Cruise Missiles: Evolution, Proliferation and Future

by Sitakanta Mishra, Delhi: KW Publishers, 2011, pp. 206, INR 680

*Zorawar Daulet Singh**

German V-1 rockets raining over London and Russian self-propelled Katyusha rockets pulverising German forces on the eastern front are enduring images of the Second World War. After 1945, it seemed the rudimentary technologies embodied in these projectiles were poised to take off. Instead, it would take several decades for these rockets to transform into smart and lethal battlefield weapons. *Cruise Missiles: Evolution, Proliferation and Future* traces the emergence and evolution of this unsung weapon system, and makes a timely and useful contribution to contemporary security literature.

With the onset of the missile age in the 1950s, it was the ballistic rather than the cruise missile that raced ahead. Aside from technological constraints, there were doctrinal reasons that ensured the cruise missile played second fiddle to the ballistic missile throughout the Cold War. Strategic deterrence was the primary goal of the US and Soviet military planners and the ballistic missile became the only viable means to deliver nuclear ordinance over inter-continental ranges given the vast distance between the American and Soviet heartland.

Since the mid-1970s, significant advances in 'enabling technologies' (p. 58) such as guidance and control, propulsion, and, stealth technologies dramatically transformed the range, lethality, survivability, and accuracy of cruise missiles. Today, cruise missiles represent a significant counter

* The reviewer is an international relations analyst based in New Delhi. He can be reached at http://www.zorawardauletsingh.com.

ISSN 0976-1004 print

Journal of Defence Studies, Vol. 6, No. 3, July 2012, pp. 139–142

force capability that can potentially alter the terms of a conflict, even between unequal adversaries.

The main advantage of cruise missiles is that they are relatively inexpensive, compact, accurate, and easier to develop or access than ballistic technology. On the average, the cost of a cruise missile is one-sixth of a ballistic missile. Aside from high operating and support costs, the technological prequisites to sustain a ballistic missile force or a modern air force ensures these capabilities remain confined to a select group of nations.

On the other hand, '130 types of cruise missiles are distributed among 75 nations' (p. 80) of which 56 countries are pure importers. Cruise missiles are then truly 'a poor man's air force' (p. 81) but with capabilities that even the leading states have come to value. The latest generation cruise missiles such as the Indian BrahMos are supersonic (faster than speed of sound) making defence nearly impossible. Unlike ballistic missiles that follow a predictable trajectory, modern cruise missiles can fly at low altitudes to stay below the enemy's radar horizon and even hide behind terrain features. Thus, like aircraft they can approach and attack targets from different directions to overwhelm air defences. Disadvantages include guidance systems that can be undermined by electronic and anti-satellite warfare. The main limitation though is that the cruise missiles have a shorter range and smaller payloads than ballistic missiles or bombers, which makes a cruise missile's primary military function as a precision counter force weapon.

What is Driving the Diffusion and Proliferation of this Technology? On the supply side, the study by Mishra highlights that while the great powers have been nearly uncompromising on the diffusion of ballistic technology with the Missile Technology Control Regime (MTCR) as its primary horizontal non-proliferation tool, cruise missiles have 'been generously supplied by the major powers to some countries in the developing world' (p. 120). One reason is cruise missiles, given their shorter ranges and mostly tactical capabilities, have generally escaped the attention of serious arms control. Furthermore, given that the versatility of cruise missiles is directly connected to the platform it is married to—fighter aircraft, heavy bomber, warship, and submarine—it is impossible to enforce a uniform arms control arrangement without including the carrier platforms themselves. This, in turn, is probably unattainable because of the diversity of force structures across the leading states, the

difficulty of verification mechanisms for some platforms, and ensuring subsequent compliance to agreed limits.

On the demand side, the author remarks '… the security guarantees extended by the major powers to different states' fade away, 'states will devise self-help security arrangements' (pp. 108–09). Thus, as the US-led unipolar order is displaced by one where power is more distributed, regional security goals would impel states to modernize their military forces more purposively. We are already seeing this play out in real time.

The Eurasian rimland states like China and Iran, and more recently Syria, are actively pursuing cruise technologies with the asymmetric strategy to deny or limit the US's ability to project its superior maritime power around the periphery of these states. Anti-Ship Cruise Missiles (ASCMs) have, therefore, acquired a new salience in the military doctrines of such states. Even smaller littoral states, like Vietnam, have acquired anti-ship missiles to secure their exclusive economic zones from regional navies. The US too has exploited cruise missiles innovatively. The US Navy currently fields four SSGNs—these are converted Ohio-class submarines (originally SSBNs armed with Trident ballistic missiles) each fitted with 154 Tomahawk conventional Land Attack Cruise Missiles (LACM). Some analysts view these capabilities as a vital component of a US counter to Chinese quantitative and qualitative build up of missiles.

While the author does mention 'security deficits' in 'regional security complexes' (p. 105) as a demand driver for acquiring cruise missiles, the study does not conceptualize the different uses of cruise missiles and explicitly link this phenomenon to geopolitics. How cruise missiles are exploited by states depends on their geopolitical context. Eurasian rimland states are showing a clear trend in leveraging cruise missiles as part of a broader anti-access strategy to keep rival navies out. Maritime powers like the US, which must operate at stand-off ranges, have consequently exploited longer range cruise missiles married to a variety of platforms as 'big sticks' (p. 80) to target both irregular and conventional threats across the Eurasian continent.

The most highly capable ASCMs come from the former Soviet or Russian arsenal such as the SS-N-22 Sunburn, the SS-N-26 Yakhont (recently transferred to Syria), as well as more modern systems from the Klub family. For example, the Moskits (Sunburn) are anti-ship missiles, flying up to three times the speed of sound and sea-skimming (5 feet above the water). They were specifically designed to overcome the Aegis

defence systems, and SM-2 and SM-3 defence missiles protecting American carrier battle groups. Such innovations emanate from Soviet naval doctrine during the Cold War that was predicated on developing anti-access capabilities that could pose a threat to forward-based NATO naval forces. As the author cites, historically, Russia developed a 'great many designs which had and still have no western equivalent' (p. 41). Some of these ASCMs have found their way into the arsenals of states like China, Iran, and Syria who have a clear interest in keeping the US Navy at an arms length. The US too 'has been one of the leading exporters of cruise missiles' (p. 109). The anti-ship Harpoon has been sold to 23 countries including India and Pakistan.

Even at the strategic level, cruise missiles could assume a front line role. In the historical contest between ballistic and cruise missiles, the former prevailed because it was invulnerable to any form of defence and, therefore, indispensable as a second-strike platform. Ironically, in the post-Cold War era, as ballistic missile defence technologies have developed along with the institutional impetus for ABM technologies in the US, new generation cruise missiles will emerge as vital technologies for even strategic missions. The study notes that the Pakistani nuclear-capable Babur LACM (based on the US Tomahawk) is a response to India's efforts at developing anti-ballistic systems.

What are the implications for India? The multi-role BrahMos (1,000 missiles have been ordered between the three services) with several variants and longer ranges in the pipeline is providing lethal war fighting capabilities to the Indian armed forces. Its assimilation into India's force structure and the honing of supporting capabilities, however, remains a work in progress. Weaknesses in early-warning capability and C4ISR, in general, are apparent in India's case. Military modernization must focus on developing a complete and integrated picture of the potential battlefield as without advanced surveillance and reconnaissance capabilities, cruise missiles cannot be exploited to their full potential.

Given the generally disadvantageous geostrategic position for Indian forces on the Himalayan frontiers, cruise missiles offer an unrivalled stand-off capability that will buttress India's conventional deterrence. According to recent reports, BrahMos LACM mobile units have been deployed in the western sector.

In sum, this study must be commended for dwelling on a weapon system that has already become an integral part of a state's quiver.