

BOOK REVIEWS

War Transformed: The Future of Twenty-First-Century Great Power Competition and Conflict

By Mick Ryan. Naval Institute Press, 2022, 312 pp.

In a crowded field of books anticipating future warfare, Mick Ryan's *War Transformed: The Future of Twenty-First-Century Great Power Competition and Conflict* stands apart for seeking to avoid a breathless emphasis on change. Rather, *War Transformed* seeks to remain grounded in continuity while stressing areas that military institutions should seek to reform (66).

This approach can be seen in Ryan's opening anecdote of violence breaking out between India and China in June 2020, a twenty-first-century outburst characterized by some of the same weapons used by cavemen, like clubs. Ryan similarly explains that Russia's 2014 invasion of Ukraine "shows how war never really disposes of any old ideas or capabilities. It just combines them in different and sometimes new ways" (81).

Ryan, a recently retired Australian army general, first explores the relationship between revolutions and military change to situate his work within the fourth industrial revolution of the "acquisition" of knowledge (5). Concurrently, Ryan challenges technological determinists by contending that technology is "largely a level playing field" that may offer only the most "transient" of advantages (172). A more lasting advantage can be secured by appropriately hitching the technology to a suit of supporting ideas, institutions, and properly trained and educated military professionals (7). This point is at the heart of the work's argument.

Regarding specific technologies, Ryan suggests that artificial intelligence, robotics, quantum computing, biotechnology, energy weapons, hypersonics, space technology, and additive manufacturing will probably be the most important technologies to watch. None of this will greatly surprise the reader with a passing acquaintance in future warfare. But then again, the work's strength is not its deep dives into technology but rather its balanced approach to future warfare.

As such, Ryan incorporates discussions of larger disruptive global patterns of demographic change and demography and urbanization and identifies seven trends for future warfare agnostic to any specific technology. These trends include (1) a "new appreciation of time"; (2) the "battle of signatures"; (3) "new forms of mass" that require more creative approaches; (4) more "integrated thinking and action"; (5) an increased reliance on human-machine teams; (6) a reevaluation of how one targets a nation's psyche; and (7) the need for nations to reduce dangerous supply chain dependencies (82-84).

Ryan's discussion of time highlights his approach's strengths and weaknesses. Well-versed in the literature on modern and future warfare, Ryan draws on maneuver theorist Robert Leonhard's breakdown of time into four categories: duration, frequency, sequence,

and opportunity. Of those, Ryan believes that duration and frequency will be of greatest importance. Regarding duration, Ryan unsurprisingly stresses the tension between the preference of Western nations for shorter conflicts and the ability of some of its opponents to work against Western preference. More interesting is Ryan's emphasis on frequency, by which he means the "pace at which things occur" (86). The author allows that events may occur faster and that speed potentially "deepens the strategic reach of military activities," a point at which the author vaguely refers to cyber and information war by way of example (87).

Yet Ryan notably stops short of embracing hyperwar, arguing that "[a]cting at the right time will always be more important than acting at speed" (88). In a five-page section, the author introduces several issues for consideration, offering a springboard from which the interested reader can pursue the topic in greater depth.

About halfway through the book, Ryan introduces another set of themes to explore the five best historical ways to gain an advantage: geography, mass, time, technology, and intellectual advantage (169). Since some of these categories overlap with his previously discussed set of themes, the author then pivots to focus largely on the last category, a logical choice since he spent his last assignment in the army before retirement commanding the Australian Defence College.

Ryan seems to suggest that China has moved ahead in the area of intellectual advantage. He certainly pulls no punches in taking Western militaries to task for mushy thinking, such as for using terms like "grey zone" (70, 211). He finds such phrases to be problematic in allowing for a shared understanding needed to counter potential opponents. But he does not always apply the same rigorous standards to his quoting and unpacking of Chinese and, to a lesser extent, Russian military thinking (34, 86–87, 124, 149).

But other examples of Western jargon receive a pass, such as multidomain operations. Ryan notes that peer and near-peer adversaries have "invested in new operational concepts that are designed to attack Western systems and joint forces where they are weak" (134). He further recognizes that China has "assessed that a key weakness in Western military organizations is the operating systems that link forces in the different domains" (143). But Ryan also insists that Western militaries must "pit" their advantages against their adversaries' weaknesses. But, in this case, multidomain operations may just constitute a known weakness that may not offer enough of an offsetting advantage.

Again, continuing his emphasis on cognitive advantage, Ryan suggests the need for almost constant adaptability in professional military education (196). Disappointingly, this section lacks compelling examples of how he oversaw such change within the Australian Defence College, particularly regarding how to better prepare military leaders to seize the advantages of artificial intelligence.

He also never quite balances how one remains grounded in key patterns of continuity given his countervailing emphasis on "spark[ing] continuous change" (143, 155). This is a delicate balancing act that desperately needs more discussion as there are real limits in quality when institutions pursue constant change.

The author also sees an unexpected boon from the COVID-19 pandemic in professional military education: the provision of more online, continual learning. But Ryan does not demonstrate that this format actually improves learning outcomes (203). Likewise, he stresses continual learning but does not offer practical suggestions regarding how overworked officers can jam professional military education into their weekends with anything more than the most cursory and cynical engagement.

For those already conversant in issues surrounding future warfare, Ryan's work offers an excellent synthesis of some key literature that will help to identify gaps or areas worthy of further study. For those not up to date on these debates, the work is still highly accessible. Amid a slew of books offering technological silver bullets, Ryan provides a steady

and wide-ranging approach that can be mined for additional study depending on one's familiarity with the topic at hand.

Heather Venable, PhD

The Insurgent's Dilemma: A Struggle to Prevail

By David H. Ucko. Oxford University Press, 2022, 328 pp.

David H. Ucko explores new trends in insurgent strategy by looking at how insurgency is transforming in a symbiotic relationship with state vulnerabilities. He describes the insurgent's dilemma as the challenge in violently fighting state authority and establishing power while avoiding a devastating state response during the process.

The book opens with Ucko reframing analysis about insurgency by focusing on its political features rather than the military aspects. He highlights how the successful insurgencies during the Cold War focused on specific state vulnerabilities, but this changed as the international community and states have transformed. Ucko also describes how foreign states were key to insurgency victories, but insurgencies have succeeded with only a few definitive victories between 2000 and 2015 (26). This relative lack of success, he argues, prompted changes in the insurgent's strategies and, in doing so, necessitates changes for states to counterinsurgencies.

The first half of the book examines three types of insurgencies, which demonstrate a shift from more traditional analysis. Ucko begins by analyzing localized insurgency in which a group does not attempt to change the regime but engages in subversion locally and avoids significant armed retaliation from the state. Exploring urban and rural cases in Brazil, Iraq, Mali, Mozambique, Nigeria, and Turkey, he describes the vulnerabilities this type of insurgency poses to the state with its internationalization and threat to government legitimacy by localizing the battle to the neglected areas of the countries.

Building from this, Ucko defines infiltrative insurgency as involving a group that co-opts state structures through the exploitation of political and social divisions while covertly using violence as it engages in legitimate politics from within to dismantle a democratic system. He analyzes historical case studies with the Nazi Party in interwar Germany and more contemporary cases involving Bolivia, Colombia, Greece, Iraq, Nepal, Northern Ireland, and Pakistan, demonstrating how this approach allowed armed movements to legitimize their aims and twist democracy even when the movement failed (111).

Then, Ucko analyzes ideational insurgency that he describes as online influence and recruitment narratives that seek to build power amid sporadic violence. Drawing on case studies of information operations from the Islamic State and online activity from far-right violent extremists, he describes their efforts to mobilize against the state through the formation of a digital counterstate and the movement of fringe ideas into the mainstream (141).

The second half of the book proposes state responses to these three types of insurgencies and highlights the need to focus state efforts beyond military responses. Ucko offers several state courses of action against localized insurgency, drawing from lessons learned in Afghanistan, Colombia, El Salvador, Haiti, Iraq, and Sri Lanka to demonstrate how the state must enter neglected areas and establish legitimacy. He highlights the need to not only control, clear, and hold territory in rural areas, but also to establish conditions for institutionalizing informal structures. Moreover, he notes that urban areas require special consideration about the types of force necessary, allowing state connections with the population so urban insurgents' political functions can be replaced by the state (183).

Next, Ucko looks at state responses to infiltrative insurgency and the importance of the responses, such as ostracizing, integrating, and proscribing groups, as well as distinguishing between competition and existential threats (188). Using case studies from

Colombia and Northern Ireland, he describes ethical and strategic aspects of the responses, such as the dangers of inclusion, to encourage moderation and discusses the problems of simply banning the parties from political participation.

Lastly, Ucko reviews state responses to ideational insurgency with attention to censoring, policing, and regulating internet activity by noting the trade-offs and challenges of each approach. Largely focused on the United States, he also looks at countermessaging and the need for states to adjust as well as the importance of media literacy against disinformation and propaganda. He notes the significant difficulty the state faces in responding to ideational insurgency and the role of the private sector, such as social media companies deplatforming and removing violent internet content.

This book successfully describes the ways insurgency has transformed and provides ideas for state responses to some transformations. Ucko details how insurgents had more victories before the end of the Cold War, which prompted strategy shifts to fight the state's advantages and attack vulnerabilities. During the Cold War, states relied on military might to fight insurgencies, but suppressing opponents with firepower is not enough in a contemporary globalized and digitized world. Hence, the book explains not only how states need to rethink insurgencies but also how they must establish analytic frameworks about these trends for effective responses.

The Insurgent's Dilemma does have some shortcomings. Notably, several of the case studies examined were superficial, reciting some basic contours about actors and events when providing comparative analysis to movements in other countries or time periods. Moreover, the book expands the definition of insurgency by including online narratives, social media posts, and computer hacking as forms of insurgency. This significantly changes the scope of insurgency beyond conventional definitions and potentially blurs lines between dissent and violence, especially for countries where political opposition, including demands for democracy, are branded as terrorism. Nonetheless, readers interested in the future of insurgency, disinformation, and contemporary challenges to democratic nation-states will find this a valuable study.

Ryan Shaffer

Klimat: Russia in the Age of Climate Change

By Thane Gustafson. Harvard University Press, 2021, 336 pp.

Climate change will be the defining issue in this century's international politics. It will shift international trade, drive conflicts, and—at least for some low-lying Pacific islands—be an existential threat.

Thane Gustafson's *Klimat: Russia in the Age of Climate Change* seeks to predict the effects on Russia. The book charts a perilous course for the Russian economy and society in the next 30 years, a course beset by the storms of shifting international markets and the shoal waters of poor domestic economic management. That course is only possible without any surprise, world-changing events beyond the COVID-19 pandemic that had begun as Gustafson completed his book. Civilization is now, however, beset by another world-altering event: Russia's February 2022 invasion of Ukraine. *Klimat* is only more compelling as a result.

Gustafson argues that climate change's net effects on Russia will be negative (6). There will be benefits, such as marginal improvements in agricultural productivity in parts of Russia and greater access to Arctic waterways, but these will be surpassed by the costs. Melting permafrost will degrade infrastructure across 70 percent of Russia's landmass (210). Droughts, floods, and extreme weather events will make parts of Russia less habitable and economically productive. This will drive economic migration, pushing rural populations into already crowded cities.

Gustafson argues that external actors control the economic impact of climate change on Russia, compounding this problem for Russian policymakers (7). Russian export revenue comes overwhelmingly from hydrocarbons, precisely those resources the world must wean itself from to limit the impact of climate change. Russia's economic output—and its tax revenue—is at the whim of governments actively seeking to move their economies away from oil and gas (15, 52). Changes in European policy toward fossil fuels, such as a carbon border tax, would strongly affect Russian exports. Similarly, any change in Chinese demand could radically change Russia's economic fortunes.

Gustafson predicts that in the short-term, Russia will continue to benefit from its hydrocarbon resources as the global energy transition slowly builds speed. To the early 2030s, the global demand for fossil fuels will continue to increase and Russia will remain in a strong economic position (13). From the 2030s to 2050, however, the global energy transition will gain steam and Russian exports of oil, gas, and coal will fall precipitously (13). The result will be a Russian economy short of export revenues, a state short of tax incomes, and a society struggling to cope with the effects of climate change.

All told, Gustafson paints a bleak picture of Russia's economic future. This future has grown bleaker in the wake of Russia's 2022 invasion of Ukraine. Sanctions on Russia's central bank have obliterated the currency reserves that Russia has developed over the last 20 years. This will reduce Russia's ability to offset the costs of climate change. Shell and BP—major British oil companies—withdrawed their Russian investments. The four largest international oilfield servicing firms also left Russia. With these departures, Russia loses the capital to finance development of its fossil fuel reserves and the technical knowledge to exploit them. This will seriously constrain Russia's ability to benefit from its natural resources even to the early 2030s horizon that Gustafson predicts. Furthermore, Europe plans to cut Russian gas imports by 66 percent this year and intends to have complete energy independence from Moscow well before 2030. The 10 years of strong fossil fuel exports that Gustafson predicts seem to have burned up, leaving Russia in a much weaker position.

This is not to criticize Gustafson's work, which provides a sober analysis of the structural factors that will govern Russia's experience of and ability to respond to climate change. The point is to highlight the precarity of Russia's economic position until 2050 and its vulnerability to Kremlin mismanagement and outside events. Few predicted Russia would invade Ukraine in 2022, and fewer still predicted the unprecedented scale of economic sanctions the United States, the European Union, and others enacted in response.

Russia could only overcome the structural problems that Gustafson highlighted if incredibly skilled and lucky political leaders in the Kremlin worked with all parts of Russian civil society and coordinated with their counterparts in other countries. Instead, Russian President Vladimir Putin launched his country into a war that puts Russia in opposition to its primary hydrocarbon customers and the source of the high technology the future Russian economy needs.

In understanding the world that will emerge after the Russo-Ukraine War, readers will appreciate *Klimat* for the insights it provides on Russia's future, climate change, and the future of international relations.

Ian T. Sundstrom

Innovating Victory: Naval Technology in Three Wars

By Vincent P. O'Hara and Leonard R. Heinz. Naval Institute Press, 2022, 336 pp.

Vincent P. O'Hara is the author or co-author of more than 10 books, mainly on topics of World War I and II naval warfare. In this latest book, *Innovating Victory: Naval Technology in Three Wars*, O'Hara has teamed up with Leonard R. Heinz, an experienced

designer of wargames and simulations with emphasis on tactical naval problems. The authors use their expertise to explore six case studies that analyze technological developments in the twentieth century.

O'Hara and Heinz studied the development of weapons (mines and torpedoes), tools (radio and radar), and platforms (submarines and aircraft). The guiding idea was not to focus on technical details but to explore "the process by which each technology's possibilities were first recognized, tested, then used, or not used, to best advantage" (2). Aside from the specific technologies, the book also considers the effects of human factors, such as prior established practice, politics, and policy. The goal was to divine any principles that governed the process and determine whether those principles applied across platforms, technologies, and nations. The authors also wanted to know whether any identified principles led to victory irrespective of the time in history or the specific technology pursued. This would help answer the question of whether those principles were generalizable enough to apply to developing technology today.

The book is organized into eight chapters. The lead chapter, "Use, Doctrine, Innovation," provides an overview of the previously mentioned human factors. This is followed by six chapters exploring the historical development of mines, torpedoes, radio, radar, submarines, and aircraft. The closing chapter, "Conclusions," lays out what the authors discovered as principles. Based on the scope of the bibliography and the well-documented endnotes, it is apparent that the chapters are thoroughly researched. The bibliography is well-organized, showing that the authors made liberal use of official histories and primary documents and hundreds of articles, chapters, and books by well-respected scholars. Moreover, the chapters are provided with useful illustrations, pictures, and graphics that emphasize the authors' points.

Within each of these chapters, they do a commendable job of producing a pleasantly readable condensed history that compares development success and failure across several nations, including the United States, United Kingdom, Russia (and the USSR), Italy, France, Germany, Japan, and the Ottoman Empire.

Obviously, radio, radar, and aircraft are not technological developments exclusive to naval warfare, so the authors find it necessary to discuss the development of these key innovations in broader terms that includes the development of land-based systems. Those cases readily showed the complications that arose from politics, interservice rivalry, national competition, and policy decisions—particularly concerning the priority of capital investment. These human factors all contributed equally, or more so, than the science and engineering to the development of these technologies into effective weapon systems.

What stands out in some cases is how quickly these technologies went from discovered physical phenomena, to ideas, developed prototypes, workable innovations, and dominating advantages in a period of only a few decades, while in others the basic technology existed for more than a century before countries found a way to use it effectively in naval warfare. For example, Guglielmo Marconi demonstrated the operation of his radio in 1896, and by 1897, the Italian navy had trialed ship-to-shore communication. Naval commanders on both sides used radio extensively in the Russo-Japanese War from 1904–5. As use of the new technology became widespread, its liabilities also became manifest. By 1914, all major navies used radio communications but also learned to listen to adversary radio transmissions. Knowing that radio transmissions were easily intercepted, the navies developed cyphers and encryption, used jamming techniques, and developed direction finding to determine locations of enemy forces. O'Hara and Heinz conclude that each new technology offered a window of advantage that could be exploited until countermeasures were developed. Sometimes that window was open long enough to win a war.

In other circumstances, technology was only slowly exploited. An example documented by O'Hara and Heinz is China's use of mines dating back to the tenth century during the Sung dynasty. Mines were placed in the river channel to block traffic or emplaced to protect a small harbor. Japan began to use mines offensively in the early twentieth century against the Russian fleet during the Russo-Japanese war. Mines were used both offensively and defensively during World War I, where they were produced and laid by the tens of thousands. Mines are relatively cheap to manufacture, can be laid by many platforms either covertly or overtly, and cannot be ignored. Mine countermeasures are difficult to employ. Sweeping for them is a tedious and uncertain process.

A point that O'Hara and Heinz make to explain this differential in development time is that there is an emotional current to developing technology. Mines, mine layers, and mine sweepers do not evoke the emotional attachment that flows to aircraft, ships of the line, and submarines with crews admired for their bravery and exploits. This emotional preference influences which technologies receive priority for development. Exciting technology garners the most attention and investment. This can create a blind spot for older technology that is used in a novel way. A technology might be considered boring but that does not mean it is ineffective.

Technological advantage in warfare is often due to integration and codevelopment with other technologies. Radio begat radar. But radar and radio intelligence became advantages only after navies learned how to compile and analyze information so that it could be acted upon tactically. Here it was apparent that top-down, centralized oversight of technological development was most useful when scientific and engineering attention were needed along with large amounts of capital. Wealthy national governments could provide those commodities better than anyone else. Once the technology existed, however, bottom-up experimentation and lessons learned were the quickest ways to develop effective exploitation methods. Thus, the US Navy developed the combat information center and began to modify ships to include a dedicated space for consolidating information and controlling combat.

Submarines became effective along with improvements in radio and torpedoes. They became particularly deadly, and almost a war-winning application, when policy shifted the submarine's focus to targeting national trade by sinking merchant shipping without following the traditional rules of prize capture.

Similarly, aircraft needed to communicate with their ships, find targets, and deliver ordnance. They became most effective when the purpose-built ship—the aircraft carrier—was designed specifically to launch, recover, and maintain aircraft. Torpedoes had to be hardened to withstand the impact with the water when launched at the speeds necessary to keep aircraft aloft. Tactics had to be developed to find the enemy, report the location and direction, direct other aircraft to attack the enemy, and finally to return to their own fleet and be recovered.

A theme that runs throughout the book is the idea of network effects. One radio is a novelty. Many radios in a network allow rapid communications for a variety of tasks and common understanding of the situation. Other technologies are similar. For instance, many radio direction-finding antennas provide more accurate locations and greater resilience against damage. Many mines are far more effective in constraining ship movement than a few that can be avoided. If Germany had fielded 50 more submarines when World War II began, the outcome may have been quite different. The limited application of technology produces a small effect, but massive proliferation produces a great effect.

The military professional might not be surprised by these lessons, but they are worth noting, and many of the assumptions and biases demonstrated in the cases are still prevalent today. It is also important that one does not learn the wrong lessons from these historical snapshots.

The book, including the index, is only 300 pages. The authors examined several nations but only six technologies and two platforms. That limitation raises concern over how generalizable the lessons are. Many more cases, covering more diverse technologies over longer spans of history and including differing cultures will be required before achieving the goals that the authors set out for this book.

Given the limitations of the cases presented here, the authors did a commendable job of creating an accessible and readable volume that points out some potential pitfalls to avoid and techniques for developing technological advantage in wartime. The target audience is not the Department of Defense acquisition professional or the cadre of doctrine writers who will not be surprised by any of the book's findings. Military enthusiasts, whether professional or amateur, however, will enjoy the book and should add it to their military history library.

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