

The Chief of the Air Staff's Reading List 2024



Front cover image:

Personnel from 617 Squadron, RAF Marham, deployed on board HMS Queen Elizabeth for a number of days in July 2023 for the Aviation Integration Period, in preparation for the Carrier Strike Group (CSG) 2023 Deployment.

Photograph shows an F-35B Lightning Jet creating a vapor cone as it flew past the Aircraft Carrier during flight deck operations which took place over the two days where the Jets conducted vertical landings, take offs, and hot pits (refuelling).

RAF Marham is the home of the F-35B Lightning, a 5th Generation, multi-role, stealth fighter.

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Foreword

With the myriad challenges before us, the ability to understand the world and to think clearly how to maintain our defence and security is increasingly important. This is why it is essential that we understand the strategic challenges facing us all and think through how to respond to them effectively. The Reading List explores the key themes shaping our world.

Understanding our strategic competitors, Russia and China, is critically important, as their actions are affecting every nation across the international arena. In ***Conflict: The Evolution of Warfare from 1945 to Ukraine*** General (Retired) David Petraeus and Andrew Roberts provide us with a detailed understanding of both historical and contemporary conflicts. Whilst ***Getting China Wrong*** by Aaron L. Friedberg highlights the impact of strategic miscalculation.

It is also critical that we deepen our knowledge and understanding of the technological challenges which are shaping our lives as individuals, societies, nations and alliances. These range from the evolution of cyber capabilities to the increasing sophistication and pervasiveness of artificial intelligence, and the development of quantum-based technologies. ***The Coming Wave*** by Mustafa Suleyman and Michael Bhaskar considers AI, Power and the 21st Century's Greatest Dilemma, and ***Quantum Supremacy*** by Michio Kaku explains quantum theory and its potential impact on us all.

Our approaches to technological innovation will determine how successful we are at evolving to face the future and equally important, how resilient we are in surviving future crises. This highlights why it is important to learn how



certain military organisations are so effective in adapting to change as analysed in Andrew F. Krepinevich's ***The Origins of Victory: How Disruptive Military Innovation Determines the Fates of Great Powers***; and, also why it is essential we think through what to do when things go wrong, which they inevitably will, as examined by David Omand in ***How to Survive a Crisis: Lessons in Resilience and Avoiding Disaster***.

We deepen our understanding of how modern strategy is decided, through the lens of some of the world's most accomplished strategic thinkers. These include ***How States Think: The Rationality of Foreign Policy*** by John J. Mearsheimer and Sebastian Rosato, and ***The New Makers of Modern Strategy***, edited by Hal Brands.

The Future of Geography: How Power and Politics in Space Will Change Our World by Tim Marshall explores our focus on the space domain and national space strategies, including the extent to which this focus on the stars may change our relationships here on earth.

We then consider the importance of learning from the experiences of our history, through ***Leadership: Six Studies in World Strategy*** by Henry Kissinger. And as military professionals we examine where military command and effective leadership can achieve critical impact within the wider political context, through ***Command: The Politics of Military Operations from Korea to Ukraine*** by Sir Lawrence Freedman.

Finally, as exponents of air power, we examine the life and career of one of our most distinguished aviators in ***Winkle: The Extraordinary Life of Britain's Greatest Pilot*** by our foremost aviation and military author, Paul Beaver. I trust that you will find these interesting and stimulating. If you want to expand and deepen your knowledge further, you might want to consider applying for one of my CAS Fellowships, through our Defence Studies Team at The Defence Academy, in Shrivenham.

A handwritten signature in black ink, appearing to read 'Rich Knighton', followed by a period.

Sir Rich Knighton KCB ADC FREng
Air Chief Marshal, The Chief of the Air Staff



Message from the Director of Defence Studies (RAF)

I hope that you find the titles listed within this 2024 Reading List to be both interesting and highly relevant to your professional and personal perspectives. Most of the books are available for loan from unit libraries and are also accessible in e-book format at the MOD Whitehall on-line library (<https://ebookcentral.proquest.com/auth/lib/mod/login.action>) – opening an account is straightforward, simply requiring your personal MOD email address to register. A wide range of publications are available for you to enjoy, with new titles being introduced throughout the year. If you discover a title which you feel is especially worthy of consideration for CAS's endorsement in his 2025 list then please get in touch with us at CAS-ASDefenceStudies@mod.gov.uk. For all serving Regular and Reservist RAF personnel and RAF Civil Servants, if your reading inspires you to take a greater interest in Air, Space and Cyber Power, International Relations, Emerging Technology and Sustainable Development, as part of developing our Next Generation Royal Air Force, I would actively encourage you to consider applying for a Chief of the Air Staff's Fellowship. It is sure to be one of the most rewarding and stimulating decisions that you will ever take.

Details of our CAS Fellowships can be found on the RAF Centre for Air Power Studies website at www.raf.mod.uk/what-we-do/centre-for-air-and-space-power-studies/.



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The Chief of the Air Staff's Reading List is edited and distributed on behalf of the Chief of the Air Staff by the Director of Defence Studies (RAF).

Conflict: The Evolution of Warfare from 1945 to Ukraine

By David Petraeus and Andrew Roberts

Publisher: William Collins, 2023

ISBN: 978-0008567972, 544 pages

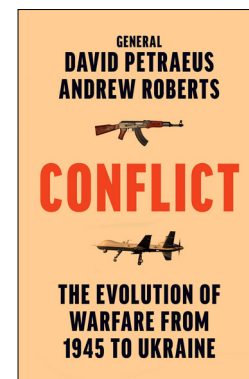
Reviewed by Wing Commander Jim McPartlin

C*onflict: The Evolution of Warfare from 1945 to Ukraine* by General David Petraeus and Andrew Roberts is a vast and impressive collaboration that delves deep into the various dimensions of human conflict throughout modern history. Drawing from Petraeus's distinguished military career and Roberts's expertise as a renowned historian, the book provides a forensic analysis of warfare, diplomacy, and strategic thinking through invaluable insights into the causes, conduct, and resolution of conflicts. The analysis is situated within a historical context, tracing the evolution of conflict from 1945 to the present day. Petraeus and Roberts adopt an interdisciplinary approach, drawing upon military history, political science, psychology, and strategic studies to bring to life the multi-faceted nature of warfare. By examining a diverse array of conflicts, including conventional warfare, insurgencies, terrorism, and geopolitical rivalries, the authors reveal recurrent patterns and enduring principles that have shaped the dynamics of conflict across different cultures over the last 80 years.

One of the central themes of the book is the human dimension of warfare. Petraeus, as a vastly experienced military commander, provides personal insights into the psychological, moral, and ethical aspects of combat. He emphasizes the importance of leadership, courage, and resilience in shaping the outcomes of conflicts, highlighting the role of individuals in driving historical events. In the introduction, the authors identify the four

major tasks of political and military leaders during a conflict: understand the strategic situation; communicate the big ideas and strategy; oversee the implementation of that strategy; and refine the strategy as the situation changes. The proceeding chapters then compare how well the main protagonists performed each of these tasks in the respective conflicts. Moreover, the authors explore the motivations of the leaders that led them into conflict, ranging from the pursuit of power and territory to ideological and religious fervour, shedding light on the complex interplay of interests and ideologies that fuel human struggle.

The book also explores the role of diplomacy and statecraft in managing and resolving conflicts. Petraeus and Roberts examine historical examples of successful and unsuccessful diplomatic efforts, highlighting the importance of negotiation, mediation, and conflict resolution in preventing escalation and fostering peace. They analyse the strategies employed by political leaders and diplomats to navigate geopolitical rivalries, alliances, and power struggles, offering valuable lessons for contemporary policymakers grappling with diplomatic crises and security dilemmas. Moreover, the book addresses the ethical and legal dimensions of warfare through Just War theory and the Law of Armed Conflict. The authors also explore the moral dilemmas faced by military commanders and policymakers, grappling with questions of proportionality, civilian casualties, and the use of force.



They advocate for adherence to international humanitarian law and ethical norms in warfare, arguing that upholding these principles is not only a legal obligation but also essential for preserving the legitimacy and moral authority of military actions. The final chapter on Russia's illegal war of aggression in Ukraine provides a counterpoint to this perspective to show the fatal outcome of failing to maintain the moral and legal high ground.

Another key theme is the changing nature of warfare in the modern era. Petraeus and Roberts consider the impact of technological advancements, globalization, and asymmetric threats on the conduct of conflict. They explore the strategies employed by state and non-state actors alike, from the use of irregular warfare and guerrilla tactics to the weaponization of information and cyber warfare to show how wars may be fought in the future. Additionally, the authors assess the challenges posed by emerging threats such as hybrid warfare and transnational terrorism, offering strategic recommendations for addressing these complex security challenges.

One of the strengths of the book is its analytical depth combined with accessibility. Petraeus and Roberts demonstrate a profound command of historical detail, strategic theory, and empirical evidence, offering heavily referenced rigorous analysis and real-world experience. However, they present their arguments in a clear, engaging manner that is accessible to readers with varying levels of expertise in military affairs and strategic studies. The text is enriched by anecdotes, case studies, and historical examples that bring the complexities of conflict to life. The chapters on the wars in Afghanistan and Iraq are particularly rich in detail as they are written by Petraeus in the first person. In doing so he provides a unique insight into the machinations of the various political and military leaders involved in the 20-plus years of conflict in those

two countries. No historiographical record could come close to matching this first-hand account of how these conflicts were initiated, fought, and ended.

Although the book does provide a light touch on less contemporary conflicts and in some cases misses key lessons - there is no mention of the Black Buck raids in the section on the Falklands War, for example - it is still a significant and comprehensive analysis of global conflict and strategic thinking. Combining scholarly rigour with practical insights, the book provides invaluable perspectives on the causes, conduct, and resolution of conflicts throughout modern history. The 20th Century was the bloodiest known to humankind and the first quarter of the 21st Century seems to be following suit. With two major conflicts raging in Europe and the Middle East and a significant challenge to the International Rules Based Order underway, the prospects for a secure and stable future are diminishing. Understanding the road to conflict, therefore, is ever more critical if we are to learn the lessons from history and avoid plunging into a third global conflict. This book goes a long way to bringing those lessons to the fore and is an indispensable read for policymakers, military commanders and scholars who are charged with understanding and managing the complexities of global security.

Getting China Wrong

By Aaron L. Friedberg

Publisher: Polity, 2023

ISBN: 978-1509560325, 256 pages

Reviewed by Corporal Katie Devenney

Aaron Louis Friedberg was one of the few authors who swam against the current of conventional thought on United States (US)-China relations by publishing *A Contest for Supremacy* in 2011, a book that predicted the inevitable failure of the US policy of engagement with the People's Republic of China (PRC). In retrospect, the cautions he warned of were clearly deserving of attention, with his current book providing unique insight into how the West is *Getting China Wrong*.

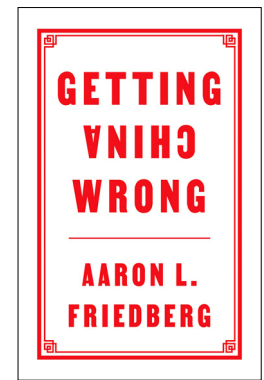
Contrary to the era of Friedberg's earlier work, Washington is currently experiencing a rare bipartisan consensus that, in the face of an increasingly assertive and aggressive PRC, the period of 'engagement' has failed. Yet, at this critical juncture in US-China relations, there is more confusion than consensus on implementing the next strategic phase of relations. Friedberg's *Getting China Wrong* attempts to provide rigorous and balanced insight into the mistakes made throughout decades of US engagement with China, enabling foresight to argue for a new strategic path forward.

Friedberg's arguments are underpinned by his extensive experience and academic background. He has been Professor of Politics and International Affairs at Princeton since 1987, the US Vice President's Deputy Assistant for National Security Affairs from 2003 to 2005, a US-China Economic and Security Review Commission member, an American Enterprise Institute non-resident senior fellow;

and a National Bureau of Asian Research counsellor. His first-hand knowledge of US-China relations positions him well to write an authoritative analysis on geopolitical power politics.

The book's structure provides clear logic to advance the arguments in three parts. The first of these examines US engagement policy's origins, rationale, and expectations. Friedberg's core assertion is that over three decades of engagement, its policy towards PRC failed because US administrations underestimated the Chinese Communist Party's (CCP) strategic priority of self-sustainment, its perceived existential threat of Western influence, and plan to exploit Western engagement to support its own goals. He effectively argues that China has not developed into a market-driven economy, as it relies on interventionist and mercantilist policies. He says it has not become more liberal, but instead more repressive and revisionist and it has not become a status quo power. Rather, Beijing has developed alternative institutions that compete with the Western international order, particularly in developing regions. The significance of *Getting China Wrong* lies not in merely highlighting the failures of engagement, a point well established by others, but in dissecting why it went wrong and what that means for future strategy and policy.

The second part of the argument contrasts the history of US rationale and expectations with CCP strategy and



policy, outlining a trajectory of Beijing capitalising on the asymmetric advantage of engagement. The author compares the West's optimism for liberal change with PRC domestic political policies to ensure CCP control. He considers Beijing's economic policies designed and evolved to promote growth to benefit from engagement and be driven by the party-state strategy. Internationally, he examines the PRC's consistent strategic priority of reasserting its place as the preponderant power in Asia and arguably the wider international system. Friedberg also notes that Beijing fought an 'information war' in response to the CCP's perceived existential threat from Western information liberalisation, blocking Western influence with its 'Great Firewall' and repressive policy, while exploiting Western internet and market openness to sustain and promote engagement with China. Friedberg challenges the notion that PRC President, Xi Jinping, has influenced Beijing's more assertive and aggressive global posture, instead, linking this behaviour shift to the CCP's relative power in the world; an assessment that is supported by his historical analysis of PRC behaviour and policy driven by long-term strategy, leading the reader to understand it is a trajectory that is unlikely to change. Friedberg's balanced critique avoids partisanship as he contends that the West's engagement strategy was an optimistic 'gamble' rather than a 'blunder', emphasising that the real issue was the West's failure to adapt its strategy when accumulating evidence suggested that the gamble was not paying off.

Friedberg proposes 'four main lines of effort' for 'Getting China Right' in his final chapter. He advocates for 'political mobilisation' as an existential necessity for liberal democracies to compete with the PRC using soft power and public support. He proposes 'partial disengagement' to restructure economic relations with Beijing, because integrating a mercantilist-Leninist system into an open global economy has exacerbated systemic vulnerabilities.

Also, 'counterbalancing' a growing PRC across all military domains and regions by working globally with partners and allies to discourage aggression; and fourthly, 'waging [a] discursive struggle', proposes tackling the battle of narratives and revisionism that Beijing is strategically advancing across developing nations and domestically. While Friedberg's approach might appear confrontational, his emphasis for a radical shift in strategy to avoid direct conflict and uphold the current rules-based international order is irrefutable. Although the 'four main lines of effort' resonate with wider, well-referenced research, with one, 38-page chapter dedicated to detailing such a grand aim, there is much still to unpick within Friedberg's solution.

In only 198 pages of clear and compelling prose, *Getting China Wrong* is an excellent primer, providing first-class analysis regarding political choices made over decades of US-China relations. However, it is best read alongside contemporary works and wider historiography to fully understand the complexity of debates. Friedberg's work contributes to a field that has long argued China is becoming increasingly competitive, assertive and norm-divergent from the liberal order, including John Mearsheimer's offensive realism theory, and scholars such as Martin Jacques, Michael Pillsbury and Elbridge Colby, with Friedberg himself publishing several works on the topic. Contemporary publications that propose future US-China strategic frameworks also enhance understanding. Bergsten's *The United States Vs China* contrasts Friedberg's worldview, while Kevin Rudd's *The Avoidable War*, is in-between. Friedberg's analysis focuses on geopolitical power politics, while Bergsten's focuses on economic power, disagreeing that PRC is an 'existential threat' and advocating for 'conditional cooperative competition'. Rudd's proposal differs from Friedberg's by focusing on ideational power and emphasising the influence of Xi Jinping, yet it compliments

Getting China Wrong by agreeing on the growing PRC threat and arguing that the West must better understand Beijing's worldview.

Friedberg's astute assessment regarding the enduring centrality of the CCP's authoritarian intent being misunderstood and underestimated by the West throughout decades of engagement is also echoed by Rudd, who claims CCP self-sustainment has, and always will be, the party-state's strategic priority.

In the current geopolitical climate, an evolving strategic framework for US-China policy is as complex as it is crucial. Friedberg's ability to synthesise such complexity into clear and accessible arguments offers a wide range of readers a perspective of clarity on one of the most important – and often confusing – geopolitical relationships of our time. *Getting China Wrong* provides a compelling manual for the design of future US-China policy, and is a must-read by students, scholars, and policymakers alike.

The Coming Wave

By Mustafa Suleyman and Michael Bhaskar

Publisher: Bodley Head, 2023

ISBN: 978-1847927484, 352 pages

Reviewed by Squadron Leader Ben Goodwin

In 2016, an Artificial Intelligence (AI) beat the rest of the world in an ancient game of strategy to win the World Go Championship. It had been built by Deepmind, a company co-founded by British born, Oxford University drop out, Mustafa Suleyman. Now he's worried. Like Dr Frankenstein, Suleyman is concerned about his creation and the wider industry, exploring some of the hazards of this technology in his book *The Coming Wave*.

When it comes to AI and its possibilities, dangers and ethics, Suleyman is a veteran practitioner and thoughtful critic. His book is a stimulating and accessible description of AI's potential, both good and bad. For military readers familiar with the dilemmas of warfare, however, his sweeping visions might appear closer to hallucinations than a guide to the future.

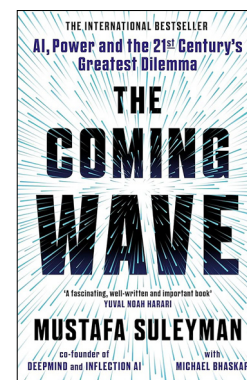
Suleyman opens with a metaphorical tsunami, claiming that the coming deluge of AI is inevitable, unstoppable, and carries all the destructive potential of the most legendary and literal great waves. Major technological shifts have numbered only a few dozen over the last millennia, from the domestication of plants and animals to the invention of electricity. But none had the rapidity or breadth of the flood of AI into our societies. The breakthrough is Large Language Models (LLMs), which leverage the most recent expansions of computing power. In the last 10 years, these systems have seen an increase of nine orders of magnitude of compute, from

two petaFLOPs (two million billion calculations) to ten billion petaFLOPs (10^{16}), per second.

In this book LLMs are synonymous with AI. LLMs are software systems, called transformers, that learn language patterns, rather than the meanings of words. This is different from human language learning, and is based upon how frequently words appear adjacent to one another. ChatGPT (Generative Pre-trained Transformer) is one such example. LLMs produce compelling outputs: in June 2022, a Google engineer publicly declared that the company's LLM (called LaMDA) was now sentient, and helped it hire an attorney. The engineer was fired shortly after.

Suleyman says the universality of AI presents novel challenges, not least to the liberal nation state. As AIs are progressively integrated into every aspect of technology, the State will be unable to keep pace with private companies, even private citizens, who can access the best of any service, just as anyone who can afford a mobile phone has access to all the world's knowledge. Trust in public institutions is collapsing, particularly in the USA, but across liberal democracies more generally. AIs can flood the world with disinformation, making agreement on facts near impossible, and for the elites who can afford to harness its financial potential, bring cosmic monetary gains.

The data capture and analysis capabilities, and broad military applications, further empower and embolden



authoritarian states. China is ahead on many fronts, from research to deployment, and shows every sign of accelerating away.

For Suleyman, humanity is at a crucial point. A self-replicating and self-fortifying AI might destroy computer-controlled systems from traffic lights, to hospitals, to satellites. It may be released by bad actors, or simply escape by its own ingenuity. Liberal democracies are threatened by eroding trust and growing authoritarianism. Suleyman concludes his book with a framework for containment, to harmonise government and industry AI development through regulation, incentivisation, and standardisation.

The author's occasional investigations of the military applications are rather pedestrian, and of the consequences only cursory. He recounts the first hours of the Ukraine conflict, when a 'ragtag bunch of drone hobbyists [and] software engineers' halted Russian armoured columns in their advance on Kyiv. That Ukraine's drone capabilities were soon matched, or that the physical, human presence on the battlefield has continued to be fundamental to success, are points left begging for consideration.

Military practitioners understand the bell-curve of outputs, whether weapon accuracy, equipment failures, or more chaotic distributions like the weather. Suleyman never engages with this digital/reality divide, often favouring the speculative to the tangible. The high technology focus jars with the mass and material reality of current conflicts.

Superficially AI applies everywhere in warfighting: autonomous weapons, rapid and insightful analysis and hyper-efficient targeting. Built of data centres and silicon chips, AI is reliant upon stable conditions, far from the chaos of war. It needs solid institutions and economies.

Effective software requires specifications based upon knowledge of operational conditions and desired outcomes. This information is often impossible to foretell with any accuracy, let alone that required to build a digital system. Above all, AIs need large amounts of data that is broad, deep, and representative.

In conflict, however, many factors, including morale, fear and strategy, defy quantification. Others, including weather, luck and friction, are inherently chaotic. Military data systems are air-gapped and frequently cannot talk to each other. Mis- and disinformation are part of the fog of war, and to add to this, AIs will inevitably be weaponised.

Whether AI is an autonomous robot or a decision support chatbot, the infrequency, complexity, and incompleteness of the necessary data of war present important limitations. Second order effects should also be considered. If all sailors, soldiers and aviators have been substituted with robots, will this make us more or less determined to fight and continue fighting? What will our adversary think of our will to fight? If all military devices are multi-purpose and have offensive potential, where are the limits of the battlefield?

An AI is still dangerous in the hands of an adversary, but perhaps for reasons different from those Suleyman envisages. Its advice and activity may be based on data even less complete than that offered to the humans in-the-loop. We must continue to integrate automation and remote sensing, and we must broaden our horizons to where these powerful new systems are heading. If, for instance, we cannot match an adversary's swarming drones or filter its disinformation campaign, we will be defeated. Thus, we must understand AI's potential and limitations to make our judgements.

Perhaps some of the greatest impacts of AI will be felt in more stable functions where outputs are readily defined and measured, including supply chains, human resources, and maintenance. These are less sexy than cutting edge weapons, but may have more immediate and lasting effects.

The flood is coming, and Suleyman's horizons are valuable to consider. In warfare, however, AI may upend us in ways that do not look like the societal transformation that Suleyman envisages. *The Coming Wave's* prologue was written by an AI, majoring on its fearsome potential, both good and bad. With a prompt from me, ChatGPT created a haiku on AI's utility in military applications:

Metal minds may strive
War's chaos eludes their grasp
Human essence thrives

Quantum Supremacy: How the Quantum Computer Revolution Will Change Everything

By Michio Kaku

Publisher: Doubleday Books, 2023

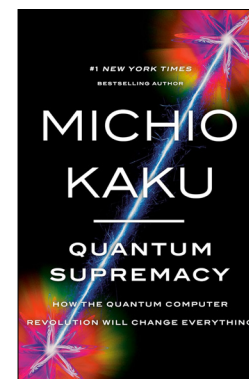
ISBN: 978-0385548366, 352 pages

Reviewed by Wing Commander Andy Mitchell

'A revolution is coming' is the bold statement with which Michio Kaku opens this future-gazing overview of the potential of quantum computers. These four simple words, equally suited as the opening to a political manifesto or fictional narrative (be it dystopian or utopian), clearly establish the disruptive purview of *Quantum Supremacy*. Kaku, professor of physics at the City University of New York, author of various well-regarded popular science books, and co-founder of string field theory, contends that quantum computers will change our world markedly: 'What is at stake is nothing less than our future'. Whilst these robust assertions have an air of intentional provocation, Kaku's position at the epicentre of world physics (string field theory being the most 'complete' theoretical model of the universe thus far developed) brings gravitas and credibility to these statements. Anyone with an eye to the future, be they private sector, public sector, academic or inquisitive private citizen, would benefit from 'brushing up their quantum' via this accessible primer that explores and outlines a series of possible future use-cases for quantum computers. Understanding the challenges that quantum computers could perhaps address, pending the contours of their future development and the interests of their sponsors and users, provides some useful 'shape' to myriad possible futures and offers readers the opportunity to shift their own comprehension beyond using 'quantum' as purely a buzzword.

Accessibility is a strength of this work. No prior knowledge of physics, quantum theory, or other scientific concepts is required of the reader in order to participate; Kaku cogently and engagingly outlines key theories and scientific concepts wherever they are required. Such explanations are well-judged to illuminate ab-initio readers and refresh/re-focus/re-engage those readers who already have some knowledge. The scientific concepts fall broadly into two categories: underpinning knowledge and specific use-case science.

The underpinning knowledge, which is Kaku's home territory, is sensibly front-loaded to build the reader's familiarity with the key tenets and concepts required to engage with quantum computing, that fills the first five chapters of the book. The author provides an overview of quantum theory, quantum computers and how they have evolved from, yet differ from, 'normal' silicon/digital computers. Digital computers are reaching physical limitations on speed and processing power that do not apply to quantum computers, and since 2019 a handful of quantum computers have achieved *Quantum Supremacy*, meaning they could 'decisively outperform an ordinary digital supercomputer on specific tasks'. As an example of 'decisive' outperforming, in 2020 the Chinese took 200 seconds to perform a calculation that would take a digital computer half a billion years. Kaku provides the theory (or rather, theories) that explains this paradigm shift in computing power, but the key take-away is that quantum



computers offer vastly increased computing power that could enable many hitherto intractable problems to be addressed. A further potential game-changer is linked to the fact that quantum computers ‘compute on the tiniest possible object, the atoms themselves’ and perhaps, therefore, offer the possibility of modelling/simulation/emulation to ‘unlock’ the workings of a range of atomic processes that we currently cannot fully comprehend.

Quantum computers’ decisive increase in computing power and potential ability to ‘unlock’ atomic/ molecular processes provide an essential lens through which to view the various potential use-cases that form the bulk of the work. The use-cases are brigaded in three thematic groupings: societal needs; medical advances; and understanding the universe, and are helpfully presented in separate chapters that each offer a bite-size challenge (or set of challenges) that could be tackled via quantum computing. In most chapters, understanding the problem requires a crash course in a particular field of (use-case specific) science that is often in a discipline far removed from Kaku’s background in physics. His explanations remain cogent and digestible, a testament to his efforts to engage robustly with these disciplines and his keen ability to communicate scientific ideas. The use-cases include ‘solving’ nuclear fusion as a means to provide abundant energy; developing artificial photosynthesis to achieve carbon balance to slow/reverse global warming; and understanding and correcting the behaviour of proteins in order to combat Alzheimer’s and other complex diseases. This variety (there is more) makes for wide-ranging and interesting reading and brings to light trends/challenges that ought to be in the mind of any futurologist, irrespective of whether quantum computers might play a role. It is also important to read these use-cases as exploratory thought pieces, taking a ‘could it work?’ approach, rather than seeking a detailed understanding of ‘how would it work?’. The detailed ‘how’

is something that, hopefully, given investment, time and resource, will follow. Identifying these use-cases could be enough to inspire such future work by those who have the capacity and resources to pursue such activities.

The final chapter provides an easy-to-read storybook narrative of a day in the year 2050, summarising what the world might ‘look like’ should quantum computers fulfil the various use-cases outlined in the preceding chapters. This narrative is optimistic, perhaps even utopian, and like the whole book remains studiously apolitical. In this sense, Kaku leaves the reader to draw their own conclusions on the political and social constructs required to ensure that quantum computers are brought to bear to focus on humanity’s challenges, rather than serve to threaten humanity. This makes *Quantum Supremacy* an ideal juxtaposition to Aaron Bastani’s *Fully Automated Luxury Communism*. Both works focus on the possibilities offered by technological advancement to address humanity’s challenges. Bastani offers a firm opinion on the political economy that would allow technology to solve our problems, whereas Kaku focuses on one key technology and offers a range of ways where the technology could be employed, taking a positive/progressive stance as a given (other than brief discussion of the ability of quantum computers to render digital encryption obsolete).

A highly worthwhile read for anyone who wishes to move their understanding of quantum computing from buzzword to a well-grounded foundation of the basic principles underpinning a disruptive, potentially ‘game-changing’ technology. Also, it has value to any futurologists who wish to explore the science behind a range of the world’s key problems and understand more about the potential to unlock those problems.

The Origins of Victory: How Disruptive Military Innovation Determines the Fates of Great Powers

By Andrew F. Krepinevich

Publisher: Yale University Press, 2023

ISBN: 978-0300234091, 568 pages

Reviewed by Squadron Leader David Tucker

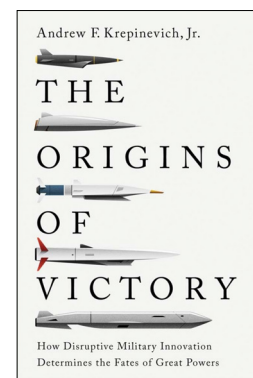
At the close of the Cold War, much was written on the 'revolution in military affairs'. After 30 years when the western military powers have concentrated primarily on Counter-Insurgency warfare or limited wars against minor powers, the subject has lost currency. With conflict in Ukraine, and the resurgence of Russia and China as serious military threats, Krepinevich makes a timely and important contribution to the thinking the West must undertake to prepare itself once more for potential peer-on-peer conflict.

The Origins of Victory examines the way in which disruptive innovations in technology lead to an advantage for military powers and can influence the outcomes of confrontations. It also examines how militaries position themselves to take advantage of these disruptive innovations. Krepinevich served as a US Army Officer from 1972-93, including on the personal staffs of three Secretaries of Defence. He gained a PhD from Harvard in 1984 and has published a number of books dealing with defence policy. On retirement from the Army, he founded and became director of the think tank, the Center for Strategic and Budgetary Assessments (CBSA). He has held chairs at Johns-Hopkins University, George Mason University and Georgetown University. He retired as director of the CBSA in 2015, but remains a senior distinguished fellow of the organisation.

This book sets out to examine how disruptive technical innovation confers a decisive advantage on those powers

best able to exploit it and considers how successful military powers exploit that innovation. Disruptive innovation refers to developments that completely change the way of waging war, rather than improving conventionally accepted warfighting. The book is divided into two parts: Part One examines the competitive developments in warfare over the past two centuries, leading up to the US military's precision warfare advantage from the first Gulf War, and examines how this has led to deterrence of peer-on-peer conflict, albeit that the maturation of precision warfare has now eroded this; Part Two looks at the importance of being the first military organisation to recognize and exploit disruptive innovation, and examines how well equipped the world's militaries are to exploit this process. It uses four case studies to investigate military powers that have successfully used disruptive innovation to gain advantage. The target audiences are military officers, students of strategy and military policy, and military technologists.

Part One looks in some detail at the disruptive innovations that have shaped the last two centuries of warfare. Krepinevich shows us how the advent of railways, the telegraph and rifled gun barrels allowed greater firepower to be delivered with greater accuracy, and with troops able to mass more quickly in any given location. Thus, the tightly packed large formations of infantry of the musket equipped Napoleonic era were replaced by positional



trench warfare, which developed from the American Civil War through to the First World War.

Similarly, the replacement of wooden sailing ships by steam ironclads and ultimately steam turbine powered battleships, and the advent of submarines, placed greater emphasis on speed, range and accuracy. Subsequently, the opening up of the air and then the electromagnetic domains led to a change in how war was waged. Part One is well laid out, explaining the theoretical basis for Krepinevich's arguments; although one could take issue with his understating of the Anti-Access/Area-Denial (A2AD) problem. He discusses rolling it back in the way that the West was able to roll back Integrated Air Defence Systems (IADS) in the 1990s. This fails to grasp the joint nature of the problem, and the fact that A2AD systems are designed to prevent this. You cannot just roll it back like an IADS – it represents a terrible problem. Indeed, in discussing A2AD (pages 45-6), he references problems that are clearly A2AD, but seems reluctant to label them as such. Nonetheless, he does emphasise the necessity for an ability to operate across multi-domains and prioritises the need for Information Advantage, echoing, in the UK, the Defence Science and Technology Laboratory's (DSTL) Air Information Advantage (AIA) Project. The discussion of the reconnaissance/strike complex and cross-domain operations is a clear allusion to the US and NATO's current thinking about Multi-Domain Operations (MDO).

There is discussion of the 'latent space arsenal of democracy' (page 75), referring to the emerging civilian space launch industry, although not convinced that Elon Musk or Jeff Bezos would reliably support the US in Space-Military operations. Nevertheless, he is right to say that, with capabilities available more cheaply and to non-state actors, there has been a 'democratization of destruction' (page 77) recognizing the level of threat against space-

based assets and our reliance upon them; he is also correct that the US has the most to lose in a Space War.

The book does contain some good technical explanations in plain English about advanced capabilities, with a particularly clear discussion of Artificial Intelligence, with easily understood descriptions of how it might contribute to military operations. His treatment of Power Projection (page 83) is especially relevant to the UK as an island nation. It is a largely US/China/Israel/Iran centric book. When he talks of the emerging threats it is almost exclusively of areas that interest the US today, and scant attention is given to other western nations which have disruptive technology projects in the pipeline. This is understandable as it is a US book, and the US is the world's pre-eminent military power, with China as its main threat. The book is well structured with descriptions of various disruptive technologies and their implications for warfare, and summaries of each argument.

In Part Two, Krepinevich begins with his four case studies of instances where militaries have used disruptive technologies to win victories. He reviews Admiral John Fisher's updating of the Royal Navy as steam turbine, submarine, mine and torpedo technologies changed the face of Naval Warfare; he examines Germany's use of disruptive technology to re-arm during the inter-war years, and looks at how the manoeuvre warfare of the Blitzkrieg was reintroduced after the attritional First World War; he examines the USN's changes that saw the Aircraft Carrier replace the battleship as the capital ship for Navies; and he looks at how, Under General Wilbur Creech, the USAF pursued the development of Precision Guided Missiles, Suppression of Enemy Air Defences and low observable technologies to change the face of air warfare.

At times, it suggests that disruptive technology is a catalyst for evolutionary, not revolutionary change. And in each of

these case studies, it required someone with vision and who had a long tenure of command to see the required changes through. Furthermore, he makes it clear that disruptive changes are contextual, and may lead to advantage in one theatre of war but not in another. Krepinevich at times draws questionable conclusions. Anyone who has considered the current A2AD problem would be unlikely to discount low-level air attacks as he does. However, his final chapter, *Where Do We Stand?* is a masterpiece at highlighting the difficulties facing the West with adopting disruptive innovations as we are faced with the potential return of Great Power conflict.

This book is well written, interesting and thought provoking. However, it is best understood if read from a position of some knowledge, and therefore is pitched well for its intended audience. A layperson may struggle with some of the concepts and assumed understanding. Nevertheless, for those in the defence sector it is a good read. For anyone concerned with the strategic and operational level of warfare, and for defence technologists, one could go as far as to say it is a 'must-read'.

How to Survive a Crisis: Lessons in Resilience and Avoiding Disaster

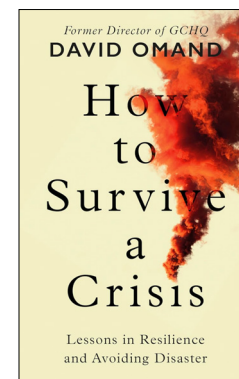
By David Omand

Publisher: Viking, 2023

ISBN: 978-0241561331, 368 pages

Reviewed by Squadron Leader Lee Ashcroft

David Omand's exploratory insight into the complexities of a crisis is a masterpiece. He skilfully navigates the reader in a comprehensible way, signposting through keyway points, detailing how policymakers and governments can survive, in either a slow burn or a catastrophic (sudden impact) crisis. He does this through a sumptuous story board of anecdotal evidence highlighting that lessons can be learned to improving resilience in what he describes as an 'arc of crisis'. In traversing this arc, the book canters at pace, but follows a golden thread around how organisations and individuals can be better prepared for them. By doing so, and by taking the right measures, governments can defuse a crisis and turn it into a series of emergencies that existing plans and preparations can cope with through what he terms 'strategic notice'. Use of recent salutary lessons on the UK's reaction to COVID-19, BREXIT and HM Government's reaction to the mini budget, underpin the key message of the book. He articulates that the consequences to a string of crises linked together could damage the resilient national infrastructure of the country. His warning is that 'society is entering an era in which national security has to address more than just the traditional embrace of the state and its democratic institutes from the real external threats that we face'. This is a compelling warning to future UK governments who have started that change by widening the responsibility and periphery of the Cabinet Office Briefing Room (COBR) from just national security crises.



This is a significant piece of work and achieves all of the book's aims. His writing style is pithy enough to capture your interest and make you not want to put the book down. It encapsulates all of Omand's knowledge gained within defence, security, and intelligence, drawing on his lived experience as Director of the Government Communications Headquarters (GCHQ), including interactions as UK Security and Intelligence Coordinator in how to detect and extinguish many looming crises. It is clearly structured throughout and summarises his key findings in terms of takeaway points after the end of each chapter; he does this by distilling key information to be assimilated that is useful to the reader. Omand draws on some key lessons learned not just within his tenure at GCHQ and within government, but dusts down lessons from the 1950s, such as the Cumbrian Windscale nuclear disaster with a laser focus on the value of preparation and application of the best scientific brains to think through the problems as a key enabler to success. This was a salutary lesson for the Bhopal disaster in India and the global COVID epidemic.

This is very much a homage to General McChrystal's book *Risk: A Users Guide*, about risk but more importantly how we live with risk. McChrystal opined that risk is not just the preserve of the military commander, but that in any event, while experience in a crisis can mature and season an individual, the relationship with risk remains constant. Similarly, Omand advances McChrystal's relationship

from the taxonomy of detecting risk, arguing that, fundamentally, within risk the intensity of impact, extent of turbulence, and duration relate to the events of itself and therefore cannot be codified - but managed throughout. While McChrystal focusses on the military relationship to risk, Omand's experience is more strategic and exculpates the notion that crisis is based around national security with the looming threat and current cyber security challenges in Russia, China, and North Korea. Instead, he drives the point home that the extent of the economic and social crisis, not just in Europe, but globally has become more steadily obvious as the key threats to prepare for in the future. He also offers a fresh theoretical perspective that since the 1990s, globalisation whilst seen as the saviour of the post-Cold War global order has created the quicksand and fragile conditions within which supply chains operate today that is the weakness of the new world order. This also includes the ominous effect of the cyber age, to government interactions through phishing, misinformation and hacking, to IT systems that undermine large organisations and corporations. This set the conditions for the disastrous string of events that started with COVID-19 and the invasion of Ukraine in 2022.

In terms of audience, it has many outlets. The book is not just about understanding the ways in which businesses learn how to tackle global turbulence, as illustrated in Donald Sull's *The Upside of Turbulence*. Omand, builds on previous research on how business can prepare for the future system of structure by focussing on a set of reflective exercises, or red teaming crises that he witnessed in the Cold War exercises in NATO. The Foreign and Commonwealth Office or Standing Joint Force Headquarters would benefit from this analysis. Equally, any student of risk would enjoy the luxuriant wealth of anecdotes, specifically in 'adaptive resilience' and organisations taking any risk appetite. Also, those researching securitisation and disaster management

would take advantage of the chapter relating to the slow burn crisis to the fall of Kabul in August 2021. It was slow burn to start with but led to a rapid collapse, and Omand highlights how taking the correct approach by policy makers would have been crucial in detecting the collapse of the Afghan Government. More broadly, any history student with an interest in current affairs could not fail to be impressed with the lived experience of a key person that was in the heart of GCHQ and involved with key policy makers from the 1970s and throughout the events of the post-Cold War. A thoroughly enjoyable read.

How States Think: The Rationality of Foreign Policy

By John J. Mearsheimer and Sebastian Rosato

Publisher: Yale University Press, 2023

ISBN: 978-0300269307, 304 pages

Reviewed by Flight Lieutenant Tom Raeburn

The Russian Invasion of Ukraine in 2022 placed the decision-making of great powers firmly in the international spotlight. Are states rational? Can we attribute the misadventures of stuttering invasions or ineffective defensive alliances to a poor decision-making process? These are the big questions which John Mearsheimer and Sebastian Rosato coherently tackle in *How States Think*.

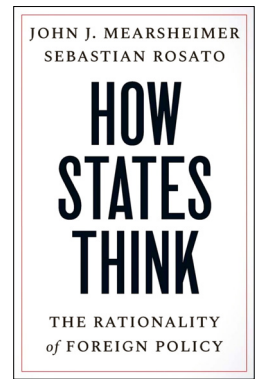
If there was to be an international heavyweight ably qualified to cohere such a weighty topic it would be John Mearsheimer. Writing in the 1980s, Mearsheimer explored conventional deterrence and the process by which states go to war. His subsequent predictions of the 1991 Gulf War proved remarkably accurate as did his assertions on US regional hegemony, and its many limits, within an uncertain world. One of the few commentators to argue against Ukraine giving up nuclear weapons, he recognised the need for deterrence in the Russian 'backyard'. Mearsheimer is ably partnered by Sebastian Rosato, a professor at the University of Notre Dame, who has a strong pedigree exploring the history of great power decision-making.

How States Think tackles a multifaceted issue often complicated by competing geopolitical theories. The authors effectively ground their approach with examples which are accessible and interesting to the reader. These assure the real-world application of

theories under analysis. First, they tackle the 'rational actor assumption'. Too often Western leaders, and their clamouring liberal media, describe adversaries as non-rational. This assertion has crept into modern political psychology with the consequent upset of years of geopolitical theory. States are ultimately rational, argue Mearsheimer and Rosato. With a few rare exceptions, states follow a deliberative decision-making process.

The authors make a strong case for strategic rationality using the examples of American policy in Europe after World War Two and the infamous Japanese attack on Pearl Harbour. They recognise the role of uncertainty plaguing even the most rational deliberative process. If a country does not know the strengths or ultimate goals of a rival, then a rational approach becomes increasingly challenging. Yet an information deficit in decision-making is neither proof of irrationality nor is it an imperfect final result.

With the foundation of rationality established, *How States Think* dives into detailed case studies of 20th Century grand strategy. One of the most interesting and thought-provoking examples assesses the pre-war French relationship with Nazi Germany. The French preparations for an increasingly certain war may appear lacklustre. A casual observer may therefore argue they were non-rational. Yet the authors assert these were



actually grounded in a deliberative process accounting for many factors such as the suppression of French Communism and the complex Franco-Soviet relationship.

Rationality in grand strategy is supported by long lead times for decision-making which allow for debate and deliberation. Mearsheimer and Rosato must therefore develop their thesis by assessing the pressured scenario of Crisis Management. This entails a further fascinating journey through the crises of the 20th Century to highlight that in cases such as the Soviet invasion of Czechoslovakia, a deliberative rational process was followed by decision-makers.

Finally, the authors wrap their argument by confronting a few clear examples where states have followed non-rational processes. Examples such as German naval strategy prior to World War One and the final days of Nazi Germany show that when certain 'dominator' individuals become central in decision-making they can skew the deliberative process. Yet these cases are rare even in autocratic regimes, as the competitive nature of geopolitics leaves little slack for frequent or engrained irrational behaviour. A final assessment of strategic goals argues the primacy of state survival. This overarching goal explains seemingly irrational decisions when states are faced with options to fight or appease potential aggressors.

Mearsheimer and Rosato leave little doubt on their assertion of rational decision-making. Yet while they recognise the challenges of imperfect information this seemingly crucial field is given little detailed analysis. They provide copious examples of leaders grappling with information gaps or biased intelligence, but offer limited insight on how this can be coalesced to best support a deliberative process. To fully immerse the reader in the state decision-making process and allow

analysis of contemporary situations, this aspect requires greater focus or perhaps here lies an opportunity for a subsequent publication.

How States Think offers an easily accessible gateway into the realms of strategic thought. Highly relevant, succinctly explained examples support Mearsheimer and Rosato's argument that states are ultimately rational actors. With this frame established, we can approach the confusion of 21st Century geopolitics with new clarity. It is an essential read, not just for scholars of the subject, who would be wise to learn from two great names of the field, but also for more casual observers. For scholars and operators in the field of defence and security this book provides a new reference by which to assess our rivals. Understanding and giving credit to an adversary's deliberative decision-making process should increase the efficacy of our own planning and ultimately enhance our operational effectiveness.

The New Makers of Modern Strategy: From the Ancient World to the Digital Age

Edited by Hal Brands

Publisher: Princeton University Press, 2023

ISBN: 978-0691204383, 1,200 pages

Reviewed by Squadron Leader Robyn Mitchell

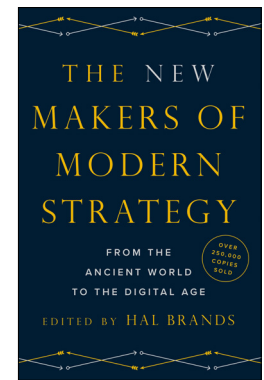
'Strategy is the indispensable art of getting what we want, with what we have, in a world that seems set on denying us.' Given the current financial and geopolitical climate, it has never been more important to harness the capabilities and resource we possess in order to achieve the political outcomes we desire. The strategy we employ is critical to enabling that success. As editor Hal Brands reflects in his introduction, 'strategy must weave together military commanders, economists, revolutionaries, politicians and all citizens of democracies'. *The New Makers of Modern Strategy: From the Ancient World to the Digital Age* is a thought-provoking book that explores the evolution, revolution, and reinvention of strategic thinking throughout history. It brings together a diverse community of intellectual heavyweights and strategic masterminds to provide an insightful analysis of the influential strategists and their ideas that have shaped the world of military action and international relations for centuries.

On its third edition, *The New Makers of Modern Strategy* has long been popular with academics and military practitioners alike. The first volume, edited by Edward Mead Earle was published in 1943, two years before the end of an era of world wars that had raged across continents for three decades. The second volume, edited by Peter Paret, was published in 1986, five years before the conclusion of over four decades of the Cold War. The previous two volumes arrived during great power conflict and great power competition. This book arrives in a

similarly unique time of great power resurgence. Since the last edition, the world has changed drastically, emerging from the Cold War with America enjoying a period of global primacy. Soon afterwards, the West would find itself embroiled in wars against terrorism and insurgency, more recently grappling with the idea of grey-zone, sub-threshold conflict. This edition of the book reflects that for a time, the West enjoyed a reprieve from great-power competition, but that reprieve is now over, with China grappling for hegemony and Russia seeking revisions to the balance of power in Europe. It is a truism that you see the world from where you sit, but whilst all three versions of this book have arrived into distinctly unique geopolitical situations, they all share the common ambition that an understanding of the long history of strategy may help us to better anticipate what is to come.

Given the size of the book, at just over 1,200 pages, it is helpfully divided into five distinct sections, each focusing on a different era: Foundations and Founders, Strategy in an Age of Great-Power Rivalry, Strategy in an Age of Global War, Strategy in a Bipolar Era, and Strategy in the Post-Cold War World. Each section offers a meticulous exploration of the key strategists and their theories within the context of their respective time periods.

This structure allows the reader, as the title suggests, to trace the evolution of strategic thinking and development from ancient times to the digital age, providing a



comprehensive reference guide to allow for a much deeper understanding of the subject.

One of the book's greatest strengths comes from its diversity and breadth of coverage. Hal Brands has curated a collection of essays that encompasses a wide range of strategic thinkers such as Tami Davis Biddle, Laurence Freedman, and Dima Adamsky. The inclusion of non-Western strategists and perspectives offers a varied and balanced portrayal of the development of strategic thought throughout history. This approach challenges conventional narratives and provides the audience with a more global and nuanced understanding of strategic theory. The essays within each section are well researched, providing readers with a detailed yet accessible analysis of specific strategists and their contributions, both successful and unsuccessful, to the development of strategy. The authors also delve into the historical context and weave through the political, cultural, and social factors that shaped the development of strategic thinking in each era. This approach provides the reader with an enhanced understanding of the complex interplay between ideas and the historical events that provided the catalyst. In addition to the reflection on individual historic periods, the book also explores the continuity of thought throughout history, highlighting how ideas from ancient strategists such as Sun Tzu or Thucydides continue to resonate and shape contemporary thinking. This relationship between past and present underscores the enduring relevance of these theories and their impact on modern strategic practices. It is that latter point that makes this book a valuable tool for any air power practitioner, General Jim Mattis once said, 'we have been fighting on this planet for ten thousand years; it would be idiotic and unethical to not take advantage of such accumulated experiences'. This book collates much of that history into a comprehensive and insightful analysis that can be revisited time and time again throughout one's career.

The New Makers of Modern Strategy is a hugely valuable anthology and one I would highly recommend adding to your bookshelf and revisiting often. Its diverse approach and insightful analysis provides readers with a comprehensive appreciation of the evolution of strategic thought. It is this diversity in authorship that challenges some of the traditional narratives and offers a more nuanced and global perspective on strategic theory. Whilst it will naturally appeal to those of us with an interest in strategy and international relations, it has far broader utility. There is no question that we are in the midst of a period of significant change; the next 12 months will be crucial for Ukraine, and the support provided to them in order to tackle the Russian onslaught must not wane. The renewed strength of investment into NATO must continue to be galvanised, despite the continuing shifts in global geopolitics. As air power professionals and practitioners, each of us has a responsibility to use this volume as a supporting guide to make informed decisions on the war-winning strategies of today and tomorrow. It is those actions which we take now that will be analysed for the fourth edition of this book.

This causes us to question whether these things will become certainties, or whether there is still time to treat space and our relationship with it, differently. Noting the sage advice of Albert Einstein, who famously highlighted that: 'two things are infinite: the universe and human stupidity and I'm not sure about the universe'.

This book is a must read for every space scholar and for anyone who is inquisitive about why we are where we are, and where we could be if we consciously choose the right vector for our future. It talks about Astro-politics – a term which, in my own humble view, incorrectly frames our approach to venturing into space and 'slipping the surly bonds of earth' as John Gillespie Magee Jr famously wrote. As an alternative, perhaps we should be thinking and talking about Astro-relations – how humankind decides collectively to treat each other in a humane manner, with kindness. Additionally, how we work together, harnessing our collective talents and energy to make colonies on the moon, asteroid mining for other-than-earth minerals, and our moves towards Mars, as examples of science fact rather than visions of science fiction. That represents the real challenge and opportunity for us all.

As the Apollo 14 astronaut, Edgar Mitchell, said: 'from out there on the moon, from a quarter of a million miles out, international politics look so petty'.

However, the last word, quite rightly, should be reserved for the first member of our human race to venture into space - Yuri Gagarin: 'I see Earth. It is so beautiful'.

Leadership: Six Studies in World Strategy

By Henry Kissinger

Publisher: Allen Lane, 2022

ISBN: 978-0241542002, 528 pages

Reviewed by Air Vice-Marshal (Retd) Phil Lester

Leaders think and act at the intersection of two axes: the first, between the past and the future; the second, between the abiding values and aspirations of those they lead.

Henry Kissinger, 2022

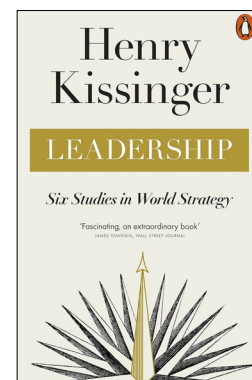
The book is a masterpiece and arguably the pinnacle of Kissinger's long and distinguished career as a diplomat, statesman, political advisor, strategist and historian. He was certainly a, if not the, grand master of contemporary strategy and he leaves a gaping void. Fortunately, his intellectual and practical legacies will endure through an extensive library of books, articles and papers.

Leadership – Six Studies in World Strategy, his final literary contribution and possibly one of his most important insights into the realm of contemporary strategy and strategic leadership, is an excellent handrail for strategists, leaders, advisors and practitioners of statecraft at the international level.

Through the analysis of six of the 20th Century's most influential strategic leaders, Kissinger navigates the complexities of that century while narrating a clever and insightful summation of the nature of contemporary strategic leadership. In each case study he makes vivid linkages – past and present, theory and practice, context and vision, as well as on learning and intuition. With each leader, he anchors their character with their ability to understand and adapt to their society at their

respective point in time, considering history, capacity, motivations, tensions as well as capacities. Each case study is a statement of a particular strategic leader's strategic authenticity: Adenauer – Humility; De Gaulle – Will; Nixon – Equilibrium; Sadat – Transcendence; Yew – Excellence; and, Thatcher – Conviction. Moreover, there is the sense that Kissinger also felt that each of these leaders was also equipped with an amalgam of all six qualities. Throughout the book, Kissinger demonstrated the effectiveness of such a combination and how all six leaders were both able to maximise such traits to understand and relate to the prevailing conditions or context, in order to provide a believable vision for the future, which fits with the heart of his two axes analogy. The skill to think, act and learn at this intersection is what strategic leaders must do by means to set goals, to define an actionable strategy and to be able to communicate their ambition to multiple audiences. In short, cometh the hour, cometh the leader.

But why are these case studies, which are all rooted in 20th Century history, when the socio-cultural and technological conditions were considerably different to those of the 21st Century, important signposts for us today? We are all aware of how advances in technology have increased the amount of information and data available to leaders and decision-makers. Consequently, with the increase in this data volume, we are also challenged by its velocity, veracity and



validity. Kissinger's book will undoubtedly stand the test of time.

He recognises the differences between the last and current centuries and particularly the growth of populism, the importance of self-image preservation, political myopia and increased multipolarity, and with it the divergence of hitherto accepted norms and values – East and West, North and South. Through this book he is creating a narrative and painting a picture of what we need now. He is emphasising the importance of knowing oneself – as both an individual and the representative of a societal collective – and the importance of linking history with vision, and interests with values. And, because of the pressures contained within the 21st Century panorama, leaders need to think and act faster – and this is where timely and empathetic intuition is of growing importance to the contemporary strategic leader and those that they lead.

As a result of his recent passing, the world has lost an immense intellect and skilled practitioner. Nonetheless, this book is his ultimate legacy in that it provides an incredibly important road map for current and future strategic leaders. Readers should digest and reflect on the nuance of each case study and consider the synthesis of the six as a whole. Readers should also ask themselves 'what 21st Century strategic leaders have similar levels of humility, will, equilibrium, transcendence, excellence and conviction and are able to deliver strategies as effectively as Adenauer, De Gaulle, Nixon, Sadat, Yew and Thatcher'?

It's a shame that Kissinger is no longer with us and he leaves a very big void in the world of diplomacy, statecraft and strategy. While a natural successor to Kissinger may not be obvious, we have through *Leadership – Six Studies in World Strategy* a great

frame of reference to start looking and measuring potential candidates.

As senior directing staff at the Royal College of Defence Studies, I lead our strategy modules: the first, on strategic theory and strategic design; the second, on strategic orchestration. Through all our modules, a golden thread of strategic leadership binds our thinking and learning at the strategic level. There is so much in Kissinger's writing that chimes with what is covered and on where we place emphasis on qualities such as authenticity, learning, inquisitiveness, reflection and communication.

Command: The Politics of Military Operations from Korea to Ukraine

By Sir Lawrence Freedman

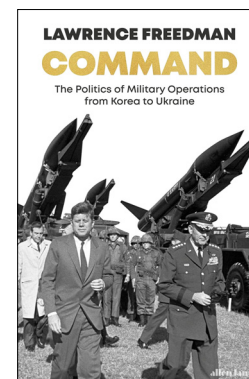
Publisher: Allen Lane, 2022

ISBN 978-0241456996, 608 pages

Reviewed by Wing Commander Paul Withers

Command: *The Politics of Military Operations from Korea to Ukraine* is an extensive treatment of the challenges of commanding military operations. Sir Lawrence Freedman presents a fantastic book that is beautifully written and packed with insight and analysis. He highlights that command is essentially a human endeavour, on one level deeply personal and an expression of the character and experience of the commander but also dependent upon the interpersonal relationships between commanders and those under command. Perhaps more importantly, at the very senior level, success in command is determined by the relationships with the political leaders that shape the context of command decisions, and in doing so endow the commander with their freedoms and constraints.

Sir Lawrence Freedman is Emeritus Professor of War Studies at King's College London and is arguably the leading war studies academic of his generation. A multi-award-winning scholar and author, he has a reputation for covering some of the big issues relating to the art and science of war, as evidenced in other recent works, *Strategy: A History and The Future of War*. He was the official historian of the Falklands Campaign and a member of the Chilcot Inquiry into the 2003 Iraq War. His lifetime of scholarship and particularly his role in analysing the political and command decisions of some of Britain's recent conflicts make him eminently qualified to write this authoritative volume.



The introduction establishes the principles of what command is, and how it differs from leadership. The author draws on the key qualities of a senior commander, emphasising their character over their tactical expertise, and drawing out the vital element of political sensibility that can make or break them. One consistent theme is that the great commanders need to possess what Clausewitz called the *coup d'oeil*, the ability to look beyond the immense complexity they face and clearly see the route to victory.

Each chapter examines command in the context of a significant campaign since World War II, and the senior commanders who oversaw them. Freedman starts with Korea and the controversial General Douglas MacArthur's difficult relationship with his Commander-in-Chief, President Truman, which ultimately led to his being relieved of command. Other chapters range from the French Wars in Indochina that marked the beginning of the end of French colonial influence, new insights into the widely studied Cuban Missile Crisis, and the perhaps less well-known in the West, Yahya Kahn's command of Pakistani forces in their defeat and loss of East Pakistan. In addition to Kahn, Freedman also covers the role of another dictator as supreme commander, in this case one without prior military experience, in the form of Saddam Hussein. His study into the role of revolutionary commanders in a fragile state in the form of Che Guevara and Laurent-Désiré Kabila in the Congo offers insight into

a different type of command, not one established in an existing state structure.

The chapter on the US war in Vietnam, particularly in its latter stages, elucidates the frictions between military commanders, their political Commander-in-Chief President Nixon, who was impatient for an exit strategy, and the wider politics of Washington DC. The US experience in Vietnam cast a long shadow over its willingness to commit forces a quarter of a century later in Kosovo. In the Kosovo chapter, Freedman highlights the challenges of working with sometimes competing national and NATO chains of command, differences in strategy, and the role played by another contentious commander, the Supreme Allied Commander Europe, General Wesley Clarke. Israel's 1967 War gave rise to their controversial command character in the form of Ariel Sharon, who gained a reputation for fighting both the enemy and the leadership above him, often masking insubordination under a thin veil of interpretation.

Unsurprisingly, given his role in writing its history, the author's treatment of the 1982 Falklands Campaign is particularly detailed and nuanced. He demonstrates the difficulties communicating and gaining situational awareness during a campaign playing out 8,000 miles away from the heart of political and senior military decision-making, one that switched from being a naval battle to a land campaign, requiring a different type of command. The cast of players in this campaign includes Prime Minister Margaret Thatcher, her ministers, senior military advisors, and those in the South Atlantic, commanding at various levels in the Task Force. In this case, there was a comparative lack of 'long screwdriver' control from London, owing to the distances being too great and the complexity of the evolving situation, without a clear and current picture being available.

This required a level of autonomy and trust that is seen less in today's hyper-connected operations.

Perhaps of particular interest to currently serving personnel and analysts are the challenges of command faced in wars fought by Russia, in Chechnya and later in Ukraine, and those related to counterinsurgency operations in Afghanistan and the Middle East. Each of these chapters illuminates the context that contributes to the contemporary challenges of command.

In concluding the book Freedman draws together some of the common themes across all his case studies and highlights the balance between politicians directing their military commanders and acting on sound military advice. He notes the consequences of a breakdown in the institutional separation between politics and military command as leading to 'bad government and an incompetent military'.

This fantastic volume has rightly received warm critical acclaim; at well over 500 pages, it is a long, but highly engaging read. Having read the book as a single piece of work, its structure also lends itself to consuming individual chapters, where the reader's focus is on a particular historical or contemporary campaign. The author states he does not intend to provide a complete history of the campaigns under the microscope, but instead hopes to help us 'appreciate the core issues surrounding the exercise of command'. Above all, Freedman captures the essence of the commanders themselves, their characters, strengths and weaknesses, hubris, and doubts. These factors all contributed to the weighty decisions they made, risking the lives of personnel entrusted to their command, and in many cases the fate of innocent civilians and entire nations.

This book should be read by those aspiring to command at all levels, particularly those officers granted the privilege and weighty responsibility of higher levels of command.

It should be required reading on command and staff courses; for those studying any of the case studies in greater depth, Freedman offers a collection of insightful primers through the lens of the politics and the challenges of command.

Winkle: The Extraordinary Life of Britain's Greatest Pilot

By Paul Beaver

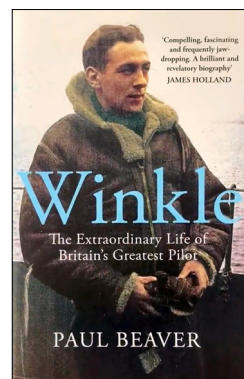
Publisher: Michael Joseph, 2023

ISBN 978-0718186708, 544 pages

Reviewed by Group Captain Martin Higgins

Paul Beaver's, *Winkle: The Extraordinary Life of Britain's Greatest Pilot*, is a highly recommended book targeted at an audience with a general interest in aviation history. The story tracks the life of Eric 'Winkle' Brown from being adopted as an infant at Edinburgh Waverly Station, through a truly extraordinary test pilot career in the Royal Navy, to appearing as the 3,000th castaway of BBC Radio 4's *Desert Island Discs* at 95 years old. The terms, 'extraordinary' and 'exceptional' are ironically commonplace these days but this story reminds us that, with 487 different aircraft types in his logbooks, the story of Capt Eric 'Winkle' Brown CBE DSC AFC RN deserves to stand out from the rest.

Beaver is an aviation journalist, author, and good friend of Winkle, who first floated the idea of a biography at Winkle's 90th birthday celebration in London. Winkle agreed to publishing a work after his death, at which point he would share his logbooks and documents with Beaver. This book is the culmination of extensive research of those documents, several interviews with Winkle leading up to his death in 2016, plus other interviews with Winkle's contemporaries. This is not an academic piece of work, with very few footnotes, references and a short bibliography; nevertheless, Beaver does apply due diligence throughout the book to highlight where there is no documentary evidence to support Winkle's claims. Beaver also politely reminds us that Winkle may have embellished some of his stories (show me a pilot that



doesn't do this!). That said, Beaver's approach is spot on. For a career spanning 30 years with so many types and experiences, Beaver breaks up the inevitable list of facts with some very entertaining stories. It helps the reader to understand Winkle's character as well as his skills. Beaver writes in an engaging style, so this book will suit everyone's taste, particularly those looking for an easy and absorbing read for holiday or travelling.

Beaver is not shy in revealing Winkle's strengths and his weaknesses. Beaver's argument, although implied, was that Winkle was without doubt someone to be greatly admired but not necessarily someone who was liked by everyone: an expert in the air, but a tendency, '...to rub people up the wrong way'. Beaver also shares several anecdotes where Winkle demonstrated a tendency to bend the rules, not only in his younger days, but throughout his career. Winkle allegedly 'borrowed' an aircraft to see his beloved, Lynn, whilst they were courting. He had also performed numerous unauthorised low-level flypasts on several aircraft types. Each time, he received the appropriate sanction, and it was often dealt with at unit level. This 'naughty' streak stayed with Winkle to old age, achieving his first speeding ticket at 95 years old.

Beaver's book is a valuable contribution to general aviation history because it presents a convincing case to place Winkle in the same league as Neil Armstrong, Amy

Johnson, and Chuck Yeager. The book describes Winkle's journey of opportunity, pure luck, and overcoming fear to become one of the greatest pilots we have seen. Many of his colleagues didn't survive that journey. And this is where the book is so thought-provoking. Beaver does not venture into how today's Defence might grow the Winkles of the future, or whether Defence could, or should. From Beaver's account, Winkle's bravery accelerated the test flight programme of dozens of aircraft, often exploring uncharted flight regimes, without the luxury of time. Could we match Winkle's pace these days? Do we have a system which would accept that level of risk? And how would our system deal with a talented individual who may have bent the rules from time-to-time? These points are particularly poignant in the chapter concerning the Fallen Mission – the UK test flying of captured Luftwaffe capabilities after the war. Winkle flew the highly volatile Me 163 Komet rocketplane after a few brief interviews with Luftwaffe pilots!

Overall, this is a humbling and enjoyable read for anyone interested in military aviation. Beaver believes Winkle was Britain's finest pilot and, given his test flying achievements, it is unlikely that anyone will come close again.

Contents: The Chief of the Air Staff's Reading List 2023

Putin's War: From Chechnya to Ukraine

By Mark Galeotti

Publisher: Osprey Publishing

The Avoidable War: The Dangers of a Catastrophic Conflict Between the US and Xi Jinping's China

By Kevin Rudd

Publisher: Public Affairs

Allies in Air Power: A History of Multinational Air Operations

By Steven Paget (Editor)

Contributors: Bert Frandsen, Matthew Powell, Andrew Conway, John Moremon

Publisher: University Press of Kentucky

Air Power Supremo: A Biography of Marshal of the Royal Air Force Sir John Slessor

By William Pike

Publisher: Pen & Sword Books

21 Lessons for the 21st Century

By Yuval Noah Harari

Publisher: Vintage

Diversify: Six degrees of integration

By June Sarpong

Publisher: HQ

The End of the World is Just the Beginning: Mapping the Collapse of Globalisation

By Peter Zeihan

Publisher: HarperBus

Exponential: Order and Chaos in an Age of Accelerating Technology

By Azeem Azhar

Publisher: Penguin

Original Sin: Power, Technology and War in Outer Space

By Bleddyn E Bowen

Publisher: C Hurst & Co Publishers Ltd

Scramble for the Skies: The Great Power Competition to Control the Resources of Outer Space

By Peter Garretson and Namrata Goswami

Publisher: Lexington Books

Contents: The Chief of the Air Staff's Reading List 2022

Life 3.0: Being Human in the Age of Artificial Intelligence (AI)

By Max Tegmark

Publisher: Penguin Random House UK

We Are Bellingcat: An Intelligence Agency for the People

By Eliot Higgins

Publisher: Bloomsbury

Military Strategy in the Twenty-First Century: The Challenge for NATO

By Janne Haaland Matlary and Rob Johnson

Publisher: Hurst Publishers

Air Forces: The Next Generation

By Amit Gupta

Publisher: Howgate Publishing Limited

The Space Barons, Elon Musk, Jeff Bezos, and the Quest to Colonize the Cosmos

By Christian Davenport

Publisher: Public Affairs

Behold the Dark Gray Man

By Katharine Campbell

Publisher: Biteback Publishing Ltd

Educating Air Forces: Global Perspectives on Airpower Learning

By Randall Wakelam, David Varey and Emanuele Sica

Publisher: The University Press of Kentucky

The Authority Gap: Why women are still taken less seriously than men, and what we can do about it

By Mary Ann Sieghart

Publisher: London: Transworld

Noise: A Flaw in Human Judgement

By Daniel Kahneman, Olivier Sibony and Cass R Sunstein

Publisher: William Collins: London

The Russian Understanding of War: Blurring the Lines between War and Peace

By Oscar Jonsson

Publisher: Georgetown University Press

Contents: The Chief of the Air Staff's Reading List 2020-21

Rebel Ideas: The Power of Diverse Thinking

By Matthew Syed

Publisher: John Murray

The Dragons and the Snakes: How the Rest Learned to Fight the West

By David Kilcullen

Publisher: London: C Hurst & Co

The Culture of Military Organizations

By Peter R Mansoor and Williamson Murray

Publisher: Cambridge University Press

Army of None: Autonomous Weapons and the Future of War

By Paul Scharre

Publisher: WW Norton & Company

The Rules of Contagion: Why Things Spread and Why They Stop

By Adam Kucharski

Publisher: London: Profile Books

War in Space: Strategy, Spacepower, Geopolitics

By Bledwyn E Bowen

Publisher: Edinburgh University Press

The New Rules of War: How America Can Win Against Russia, China, and Other Threats

By Sean McFate

Publisher: New York, William Morrow

Command: the Twenty-First Century General

By Anthony King

Publisher: Cambridge University Press

The Future of NATO Air Power: RUSI Whitehall Papers 94

By Justin Bronk

Publisher: Routledge

Sandworm: A New Era of Cyberwar and the Hunt for the Kremlin's Most Dangerous Hackers

By Andy Greenberg

Publisher: Doubleday

The views expressed by the reviewers in this list are theirs and theirs alone. Inclusion of a particular book within the reading list should not be taken to mean that the Royal Air Force or the Ministry of Defence endorses the contents. Manuscripts with challenging and even contrarian views will be included in order to stimulate thinking, discussion and debate.



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