Preparing for the future of war

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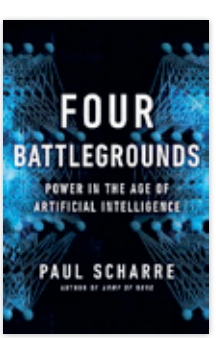
Review essay

Imagining the future of war and warfare has drawn the attention of scholars and soldiers alike. However, works by authors of science fiction have arguably stirred the imagination in a more dramatic fashion. Classical examples of fictional books on future conflict include *Ghost Fleet* by Peter Singer, *Old Men's War* by John Scalzi and, of course, the works by H.G. Wells such as *The War in the Air* and *The War to End All Wars*. The best of these fictional works combine a profound understanding of what war is and explore the impact of potential developments in technology, concepts and society on the conduct of future wars. Apart from being a fascinating pastime, fictional works can contribute to imaging future war by soldiers, policy makers and scholars. Fictional scenarios help to explore possible



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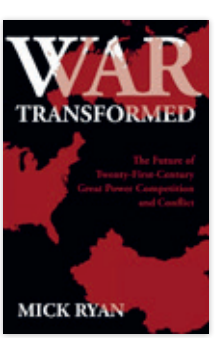
Four Battlegrounds
Power in the Age of Artificial Intelligence
Paul Scharre
New York (W.W. Norton) 2023
512 pp.
ISBN 9781324074779



War Transformed

The Future of Twenty-First Century Great Power Competition and Conflict
Mick Ryan
Annapolis (Naval Institute Press) 2023
312 pp.
ISBN 9781682477410

scenarios and potentially initiate their manifestation.[1] In other words, war can imitate art.

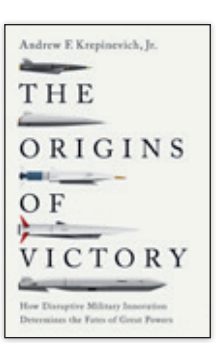
However, pursuing change in itself is not necessarily the objective of students of future war. As Elliot Cohen and John Gooch put it, one main component of military catastrophes is the failure to anticipate.[2] They distinguish foresight needed to anticipate from learning the lessons from (recent) history and the ability to adapt changes in the environment. Within this large and diverse body of literature on future war, the concept of strategic surprise is a central theme. To be caught off-guard by an adversary is of course lamentable and states naturally strive to prevent such surprises. Still, history is replete with examples of an aggressor pulling off a strategic feat of deception, often in spite of available warning signs. Testament to the impact of such bolts from the blue is the widespread familiarity with events like Pearl Harbor, the Yom Kippur War or 9/11.

When strategic surprise is coupled with new and unforeseen capabilities of adversaries, the results can be catastrophic. Therefore, armed forces continuously have to prepare for future challenges. Furthermore, they have to anticipate and implement new capabilities. At the same time, professionals on national security must balance the exploration of the future with more mundane iterations of available capabilities for emerging conflicts.[3] Indeed, military institutions can be reluctant to expend too many resources on such explorations of unproven capabilities in order to prevent adverse effects on combat readiness in the short term.[4] Consequently, preparing for future war is inherently complicated by contemporary imperatives.

Thus, contemplating future wars remains an important effort to help preparing armed forces for conflicts to come. As such, periodically taking stock of the intellectual state of the art on future war is warranted. Recently, three new works have been published that explore future conflict: Paul Scharre's *Four Battlegrounds*, Mick Ryan's *War Transformed* and Andrew Krepinevich's *The Origins of Victory*. This essay seeks to assess the contribution of these works.

Contribution

Although Paul Scharre's *Four Battlegrounds* is not solely focused on war, his treatise on the impact of Artificial Intelligence (AI) on national security is highly pertinent. The book focuses on how adoption of AI is spurring strategic competition between the United States and China. Scharre contends that winning the quest for gaining the upper hand in successfully implementing AI will confer substantial strategic advantages on states in the pursuit of power. As the title states, this



The Origins of Victory
How Disruptive Military Innovation Determines the Fates of Great Powers
Andrew E. Krepinevich, Jr.
New Haven (Yale University Press) 2023
568 pp.
ISBN 9780300234091

1 See for instance: Lawrence Freedman, *The Future of War. A History* (New York: Public Affairs, 2017); Christopher Coker, *Future War* (Cambridge: Polity Press, 2015).
2 Eliot Cohen and John Gooch, *Military Misfortunes* (New York: Free Press, 1990) pp. 26-27.
3 Martijn van der Vorm. 2023. *The Crucible of War. Dutch and British military learning processes in and beyond southern Afghanistan* (Leiden: Leiden University (doctoral dissertation 2023) pp. 384-387.
4 Kendrick Kuo, 'Dangerous Changes. When Military Innovation Harms Combat Effectiveness,' *International Security* 47, No. 2 (2022) pp. 48-87

new 'arms race' will be waged in four distinct but interrelated battlegrounds: data collection, computing hardware, (human) talent and institutions. Indeed, Scharre contends that this strive for dominance in AI is already well underway. While, according to Scharre, the U.S. currently holds the edge, China is closing the gap swiftly.[5] Marked advantages of China are its unity of purpose and ability to commit resources to AI. Ominously, Scharre warns that authoritarian states, such as China, are less scrupulous in using AI in strategic competition and to control their own populations. At the same time, the U.S., and by extension the West, is more conducive to innovation and more prone to attract talented personnel.[6] As such, Scharre advocates that the U.S. focuses on attracting human talent and ensure institutional reform of the national security organs to direct, implement and harness developments in AI. Of course, transforming inherently bureaucratic institutions to embrace what Scharre and others hail as the fourth Industrial Revolution is a tall order.

Four Battlegrounds thus provides a sobering assessment of the potential impact of AI on international security and strategic competition. It is accessible to a large audience and explains the developments and implications of AI comprehensively and in-depth. What the book drives home is that national security is contingent on far more factors than military capability. The emergence of AI and its impact on international security is a societal challenge. Scharre succeeds in illustrating these implications. When Scharre focuses on military aspects, he is able to explore the future yet remain grounded in contemporary developments and implications. *Four Battlegrounds* contends that AI can be used for expedited targeting cycles, automated cyber operations but also more mundane applications, such as predictive maintenance. As such, Scharre argues that AI will not alter the nature of war but that the interaction between humans and machines will change the character of war in a profound way.[7] Ultimately, the technological potential, for better or worse, held by AI for the future of war can only be faced with skilled people working in adaptive institutions.

The emphasis on human and organizational factors for future conflict is even more pertinent to the other two books. In *War Transformed*, retired Australian Major-General Mick Ryan explores technological developments, such as AI, quantum computing, robotics, biotechnology and additive manufacturing. He then synthesizes these advances in technology with geopolitics, climate change, demographics and urbanization – collectively designated as 'disruptors' by Ryan and military trends. For instance, the 'battle for signatures', 'integrated action and thinking', human-machine cooperation and 'new forms of mass' are identified as trends.[8] These trends form a strong element of the book as change is not centred on technology but is viewed far more comprehensively. Ryan argues that war is an inherently human preoccupation and thus the human factor will remain pre-eminent, despite technological advances. Moreover, as the human factor in war remains constant, the nature of war will not be affected by changes. Ryan stresses that, consequently, the enduring realities of war as violence, politics and human emotion will remain at to the centre of conflicts.

Nevertheless, change in the character of war is constant and environmental changes will pose challenges to societies and their military institutions. As such, *War Transforms* contends that these changes should not be ignored but instead approached boldly by organizations and leaders. With this, Ryan emphasizes that 'effectiveness of people, ideas and institutions will […] determine whether military organizations can successfully adapt to meet the demands of the future security environment'.[9] Central to his argument, Ryan stresses the

5 Paul Scharre, *Four Battlegrounds*, pp. 6-7.
6 Ibidem, pp. 30-31.
7 Ibidem, pp. 23-265.
8 Mick Ryan, *War Transformed*, pp. 82-84.
9 Ibidem, p. 210.

importance of maintaining an intellectual edge over potential adversaries. Therefore, *War Transformed* advocates investment in professional military education to enhance understanding of adversaries, technological literacy, adaptability and creativity. This grounded approach to future war makes this book well-worth reading. Yet, while most readers will sympathize with Ryan's notion that intellectual investments in military personnel will be beneficial to military institutions, the bureaucratic and political realities of armed forces will continue to impede the adaptability of these organizations.

The third book, *Origins of Victory* by Andrew Krepinevich, confronts the reader with the institutional elements of preparing for future war. The book is marbled with anecdotes from his time as analyst in the Pentagon's Office of Net Assessment. Tasked with examining current and future trends in war for the U.S. Department of Defense, Krepinevich is well- versed in the institutional dynamics regarding organizational change based on new concepts, technologies and challenges. With this background, Krepinevich explores in his new book how states can acquire military advantage through the adoption of new technologies and concepts.

The first part of *The Origins of Victory* contains an insightful analysis on what Krepinevich identifies as the current military paradigm: the 'Precision-Warfare regime'. In order to overcome this equilibrium, the U.S. and its rivals, China and Russia, will naturally seek to adopt new technologies that are currently emerging. Mirroring Mick Ryan's book, *Origins of Victory* sketches the potential impact of developments, such as AI, robotics, hypersonics and biotechnology. What stands out in this part of the book is the ominous sense that new capabilities can degrade a state's ability to deter its rivals and thereby lower the threshold for military conflict.[10] Of course, this possibility cannot be discounted, yet the determination to prevent such a strategic surprise holds risks in itself. At the same time, Krepinevich states that the first-mover of a capability will not necessarily hold a strategic advantage as rivals can refine it and implement it more effectively.

The second part of the book contains historical cases of adopting 'disruptive innovations' by militaries: the Royal Navy's transformation at the onset of the 20th century, the German Army's pursuit to adopt manoeuvre warfare during the interbellum, the concurrent adoption of aircraft carriers by the U.S. Navy and, finally, the quest towards precision by the U.S. Air Force during the end of the 20th century. In these substantial chapters, Krepinevich tries to identify conditions that shaped the successful adoption of new concepts and technologies. In this part of the book Krepinevich shows that in each case substantial institutional impediments had to be overcome to change the dominant paradigms of the time. Implementing organizational change did not only upset the power balance within the organization, it also held the risk of degrading the readiness for war if the transformation was based on faulty analysis.

Empirically, these cases hold limited new insights for students of military change. Furthermore, while the innovations conferred a military advantage on the military services under study, these were mostly not strategically decisive. A related observation to this is that the case studies refer to services in isolation. As such, they are of limited value to address inter-service rivalry in institutions over resources, capabilities and concepts, in particular, in the light of the emerging prominence of Multi-Domain Operations in NATO.

These critical observations notwithstanding, Krepinevich provides relevant analyses based on the examples. Arguably the most important element is to provide a clear vision of what the main operational challenges might be for a military organization: what are potential operating environments, adversaries and how do we seek to operate in future conflicts. Krepinevich argues that this vision should be as concrete as possible to inform thinking on and build support for organizational change.[11] A

10 Andrew Krepinevich, *The Origins of Victory*, pp. 146-149.
11 Ibidem, pp. 430-433.

second element based on the case studies is that successful adoption of new concepts requires new a measurement of effectiveness. Only by having a clear grasp of whether a concept works can armed forces adapt and overcome operational challenges. The third proposition brought forward in the book is allowing for 'wildcatting', exploring potential new solutions to overcome identified challenges. Inherently, experimentation is difficult for large bureaucratic organizations, as this require resources with potentially limited returns on investment. Yet, this exploration is also crucial in order to adapt to an ever-changing environment with strategic rivals. A fourth and final element worth mentioning here is the role of leadership. In the case studies, Krepinevich stresses the influence of leaders in initiating and embracing organizational change. Invariably, the leaders in the examples held long tenures, often more than six years. This helped them with establishing a clear vision, build organizational support (often by promoting like-minded subordinates), allocation of resources and instilling a form of institutional patience. In other words, organizational change can be catalyzed by institutional continuity.

Conclusion

The three books discussed above are all worthy additions to the field and have considerable merits of their own. *Four Battlegrounds* provides a clear and insightful overview of the impact of AI on national security. *War Transformed* serves as a helpful reminder of the enduring nature of war and the inherent centrality of humans in conflict. Finally, *The Origins of Victory* explores potential technological developments and draws on history to examine how military institutions seek to translate this to new capabilities. A central theme of the three books is that the future of war will not be shaped solely by technology. Instead, all authors emphasize the interplay between evolving technology, societal developments, humans and institutions. As such, the books are grounded and provide realistic vistas on the future of war. Moreover, the books by Scharre and Mick Ryan cogently illustrate that military prowess alone accounts for little in contemporary, and thus also future, strategic competition. Conversely, Krepinevich focuses more on military institutions and aptly describes the organizational dynamics and challenges of enacting change. Furthermore, he identifies a number of characteristics that can help to successfully adopt new concepts: vision, measurement of effectiveness, experimentation and consistent leadership. While elegant in their simplicity, any soldier or civil servant with practical experience in military organizations will recognize that enhancing these catalysts is challenging enough. Preparing for future challenges will have to compete with the imperative to be ready for any task today. Therefore, balancing between current requirements and future capabilities is a key challenge for any military organization. While the discussed books hold no definite answers, they do provide ample inspiration for further thought on potential future concepts, capabilities and conflicts. ■