

***War Transformed: The Future of Twenty-First-Century Great Power Competition and Conflict*, Mick Ryan, (Annapolis, Maryland: Naval Institute Press, 2022) 329**

Military historians and strategists have been writing on the subject of warfare since ancient times. Strategists and scholars generally focus on both tangible and intangible aspects of warfare. Tangible aspects are the number of troops, quality and quantity of weapons, technology and economic resources etc. Intangible aspects of war include willpower, strategic innovation and the idea of employment of weapons. Most scholars of war studies separate these two and focus on one of the two aspects of warfare, i.e. tangible or intangible. Some scholars consider technological advancement as the most important factor for victory in contemporary warfare. Many scholars referred to in the book have highlighted that Prussia (1806), Russia (1905) and Iraq (2003) lost the wars due to lack of technological advancement. But Mick Ryan's book *War Transformed: The Future of Twenty-First Century Great Power Competition and Conflict* draws a different conclusion. He argues that both technological and cognitive factors are important for victory in war. Ryan is of the view that technological advancement and military revolutions, although critical, do not provide a decisive military advantage in a conflict. The strategy to combine technological innovation with new ideas, new organizations and well trained and educated human resource will provide decisive advantage in 21<sup>st</sup> century warfare. The book consists of four chapters that focus on the debate on cognitive and technological aspects of armed conflicts along with solutions to overcome the challenges of modern warfare.

Chapter I examines the impact of industrial revolutions on technological transformation of warfare. The three industrial revolutions changed the nature of warfare, national war-fighting capacity and military organization. The first industrial revolution resulted in the invention of steamboat, the telegraph, railroads and nation's ability to produce weapons on mass-scale. This transformed the conduct of warfare by enhancing tactical and operational capabilities. The second industrial revolution provided the power of flight, internal combustion engine, wireless communications, radar and electrically powered factories and

expansion of scientific knowledge that underpinned the transformation of military affairs. The third industrial revolution featured the birth and growth of the internet and space-based capabilities. According to Ryan, the world is moving towards the fourth industrial revolution backed by silicon-based artificial intelligence, biotechnology, energy weapons, quantum technology, hypersonic and robotic systems that are impacting geopolitics, demography, technology and climate. The author is of the view that if we are able to understand how these industrial revolutions have changed war-making capacity and military organizations, this knowledge can be applied to the emerging fourth industrial revolution.

After the first chapter the author moves on the assertion that war is a recurrent factor of human history, which is the ultimate expression of competition. Roman proverb, “If you want peace prepare for war”, aptly expresses the significance of war in their strategic culture. Romans and Greeks considered war as an element of human existence and it would inevitably be part of human future according to Ryan.

The author has outlined five main features of warfare: (i) war will remain a part of human affairs; (ii) human competition is a constant feature of the interplay of nations; (iii) military institutions along with their adaptive capacity of strategic advancement will exist to respond and achieve the outcomes of different situations; (iv) strategic culture of states will define the ways to protect the sovereignty of nations; and (v) surprise attack on the adversary will remain the significant element of 21<sup>st</sup> century warfare.

The author has broadly explained the changes in 21<sup>st</sup> century warfare techniques and competition and is of the view that military power requires understanding of modern warfare techniques. However, states are applying a combination of modern and traditional techniques of warfare to attain their strategic objectives. In case of the Russia-Ukraine conflict, Moscow used ancient warfare techniques including: (i) the seizure of cities and geostrategic points; (ii) negotiations; (ii) conduct of psychological operations and information warfare along with modern warfare tools; (iv) unmanned systems; and (v) open-source intelligence capabilities including data mining, hacking, geolocation and other methods.

Ryan gives importance to emerging trends of 21<sup>st</sup> century warfare in which technological advancement along with human-machine integration will be the main pillar of warfare. The integrated thinking and action approach is

the emerging trend of warfare where air, space and cyberspace have joined the old space of land and sea conflict. This indicates that in future wars states will need to act in all emerging competitive domains. Ryan concludes that changing nature of 21<sup>st</sup> century warfare has its impact on the ideas of leaders, people and new military institutions. The nations which nurture learning culture and invest in new ways of thinking and operating are more likely to succeed.

The author discusses the significance of ideas, institutions and military power in developing military effectiveness in modern times. For example, the US has the idea of multidomain warfare that was defined in 2018 in the document “The US Army in Multidomain Operations 2028”. The document not only defines the convergence of capabilities in the physical, cyber and influence domains, but also discusses the importance to penetrate and disintegrate enemy’s anti-access systems, and exploits the freedom of maneuver. China, on the other hand, follows a multidomain warfare approach from its own perspective. The Chinese consider science, technology and innovation to be core ingredients in developing China’s advantage in military domain. Beijing has three core approaches in dealing with problems of future warfare: (i) use of information and intelligentization of warfare; (ii) use of kinetic and non-kinetic strikes against the enemy’s operational system; and (ii) use of political warfare.

Ryan has used Millett and Murray’s framework for the assessment of military effectiveness and applied that on 21<sup>st</sup> century warfare scenarios. The framework includes strategic, operational and tactical capacity of warring nations. Millett and Murray give more importance to strategic effectiveness than operational or tactical effectiveness because mistakes on operational and tactical levels can be corrected, but strategic mistakes may have lasting consequences. On strategic effectiveness, military institutions require an integrated approach which includes economic, political, cultural, information, diplomatic and other strategic goals, in order to achieve desired strategic objectives. The use of emerging technologies and trained manpower are among the main elements of contemporary warfare, where tools of information and strategic assessments can help to get an advantage or balance in intellectual competition domain. These operational concepts are adopted by China and Russia to counter the Western system – where they are weak.

The last chapter of the book explores the participation of effective and adaptive military personnel in military institutions in order to meet the 21<sup>st</sup> century warfare challenges. The author is of the view that military leaders are trained in institutions that help them to cope with emerging warfare challenges. Because of this adaptive approach, historically, military personnel have been able to use geography, time, technology and intellectual edge to gain military advantage against their adversary. Ryan stresses more on “intellectual edge” which he defines as “individual excellence and professional mastery to out-think and out-plan potential adversaries”. This intellectual edge could be developed by the deployed forces, its education and training system, and its strategic planning institutions. Military personnel should be given the training to think, act and decide faster than their adversaries according to the author. The new model of military training and education system must operate by strategic design, new technologies, military and organization theory and enhanced networking. Military institutions should invest in their people for future warfare and competition.

The book is an insightful reading as it presents options and choices for military leaders in adopting an effective military strategy in 21<sup>st</sup> century warfare. Ryan’s two conclusions (i) technological innovation, ideas, institutions and well-trained and educated people and (ii) combination of old and new technologies that would provide a decisive advantage to nations in any military conflict are drawn from his own professional military experience during his service as a Major General in the Australian army. The book also highlights contemporary issues of international politics including the US-China strategic competition and the Russia-Ukraine war in drawing options for military effectiveness. The book may help the reader to better understand the evolution of strategic thought and the impact of military modernization on the overall strategic culture of nations. The primary audience of this book is current and future military leaders, and students of strategic and defense studies. Besides it has interesting information for military historians.

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