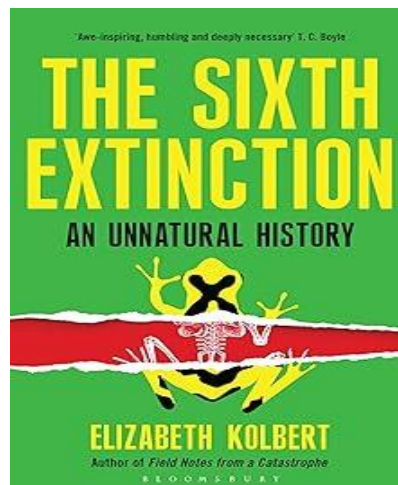


RLC Foundation – Autumn Book Club 2023

This season's Foundation Book Club focuses on the complex theme that has the potential to influence every global political and business decision; the climate emergency and its relationship with global trade and security. Selected publications, supporting articles and media have been carefully chosen to explain not only how the environment is changing, but why the debate has taken so long to convince government decision makers and business leaders to take action. The dichotomy of taking bold mitigation steps, by attempting to reduce fossil fuel emissions, have abutted the increased competition for critical commodities and the dangers are exposed through a number of compelling narratives. An overview of some of the climate naysayers and deep dives into the oil and mineral industries throw up some intriguing endemic dilemmas for those working in supply chains. The implications for defence, security and business are profound, perhaps explaining why the UK's Integrated Review stresses the competitive global environment in which Britain is compelled to compete and operate. Finally, for some variety, a recently published book on the citizen soldiers of Hampshire and the Isle of Wight is reviewed. This publication not only offers some context to the vital role that Army reserves, in their various guises, have played in Britain's emergencies, but how reliant the country has been and is likely to remain so in the nation's ability to generate credible trained mass.

To set the scene, first up is Elizabeth Kolbert's ***The Sixth Extinction: An Unnatural History***



Even the World Wildlife Fund have no idea how many species go extinct every year, but it's a lot. Kolbert uses selected species and their avoidable demise to explain what humans are doing to the planet (and each other). As you sit in your field tent or corporate office, you may be wondering what's this got to do with logistics and/or my life? Well, quite a lot – the 21st century climate emergency and the collapse of global biodiversity is an inter-generational challenge. From now on, every business decision a company board makes, every

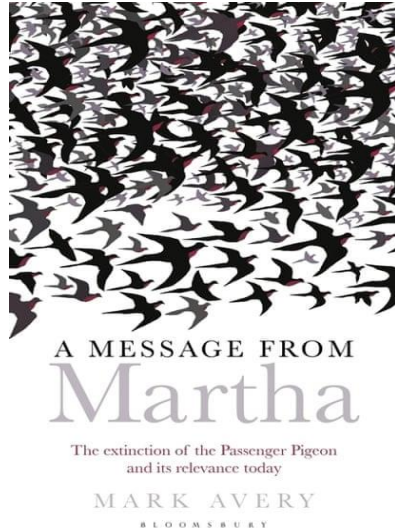
transitioning manufacturing sector initiative, every amended supply chain relationship, every attempt at gaining some green credential for your organisation's image – they're all connected. Consequently, they're all going to have an impact on your business outputs, as well as the planet we all live on. MBA lectures and assignments focusing on optimizing *value chains*, *flow* and *resilience*, will all have to be constantly revised to accommodate for what's happening. For some considerable time, business strategies and the assurance of ethical supply chains have involved a complex and competing number of factors. Today, environmental impacts are now firmly embedded in most corporate business risk registers in an effort to help support vital outputs and avoid institutional green controversies. Kolbert's chosen organisms, which once shared the planet with us, tell the story of our capacity for ignorance, destruction and self-harm. From uncontrolled sport killing, to what's now on the crisis agenda of every nation; climate change (otherwise known as global warming), Kolbert builds a convincing case of our avoidable mistakes, currently being repeated across continents and potentially leading to our own demise.

The five previous global extinction events have all been geological – the next one, known as the Anthropocene age, is down to one species; us. The environmental backdrop that Kolbert depicts is explained through scientific data and considered pattern development. The evidence is overwhelming, perhaps explaining why, in February 2023, 194 states and the EU signed up to the Paris Agreement. Readers may be left asking themselves why it's taken so long to recognise the dangers and instigate a semblance of global mitigation measures. With the benefit of hindsight, and considering that our own survival was at stake, it now seems logical that humanity should have erred on the side of caution decades ago and adopted some environmental counters while more data was gathered. Just over a decade ago however, there was a powerful and self-interested group of politicians and big industries (some may argue that they still exist) who were denying the catastrophic effects of climate change. Nigel Lawson's *An Appeal to Reason: A Cool Look at Global Warming* (2008) was but one example of the vocal and influential naysayers who regarded climate change as a 'theoretical' challenge. Lawson posited in 2008 that, 'perhaps the most surprising fact about global warming...is that – despite carbon dioxide emissions rising faster than ever – it is not, at the present time, happening' (p.91). Whilst outlooks have thankfully changed, the burning question (for some, literally) is whether there is time to adopt credible mitigations to curb the worst effects. Using well researched case studies, Kolbert explains how scientists are able to make some accurate projections on the future effects of climate change, from rising sea acidity/temperature levels to the demise of biodiversity and its consequences.

It's likely that younger age groups will ask some uncomfortable questions of why it took so long for this generation to act to save their sacred heritage – it's not as if we didn't have the

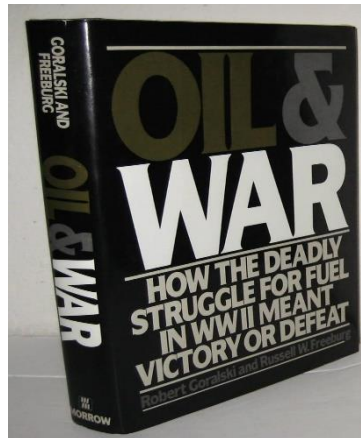
evidence or knowledge of green technologies. Kolbert builds a compelling case on this wealth of scientific evidence, making *The 6th Extinction* a sobering read where the prophesy makes every other challenge on the planet seem like ground clutter. To many, it seems that dirty energy is better than no energy, but if humanity generally accepts the prophesy of extinction, there is a chance that we could transition to a net-zero future – hopefully with some biodiversity still intact. There is no doubt that the ‘transition phase’ will be problematic, just look at the recent politicization of UK climate change sub-policies, where the expansion of green initiatives such as the ultra-low emissions policy across Greater London, are being considered as a potential wedge in Britain’s future elections. Listening to the environmental rhetoric in Parliament, on the relatively rare occasions when the climate is debated, there remains a barrier between the natural world and us; demonstrating an ignorance of the fact that the latter is ultimately reliant on the former for its survival. Based on recent evidence, the jury is still out on what level of protection will be afforded to our biodiversity. Until the verdict is in, expect more extreme climate events with victims (both fauna and flora) consigned to the category of collateral damage. Cavendish is right when she states that ‘outright climate denial is now patently delusional’ (Financial Times, 29/30 July 2023, p.11), but her observation that ‘rightist politicians are quick to claim that the *west* has already done enough, or that new technology will save us’ are disconcerting after reading Kolbert. What is clear is that there are no perfect solutions left if we’re to avoid the sixth extinction, just graduations of uncomfortable outcomes, ranging from extreme pain (wildfires) to moderately bearable life changes (low emission zones). Sadly, for some regions, the former may be all that’s left in the shrinking options basket. Kubert’s big takeaway is that as the environment deteriorates, biodiversity reduces in parallel with our long-term chances of survival. Even if Kubert’s cataclysmic endstate is avoidable and we wise-up to the risks, our wellbeing is likely to be eroded in-line with the totality of organism extinctions. I warned you that it’s a sobering read.

Perhaps for those new to the broader climate debate issues, publications such as Mark Avery’s, *A Message from Martha*, provides some cautionary and disheartening context to why many believe we are living in the ‘Age of Stupid’ (an alternate descriptor for Anthropocene).



In 1864 the most numerous bird on the planet was the Passenger Pigeon, there were literally billions of them (estimated between 5-10 billion individuals). On 1st September 1914 (just 50 years later), the species became extinct, the last specimen, named Martha, dying in Cincinnati Zoo. What is more depressing is that the story of Martha is not atypical of what has and is happening. Despite the growing and compelling historic evidence, how society transitions from contributing to climate change to slowing, or even stopping the fading of the natural world, can be explained through a focus on specific industries and the enigma of how competitive global trade is generally being pursued.

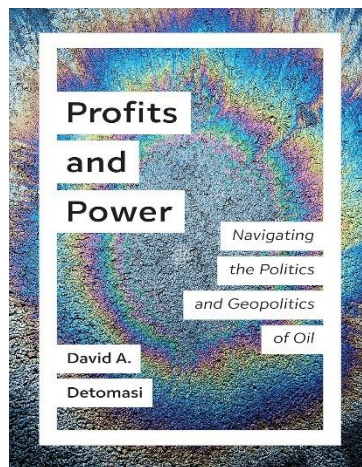
The disquieting story of the Passenger Pigeon helps highlight the biodiversity dangers but doesn't explain why there's not been a Eureka moment in world environmental affairs. To understand that enigma, the story of oil helps explain humanities' failures and current predicament. If readers refer to the World Resources Institute (WRI) data on the top greenhouse gas emitters, some baseline context is offered. Consider the WRI data with the **BBC's *Big Oil verses the World*** documentary series (BBC online) and some understanding of how and why the forty-year oil industry delayed any credible global action on climate change emerges. This ground-breaking three-part series features previously unpublished corporate documents, exclusive interviews with industry players, and testimony from leading scientists, politicians and CEOs. To set the scene and further understand this highly competitive global industry, its part in current world trade and its complex supply chains, Garalski and Freeburg's ***Oil and War: How the deadly struggle for fuel in WWII meant victory or defeat***, provides the historic background to why the commodity was brought under strict state control and explains in-part, the contemporary reasons for its continued restricted management.



The book offers the reader the enduring baseline political/economic factors which persist today and partly explains why nations may be prepared to go to war over it. Post WW2, Coggan believes that 'the use of energy supply as a geopolitical weapon began in the 1970s with the Opec oil embargo and quadrupling of the crude price that created stagflation in the western economies' (The Financial Times Weekend, 5/6 Aug 2023, p.22). If there is any doubt over the continued relationship between security, oil and corporate business, then look no further than the war in Ukraine. The reason for the sea drone attack on the port of Novorossiysk on 4 August 2023 was to attrite the Kremlin's main Black Sea oil node, where Russia exports circa 60,000 barrels a day (The Financial Times, 5/6 August 2023. p.8). Whilst this may seem an unsurprising military/economic regional target for Kyiv, the distribution of oil, as it did in WW2, still has geopolitical implications. Novorossiysk is not only Russia's major Black Sea oil export node but it also incorporates the termination of the Caspian Pipeline carrying oil from Kazakhstan. This terminal is managed by a business consortium – and here's where it gets complicated; a major part of that consortium's stake is controlled by the US oil supermajor: Chevron. The global security/economic dichotomy can be explained by the continued international market power of oil. Whilst one of Ukraine's operational aims is to weaken Russia's infrastructure in the Black Sea with the strategic intent to undermine Moscow's ability to raise funds for the war, western support for Ukraine might be harder to sustain if there was another spike in global energy prices. Helima Croft, a former CIA analyst, believes that 'Anything that risks curtailing Russian oil supply to the market is not going to be welcomed by the White House' (cited in Olearchyk, Miller and Sheppard, The Financial Times, 5/6 August 2023, p.8) – welcome to the opaque world of global petro-politics.

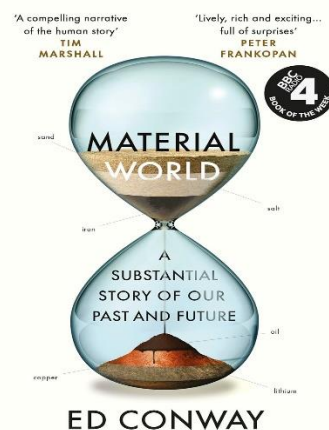
Washington's stance is understandable in the context that the oil supermajors (Shell, BP, Chevron and Exxon) are all reporting that market turmoil brought about by the Ukraine-Russian War, has finally been brought under control. Whilst the price of a barrel of oil fell from \$112 to \$78 – within the 10-year normal range (The Financial Times, 29/30 July 2023, p.13), its demand has also reached an all-time high of 103mn barrels (The Financial Times, 12/13

Aug 2023, p.17), an economic reality that few countries seem unwilling to jeopardise and not a good omen for reducing future carbon emissions. As this book club review goes to press, a barrel of oil on the open market is \$90 and likely to rise (BBC World Service Financial Report, 7 September 2023). This is but one factor in the close management of the global oil market which, together with natural gas, powers globalisation. To comprehend the nuances of how global industry transitions from oil to greener solutions however, David Detomasi's ***Profits and Power: Navigating the Politics and Geopolitics of Oil*** is a stunning book which carefully explores the rise, fall and influence of the industry and how it may be structured in the post-pandemic transitional world.



For those interested in the relationship between the oil industry, security and geopolitical environmental issues, Detomasi frames some of the supply chain challenges of what remains an enormous global and influential industry. It's hard to find a product upon which, according to Detomasi, the world is utterly dependent. For international relations students, it's interesting that Detomasi calculates that 'Most of the world's proven oil reserves – approximately 80% - remain under the purview of state-owned national oil companies' (p.54), many of which operate under non-democratic governance structures. This should not come as too much of a surprise, as the author also posits that wherever the oil reserves are found, 'oil is clearly too important a commodity to be left to the market' (p.55). The geo-politics associated with oil, combined with pursuing climate change initiatives, provide a significant challenge to the world economy. Even if many western countries pivot towards greener energy options, it is likely that China will remain dependent on oil imports transiting the sea lines of communication through the South China Sea for some considerable time – meaning that oil will remain, or even increase, in strategic importance. Wael Sawan, the current CEO of Shell, recognises the continued importance of the industry revealing that, 'I am of a firm view that the world will need oil and gas for a long time to come. As such, cutting oil and gas production is not healthy.' (The Times, 4 March 2023, p.55). Finally, perhaps the most important issue

that Detomasi explores is not so much the continued demand and supply issues associated with oil, which perversely is required to fabricate much of the global green hardware needed for cleaner energy solutions, but how the commodity is managed, especially by energy hungry developing nations with relatively limited access to green technologies. Whilst oil is a prominent feature of many climate discussions, it is not the sole critical commodity that is distorting international markets, nor is it the only refined product with a burgeoning global demand that has an uncomfortable relationship with global warming. Ed Conway's ***Material World: A Substantial Story of Our Past and Future***, illuminates the largely hidden world of mineral extraction and trading which, like biodiversity, we take for granted – until it all goes wrong.



From the outset, readers will be entertained by this clever and convincing look at selected global commodity production, distribution and consumption. Conway takes a deep dive into six of the most crucial substances traded on international markets: sand, salt, iron, copper, oil and lithium. This is not a deeply scientific book; Conway is economics editor at Sky News, so he knows how to capture and hold an audience. He does this by entertaining with personal anecdotes and where necessary, lay-person clarifications of the scientific/industrial processes. Conway has a gift for explaining the deadly serious business of world trade in an amusing and informed way and even seasoned logistic veterans will learn something new about how global trade works – or doesn't work in some cases. Just by taking one commodity, sand, potential readers will get an idea of how the book is constructed. Firstly, it is true that you can sell sand to the Arabs – and Britain does. Conway explains why this diverse commodity is so important as he follows the process of mineral extraction to the fabrication of high grade silicon chips. His case studies help explain why the global market is what it is, and how the end product has significant geo-political consequences.

So, taking the digging of sand to the point of manufacturing silicon-chips, the reader will discover that it takes some very sophisticated, expensive and closely guarded technologies to produce the final product. Conway convinces the reader that no product is more central to international trade than semiconductors – made from sand. For context, Conway identifies that semiconductors are so important that ‘China spends more money on importing computer chips...than it does importing oil’ (p.116). As Conway describes the product; it’s a foundational innovation, a general-purpose technology – so everybody wants it. However, where there is such high demand over finite supply, there is also acute dependency, and this is where challenges in global trade occur.

The US is the leading nation in marketing high performance semiconductors – not so much their physical fabrication, but the control of the product’s intellectual property rights and their subsequent availability to the global market. This intellectual property ownership is one of Washington’s most closely guarded confidences. Perhaps this stems from how the technology was initially spun up, with US Government R&D funding in the mid-20th century underpinning the boom in Silicon Valley. This public finance was specifically designed to give the US a strategic competitive edge – and the White House wants their money back. Some even equate that for every \$1 invested, \$5 are made (Tett, Financial Times Weekend Magazine, 29/30 July 2023, p.16). Today, the manufacture of these semiconductors is protected to a degree where Conway describes their production and distribution as a ‘chip war’ (p.114). So closely is the trade managed that Conway points out that one of the first acts of Joe Biden’s presidency was signing an executive order on ‘America’s Supply Chains’ (p.17). The high-grade chips, or wafers, are manufactured in Taiwan by a single company: TSMC, from a particular type of sand only found in the US. The specialist machines used to make the silicon wafers are manufactured by one company in the Netherlands, ASML – not only are they eye-wateringly expensive to fabricate and purchase, but the US also effectively controls the distribution and end-sales of these etching machines. It is a rare example of a single nation controlling the world market by dominating the management of a specific global supply chain.

Perhaps what is more concerning is that this close supplier control is a growing trend across several sectors of international trade. This trend now encompasses restrictions in US investment in China across areas of quantum computing and AI (The Financial Times Weekend, 12/13 August 2023, p.4). If readers are in any doubt that in today’s globalized world a single nation (ok granted, the most powerful nation) can still dominate a technology and its associated supply chains, then recent market interventions prove what Conway has published. These regulatory market adjustments are likely to worsen what Maersk’s Chief Executive, Vincent Clerc, refers to as ‘a difficult trading outlook’ where global demand for containers

(regarded as a reliable metric for global trade) will, according to Milne, 'fall by 1 percent to 4 percent this year' (The Financial Times Weekend, 5/6 August 2023, p.13). A drop in international container business underpins the health barometer readings of world-wide exports - in 2022, as a proportion of global GDP, trade was below that of 2008 (Coggan, The Financial Times, 5/6 Aug 2023, p.22). This deliberate shrinking of the free market is unsurprisingly contested by China who, according to Hale, has implemented counter measures to contest Washington's trade restrictions by slowing its investment in the US to its lowest level in almost two decades (The Financial Times Weekend, 5/6 August 2023, p.15). Whilst it might be argued that commercial restrictions currently fall short of a full blown trade war, there are areas where trade competition has adopted a honed edge.

China has a proven record in securing global economic resources, be they natural resources, technologies or agreements on regional infrastructure projects – the Belt and Road Initiative (BRI) is one of Beijing's well publicised strategic global lines of economic development. When it comes to high-grade semiconductors however, China has hit a bump in their economic development borne out since Conway's book. That single Dutch company manufacturing the high-grade chipmaking machines (ASML), were denied export certificates to China on 1 September 2023. According to Bounds, Liu and Bradshaw, (The Financial Times 1/2 July 2023, International Section), the US put pressure on ASML's order book because 'Washington is seeking to curb China's access to advanced weapons as it threatens Taiwan and adopts a more assertive military stance.' To mitigate any disruption in its overall chip production, Beijing anticipated these import restrictions and according to Chen (cited in Lin and Liu, The Financial Times, 26/27 August 2023, p.12), to compensate, 'China has increased its inventory of [low-yield] semiconductor equipment through advanced stockpiling to alleviate potential supply chain bottlenecks. Chinese imports of Dutch chipmaking equipment doubled in June and July (2023) from May [a 70% increase totaling nearly \$5Bn compared to \$2.9Bn in 2022].' These advanced purchases are for lower end chip fabrication which, if incorporated in large numbers across production lines, can still provide a high level of performance in end products.

The chip war that Conway refers to is, like many wars, multifaceted with numerous factors interacting in complex ways. These opaque and fluid battle lines are however being drawn wider than silicon chips. According to the Financial Times (15/16 July 2023, View, p.12), from the 1 August 2023, China restricted the export of gallium and germanium, critical commodities for the manufacture of solar panels, screens and optical fibres. The US alone is reported to source as much as 50% of its demands in germanium from China (The Economist, 8 July 2023, p.60). Add to this the increasing demand for copper, cobalt, nickel and manganese – all essential elements as the world attempts to decarbonise and expand

electrification – and broader mineral competition reflects that of silicon chips. Although commonly classified as ‘critical minerals’ they all pale into insignificance in comparison with the demand for lithium which, according to the Financial Times (15 July 2023, p.6), increased nearly sevenfold between 2017 and 2022. There are several major concerns surrounding this metal and other minerals. Firstly, mining and refining is concentrated in countries in central Africa and Latin America where China has been developing preferential trade relations for decades. In 2022 alone, Chinese companies doubled their investment spending in mineral extraction and refining (The Financial Times, 15/16 July 2023, p.12). This scale of investment, combined with exclusive contracting, could potentially restrict the market for these finite resources jeopardising a global transition to clean energy. Secondly, demand for these critical minerals is set to double by 2030 (p.12) and with restricted access to these finite resources there will be pressure to develop mineral deposits found at home – consider the mineral extraction options being pursued in Cornwall and the potential threats to UK biodiversity loss. Nickel extraction alone (used in the cathodes of high-quality electric vehicle batteries) needs to double by 2040 (The Economist, 8 July 2023, p.71) if global decarbonizing goals are to be achieved by 2050. This increasing demand is currently being met by bulldozing the rainforests of Indonesia (perversely ousting palm-oil production as the primary cause of deforestation). Known colloquially as the ‘nickel-pickle’, it demonstrates that there may be no magic bullet for decarbonizing whilst also protecting biodiversity. When it comes to setting priorities, ignoring the message from Martha could be considered by some as one of a series of least-worse choices.

Finally, lithium supply will be the long pole in the green energy transition tent. China currently accounts for circa 60% of the world’s lithium processing (The Financial Times, 15/16 July 2023, p.12), a market which the Financial Times regards as *extraordinary* and The Economist refers to as *white gold* (The Economist, 26 August 2023, p.73). According to the International Energy Agency (cited in The Financial Times, 15 July 2023, p.6), demand for lithium will rise seven times between 2012 and 2030 levels and with new mines taking a decade or more to develop, demand verses supply challenges are likely to remain in the short to medium term. Two Chinese companies produce more than 50% of the electric car batteries for the world (Coggan, The Financial Times, p.22). One of these companies (Contemporary Amperex Technology (CATL)), not only manufactures a third of the world’s EV batteries but it is one of the leaders of solid or semi-solid batteries – known as superbatteries. These batteries consume more lithium (between 40-100%) than traditional lithium-ion batteries plus a pure form of carbon – graphite – only found in a handful of mines in Mozambique and China (The Economist, 26 August 2023, p.72). All of these factors explain why lithium prices have doubled since 2021 and are set to increase. There is one chink of light in this world that

Conway explores, there are indications that new methods of recycling could mature to the extent where, by the end of the decade, up to half the materials needed for battery production comes from recycled batteries (p.73).

So the complex relationship between the existential threat of a growing climate crisis and the challenges of transitioning from fossil fuels to green energy solutions, combined with the competition generated across the global commodity markets, are all covered in one of Conway's six mineral case studies. As Conway declares, 'Far from being independent from the physical world around us, we have never been more reliant upon it.' Conway's case studies lead into this Book Club's penultimate journal publication under the theme of trade. Okonjo-Iweala's ***Why the World Still Needs Trade; The Case for Reimagining – Not Abandoning – Globalization***, offers a convincing argument for cooperation if we are to tackle climate change and transition from fossil fuels without steering into conflict.

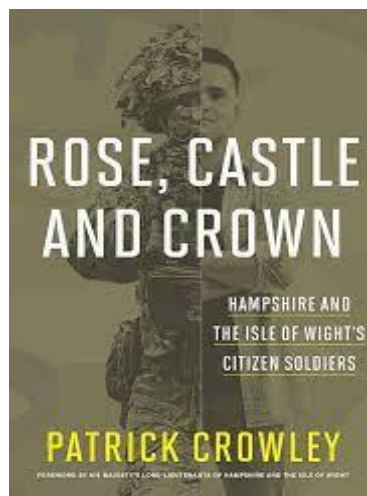


The premise of this article is that states have to enter into deeper interdependence and not seek resilience through independence. The author provides some post-WW2 history of the decision to form the financial structures that developed dense economic ties as a foil to future wars. Based on statistical evidence, readers will be left in no doubt that trade has generally underpinned global peace and prosperity. In fact, global trade is now so interdependent, it is almost impossible for nations to totally decouple themselves from their markets and supply chains. With global trade hitting record levels in 2022 (p.95), any mass '*near, on-shoring or friend shoring*' initiatives or control of the markets looks short sighted. Despite well publicised political frictions, the US and China in 2022 reached an all-time record of \$691 Bn in total trade. What the author posits is that 'the fundamental problem is not interdependence per se, but an overconcentration of some trading relationships for certain vital products' (p.96), something already examined in the reviewed titles. The commercial sweet spot seems to be achieving interdependence without overdependence, and that is only likely to be realised if current market outliers are brought into the global business network. If this could be achieved, then supply chain resilience will be forthcoming and with it a deeper sense of security. This imperative to stabilise markets and grow customer-supplier bases is closely linked to climate change. As Okonjo-Iweala believes,

'Negative supply shocks are likely to become more frequent in the years ahead as droughts, heat waves, and flooding wreak havoc with production and transport. Closing the door to trade would increase countries' exposure to such shocks. Trade is often portrayed as damaging the environment, with concerns about emissions related to shipping, air freight, and trucking spawning initiatives to "buy local." Transportation, like other carbon-intensive sectors, need to reduce its omissions...But what critics miss is that the world cannot decarbonize without trade' (pp.97-98).

Perhaps this is the strategic rationale behind Washington's clear desire to keep the oil market stable and keep Russian Black Sea exports flowing. Without robust supply chains and interdependent markets, what's not so clear is how we drive down the costs of green energy technologies and make them globally affordable to transition towards reaching net-zero emissions by 2050. What's clear is that we've to somehow fix it or we're consigning the next generation to the effects of our self-generated *Age of Stupid*. As Avery identified with Martha, 'we didn't intend to do it, but we all played a part. It was all the things that we hold dear that did for the Passenger Pigeon – progress and civilization' (p.171). Whilst Avery explains what happened, and is happening still, the next generation is likely to rightly state that '*you don't get points for environmental mistakes, in fact, you get punished mercilessly*' – so this generation needs to raise its game and global outlook. Perhaps once we realise that it's not Putin's armoured columns we should fear most, but the 2°C rise in ocean temperature – we may get closer to a long-term solution – assuming we have enough time to avoid a sixth extinction.

Moving away from commodities, markets, supply chains and extinction, but surreptitiously still linked to geo-politics, is Patrick Crowley's ***Rose, Castle and Crown; Hampshire and the Isle of Wight's Citizen Soldiers.***



For members working with, or employing Army reservists, this is a well-structured, informative and enjoyable read. Crowley provides a comprehensive chronological history of soldiers who have volunteered to serve from the militia in the 16th century to today's *One Army*. Although focused on Hampshire and the Isle of Wight, the book's story is likely to follow a similar pattern of recruitment, retention and capability development across the UK's citizen soldiers. In many ways, it's a broad case study of the reasons why citizen soldier's join and their psyche for serving in some of the most inhospitable places of the world. For those seeking details on specific county units, Crowley provides a mine of information and it may come as a surprise how many specialist units have and continue to support the British Army. As well as these unit histories however, Crowley links international events to national policy decisions. The two total wars unsurprisingly demanded significant structural changes to the management and leadership of Britain's citizen soldiers but there has been continuous modern geopolitical challenges that have shaped the part-time soldier's commitments. How Britain planned to mobilise *en masse* in the Cold War against a very constricted timeline, offers some insights into what the contemporary General Staff are dealing with today. The major strategic post-Cold War forcing policies, captured comprehensively in SDSR 10, are examined together with the resulting reserve structure and expanded capabilities. The contribution made by the reserves to the UK's initial and sustainment phase operations in Iraq and Afghanistan are well covered, with some interesting questions on where the Army, under challenging societal and financial constraints, goes from here. The subliminal takeaway from Crowley's book is that what happens to the Reserves in peace is arguably more important than what happens to them in times of conflict. The logical deduction is that the UK must plan strategically if it is going to have a credible and capable reserve force which the Regular Army is increasingly dependent on. For anyone working in Defence, Crowley's appendices will likely prove very useful. Comparing his details on notable dates and Army personnel numbers (liability not manning), offers insight into not only how flexible the reserves have, and could continue to be, but also some of their limitations if they are not closely nurtured and well led. All told, an interesting publication with much broader inferences and appeal than the title suggests.

For those within striking distance of Aldershot, Patrick Crowley is planned to give an author talk on *Rose, Castle and Crown* at The Prince Consort's Army Library on Monday 25 September between 1730-1800 hrs.

Reviewed Publications/Media

BBC, *Big Oil Verses the World*, online at <https://www.bbc.com/mediacentre/2022/big-oil-vs-the-world> [Accessed 12 July 2023].

Conway, E., *Material World: A Substantial Story of Our Past and Future*, London, WH Allen, 2023.

Crowley, P., *Rose, Castle and Crown: Hampshire and the Isle of Wight's Citizen Soldiers*, Cowes, Medina Publishing Ltd, 2023.

Detomasi, D. A., *Profits and Power: Navigating the Politics and Geopolitics of Oil*, Toronto, University of Toronto Press, 2022.

Goralski, R., and Freeburg, R.W., *Oil and War: How the deadly struggle for fuel in WWII meant victory or defeat*, New York, William Morrow and Company, Inc, 1987.

Kolbert, E., *The Sixth Extinction: An Unnatural History*, London, Bloomsbury, 2015.

Okonjo-Iweala, N., *Why the World Still Needs Trade; The Case for Reimagining – Not Abandoning – Globalization*, Foreign Affairs, July/August 2023, pp.94-103.

References

Avery, M., *A Message from Martha: The Extinction of the Passenger Pigeon and its relevance today*, London, Bloomsbury, 2015.

Bounds, A., Lui, Q., and Bradshaw, T., *Netherlands blocks sales of chip machines to China*, Financial Times, International, Technology Exports, 1 July 2023.

Cavendish, C., *The climate crisis requires a wartime footing*, The Financial Times Weekend, Opinion, p.11, 29/30 July 2023.

Coggan, P., *Five factors count when weighing up the dangers ahead*, The Financial Times Weekend, The Long View, 5/6 August 2023, p.22.

Hale, T., *Chinese deals in US shrink to lowest level since 2006*, The Financial Times Weekend, Mergers and acquisitions, Companies and Markets, 5/6 August 2023, p.15.

Lawson, N., *An Appeal to Reason: A Cool Look at Global Warming*, London, Duckworth Overlook, 2008.

Lin, A., and Liu, Q., *China's chip tool imports jump ahead of western restrictions*, The Financial Times Weekend, Companies and Markets, 26/27 August 2023, p.12

Milne, R., *Maersk warns of long and deep contraction in worldwide trade*, The Financial Times Weekend, Companies and Markets, 5/6 August 2023, p.13.

Olearchyk, R., Miller, C., and Sheppard, D., *Ukraine strikes Russian naval vessel in first threat to oil export infrastructure*, The Financial Times Weekend, International, 5/6 August 2023.

Tett, G., *'Oppenheimer and the end of the moonshot era,'* Financial Times Weekend Magazine, Intellect, American Experiment, 29/30 July 2023.

The Economist, *The Chip War: Full Metal Straitjacket*, Business, 8 July 2023, p.60.

The Economist, *Deep Sea Mining: Raiding Davy Jones's Locker*, Science and Technology, 8 July 2023, pp.71-72.

The Financial Times Weekend, *Financing grows into the minerals critical to clean energy drive*, 15 July 2023, p.6

The Financial Times Weekend, View, *Three inconvenient truths about the critical minerals race*, 15/16 July 2023, p.12.

The Financial Times Weekend, Companies and Markets, *ExxonMobil earnings tumble as oil prices return to 'normal'*, p.13, 29/30 July 2023.

The Financial Times Weekend, International, *Crude's rally set to continue as global demand reaches record high, says IEA*, Commodities, 12/13 August 2023, p.17.

The Financial Times Weekend, International, *White House unveils ban on some US investment in China tech sectors*, International, 12/13 August 2023, p.4.

World Resources Institute data on greenhouse gases and changes in pattern, Online at: (*World's Top Emitters Interactive Chart | World Resources Institute (wri.org)*), and <https://www.wri.org/insights/interactive-chart-shows-changes-worlds-top-10-emitters> [Accessed 29 July 2023].