

The Chief of the Air Staff's Reading List 2023



Front cover image:

One of RAF Coningsby's Typhoon on return from the Exercise Cobra Warrior on 7th September.

Exercise Cobra Warrior, has allowed members of the United States Air Force, Italian and German Air Forces and NATO to work alongside their RAF counterparts to undertake multiple training missions with various objectives. Providing valuable opportunity to develop joint tactics, techniques and procedures.

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Foreword

In a rapidly changing, more uncertain world, we have to remain open to new ideas, to new perspectives and to new ways of thinking.

This reading list provides an array of titles from renowned authors, covering the fast-evolving global arena; the challenges and opportunities of technology; the greater diversity of our societies and future workforce; and what it means for air and space power going forward. Above all, it helps us to visualise the Royal Air Force our successors must inherit in 10, 20 or 30 years from now, and the part we must play today to build that future force.

This 2023 list starts with *Putin's War: From Chechnya to Ukraine* by Mark Galeotti, a leading commentator on contemporary Russia. Using his unique perspectives of the Russian elite, it examines the key factors which explain why we are facing war in Europe once again.

The wider implications of superpower competition are considered in *The Avoidable War: The Dangers of a Catastrophic Conflict Between the US and Xi Jinping's China* by Kevin Rudd. As a respected international statesman and lifelong student of China, Rudd explores the tensions between the superpowers facing each other across the Pacific while addressing the tyranny of distance.

Examining the phenomena described as 'deglobalisation', Peter Zeihan's *The End of the World is Just the Beginning: Mapping the Collapse of Globalisation* considers how demography, geography and history are causing the current global world order to fracture and disaggregate. Of concern, the author suggests that 'the world of the past few decades has been the best it will ever be in our lifetime. Instead of cheap and better and faster, we're



rapidly transitioning into a world that's pricier and worse and slower. Because the world ... is breaking apart.'

As a counter to this, the eminent historian Yuval Noah Harari uses the lessons of recent history in his *21 Lessons for the 21st Century* to suggest that what we can learn from our recent past can place us upon the right strategic vector to shape our collective future.

Air Power Supremo: A Biography of Marshal of the Royal Air Force Sir John Slessor by William Pike provides the first definitive biography of one of the greatest thinkers on strategy and the utility of air power which our Service has produced. This seminal book describes a distinguished career and its key historical lessons which remain relevant today, spanning the evolution of air power from the biplanes of the First World War to the V-Bomber Force of the Cold War.

The use of history as a guide for how we will operate and fight alongside each other in future is evident in *Allies in Air Power: A History of Multinational Air Operations* by

Steven Paget (Editor). This highlights that contemporary and future air operations are characterised increasingly by international cooperation, and the more we are integrated by design, then the more effective we will be in using air power to ensure our defence and security.

Diversify: Six degrees of integration by June Sarpong highlights the importance of connecting with people from other groups and backgrounds, and how to do this better as part of our everyday interactions. This leading international expert suggests ways by which when we are trying to resolve significant issues, we embrace diversity of thought by including within our decision-making process those who have the knowledge and experience to challenge us effectively.

Exponential: How to Thrive in an Age of Accelerating Technology by Azeem Azhar explores the rapid rate of technological changes which are transforming our societies and suggests a future vision where Artificial Intelligence and Robotics, embracing the opportunities created by data science and data analytics, establish a world which is safer, healthier and more prosperous.

In ***Original Sin: Power, Technology and War in Outer Space***, Bledwyn E Bowen suggests that space technology has not necessarily been developed for the benefit of all humankind. He reasons that the more complex and complicated the new space ecosystem becomes, the more likely competition and potential conflict become.

This theme continues in ***Scramble for the Skies: The Great Power Competition to Control the Resources of Outer Space*** by Peter Garretson and Namrata Goswami, who suggest that the second space race is just beginning, with the expectation that it will become 'a rush, even a scramble'. The authors highlight that those nations which succeed in this new quest for the control of resources,

have the potential to change the landscape of the international arena beyond comprehension, just as throughout our histories, new technologies which have allowed exploration beyond our horizons, have significantly altered the relationships between states and their respective fortunes.

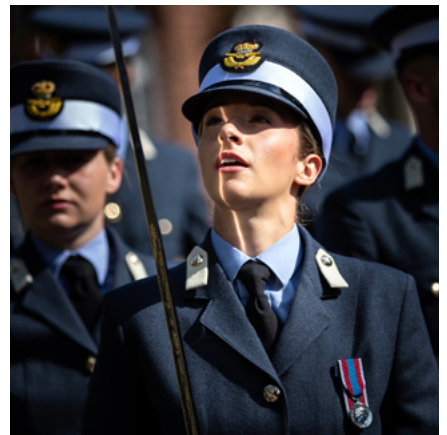
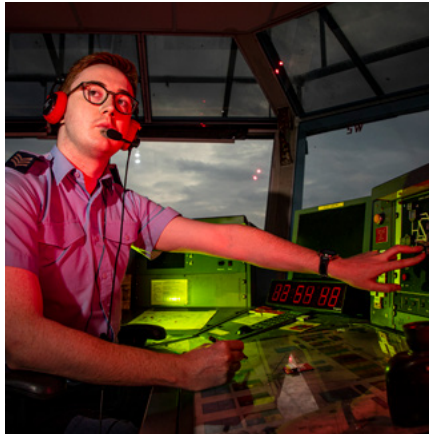
To ***out-fight our future adversaries***, we are also going to have to out-think them. To do this, we will have to understand how they think and how they view our world from their own perspectives. Our agility of mind is just as important as our agility on operations, across air, space and cyberspace.

It underlines the importance to the Royal Air Force of life-long learning, focusing on education throughout our careers, and adding to our intellectual and conceptual understanding.

I very much hope you enjoy reading some or all of these titles, as you continue on your professional development journeys. And if you find some of the subjects covered to be of particular interest, then you might consider studying them in greater detail using the fantastic opportunities which we offer through our CAS Fellowship Scheme.



Air Chief Marshal Sir Mike Wigston KCB CBE ADC
The Chief of the Air Staff



Message from the Director of Defence Studies (RAF)

I hope that you find the titles listed within this 2023 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 online 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' endorsement in his 2024 list, then please get in touch with me 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 and Emerging Technology, I would actively encourage you to consider applying for a Chief of the Air Staff's Fellowship. It may 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/.



Group Captain Paul Sanger-Davies
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The Chief of the Air Staff's Reading List 2023

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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).

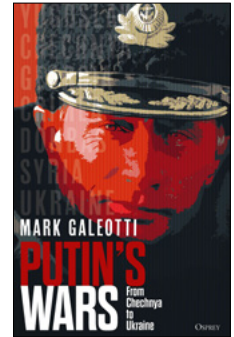
Putin's War: From Chechnya to Ukraine

By Mark Galeotti

Publisher: Osprey Publishing, 2022

ISBN: 978-1472847546, 384 pages

Reviewed by Wing Commander Paul Withers



Russia's brutal invasion of Ukraine on 24 February 2022, and the weeks and months that followed the initial attack, have shocked the world. In *Putin's Wars* Mark Galeotti provides the recent historical background to the conflict and the role of its architect and ultimate decision maker, the Russian President, Vladimir Putin. *Putin's Wars* sets the current war in its post-Soviet historical context, offers the reader an insight into the reconstruction of the Russian military under Putin, and the role that war has played in Russia's projection of power. The book also helps the Western reader understand the complex set of personal, historical, political, and economic drivers that have pushed Putin to try and reassert Russia's regional and global position.

Professor Mark Galeotti is a highly regarded scholar of Russian security affairs, is an Honorary Professor at University College London and holds fellowships at RUSI, the Council on Geostrategy and the Institute of International Affairs Prague. He is a prolific author of over 25 books mainly related to Russia's military and politics. *Putin's Wars* is underpinned by Galeotti's scholarly expertise but is written in a way that is engaging, with excellent explanations of the complexity of Russian doctrine and military structures.

The book is presented in five main parts. The author begins with the era before Putin came to power, starting with the chaotic period at the end of the Soviet Union. In 1991, the

August Coup against Mikhail Gorbachev eventually led to him being succeeded by Boris Yeltsin, followed by the dissolution of the Soviet Union. Under Yeltsin the Russian military went into a crisis of decline, underinvestment and increasing corruption. Yeltsin selected Pavel Grachyov to be his first Defence Minister, a former paratrooper who, in Galeotti's assessment, was inept at the ministerial level, leading to humiliating defeat in the First Chechen War of 1994-96. Russia also continued to try to assert itself as a regional hegemon, justifying its interventions in Moldova and Tajikistan in part due to the legacy of large numbers of ethnic Russians in Soviet satellite states. Protecting the interests of Russians abroad was, and continues to be, used as a pretext for interventions. The Balkan wars of the 1990s, particularly the 1999 Kosovo campaign, and the expansion of NATO towards Russia's borders, offered further tension and was seen as a humiliation for Russia.

The second part of the book explains Putin's rise to power from obscure KGB officer during the end of the Soviet era to Director of the KGB's successor, the FSB and eventually to President. Putin asserted himself both domestically, exerting control over the corrupt oligarchs that had emerged under Yeltsin, and doing all he could to restore Russia's position in the world. This included the rebuilding of Russia's beleaguered Armed Forces under a succession of Defence Ministers leading up to the current incumbent of over a decade, Sergei Shoigu. Putin's first war was Russia's second intervention in Chechnya.

Part three charts Shoigu's rebuilding of Russia's military, the annexation of Crimea with little actual fighting, and the intervention in the Donbas region. The war in the Donbas was initially fought by irregulars and non-attributable Russian forces. Galeotti also assesses the perhaps unexpected out of area operation in Syria in support of the Assad regime. This campaign gave Russia the ideal opportunity to test its troops in combat and trial new capabilities and weapon systems. The Donbas and Syria also saw the emergence of private military contractors such as Wagner. The author notes the value to Russia of using Wagner for deniable operations and to grow capacity, but also highlights the danger to Russia of 'the tail Wagnering the dog: the mercenaries need to know who is boss' (p. 220).

Part four offers more detail on the growth and rearmament of the Russian Armed Forces. Galeotti makes comparisons between the Russian and Western arms industries. Russia has a mainly indigenous defence industry, which offers the state the ability to resource its armed forces relatively cheaply, but it is also largely sustained by state intervention. Galeotti suggests that 'one in ten of all defence-industrial enterprises are nearing bankruptcy, only being kept afloat by new loans or periodic government debt forgiveness' (p. 235). The remainder of this section provides detailed explanations of Russian force structures across all domains, including special and nuclear forces. The author describes Russia's breadth of both newer and aging capabilities, and its logistics, including its dependence upon its rail network; Galeotti notes that Russia probably could not sustain full-scale operations far from its borders.

The fifth and final section of the book looks to the future and analyses the concepts of political warfare, including the integration of information warfare. Russia's 'new generation warfare' is built upon it having become 'a

learning organisation... [and] its military thought is complex and evolving' (p. 322). The author reflects on Russia's future challenges, not just with the West, but increasingly its important relationships in the East and with China. The book's penultimate chapter gives an early assessment of Russia's performance in Ukraine since its invasion. He notes that hubris has destroyed 20 years of military reconstruction and the war thus far has been devastating for the Russian Armed Forces. Finally, Galeotti concludes with an assessment of Putin's legacy: his striking early successes as President squandered through corruption and military overreach that will take decades to recover from.

Overall, Putin's Wars is an excellent book. It is full of insight and is a very readable volume that helps provide the reader with the context around current conflict. It is underpinned by Galeotti's decades of scholarship into this complex and enigmatic nation and its people. It is highly recommended as a useful primer on the current conflict for all military personnel and war studies scholars. It also acts as a reminder that whilst the UK and its allies were distracted by counterinsurgency, post-Soviet Russia was modernising its military, learning through successive military campaigns (its own and those of the West) and trying to reassert itself as a regional and global actor.

The author provides an excellent overview of the development and modernisation of Russia's armed forces under Putin. He does so in a balanced way, highlighting the scale and strengths of military capability, but also its weaknesses. We can conclude that the new Russian military Bear, though not ten-feet tall is a different beast to its Soviet forebear. It does however retain some of its characteristics and foibles.

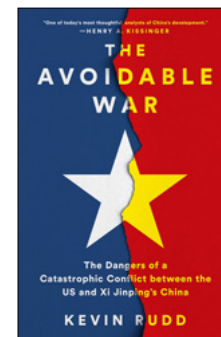
The Avoidable War: The Dangers of a Catastrophic Conflict Between the US and Xi Jinping's China

By Kevin Rudd

Publisher: Public Affairs, 2022

ISBN: 978-1541701298, 432 pages

Reviewed by Group Captain James Beldon



Former Australian Foreign Minister, Prime Minister and recently appointed ambassador to the United States, Kevin Rudd, is conspicuously well qualified to offer an authoritative and objective perspective on Sino-American relations. Before his appointment to the highest political office in his home country, Rudd had served in a wide range of diplomatic roles, including significant stints in Washington and Beijing. He is unique among recent Western leaders in being a fluent Mandarin speaker. A self-professed 'critical friend' of both the People's Republic of China (PRC) and the USA, Rudd's balanced analysis of US-China competition, and its attendant dangers, is an important addition to the literature on the subject.

In *The Avoidable War*, Rudd succeeds in exploring all the key ingredients that are contributing to the growing instability that attend China's inexorable rise, and the USA's attempts to bolster its influence in the Eastern Pacific whilst limiting the extent of its competitor's global ambitions. His proposal for a joint agreed framework which would enable the two countries to manage their strategic competition, whilst a laudable objective, is less compelling, principally because neither side seems to have the slightest inclination to embrace such an approach.

Rudd sets about his task, understandably, by establishing his outstanding credentials as an expert on Sino-US and

international relations generally, although his tendency to amplify his qualifications throughout the book serves, at times, to distract from his superb analysis. Notwithstanding, his incisive insight into Chinese strategy, and, in particular, the long-term vision held by PRC President and General Secretary of the Chinese Communist Party (CCP), Xi Jinping, is convincing. Whilst written before the 2022 Twentieth Party Congress, Rudd accurately assessed that Xi would use the event to bolster his dominance of Chinese politics for the remainder of the decade and possibly until the scheduled Twenty Third Party Congress in 2037, when Xi will be well into his 80s with, one assumes, his intended legacy secured. As Rudd predicted, Xi's stamp of authority was indelibly made on the Party through the highly visible and brutal ejection of his predecessor, Hu Jintao, from the proceedings. As Rudd states, Xi is already the most powerful CCP leader since Deng Xiaoping, and, notwithstanding a strategic disaster, is on course to eclipse Mao, neither of whom had at their disposal the economic or military might that Xi has to wield. Xi's motivations are multifarious, but Rudd reminds the reader of how deep-seated his desire to rule is, given that during the Cultural Revolution, the Party purged his father, compelled his mother to denounce her husband, and precipitated the suicide of his sister. One must conclude, according to Rudd's analysis, that Xi has a burning desire not just to dominate the CCP in his own lifetime, but to be revered by future generations as one of China's greatest ever rulers.

The key objective to securing Xi's quest for immortal recognition is the integration of Taiwan as part of a greater China. Unlike Mao, who famously told US President Nixon that 'We can wait, maybe even a hundred years' for China-Taiwan unification, Xi is an ageing man in a hurry. Alongside the many arenas in which the US and China are competing – and which Rudd thoroughly examines – *The Avoidable War* ultimately distils its examination into an assessment of ten separate scenarios directly, or obliquely, addressing the Taiwan issue. Discouragingly, yet plausibly, five of the scenarios sketched out by Rudd result in direct conflict between the PRC and USA. The remainder results in hardly less significant shifts in the balance of power – ranging from a US 'Munich' moment that would harpoon its partners' faith in its readiness to ride to their rescue, to a loss of face so humiliating to Xi and the CCP that their command of China's polity would be damned.

The strategic framework proposed by Rudd could offer a vehicle through which the mutually mistrustful, even hawkish, US and Chinese leaderships could navigate their simultaneously dependent and opposed futures, although the chances of doing so seem remote, to this reader at least. However, there are reasons for hope that war will be averted: Russia's failure to subdue Ukraine will undoubtedly have served as a cautionary tale to Xi and the People's Liberation Army's General Staff, potentially decelerating their ambitions toward Taiwan; and, secondly, so long as China remains even just partially persuaded that the USA would fight to retain Taiwanese de facto sovereignty, Xi may calculate that the costs are just too high to contemplate, and a reversion to Mao's century-long patience may be the most pragmatic approach to adopt.

In *The Avoidable War*, Kevin Rudd has brought together multiple strands of Sino-US relations and presented a disciplined examination of the strategic themes and consequences of their geopolitical, economic, diplomatic

and military competition that is likely to define not only their bilateral relationship, but that of the globe, for the remainder of the twenty-first century. Few, if any, practitioner-academics are better placed than Rudd to help China and the US to steer away from direct military confrontation or, worse still, conflagration. This book marks a significant contribution to that endeavour and, given the positions of influence he has held (and holds today), Kevin Rudd may well be the natural successor to Henry Kissinger as the leading expert on Sino-US relations over the coming decades. For that reason alone, *The Avoidable War* is a noteworthy contribution to the analysis of the foremost geopolitical issue of the age and is therefore highly recommended reading.

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, 2021

ISBN: 978-0813180328, 314 pages

Reviewed by Group Captain John Alexander



Allies in Air Power offers a comprehensive analysis of the dynamics of multinational air operations from the First World War to the twenty-first century. As editor and contributor, Steven Paget's thesis is that, while multinational operations predate air power, contemporary air operations are generally characterised by international cooperation. Paget therefore reinforces the recently published third edition of the UK's *Joint Doctrine Publication 0-30, UK Air Power*. This states 'a UK national approach will generally be framed within a broader multinational response that includes allies'. While the air power literature contains many full-length studies of multinational air operations, they are often written from a national or air power role perspective. Whereas this anthology contains eleven case studies contrasting different conflicts over the history of air power, in different regions, from the strategic to the tactical levels of warfare and across the spectrum of conflict from war to peace support operations. Paget's introduction sets the historical and theoretical context and his concluding chapter also looks forward. Paget edited the volume when Portsmouth University's director of academic support at the RAF College Cranwell, and the contributors, all published experts in their fields, are from Canada, New Zealand, five are from the US and two more from Cranwell.

Each of the chapters, arranged in chronological order, provide insights into the history of multinational air operations, drawing out common themes such as the importance of building personal and institutional

relationships, preferably before conflict. The first chapter by Bert Frandsen, a professor at the US Air War College, highlights the multinational French, British and Italian effort to create a US Air Service capability at speed in the First World War. From a handful of obsolete US Signals Corps aircraft in 1917, by September 1918 the US offensive at Saint-Mihiel was supported by 1481 American, British and French aircraft in the largest air operation of the war. Whereas Matthew Powell's chapter argues that failures of strategy before the Second World War meant Anglo-French air forces in the Battle of France in 1940 were partners in name only, suffering from a lack of cooperative preparation, a shortage of fighters, obsolete bombers and an initial French reluctance to allow allied bombing. This was compounded by the French army's flawed strategy and 1918-type doctrine which meant the Allies were completely out-thought and out-fought by the German joint air/land campaign. The culmination of their differences was Air Chief Marshal Sir Hugh Dowding's famous refusal to send more fighters to France. Nevertheless, Powell could have mentioned, notwithstanding the overall failure, that the Anglo-French air commanders (Air Marshal Arthur Barratt and General François d'Astier de La Vigerie) were more determined to co-operate than their army colleagues, collocating at an Allied Central Air Bureau.

Andrew Conway assesses the development of the Anglo-American air force supporting the British Eighth Army in

the Western Desert in 1942, where soon after its entry into the war the US provided the RAF US-made aircraft and complete US Army Air Force units, starting the relationship that continued throughout the war. Whereas as John Moremon highlights, while the US Navy provided aircraft to a Royal New Zealand Air Force (RNZAF) determined to contribute in the Far East, RNZAF participation was stymied by the abrasive General Douglas MacArthur. Stephen L. Renner's chapter examines the little known (to this reviewer) co-operation between the Luftwaffe and Royal Hungarian Air Force during the Second World War. Starting as an ally to the Luftwaffe, by the end of the war the Hungarian Air Force was an auxiliary, providing much needed fighter pilots to fly German-made fighter aircraft. The personal relationships built meant it remained loyal to the Luftwaffe when the Hungarian Regent Admiral Nicholas Horthy declared an armistice with the Allies and a break with the Axis in October 1944.

Corbin Williamson's chapter on UN carrier operations in the Korean War by the Royal Navy, Royal Australian Navy, US Navy and US Marine Corps highlights how quickly the hard-won interoperability lessons of Second World War combined operations in the Pacific were forgotten. Through the commanders' normally good personal relations a solution was found in the deconfliction of areas of operations and other mitigations. Stephen Paget examines the tactical air operations of No 2 Squadron Royal Australian Air Force's Canberra bombers in Vietnam, where the Squadron became an effective and well-regarded adjunct of the US Air Force (USAF) despite its ageing aircraft. The chapters by the renowned US air power scholar Richard P Hallion on the Gulf War in 1991, Maria E. Burczynska on Operation Allied Force over Kosovo and Benjamin S. Lambeth on Operation Iraqi Freedom highlight the challenges for US allies of operating as a USAF adjunct in expeditionary and discretionary operations. Burczynska calls Allied Force the first NATO air operation

when the effectiveness of the operation, involving almost all Allied air forces, was built on thirty years of NATO Cold War air operations, which is arguably a missing chapter in the book. Finally, A. Walter Dorn's chapter on UN air operations offers a fascinating counterpoint to the mainly Western focused collection by examining UN air combat operations in 1960s Congo and the UN's increasing use today of UAS for surveillance in peace support and relief operations.

Allies in Air Power combines sound scholarship, evidence and insights in accessible short chapters. It is a history of multinational air operations and not the history. Yet the diverse chapters identify common hinderances to effective multinational air operations - differing national caveats, lack of pre-conflict interaction, and capability, doctrine and training gaps - and mitigations. These include building institutional and personal relationships over time, such as the ten years the USAF and RAF spent enforcing no-fly zones over Iraq prior to Iraqi Freedom, as Lambeth highlights, contributing to the shared military culture of Allied air forces.

Allies in Air Power is highly recommended for practitioners likely to participate in multinational air operations and all scholars and students of air power.

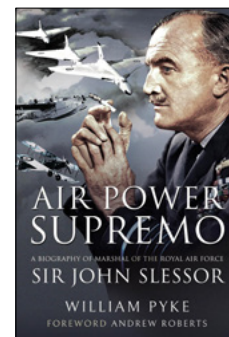
Air Power Supremo: A Biography of Marshal of the Royal Air Force Sir John Slessor

By William Pike

Publisher: Pen & Sword Books 2022

ISBN: 978-1399095525, 280 pages

Reviewed by Group Captain Paul Sanger-Davies



For anyone genuinely interested in our Service, you need to read about Jack Slessor', AVM David Walker, AOC 1 Gp.

MRAF Sir John Slessor has also been described by the eminent air power historian, Philip Meilinger, as 'the most prescient thinker in the RAF'.

For these reasons alone, this authoritative biography of one of the greatest air power thinkers of the twentieth century is essential reading for all of those with an interest in the evolution and enduring utility of air power, from tactical employment to strategic effect.

The author, William Pike, has used his unique access to the Slessor family archive, assisted by his close relationship with the grandson of MRAF Sir John Slessor, to create this superb account of an aviator who started his service career flying and fighting in biplanes and ended 37 years later as our Chief of Air Staff during the early 1950s, with responsibility for bringing our V-Bomber Force into service as the United Kingdom's independent nuclear deterrent.

Of note, Sir John Slessor's thinking is viewed as being central to influencing a turning point in British Defence Policy, by placing credible nuclear deterrence at its epicentre. And to achieve this, his clear focus was upon the urgent need for targeting information on key strategic sites across Russia, which required a rapid evolution of RAF intelligence, surveillance and reconnaissance capabilities.

His prediction, in the early 1950s, was that nuclear weapons would abolish general war, and this strategic foresight has been vindicated over subsequent decades. In November 1951, his prescient thinking on the balance between deterrence and conventional capabilities, which remains highly relevant today, was demonstrated when he wrote: 'Over expenditure on rearmament, leading to the ruin of the economy of Western Europe, would be to play to the Communist game and to present Russia with a bloodless victory gained at the sole cost of playing upon the nerves of the Free World'.

Sir John Slessor was a decorated airman, being the first to engage a Zeppelin over England, and later being awarded the Military Cross for action in Darfur, aged 18, where he was wounded in action and operated upon under anaesthetic involving hot champagne and brandy.

A colleague and friend of Lord Trenchard, he lectured at the Army Staff College, Camberley, in the early 1930s, and wrote the seminal '*Air Power and Armies*' which stressed the importance of air/ground cooperation on the battlefield.

Known for his qualities of straight-talking and clarity, supported by wisdom, charm and a determination to achieve positive outcomes, Sir John was chosen to escort emissaries of the United States Army Air Force on their visits to the United Kingdom in Summer 1940 to assess the

British chances of survival. Of note, during these visits he gained the trust and respect of Ira Eaker and Carl Spaatz, two of the leading American strategic thinkers on air power. He was then asked by CAS (Sir Charles Portal) to be his representative during the secret American, British and Canadian staff talks in early 1941, which considered the coordination required should the United States enter World War Two.

The relationships formed during such interactions formed the basis for the close relationship which has endured between the Royal Air Force and the United States Air Force.

Sir John Slessor was then asked by CAS to accompany him to the Casablanca Conference in 1943, where Sir John was influential in striking the correct balance between Allied priorities in Europe and over the Pacific theatre of operations. The need for such sensitivity in balancing strategic priorities endures to this day.

Sir Michael Howard, the eminent military historian, paid his own tribute to Sir John, when describing his contributions to the Institute of Strategic Studies, which was founded in the mid-1950s: 'He always expressed himself with force and precision, but listened courteously to dissenting voices. He was always the voice of experience, realism and sanity and kept us all on track. He was indeed a truly great man. His contribution to the winning of the war had been outstanding. No less was his contribution to the subsequent keeping of the peace.'

Yet for many, the most memorable contribution of this distinguished and deeply religious leader is reflected in the hand-written prayer which he prepared on being appointed as CAS:

'Oh God my father, grant me the strength and courage to face bravely the high demands made upon me in the coming time. Let me always remember the high responsibilities that I bear to our country, and to the men of the Air Force. Strengthen my soul and help it to triumph over my nerves. Grant me a sound judgement and a valiant heart and help me to bring our country and the world to a safe haven, for Jesus' sake'.

Such wise words are timeless.

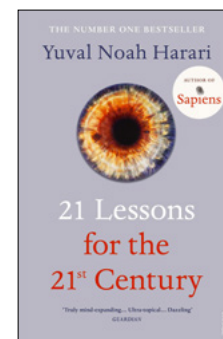
21 Lessons for the 21st Century

By Yuval Noah Harari

Publisher: Vintage, 2019

ISBN: 978-1784708283, 432 pages

Reviewed by Corporal Lee Maddison



21 *Lessons for the 21st Century* written by Yuval Noah Harari is the third of the author's three best-selling books, preceded by the well-known book, *Sapiens*. Achieving a BA from Hebrew University of Jerusalem and DPhil at Jesus College, Oxford, the author is a well-known historian whose books offer critical thoughts on past, present and future topics.

21 Lessons for the 21st Century covers just about every contentious topic in the present day which could be considered. Written in 2018, the book is arguably more topical today, in 2023, than when it was written, which is testimony to the relevance of the book and as time goes by; the book may well become increasingly more relevant. While the book's focus is heavily on the right now, it does not lose sight of the long-term vision and speculates on the future in an attempt to address the current affairs.

While titled '*21 Lessons*', the book offers little in the way of lessons or even answers, but can be considered more to pose 21 questions for the reader to unpick and formulate their own solutions. The '*21 lessons*' themselves, while broken down into five main parts, can be viewed as 21 chapters all being separate to one another. You could quite easily pick it up and read any chapter in isolation, however, they are very much intertwined with each 'lesson' feeding into the next.

Covering a wide array of topical areas such as immigration, racial discrimination, climate change and artificial intelligence, to name but a few, the book is truly thought provoking and encourages the reader to really consider the broader picture of all the subjects covered. The author repeatedly poses what could be viewed as inflammatory opinions on sensitive matters, but by the next page will be offering the opposing viewpoint on the very same topic, effectively playing devil's advocate with himself. This makes for a very engaging read, while on one page you may find yourself confused or disagreeing with the author, it is quickly countered or explained in the following paragraphs and pages. With such contrasting viewpoints offered, it can at times be difficult to decipher what the author's true thoughts are, especially as these are occasionally accompanied by sweeping generalisations of a topic. Harari does make it clear from the very start of the book that he has made the decision to not self-censor, valuing freedom of expression higher than the possibility of words being taken out of context or causing offence. However, the balanced viewpoints put forward would suggest the author has still approached sensitive matters with an element of caution so as to not cause too much offence. The underlying views of the author do however, at times come through, despite the balanced presentation of many of the provocative subjects.

Applicable to a wide audience and would be beneficial for all to read is the lesson on 'Ignorance'. The author's

focus issues on the premise of 'groupthink' and highlights human tendency to lock ourselves in 'echo chambers' with like-minded individuals. The chapter highlights how people prefer to have 'self-confirming news feeds' so our views remain unchallenged and are even reinforced.

When exploring more emotive topics such as nationalism, Harari states that 'xenophobia is in our DNA' and questions if traditional nationalism could be a solution to the identified global crisis. Harari then goes on to state that nationalism 'in the context of climate change is more dangerous than nuclear war'. This is but one snapshot of the contradictory views put forward within this book and is an indicator to how many of the subjects are approached. If by reading the book, you hope to find answers to challenges within the twenty-first century, it is likely you will be disappointed. As mentioned before, the author poses questions, talks around challenges and suggests opportunities for the reader to explore. This stands for many areas within the book, for example when covering the topic of artificial intelligence, the author suggests ideas which to some could be viewed as far-fetched and not plausible. However, as you turn more pages these ideas appear increasingly less outlandish and begin to look as though it could be a very real possibility. These ideas on artificial intelligence are, in part, quantified by climate change triggering technological development to skyrocket and thus comparing artificial intelligence to a modern day equivalent to the industrial revolution. Only time will tell, and it will be interesting to come back to this book in years to come to see how accurate the author is.

21 Lessons for the 21st Century aims to stimulate thinking and offer self-reflection and it certainly achieves this. It breaks down complex political issues in a way that is easily understood by all. However, the book is inconclusive in what it sets out to achieve but this is apparent early on in the book, and because of this is easily forgiven.

Given many of the controversial views, there is no promise that you will enjoy the entirety of the book, nor is there a guarantee you will agree with what is said. But it will almost certainly challenge your views and raise your self-awareness. The book truly does make you think and that alone, makes it worth your time.

Diversify: Six degrees of integration

By June Sarpong

Publisher: HQ, 2019

ISBN: 978-0008242084, 288 pages

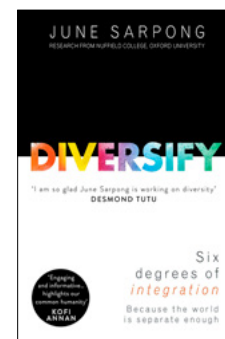
Reviewed by Squadron Leader Sarah Chapman Trim, RAuxAF

An experienced television presenter and the first Director of Creative Diversity at the BBC, June Sarpong has become synonymous with diversity and inclusion within the British media and amongst the global elite. A former co-host of The Pledge, the Sky News flagship weekly political discussion show and Loose Women on ITV, she has worked alongside Bill Clinton, supported the Obama campaign and been involved in innumerable Hollywood and charity events over the past two decades, including Make Poverty History in Trafalgar Square and 90th birthday celebrations for Nelson Mandela in Hyde Park.

Diversify is the first of her three books and the inaugural winner of London's Big Read (2018). It is an enduringly popular and accessible book in which Sarpong lays out the case for diversity in a series of chapters addressing, in sequential fashion, the lived experience of groups of individuals who are not white, middle-class, heterosexual, able-bodied men and whom she collectively calls 'Other'. These groups are ethnic minority men, women, individuals from a working-class background, anyone with a disability, those from the LGBT+ community and those who are older or non-Christian. The subtitle of the book, Six Degrees of Integration is a play on words drawn from the famous research tradition examining the interconnectedness and social capital of human networks which shows that most people in the world are connected by no more than five acquaintances.

The central tenet of Diversify is to encourage readers to Connect with the Other, Change (their) Mind, Celebrate Difference and Champion the Cause. Each chapter concludes with both an action point and a discussion point for those who are new to 'doing' diversity. The final section provides all of us within the RAF, whether in designated leadership roles or simply as role models for inclusion, a useful handle to manage our everyday interactions, workplace discussions and policy development: 'Is everyone in the room?' Have we included all those with specialist knowledge and relevant experience of the issue we are trying to resolve, regardless of rank? Have we included the input of those who can bring constructive challenge and informed dissent, however uncomfortable this may be?

In a book focused on the need to move away from a society characterised by the dominance of men to one in which greater representation of diversity in all its forms results in increased opportunity for all, it is curious that Sarpong chose to dedicate the first chapter to the experience of men from an ethnic minority background. Perhaps this is because she hopes that her opening topic will resonate with her readers: how the marginalisation of men from ethnic minorities results in increased rates of violent crime, terrorism and civil unrest that affect us all. For those who are not well-versed in the wider tapestry of exclusion and the social and economic outcomes this has for marginalised groups, Sarpong continues throughout



the book to provide evidence in support of the argument that a more inclusive society results in better outcomes for all its citizens:

A terrorist incident in which the perpetrator is Muslim will receive five times as much media coverage within the British media than one where the perpetrator is non-Muslim, which results in an increase in hate crimes towards members of the Muslim community.

Britain has the largest number of citizens of any country in the world who are fighting in Syria, which poses challenges in terms of domestic security as these individuals become figureheads for grassroots radicalisation within local communities.

A black child born in the United Kingdom has a 1 in 17 million chance of becoming Prime Minister (which reduces to 1 in 1.4 million if the same child is white and 1 in 200,000 if the child has been educated at an independent school and attended Oxford University).

Forty-eight women were awarded a Nobel Prize between 1901-2016, compared to 833 men. {For an audience focused on achievement in the air and space domain, the story of the magnificent contribution of Katherine Johnson, Dorothy Vaughan and Mary Jackson, three black women who played a key role at NASA during the civil rights movement and which gained wider awareness through the Hollywood film *Hidden Figures*, is a useful illustration of the self-defeating nature of a system which only advances half its available pool of talent.}

Written for a non-specialist audience, this is an optimistic book which remains entertaining throughout, addressing recent events of relevance to diversity and inclusion by illustrating their impact on marginalised groups and Britain as a whole. These include the fire at Grenfell Tower,

the attack on Westminster Bridge and Brexit. Particularly compelling is the gendered quote from Daniel Pink 'A great man is one sentence', which throws down the gauntlet to the reader to contemplate what theirs will be. Sarpong also includes a self-report measure for readers to reflect upon their prejudice (entitled *Check your Ism*, pp. 71-74) and another five-point framework designed to improve emotional self-regulation in the face of setbacks and disappointment and proactively counter the imposter syndrome that research tells us is experienced more often by those from marginalised groups (p. 86).

More critically, there are chapters within the book where Sarpong drifts into sharing her opinions, unsupported by evidence and this tendency increases as the book progresses. She fails to identify the fear of relative deprivation as the single most powerful motivator of discrimination, prejudice and stereotyping, instead appealing to her reader to accept the moral argument for a more just society and the more abstract concept of economic benefit (which the London School of Economics defines as £127 billion per annum) as necessitating the drive for greater inclusion. The section entitled *Change Your Mind* relies on the philosophical musings of psychoanalyst Carl Jung and his notion of collective unconscious, which is a missed opportunity to discuss evidence-based research from the behavioural sciences and explore how these findings can be harnessed for individual and collective benefit in the workplace and society. It is nonetheless recommended reading for all personnel as a window on the lived experience of those whose different life experiences can help us respond to threats, prevent conflict, watch the skies, deliver aid, work in global and domestic partnership and counter cyber threats.

My own personal reflection is that within the Royal Air Force we recognise and champion our collective need

to improve cognitive diversity, to attract and retain the best and the brightest to deliver our next generation Air Force. What is often not made clear is that within the profession of arms, a lack of diversity can have devastating consequences. In times of conflict, on routine operations, during training, indeed in all circumstances where we accept and carry increased risk to personal safety, the talented individual in the non-standard package who is serving next to you can make the most significant difference of all: The life they save could be yours.

This is a book worth reading.

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

By Peter Zeihan

Publisher: HarperBus, 2022

ISBN: 978-0063230477, 512 pages

Reviewed by Squadron Leader Aleathea Hill

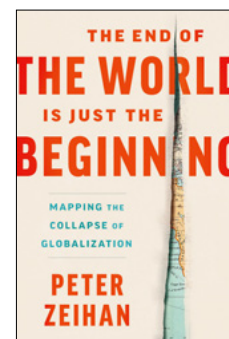
ASTOUNDINGLY this book has an approachable light-heartedness when discussing how Global Order will inevitably dissolve under the predictable pressures to come. The author explains that this is due to our current unique position of relative international security and stability with which the major sectors of globalisation function: Transport, Finance, Energy, Industrial Materials, Manufacturing and Agriculture.

Peter Zeihan's thesis is taken from his view as an American Geopolitical strategist, '...the study of place, exploring how everything about is an outcome of where we are.' Through the additional lens of Demography, '...the study of population structures' (p. 2), he cites this work as the 'lite version' of the work of the rest of his life, so we can consider this either as a prequel or as the first edition. He appears to have begun measuring his predictions even as he was sending his final draft for publishing; he managed to add some lines on 28th February 2022 in reference to the Russian invasion of Ukraine only four days earlier. He felt that there are still some surprises to come from that conflict, but it is likely too soon to tell. He has influence as a consultant on Geopolitics to businesses and military and academic institutions, meaning it is likely that this work, and his previous pieces on the rise and fall of nations in *The Accidental Superpower*, *The Absent Superpower*, and *Disunited Nations*, could already have triggered behavioural change. Yet he notes that predicting the future is a notoriously hard task, and as an optimist,

he hopes that choices can be made to reduce the impact of these changes.

Zeihan quickly reviews the history of human civilisation and why certain nations were able to survive in a particular time and geography, and how those nations changed as the various progressions evolved. The impact of farming techniques, currency creation and the ability to navigate deep waters cannot be underestimated in the early paragraphs. Throughout, there is an educational note of the relevance of human byproducts, which might come back to haunt some societies without globalisation and access to certain minerals (yes, he is talking about excrement!).

The true focus in the book is the post-1945 US established world order. The author's argument that the security foundation, which rapidly accelerated post the Cold War, is what enabled cheap finance and the stable exchange of services and goods. Consequently, the majority of countries enjoy the proceeds of this, including those who are not traditional allies of the US, namely Russia and China. He suggests that the vast majority of nations are operating outside of what their geography should allow. States are able to buy their way out of a natural lack of resources, utilising people and skills, with assured transportation means. The impact of Brexit, and some of the issues with the food supply chain, has demonstrated to the UK how quickly the 'just in time' supply model can



fall apart, and that is with the current economic ability to fund an alternative under the umbrella of regional peace; standfast the impact of the Ukraine Conflict.

Zeihan contends that very few nations can truly survive and thrive under current conditions when the US begins its retreat away from the role of Global Guarantor. So many nations rely on the ability to use the US Dollar for trade when their own currencies are considered less reliable. Similarly, access to US markets and resources for energy and agriculture underpin the models that several nations use to baseline their economies. Zeihan proposes that large groups of nations, such as the EU, are false economies, holding up certain countries which will fail when they cannot sell the specialist products they provide to more distant economies.

Fundamentally, the author's argument is that the US will be okay, as will nations that it considers useful to it, such as those in the North American Free Trade Agreement (NAFTA). Yet there remains an element of choice, which is perhaps the factor that makes Zeihan's future unknown. The US does not have to follow the current path of international recession and the glimmer of hope could be in its current role in the financial and equipment support it is providing to Ukraine. Similarly, whilst current rhetoric is that the US is swinging away from Europe and the Middle East to focus on China, that is not splendid isolationism either. This is despite Zeihan's own prediction that China will collapse of its own accord, due to an unrecoverable aging work force which consumes too much and produces too little; it also lacks the security infrastructure, i.e. a long-range naval capability to assure access to the energy and materials it requires. The logic is sound, and it seems to be playing out that populism, instability, climate change and the increasing issues with resources will mean that the next few decades will be a challenge globally. This could result in the worst of his predictions; if so, several nations

will fail entirely and potentially millions (or billions) will die from famine and war.

There are glimmers of hope. The unity of Europe has been physically demonstrated in the face of Russian aggression, which he had doubted. The US business characteristic is to adventure beyond its own boundaries for opportunity, which may not mean the current state of Globalisation will continue, but it may not end entirely.

Finally, as is noted throughout, the human ability to adapt and innovate our way out of problems will always lead to societal evolution and thus the lessons Zeihan teaches about how this situation evolved will likely repeat itself. This book is a highly recommended modern version of a doomsday prophecy, and both the author and reader can hold out hope that it is a lever for change to address the issues which are still within the grasp of those who can make choices about how the world moves forward. Inevitably, it seems to recommend to the reader to avoid allowing the smaller stresses of life to take over, as many of those are way beyond our control, but perhaps focus on those from which future generations can benefit before their decline becomes inevitable.

Exponential: Order and Chaos in an Age of Accelerating Technology

By Azeem Azhar

Publisher: Penguin, 2022

ISBN: 978-1847942920, 352 pages

Reviewed by Squadron Leader Victoria Williams

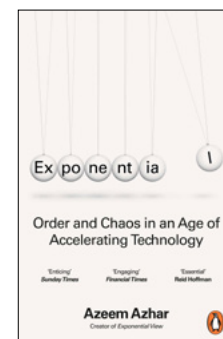
The last two years alone have brought extreme transformation from a global pandemic, accelerating climate change, and a shift in conflicts to Eastern Europe. Does our existing model of global world order and socioeconomics align with the rate of technological advancement in modern times? This book argues that the exponential rate of technological innovation has transformed human existence and will force a complete rethink and a rebuilding of government institutions.

Exponential: Order and Chaos in an Age of Accelerating Technology by Azeem Azhar is a thought-provoking exploration of the exponential technologies that are transforming our modern world. Azhar is a respected technology entrepreneur, investor, and writer. This book offers a comprehensive overview of the opportunities and challenges presented by exponential technologies such as artificial intelligence (AI), blockchain, and robotics.

At the heart of the book is Azhar's belief that we are living in a time of unprecedented technological change – 'a wholly new era of human society and economic organisation' (p. 10). He argues that the exponential growth of computing power and the widespread availability of data are driving a new wave of innovation that is transforming every aspect of our lives. From healthcare to finance, from education to transportation, exponential technological development is disrupting established industries and creating new

opportunities for entrepreneurs, innovators, and government organisations. Smartphones have diffused across society 12.5 times faster than the original telephone and the time for new technology to spread is only getting smaller. Yet not all technology develops infinitely; cars and passenger aircraft have not significantly increased in speed since the 1950s, instead, the focus has shifted towards reduced cost and efficiency. As one technology reaches its peak, 'innovation in a certain sector inspires developments in the next' (p. 30) and this book argues that we need to ensure all aspects of life develop in harmony.

Azhar's enthusiasm for technological innovation is infectious. He paints a compelling vision of a future where AI and robotics are used to create a world that is safer, healthier, and more prosperous. However, he is also careful to acknowledge the potential risks, avoiding lazy tropes of Terminator and Skynet. Instead, he warns that they could exacerbate existing inequalities while creating new ones and calls for a proactive approach to regulation to ensure that the benefits of technology are shared fairly. He acknowledges that each year algorithms get better and better at 'tasks we used to think were quintessentially human' (p. 126) such as absolute domination at chess, creation of visual art, and even academic or creative writing. Azhar argues there is a gulf between those that can harness the Exponential Age and those left behind.



While the themes explored in the book are primarily aimed at entrepreneurs and business leaders, it also has important implications for policymakers and public sector organisations. Azhar argues that governments and militaries must experiment with new policies and regulatory frameworks to support innovation ensuring that the benefits of technology are realised whilst being shared equitably. He suggests that public sector organisations can benefit from an entrepreneurial mindset, by embracing new technologies and working collaboratively with the private sector.

Another theme of the book is the role of data in driving innovation and decision-making. Azhar argues that data is becoming increasingly important for organisations in all sectors and that those that can collect and analyse data effectively will have a competitive advantage. More data and the availability of technology naturally drives an increase in misinformation. Coupled with a lack of regulation, this means fake news is everywhere, even in warfare as seen in the murky information campaigns of Russia and Ukraine. Azhar states that the future of warfare is 'more multifaceted [...] than ever, fought simultaneously in private forums, public life and in the streets' (p. 204). Militaries and paramilitaries are both looking for more weapons that can engage the enemy without human intervention, relying instead on automation. With this innovation, the normal lines of responsibility blur, especially without legal development to reflect the ever-increasing use of automation and AI. Not only is there now an 'Exponential Gap', but also a responsibility gap. Who is responsible for the use of automated weapons – engineers, programmers, generals, or politicians? Azhar advocates there needs to be a legal framework to reflect an age of autonomous warfare.

Technology has accelerated throughout most of our lifetimes, and we embrace more of it every day.

Exponential reflects on the need for society and government to harness the power of technology rather than lag it. Azhar's emphasis on the importance of innovation, data, and diversity is certainly relevant, and his call for an entrepreneurial mindset is a useful reminder of the need to be adaptable and flexible. This book will leave you asking: do we use current technology to the best effect, especially today? Given AI and technology controls much of our social lives – have we embraced it in the military? Could AI develop to bring order to our doctrine, aircraft, processes, or even parts of a CAS reading list book review, or would it just be chaos?

Original Sin: Power, Technology and War in Outer Space

By Bleddyn E Bowen

Publisher: C Hurst & Co Publishers Ltd, 2022

ISBN: 978-1787387775, 344 pages

Reviewed by Air Commodore Adam Bone



The exploration and use of outer space shall be carried out for the benefits of and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind' - 1967 Outer Space Treaty, Article I.

But will it? With a heavy dose of political and strategic realism, Bowen leaves no stone unturned in reminding space idealists and egalitarians of the more bellicose origins of space and the technological advancements that perennial political and military interest has engendered. *Original Sin* leaves the reader in no doubt that, while space provides increasingly fertile ground for commercial endeavour, international cooperation and scientific innovation, earth orbit will likely become a warzone should large scale war eventualise.

In outlining his thoughts on the militarised and political nature of the Global Space Age, Bowen looks beyond recognised space protagonists and works hard to provide a refreshingly global perspective. The United States, China and Russia are featured heavily, as one would expect; however, it is their influence on the development of space power in other emerging space nations that offers the astropolitical enthusiast something more. Indeed, Bowen outlines how international cooperation and shared scientific endeavour will eventually fall casualty to the perpetual political objective of capitalising on any opportunity to amass military and economic infrastructure.

In this regard, Bowen offers invaluable context when considering sovereign space policy and programmes, and the pursuit of space partnerships and diplomacy. What is clear is that the more complex and complete this new space ecosystem becomes, and the more politics on earth permeate through the upper atmosphere into space, the greater the requirement to protect and defend grows.

Featuring familiar names in the niche world of astropolitics such as Everett Sheehan and Michael Dolman (whose works I have enjoyed for many years) it is of no surprise that Bowen's primary contention is that space technology has not been developed for the benefit of all humankind, forcing us to consider how relevant the 1967 Outer Space Treaty remains. Cognisant that increasing commercial capabilities offer an additional condition to the dynamic that existed at the time of the moon race of the 1950/1960s, Bowen compellingly outlines how space technologies were, and continue to be, developed to meet military-political objectives. As we relate the issues raised to the recent use of Elon Musk's STARLINK capability in Ukraine, for what could be considered the world's first broadband war, it is increasingly difficult to argue a more utopian view of the future of space.

Bowen reiterates, through various strands of argument, that there is little unique about space with regard to its military use and inherent politics. In a war between major space powers, disruptive and destructive attacks

on satellites are to be expected - something that fellow thinkers would undoubtedly agree with, using recent widely reported events as evidence. Focusing in on the application of military strategy to space, Bowen details what he describes as the superior analogy of space as a cosmic coastline, as opposed to the 'ultimate high ground' - a concept he refers to as 'vacuous that leads to mechanistic and limited strategic thought'. Western military theorists and doctrine writers will inevitably revisit this.

In considering the future of space, and our sovereign investment in it, *Original Sin* inspires many questions regarding the delicate balance of sovereign space ambition and existing reliance on international partnerships. In the same vein, Bowen invites deliberation as to how our defence and security-related strategies in space will coalesce with the ambitions of the burgeoning civil and commercial sectors. One should also pause to consider how an exponential increase in orbital and suborbital space activity will add another interesting dynamic to the US and European geopolitical space and further influence the international order.

What will be the UK's place in space going forward, as it reframes many of its previous astropolitical assumptions? Will it accurately consider the direction of its existing relationships with Europe and the US, and the impact of the increasing influence of space powers such as China, India and Japan on global defence and security allegiances and investments? Beyond this, what will the practical impacts on the UK's broader astropolitical relationships be with defence and security stakeholders such as the EU, the ESA, the US, NATO and commercial investors?

Accessible to politics, history and science scholars alike, I commend this introduction to the topical issues of space, which is sure to inspire further study in astropolitics - a topic destined to more closely orbit the realm of military endeavour.

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

By Peter Garretson and Namrata Goswami

Publisher: Lexington Books, 2022

ISBN: 978-1498583138, 464 pages

Reviewed by Wing Commander Amanda Scarth

For those scholars interested in space strategy, this important study is 'destined to become a watershed event in space strategy' (Ziarnick).

The key theme suggested by Goswami and Garretson is that there is a new space race beginning, or indeed that we are witnessing a second space race, with the expectation that it will become a rush, even a scramble. The competitors of this key strategic race for space resources are those states which have relatively easy access to this key domain. This is important, because it could allow specific states to control space resources which could become the source of significant economic wealth and power. Those states could then use such power to shape the international system as they deem beneficial to their own interests. Thus, access to space-based resources could present a significant opportunity to advance both national power and relative power. Consequently, those states which are victorious could write the rules of a new global order. Accompanied by the prediction that over the timeframe up to 2050, this could industrialise the inner solar system and allow us to export industrial production off-planet. With such ventures also having the potential to uplift humanity and secure the future of our planet and our species. So, such a race could be existential from a number of perspectives.

The authors suggest that the initial stages of this competition will involve states seeking to secure positional, logistical and industrial advantages over their competing

space-faring nations. This would then lead to states seeking to secure the key astrostrategic positions to enable them to profit from the vast energy and material wealth of space reserves. Such trends could lead to space resources becoming securitized and perceived as strategic interests by those states able to compete for them. The expectation is that those nations, which currently have the greatest space ambitions, matched by the greatest resources to compete in this domain, will lead the actual competition. These are currently the USA and China, noting that India has also embarked upon a significant space programme. Also, other nations, such as the UAE and Luxembourg, have taken pioneering steps to advance their own interests in space.

Goswami and Garretson suggest that such competition is nothing new and that there are historical parallels from the past which provide a guide for how states will act in the future. They suggest that from about 1419, the Portuguese used the technologies of sailing and navigation to venture forth and to seek wealth far from their shores, which heralded the Age of Exploration and Discovery. The authors then suggest that the availability of new transportation technology, in the form of reusable space vehicles, again enables humanity to seek wealth and power far from their earthly shores.

From the perspective of technological realism, this important academic work asks whether this is a real



emerging security concern, and notes that we cannot know where we are on the hype curve. They elegantly use quotes from the seminal science fiction writers and the most successful technological entrepreneurs to examine how effective we are at predicting the impact of emerging technologies. Where Arthur C Clarke warns that: 'in the long run the most daring prophecies seem laughingly conservative' and Elon Musk notes that 'becoming a multi-planetary species and space-faring civilisation is not inevitable. Technology only improves if a lot of people work very hard to make it better'. Before highlighting that 'when something is important enough, you do it even if the odds are not in your favour'.

Of especial importance within this work are the chapters which examine the strategic approaches of the USA, China and India, from the perspectives of their space ambitions, their strategic trajectories and what they are actually doing to translate those stellar ambitions into pragmatic realities. These individual studies of the leading space-focussed nations are then followed by a spectrum of future-focussed scenarios, which consider the relative successes of each leading nation when compared to their competitors, and what that could mean for the future of the space domain.

Goswani and Garretson work on the assumption that what states have done on earth, they will likewise do in space, and that competition is inevitable. They do not, for instance, suggest that access to this relatively new domain could offer nations the chance to work in harmony and to evolve beyond the rivalries and tensions associated with their actions of earth. Perhaps this approach is based upon the assumption that the human species is destined to repeat the mistakes that it has made throughout history. It is hoped that they can be proved wrong and that by escaping our earthly bonds, we can evolve to a higher level of cooperation.

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

Contents: The Chief of the Air Staff's Reading List 2019-20

The Royal Air Force: The First One Hundred Years

By John Buckley and Paul Beaver

Publisher: Oxford University Press

Flying to Victory: Raymond Collishaw and the Western Desert Campaign, 1940-1941

By Mike Bechthold

Publisher: University of Oklahoma Press

Churchill: Walking with Destiny

By Andrew Roberts

Publisher: Allen Lane

Bolts From The Blue

By Sir Richard Johns

Publisher: Grub Street Publishing

Leaders: Myth and Reality

By General Stanley McChrystal (US Army, Retired), with Jeff Eggers and Jason Mangone

Publisher: Portfolio Penguin

On Grand Strategy

By John Lewis Gaddis

Publisher: Allen Lane

Blunder: Britain's War in Iraq

By Patrick Porter

Publisher: Oxford University Press

The Secret World: A History of Intelligence

By Christopher Andrew

Publisher: Allen Lane

Small Wars, Big Data: The Information Revolution in Modern Conflict

By Eli Berman, Joseph H. Felter and Jacob N Shapiro

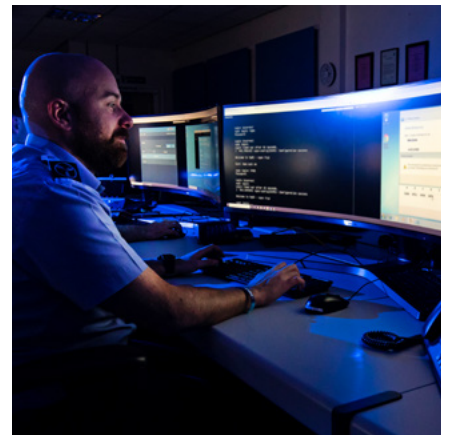
Publisher: Princeton University Press

LikeWar: The Weaponization of Social Media

By P.W. Singer and Emerson T. Brooking

Publisher: Eamon Dolan/Houghton Mifflin Harcourt Publishing

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.



Notes

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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