as the "corps [possesses] the principal interdiction means crucial to disruption of, or attack upon, the enemy second echelons. Also, the corps [is] the Army headquarters at which the concerted air and land battle [has] to be coordinated with the Air Force."³⁰⁵ The corps commander was responsible to attack up to seventy-two hours from the Forward Line of Own Troops (FLOT) and integrate the effects of allies, sensor data and protect their own rear echelon. That is, in AirLand battle a commander must be able to fight 150

³⁰¹ David Johnston, *Shared Problems: The Lessons of AirLand Battle and the 31 Initiatives for Multi-Domain Battle* (Santa Monica: RAND Corporation, 2018), 2.

³⁰² John Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982* (Fort Monroe: United States Army Training and Doctrine Command, 1984), 37.

³⁰³ The close fight is an operation conducted at short-range in contact with the enemy. The deep fight is an engagement at long-range, over an extended time scale against an adversary not currently engaged in close operations. These operations include information operations; surveillance and target acquisition; and interdiction. Canadian Armed Forces, *Land Operations*, 108-109.

³⁰⁴ Robert Leonhard, *The Art of Manoeuvre: Manoeuvre-Warfare Theory and AirLand Battle* (Novat: Presidio Press, 1994), 136-137.

³⁰⁵ Romjue, *From Active Defense to AirLand Battle*, 40.

kilometres out, and understand future possible engagements 300 kilometres out. It was at the corps level that the air targets would be identified.³⁰⁶ Thus, with AirLand battle, both the deep and close battles would be fought as one, under one headquarters to coordinate the integrated fight. Though AirLand battle was not employed against the Soviets as it was designed, it proved to be successful in both the 1991 Gulf War and again in the 2003 Iraq invasion.³⁰⁷

Since 2001 nations shifted focus to counter-insurgency operations. Losing some of their ability to engage in conflict with a peer or near-peer adversary. With Russia's successes in Georgia and Ukraine, it is only fitting that the United States and United Kingdom reassessed their need to integrate the five domains to achieve success in future conflicts. The idea of multi-domain operations entered the purview of the West in 2015 when the Deputy Secretary of Defense Robert Work stated in a speech at the United States Army War College, "We are going to have to think about fighting against enemies which have lots of guided rockets, artillery, mortars and missiles, and are using informationalised warfare to completely disrupt our heavily netted force. So, what does AirLand Battle 2.0 look like? I don't know. The Army needs to figure this out."³⁰⁸ From this challenge both the United States Army and USMC began researching a way forward leading to the *Marine Corps Operating Concept* and United States Army *Multi-Domain Operations 2028*. The United Kingdom began their research in 2018, with the idea of Fusion Doctrine. This doctrine looks to strengthen national safety by linking security with economics and influence (soft power, diplomacy, etc.) capabilities. The MoD's part in this new defence policy was to develop a doctrine which is "effective in the full range of environments and across all five domains – land, sea, air, space and cyber. It will be international by design, routinely exercising and operating with allies and partners. It will be credible and capable of addressing state and non-state threats both alongside other nations and on our own."³⁰⁹ The importance of this concept was reiterated in the *Integrated Review* and *2021 Command Paper* discussed previously.

For multi-domain operations to be successful, the United Kingdom needs to explore two concepts. First is battlespace management. As presented above with AirLand

³⁰⁶ Ibid., 40; Leonhard, *The Art of Maneuver*, 137.

³⁰⁷ Gady and Stronell, "Cyber Capabilities and Multi-domain Operations in Future High-Intensity Warfare 2030," 154.

³⁰⁸ Kelly McCoy, "The Road to Multi-Domain Battle: An Origin Story," *Modern Warfare Institute at West Point*, October 10, 2017, <https://mwi.usma.edu/road-multi-domain-battle-origin-story/>.

³⁰⁹ Her Majesty's Government, *National Security Capability Review* (London: Cabinet Office, 2018), 14.

battle, the corps can influence roughly 300 kilometres out according to doctrine. However, time and space has since expanded. Therefore, to deal with this threat, nations will have to look not just to using the military. Rather, they will have to look to other government organisations for assistance, such as the United Kingdom Space Agency or the Secret Intelligence Service, who also have stakes in multiple domains.³¹⁰ Second, for multi-domain operations to succeed there needs to be a solid command and control structure. Multi-domain operations are not just AirLand Battle 2.0, where one simply adds the three existing domains to an already present structure. A new system will need to be examined for this task. Therefore, this is best placed at the divisional level, which has been resurrected as the British Army's keystone fighting formation.

Command and Control in a Multi-domain Environment.

The interconnection across multiple domains can lead to success on the battlefield. Through the evolution of AirLand battle we see the importance of utilising other domains to gain the initiative in the modern battlespace. The way in which this is conducted is through linking the five domains under one command and control structure. The Americans are already in the process of developing this concept with the creation of the Joint All Domain Command and Control (JADC2) model. The intent of this concept is to integrate all technical networks across all branches of the United States military into one network, linking every sensor and shooter. This linkage will need to take place at the operational level of war; that is, the level between the strategic and the tactical.³¹¹

The operational level expands from division through corps to army. With AirLand battle, the corps was the formation that had the ability to coordinate across domains; however, with the current operation environment the separation between the three areas of conflict have merged. As General Nicholas Carter highlights, "Campaign planning tools, designed to manage complexity at the operational level, are now required routinely at the tactical level. Increased weapon ranges and more capable communication systems have expanded the scale of the battlefield exponentially so that what was once corps and above level battlespace is often now within the capabilities of a division."³¹² The division has now become the critical formation designed for high-intensity warfighting in a modern

³¹⁰ Johnston, *Shared Problems: The Lessons of AirLand Battle and the 31 Initiatives for Multi-Domain Battle*, 7; Her Majesty's Government, *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy* (London: Cabinet Office, 2021), 19.

³¹¹ John R. Hoehn, *Joint All-Domain Command and Control (JADC2)* (Washington: Congressional Research Service, 2021), 1-2.

³¹² Carter, "The Divisional Level of Command," 7.

conflict. It is the command and control element that provides enablers and joint capabilities to its subordinate brigades, allowing freedom of manoeuvre in close, deep and rear³¹³ operations.³¹⁴ It also orchestrates the synchronisation of these enablers for effects on the battlefield in the physical, cognitive and virtual spaces. It is designed to engage and plan multiple engagements simultaneously, and integrate joint, multinational, and inter-agency capabilities, thus making it the ideal formation for governing the five domains.³¹⁵

The British Army has only recently started to take the division seriously after years of neglect. During the last twenty or so years, in Afghanistan, and after the war-like phase in Iraq, the brigade was the chosen formation. The loss of the division as a command and control structure was the reason for a number of the short-comings by British forces in Afghanistan and Iraq. They believed at brigade level a commander or staff had the experience or resources to command an operation as complex as Helmand, Province.³¹⁶ A senior British officer echoed this argument stating,

One of the things that was very, very wrong about the British approach in Afghanistan was deploying a brigade without a divisional headquarters overtop of it. It meant a very tactical level headquarters had to take a lot of troops under their command; a massive brigade, ten manoeuvre units. You know warfighting battle groups? Which is a lot for a brigade. It is more like a division, and you're also having to operate at the political level you know all the things [we] had to deal with in Basra I was having to deal with as a brigade commander, and that's not right. You need a divisional headquarters over top of you.³¹⁷

Another British officer stated, "the British Army has effectively lost its capability at the divisional level because it has given up the structures training, logistical support, and sustainability required to manoeuvre in the way the Russians did during the invasion of Georgia."³¹⁸ With the re-emerging threat from countries like Russia, who have large conventional forces, the British Army seems to be making the divisional level of command a priority again, with General Carter stating that the British Army are currently "resetting [their] understanding of the divisional level and the corps level, following some fifteen years or so of counterinsurgency."³¹⁹ Carter argues that the division "brings 'reference

³¹³ Rear operations are the preservation of one's own forces in order to allow for freedom of manoeuvre to conduct close and deep operations. These are largely administrative tasks. Canadian Armed Forces, *Land Operations*, 109.

³¹⁴ King, *Command: The Twenty-First-Century General*, 295.

³¹⁵ Carter, "The Divisional Level of Command," 15.

³¹⁶ King, *Command: The Twenty-First-Century General*, 31-32.

³¹⁷ Officer C (Major-General) British Army, interviewed by author, May 29, 2021.

³¹⁸ Richard Shirreff, "Conducting Joint Operations," in *The Oxford Handbook of War*, ed. Julian Lindley-French and Yves Boyer, (Oxford: Oxford University Press, 2012), 379, quoted in King, *Command: The Twenty-First-Century General*, 32-33.

³¹⁹ Nicholas Carter, "Chief of the General Staff's Keynote," (Lecture presented at the RUSI Land Warfare Conference, London, UK, June 28, 2017).

customer' status, both for our allies but importantly also for our potential enemies; it underpins the creditability of an army."³²⁰ Carter concludes, "it is still important that we remind people that in the British Army it is the divisional level which is essential to our output because that is the level at which we would war fight. History proves this and if you look back at 2003 and 1991 it was the division that we fielded with the prospect of warfighting to occur."³²¹ It is the division that is needed to command and control in a multi-domain conflict.

For the multi-domain concept to work, a sound understanding of operating in an interconnected environment is key. There must be emphasis on intuition and action at the lower levels. This must then be synchronised with the higher formations, making sure that the intent of the commander is met, and in line with strategic objectives.³²² To do so, mission command is crucial for command and control. With that said, it is important for commanders and staff officers to be trained in this concept in a multi-domain environment.

Synchronising the effects across five domains is complex, especially with the extended reach of technology. It is likely that an adversary will attempt to degrade a formation's communications through attacks on command and control structures. Therefore, subordinate commanders "must be comfortable continuing to operate within the higher commander's intent to achieve objectives semi-independently."³²³ This will allow a commander to keep an adversary off-balance, and through a combination of multi-domain operations and mission command, impose multiple dilemmas on the enemy expose their vulnerabilities.³²⁴ Doing this will allow a commander to gain the initiative and get inside the adversary's OODA loop, thus gaining the advantage. As General Mark Milley stated we need to "seize and maintain the initiative, to gain positions of advantage, and breach (enemy) defences in depth through combined-arms manoeuvre in all domains and operate at speeds far faster than the enemy can react... to disrupt, penetrate, disintegrate, and exploit the enemy's anti-access systems and bring their fielded forces to operational

³²⁰ Nicholas, Carter, "Chief of the General Staff's Opening Address," (Lecture presented at the RUSI Land Warfare Conference, London, UK, June 28, 2016).

³²¹ Nicholas, Carter, "Chief of the General Staff's Opening Address," (Lecture presented at the RUSI Land Warfare Conference, London, UK, June 30, 2015).

³²² Mark Balboni et al., *Mission Command of Multi-domain Operations* (Carlisle: The US Army War College Press, 2020), 32.

³²³ Ibid., 31.

³²⁴ Ministry of Defence, *Multi-Domain Integration*, 11.

paralysis.”³²⁵ In order to properly execute mission command in a multi-domain environment the army should look to divulge, to the brigade and battlegroup, the assets needed to fight in these domains at the tactical level. With multi-domain operations, there will be reliance on linkage of domains. Therefore, “command and control must seek to lower the barriers that impede the achievement of such [collaboration].”³²⁶ This will allow for success against near-peer adversaries like Russia, who are also employing similar capabilities, as demonstrated in chapter one.

Artificial Intelligence and its Assistance in Future Command and Control.

Artificial intelligence (AI) has started to come to the forefront of multi-domain operations, for which the United Kingdom is the leader in NATO.³²⁷ Though not implemented as doctrine currently, AI will eventually be used to assist with command and control. Though the plan is not to have computers in command of forces, they “will bring advantages of automation and augmentation by AI for bounded less-complex data-centric tasks.”³²⁸ They will help analyse and predict outcomes on the battlefield as part of the planning process.

The two planning processes in British doctrine (i.e. the Six Questions for the operational level and the Seven Questions at the tactical level) follow a linear and mechanical process for analysing and generating COAs. Since automation can outperform humans in parts of the process, there is merit in having AI assist.³²⁹ As one commander stated, “where is artificial Intelligence’s place? Artificial Intelligence is the new emerging enabler. If I have four brigade commanders [as a divisional commander] to affect my decision-making, with [artificial Intelligence] I actually have six that can affect my decisions. I have four brigade commanders, a COS and black box, and the black box has equal rights in decision-making because it is looking at matters, I cannot get.”³³⁰ One of the places AI can be utilised most effectively is in the war-gaming stage of the planning process.

³²⁵ Sydney Freedberg, “A perfect Harmony of Intense Violence: Army Chief Milley on Future War,” *Breaking Defence*, October 9, 2018, Air Warfare, <https://breakingdefense.com/2018/10/a-perfect-harmony-of-intense-violence-army-chief-milley-on-future-war/>.

³²⁶ Balboni et al. *Mission Command of Multi-domain Operations*, 23.

³²⁷ Ben Wallace “Integrated Review: Defence Command Paper debate 22 March 2021,” published March 22, 2021, <https://hansard.parliament.uk/commons/2021-03-22/debates/49173AD7-1180-4251-8F29-58EB9E9D1C75/IntegratedReviewDefenceCommandPaper>.

³²⁸ Ministry of Defence, *Multi-Domain Integration*, 59.

³²⁹ Kathleen McKendrick, *The Application of Artificial Intelligence in Operation Planning* (Ankara: Centre of Excellence Defence Against Terrorism, 2017), 1.

³³⁰ Officer D (Lieutenant-General) British Army, interviewed by author, May 29, 2021.

In this stage, after COAs are selected, the staff talk through the sequence of events for each COA, trying to predict an adversary's action and, countering with friendly forces' reaction. Instead of going through this lengthy process, if data such as, enemy composition, equipment and doctrine were programmed into software, AI could play out these scenarios quicker, identifying the problems and saving time.³³¹ During the war game, planners look to synchronise and de-conflict an operation in time, space and resources, and to identify decision points for the commander. With automation, inputted data could be used to synchronise operations, not just in the physical but also in electromagnetic and information operations.³³² This information could also be retained by the program and used to continue to wargame as the situations develop through the continuous input of data. This would help with transitions in phases of war, for example, from the 'war-like phase' of the 2003 Iraq invasion to stability operations.³³³ Here, continuous updates on situational changes could be inputted to the system, helping to predict outcomes at progressive phases of the operations based on a set of conditions and algorithms.³³⁴

Machines are capable of calculating data much quicker than humans. Therefore, they can be used to compress decision-making cycles and reduce errors from increased flows of information.³³⁵ For example, a formation's ISR sensors could be used to mark positions on a map or conduct a ground analysis to identify passable routes available to a commander and, through the combination of all the data, inform COAs for a commander to decide upon.³³⁶ This could save a planning team time, giving them advantage. In recent conflicts, the West has found itself in contest with less technologically advanced adversaries, allowing a headquarters more time to conduct their decision-action cycle. In conflict with a near-peer adversary like Russia, who is as technologically advanced, a commander would need to increase their planning speed to get inside the enemy's OODA loop.³³⁷ According to one British officer AI is the preferred tool stating,

look at all the things you can do with automation, artificial intelligence, much better interpretation of data, much better logistic controls. You push a button and know how much [supply] you need... because one of the things about automation is it eliminates human error, and human error is rife when people, not matter how well trained they are, are tired...so, what I think the big take away is: understand what doesn't need to change, what needs to be preserved and make sure you are

³³¹ McKendrick, *The Application of Artificial Intelligence in Operation Planning*, 4.

³³² Ibid., 6.

³³³ Ibid., 5.

³³⁴ Ibid., 7.

³³⁵ McKendrick, *The Application of Artificial Intelligence in Operation Planning* Kendrick, 10.

³³⁶ Reynolds, *Performing Information Manoeuvre through Persistent Engagement*, 12.

³³⁷ Ibid., 9.

using automation to improve everything. When I say improve, I mean faster, more precise, lower footprint, lower people in harm's way, smaller electronic signature, and that is going to be a place I want to work.³³⁸

AI can significantly improve the decision-making process. It is an important tool that, if used accurately, can assist a commander in gaining advantage. In a future conflict with a near-peer adversary, a tool such as AI may be vital to success.

Currently, the United Kingdom is developing an AI support environment to assist in the development of COA analysis. Now in the experimental phase, it may not be long before an AI command and control tool could be operational.³³⁹ That said, computers will not take away from the human aspect of decision-making. Formations will still need the morality of a commanders to make decisions, delegate tasks and authorities, and provide legal and ethical advice.³⁴⁰ Additionally, a digitised headquarters can help with a reduced geographical footprint on the ground. With this comes great susceptibility to cyber-attack. Therefore, dominance in the electromagnetic domain is vital in an AI-centric organisation. If the right protocols are not in place, an adversary could cripple the command and control structure of a digitised headquarters. Therefore, a staff should never become reliant on automaton and should still be trained to plan and conduct command and control through analogical means.³⁴¹

United Kingdom Space Command and its Role on the Modern Battlefield.

Throughout the previous chapters there has been little discussion on the influence of space, and its role in assisting with command and control. However, this is an important topic and one worthy of discussion. Since the launch of the Sputnik satellites in 1957 by the Soviet Union, space has become a more sought-after domain worldwide. Even more so with countries like Russia and China developing new space-based weapons. This was emphasised in an interview with Air Chief Marshal Sir Mike Wigston, the head of the RAF, who stated, "right now we see countries like Russia and China testing and demonstrating anti-satellite weapons - satellites with all the characteristics of a weapon deployed in space. We see them rehearsing, manoeuvring, which frankly have only one purpose which is to destroy satellites."³⁴² We are even seeing private corporations like

³³⁸ Officer E (General) British Army, interviewed by author, June 1, 2021.

³³⁹ Gady and Stronell, "Cyber Capabilities and Multi-domain Operations in Future High-Intensity Warfare 2030," 161.

³⁴⁰ Ministry of Defence, *Multi-Domain Integration*, 59.

³⁴¹ McKendrick, *The Application of Artificial Intelligence in Operation Planning*, 13.

³⁴² British Broadcasting Corporation, "UK military opens first space command centre," *British Broadcasting Corporation*, July 30, 2021, UK Politics, <https://www.bbc.com/news/uk-politics-58029083>.

SpaceX constructing and launching rockets, making for an even greater need to monitor the domain.

The United Kingdom began its space program in 2010 and has been a great contributor to the disciplines of earth science, space exploration, and communications. On April 1, 2021, the British Government announced the establishment of the United Kingdom Space Command, an RAF-led, tri-service force consisting of additional personnel from the navy and army. The aim of the organisation is to enable the command and control of MoD space capabilities. These include RAF Fylingdales, the Space Operations Centre (SpOC), and SKYNET Satellite Communications.³⁴³

Since the 1990s Western forces have become more reliant on space-based technologies to enable military operations. This is why the role of SpOC is to “understand and monitor the Space Domain in order to protect, defend and assure access to the United Kingdom’s on-orbit assets or dependencies.”³⁴⁴ These assets provide the United Kingdom and its allies with such capabilities as the ability to: communicate globally through secure satellite communications (SATCOM); use precision guided munitions operated by satellite; positioning, navigation, and timing (PNT) capabilities help with the manoeuvre and communications of ISR capabilities, such as UAVs; and, give early warning to possible missile attacks.³⁴⁵ The latter is the role of RAF Fylingdales. In addition to providing ballistic missile early warning, RAF Fylingdales also provides the British Government’s contribution to the Allied Space Surveillance Network and the United States Missile Defense System. Loss of access to the space domain could impact the ability to conduct most military operations, as well as have a far-reaching impact on the population and economy. Air Vice Marshal Paul Godfrey, the commander of UK Space command, reinforces this argument, stating “The space domain is vital, not just in enabling military operations across the world, but in the day to day lives of everyone across the nation.”³⁴⁶

Space plays a significant role in command and control and is a key enabler on the battlefield. This is due to the ability of space-borne assets to assist in communications,

³⁴³ SKYNET is collection of military satellites and infrastructure which provides strategic satellite communications (SATCOM) to the MoD and its allies. “UK Space Command,” Ministry of Defence, accessed August 12, 2021, <https://www.gov.uk/guidance/uk-space-command>.

³⁴⁴ Ibid.

³⁴⁵ Jeffrey Reilly, “Over the Horizon: The Multi-Domain Operational Strategist,” *Over the Horizon Journal*, November 8, 2018, Feature, <https://othjournal.com/2018/11/08/oth-mdos-reilly/>.

³⁴⁶ Her Majesty’s Government, “Space Command Officially Launched,” *Ministry of Defence*, July 30, 2021, Military Equipment, Logistics, and Technology, <https://www.gov.uk/government/news/uk-space-command-officially-launched>.

navigation and intelligence gathering. The most known space enabler is the GPS system. This system first showed its value during the 1991 Gulf War. Here, coalition forces for the first time were able to track their location in real-time providing headquarters with their exact location. This assisted commanders with situational awareness allowing for the integration of advancing manoeuvre units and fires from artillery and aircraft, thus enhancing the ability to conduct AirLand battle.³⁴⁷ This was done through signals from a satellite to a receiver in vehicle or a handheld device. During the Gulf War, the technology was still new, and not without flaws. As one British officer noted, for a relatively short period of time each day, the GPS would not work due to the location of the satellites in space. He stated “we did without GPS, twice during the day, we lost six in the morning and six in the evening, we lost the ability to use GPS so we had absolutely no idea where we were for about an hour, so you had to wait, well you didn’t stop, but you rather hope you were going in a straight line so you came out the other side, and it came back on again you were roughly where you thought you would be an hour later.”³⁴⁸ Though there have been vast improvements since 1991, this example goes to highlight the significance technology places on the battlefield and how reliant an army has become on it. The West is becoming a ‘no satellite, no fight’ force, and adversaries know this as well.

The GPS did help with fighting in all types of weather and terrain conditions. In previous conflicts there was much need for guides along routes to help make sure formations arrived at their attack position, or line of departure, in a timely manner. Now with GPS a commander could be provided a reference on a map arrive knowing exactly where they are and know more accurately when they would arrive. This allows for commanders to practice mission command, giving them better freedom of movement providing updates on new attack locations and accurate updates on enemy positions, allowing for the formation to change direction, and giving real-time updates to headquarters and supporting units. For example, one USMC unit reported that they kept adjusting their obstacle breaching point, providing exact location references to the formation, through radio, as they received intelligence on Iraqi forces.³⁴⁹

The GPS system guided the way for other space-based technologies. Advancement of the GPS tracking device led to the Blue Force tracker discussed previously. Another advancement was the need for more accurate precision guided munitions. The laser-guided

³⁴⁷ Barry, *Blood, Metal and Dust*, 35.

³⁴⁸ Officer B (Major-General) British Army, interviewed by author, May 22, 2021.

³⁴⁹ Norman Friedman, *Desert Victory - The War for Kuwait* (Annapolis: Naval Institute Press: 1991), 225.

bomb employed in 1991 proved to be a fairly accurate weapon in clear skies but faltered in smoke and dust.³⁵⁰ This led to the development of an all-weather, GPS-guided munition known as the Joint Direct Attack Munition (JDAM). Developed in the mid-1990s the JDAM was a conventional United States dumb-bomb that had a guidance system, led by signals from GPS satellites, “combined with an inertial navigation system.”³⁵¹ This new ‘smart bomb’ was able to provide pinpoint accuracy in all weather and conditions, and did not need the target to be consistently marked with a laser beam. Tested with success throughout the Balkans air campaign in late 1990s, they were used almost exclusively in Afghanistan and Iraq.³⁵² Additionally, there was also the development of artillery-fired, ground-based rounds such as Excalibur, or the Guided Multiple Launch Rocket System (GMLRS) which could also be fitted GPS guidance and hit a target as accurately as within a cubic metre.³⁵³

UAVs are another tool which requires integration of multiple domains. UAVs are a complex technology as they use several of the domains. They are controlled by a combination of communications satellites used to fly the aircraft, and GPS satellites to track its location.³⁵⁴ If a GPS or communication signal is jammed, which is especially possible in a near-peer conflict, an operator can lose control of their aircraft. This type of jamming, if not combatted, can lead to losing freedom of movement in multiple domains. UAVs use the electromagnetic domain to transmit images and video feeds back to a headquarters. This allows a commander to not just hear, as they would through a radio, but see in real time what is going on in the battlespace giving them greater situational awareness, thus, allowing them to make real time accurate decisions. This was one of the driving factors for the initial procurement of UAVs by the British Government. As one member of the House of Commons committee on UAV contribution to ISTAR noted “Situational awareness is indispensable, particularly in an asymmetric environment. Staying inside [an adversary’s] decision loop is absolutely critical and the MoD, I am sure, will continue to fund whatever technology, whatever capability, enables them to stay inside that decision loop. That, at the moment, is at least partially UAV capability and I think they are making entirely the right call...”³⁵⁵

³⁵⁰ Barry, *Blood, Metal and Dust*, 71.

³⁵¹ *Ibid.*, 71.

³⁵² *Ibid.*, 71.

³⁵³ *Ibid.*, 350.

³⁵⁴ Alberto Cuadra and Craig Whitlock, “Hazard Above: How Drones are Controlled,” *Washington Post*, June 20, 2014, Technology, <https://www.washingtonpost.com/wp-srv/special/national/drone-crashes/how-drones-work/>.

³⁵⁵ House of Commons Committee for Defence, *The Contribution to Unmanned Aerial Vehicles to ISTAR Capability: Thirteenth report of session 2007-2008* (London: Her Majesty’s Government 2008), 88.

The development of UAVs has been one of the most significant advancements in military technology. It allows for ISTAR feeds in highly contested areas which ground or other air assets could not penetrate without casualties or areas that need persistent observation, or in hazardous environments. UAVs also allow a nation to strike deep in foreign countries without having assets detected, such as to the UAV strikes against terrorists in Pakistan by the United States.³⁵⁶ Or, for instance, the British operation conducted on August 12, 2015, where an RAF Reaper drone assassinated two British nationals, and Daesh fighters, in Syria. This was the first time the United Kingdom, conducted a drone strike outside of protecting British soldiers in Afghanistan or Iraq.³⁵⁷ Nonetheless, UAVs play a critical role on the modern battlefield. They rely on a number of the domains, not just space, for success. This highlights an additional reason why multi-domain integration leads to success.

The UAV is not the only intelligence gathering asset enabled by space. Satellites can also be used for ISR tasks and help feed information to a headquarters. Space ISR asset provide a commander with information on a “persistent, event-driven or scheduled basis.”³⁵⁸ These resources afford advantage as they can monitor areas and collect world-wide data that cannot be obtained by assets in the other domains such air and ground based sensors.³⁵⁹ This type of consistent surveillance on an adversary can allow for up-to-date information to be pushed to a headquarters, allowing the commander to get inside an adversary’s OODA loop, gaining the advantage.

Conclusion.

The conduct of war is changing. The way to gain the advantage in a time of persistent conflict is by dominating the five domains. The integrated review is the British Governments answer to this this problem. This chapter has discussed operating in the domains, answering the question: *how does one conduct command and control in a multi-domain environment, and how can multi-domain integration be further used to gain information advantage?* It explained the evolution of the concept by surveying the notion of the AirLand Battle. It touched on how space now plays a key role on the battlefield, and how the British Government plans to protect its capabilities in this domain. It examined how the division is the key formation for command and control for this new era of

³⁵⁶ Strachan, *The Direction of War*, 190, 233.

³⁵⁷ Economist, “Targeting Terrorists: Britain Conducts a Drone Assassination,” *The Economist*, September 8, 2015, Britain, <https://www.economist.com/britain/2015/09/08/britain-conducts-a-drone-assassination>.

³⁵⁸ Department of Defense, *Space Operations* (Washington, D.C: Joint Force Development, 2020), 36.

³⁵⁹ *Ibid.*, 36.

warfighting, and how the British Army has acknowledged this, reinstating its importance in doctrine. Finally, it explains that to hold a fighting force together throughout the domains, the philosophy of mission command is paramount for command and control.

Conclusion.

Over the last two decades, the British Army has undergone various reforms. All three branches, but particularly the army have seen massive cuts to their numbers. This has occurred despite budgets having remained relatively stable, and above the threshold required of NATO member nations – that is, 2% of GDP. This is because the British Government, as demonstrated by the *Integrated Review* and *Defence Command Paper* is putting its support behind new capabilities, such as cyberwarfare, space, and SOF. Though these concepts are important for fighting a modern conflict, hard power is still a significant deterrent to war. As one British officer stated,

the character of war is changing through technology but its inherent nature as a violent struggle between two entities, in which is the side that can bring the most violence to bear and is willing to endure the longest most aggressive way will win. I really worry about this belief that it is about more exquisite, more expensive bits of kit. It is a bit dangerous, and you do need mass. There is a balance that needs to be struck between these two positions. But I am just not convinced that we are getting it right... the notion that you can win war just by outperforming in technology is just not true. You need to keep that technological edge. But I think there is a balance to be struck.³⁶⁰

That is why, for the British Army to succeed against a near-peer threat, it needs to invest in additional hard power; as without it, freedom of manoeuvre in the domains of space and cyber may be restrained. As chapter one emphasised, Russia is expanding its hard power by increasing its forces and flexing with large scale exercises along former Soviet borders.³⁶¹ For Britain's military to be seen as a deterrent, an adequately sized force is needed.

With any fighting force, a strong command and control element must be present. The British Army is continuously evolving in this manner, and this is noticeable with the restated importance on the divisional level of command. This formation will help the British Army with controlling the multiple domains which the MoD has stressed are vital to battlefield success. To do so a well-staffed headquarters needs to be in place. The headquarters needs to minimise clutter in the form of excess staff and nonsense outputs. This practice is important to the fine tuning of a headquarters, and it will lead to better decision-making allowing for a commander greater ability to conduct command and

³⁶⁰ Officer C (Major-General) British Army, interviewed by author, May 24, 2021.

³⁶¹ Vladimir Isachenkov, "Russia to form twenty new military units in west to counter NATO." *ABC News*, May 31, 2021. <https://abcnews.go.com/International/wireStory/russia-form-20-military-units-west-counter-nato-77999488>.

control. The greatest takeaway regarding command and control is the importance of mission command. A commander must utilise this concept of decentralised power to achieve success. A commander must minimise orders, give clear guidance, and trust their subordinates to carry out the task. As demonstrated this concept is not only vital for field formations, but for the other domains as a whole.

Information is what feeds this headquarters and, in turn gives it the ability to decide. The nature in which a commander gathers this information is key to success. This thesis has highlighted the importance of HUMINT on gaining the advantage over one's enemy. Wars are now conducted amongst the people. Trust amongst the people is vital to success in any operation, not just an insurgency but also in conventional war. Fighting in the fields of Europe ended with the Cold War, and wars like Iraq and the Russian conflict in Ukraine have shown this. Urban areas are the new battleground, and so too are the people's cognitive domain. Winning over the population, both at home and in the host nation, will give one the advantage and, in the end, success.

Defence in all domains will be important. As shown in chapter one, Russia is fighting a new type of systematic war, that borders along the line of high-intensity conflict and what is now termed in the *grey zone*. Here, the new domains of space and cyber will be key. It is vital for the United Kingdom to combat Russia's attacks in the cyber and electromagnetic realms, as well as their extensive information operations campaigns against the West. This is why formations such as the newly established 6 (UK) Division are utilised and as demonstrated from the *Integrated Review*, the United Kingdom is on the right track. But a more aggressive counter-information campaign is needed, and this may require a policy change for the United Kingdom to succeed in the new environment.

The aim of the thesis was to identify effective methods in improving command and control and gain information advantage against a near-peer adversary. This was accomplished through extensive research from primary and secondary sources. However, looking at the research, there are two distinct topics that need to be further addressed. One is in the domain of space. The British Government needs to learn to better harness the advantages of space, as this is a new frontier. With countries like Russia and China and now private sector corporations racing to lead in the realm, the United Kingdom along with NATO must rush to dominate, as the result could be a 'no satellite, no fight' situation. The second topic that needs further research is the realm of AI. As highlighted previously, AI

has the potential to be a game changer regarding command and control. If harnessed correctly an army can use it to provide analytics, speed up the planning process, and provide data for decision-making. Allowing a commander to get ahead of an adversary's decision cycle and gain the advantage. As highlighted in the *Integrated Review* the British Government is leveraging extensive funds into researching new technologies, and AI must be at the forefront. This technology will enhance decision-making for a commander, allowing their forces to react quicker and dictate the battle. Therefore, both these emerging concepts are key to effective command and control, and their development must be exploited.

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