



Royal United Services Institute
for Defence and Security Studies

Conference Report

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RUSI Conference Report, August 2021



Royal United Services Institute
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Published in 2021 by the Royal United Services Institute for Defence and Security Studies.



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RUSI Conference Report, August 2021. ISSN 2397-0286 (Online).

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Precision Strike in 21st-Century Multidomain Operations

ON 13 AND 14 May 2021, RUSI held its inaugural precision strike conference, a successor to the annual missile defence conference it held for two decades. The purpose of this reframing was to emphasise the erosion of the line between offence and defence in efforts to counter adversary concepts of operations that have long-range strike assets at their core. Discussions examined the role of strike assets in the context of multidomain operations and the evolutionary steps that the arrival of strike assets ranging from expensive hypersonics to lower-cost UAVs and cruise missiles will compel.

Several core themes emerged, including: the centrality of long-range precision strike to peer competitor effects to dislocate the preferred Western model of operations; the critical importance of delivering deep effects to create the windows of opportunity needed for the successful conduct of contemporary operations in contested environments; and the resulting importance of offence–defence integration to achieve these effects and deny them to an opponent.

Situating Precision Strike in Contemporary Strategic Dynamics

Long-range strike capabilities are increasingly central to adversary strategies and concepts of operations. Notably, despite significant similarities, there are differences of emphasis in the operational concepts of individual peer competitors and the strategic frameworks in which they fit. On the first day of the conference, Brad Roberts, director of the Center for Global Security Research at Lawrence Livermore Laboratory, and Michael Kofman, director of Russia Studies at the Center for Naval Analyses, discussed how Russian and Chinese concepts of employment differ. While both states consider operational interdiction a viable military objective achievable through the use of conventional prompt strike assets, Chinese doctrine places a particularly heavy emphasis on this function. As noted by Roberts, Chinese planners paid significant attention to the US shock and awe campaigns of the 1990s and attempted to emulate them with available means. The resultant emphasis on system destruction would likely see the massed, early use of missiles against primarily military targets.

By contrast, Kofman noted that Russian planners tend to emphasise the role of missiles as a means of achieving escalation control. In a conflict on Russian borders which could involve an alliance, the ability to inflict damage on critical civilian infrastructure is deemed vital to paralysing an allied response. This implies that Russian strike operations may precede full-scale hostilities and evince a greater emphasis on civilian targets. It also suggests a more graduated approach to employment in the early stages of a conflict, and that Russian planners view limited kinetic strikes as being part of what, in UK parlance, would be dubbed constraining operations.

Notably, however, both states do view attacks on key points of failure within Western systems – including command and control (C2) nodes, logistical bottlenecks and valuable single assets such as capital ships – as being key to warfighting operations.

A Contested Operating Environment

In the first panel, General Eric Wesley, former deputy commander of the US Army Futures Command, noted that the effective use of conventional theatre-range systems by peer competitors such as Russia and China threatens to nullify Western forces' preferred model of operations, in which overwhelming force is built up in a theatre to roll back adversary forces. The use of conventional strike assets to target points of failure including C2 nodes and logistical links can serve as a key enabler for local revisionism, slowing response cycles to the point that forces cannot be fielded at the speed of relevance. This forms part of a wider system of layered standoff encompassing both kinetic and nonkinetic capabilities, including cyber warfare and political warfare. The unifying thread that runs through this suite of capabilities is a desire to increase the levels of friction, in Clausewitzian parlance, that face Western states. In effect, the role of strike assets is to create temporally bounded tactical windows of local superiority in which revisionist aims can be achieved.

Wesley outlined how the multidomain operational framework might aim to negate a *fait accompli* challenge. Western forces will need to disintegrate the key nodes that underpin an anti-access system using both kinetic and nonkinetic means. This will require the ability to stimulate key nodes and strike them using long-range precision fires. This view was echoed by Tom Karako of the Center for Strategic and International Studies, who noted that the paradigm of missile defence ought to evolve into one of missile defeat – a series of proactive and reactive measures intended to nullify adversary standoff as a system, rather than merely provide defences against strike assets themselves. Motonobu Fujita of the Japanese Ministry of Defense offered an insight into the ways in which such an evolution might manifest itself in practice. Fujita outlined the ways in which Japanese efforts to develop responsive strike options will occur in tandem with the country's efforts to reinforce integrated air and missile defence.

The impact of these changes will be felt across domains. In the second panel of the day, the audience heard from Brigadier Charlie Hewitt, commanding officer of the British Army's 1 Artillery Brigade, who stated that in the context of conflict with a near-peer adversary the demands of tasks such as SEAD (suppression of enemy air defences) would mean that recourse to the levels of air support that Western armies have traditionally been accustomed to will no longer be possible. In the same panel, Jack Watling, research fellow for land warfare at RUSI, noted how the threat from both theatre-range missiles and shorter-ranged systems like loitering munitions and multiple launch rocket systems, coupled with multispectral sensing, will make reaching the forward edge of the battle area increasingly difficult for ground forces. The panel agreed that tactical mobility, dispersion and signature control will become increasingly critical.

The second key change, proposed by both Hewitt and Lieutenant General Richard Formica, former director of the US Army's space and missile defence, was an emphasis on land-based

fires to attrit the threat left of launch. Lieutenant General Formica noted that, moving forward, the integration of offensive fires and defences will be critical to the conduct of the contemporary deep fight. In effect, constructing a reconnaissance strike complex (a system of sensors, shooters and defensive effectors) comparable to those fielded by adversaries is arguably an imperative to enable effective ground manoeuvre. The importance of offence–defence integration was reiterated in a subsequent panel by Rear Admiral Archer Macy, former director of the Joint Integrated Air and Missile Defense Organization, who proposed the suppression of the enemy air threat – the proactive neutralisation of launch systems – ought to be elevated to a core joint force function comparable to J-SEAD.

Discussions focused on the maritime domain similarly highlighted the potential of long-range fires to support the penetration and disintegration of adversary reconnaissance strike complexes. Notably, strike assets – if adroitly positioned in a crisis – can also serve to constrain the freedom of action of adversary power-projection capabilities. Brigadier General Marcus Annibale of the US Marine Corps, currently chief of staff at STRIKFORNATO (Naval Striking and Support Forces NATO), outlined how the emerging concept of expeditionary advanced base operations entails the use of precision fires from offshore littoral features to constrain adversary freedom of action in a crisis or conflict. The indirect role that the emplacement of offshore strike capabilities can play in shaping adversary behaviour and limiting the freedom of action of assets such as naval vessels illustrates that long-range strike capabilities can play a role across the spectrum of constraining and conflict operations, with ramifications for how they are situated in frameworks such as the UK's integrated operating concept.¹

Discussions of the role of precision strike in the context of the maritime domain also yielded a note of caution regarding the novelty of contemporary circumstances. Sam Tangredi of the US Naval War College highlighted that the weight of historical evidence would suggest that mass, rather than precision, tends to be critical in protracted conflicts. Moreover, as Admiral Sir Philip Jones, former first sea lord of the Royal Navy, noted, the emergence of long-range reconnaissance strike complexes is the latest iteration of the hide–finder dynamic at sea and will likely be matched by countermeasures to spoof, jam and otherwise limit the accuracy of strike complexes.

Defensive Countermeasures

The discussion of defensive countermeasures continued on the second day of the conference. In the first panel, Macy stated that the size and complexity of adversary salvos will likely require doctrinal innovation to more closely link left-of-launch solutions to active defences. A critical assumption underpinning this is that active defences are limited by time, and that the unifying thread of defending key points of failure for long enough to end the threat by other means ought to underpin a more integrated understanding of air and missile defence. The complexity of intercepting certain targets, including hypersonic missiles like the Zircon and Kinzhal, also adds an incentive for incorporating left-of-launch solutions into the missile defence framework.

1. See Ministry of Defence, 'Introducing the Integrated Operating Concept', 2021, pp. 10–12.

However, the risk posed by relatively small numbers of exquisite assets is not the only defensive challenge of note. The threat posed by larger numbers of increasingly cheap precision strike assets was reiterated by Uzi Rubin, former director of the Israeli Missile Defense Organization, who pointed out that a relatively limited number of ballistic or air-breathing leakers can have a significant strategic effect. The use of low-cost UAVs both as munitions and decoys for cruise missiles by state and non-state actors, and the proliferation of tactical ballistic missiles and cruise missiles, will exacerbate this challenge. Moreover, given the cost asymmetries between strike munitions and hit-to-kill interceptors, even poor actors can likely saturate active defences. It will thus be vital, Rubin noted, to meet the challenge at acceptable costs. In addition to developing sensors such as aerostat-based radar capable of tracking low-flying targets, it will be increasingly important to incorporate nonkinetic means of defence, including electronic warfare and the use of directed energy weapons.

The audience heard from Radoslava Stefanova, head of NATO's IAMD system, about the ways in which NATO is evolving to meet the Russian threat. Stefanova said that the Alliance's approach to integrated air and missile defence (IAMD) will likely evolve to meet the challenges of disruptive technologies such as hypersonics. NATO's IAMD policy will account for the end of the Intermediate-Range Nuclear Forces Treaty, and will be aligned with the Alliance's emerging strategic concept. The envisioned end state will be a multi-tiered system incorporating both NATO and nationally owned assets. This will be supported by work strands examining counter-hypersonic solutions, as well as lines of effort in the space and cyber domains. Notably, however, the relationship between NATO ballistic missile defence and IAMD will remain unchanged, with the former being treated as a separate mission.

Enablers and System Dynamics

A key point raised at this panel – the primacy of maintaining situational awareness and denying it to an opponent – highlighted the ways in which precision strike competitions are integrally linked to the competition for information dominance. As Tangredi noted, the ability to counter adversary over-the-horizon networks will be critical. The DF-21D, for example, would be largely inoperable without the ability of China's electronic intelligence and synthetic-aperture radar satellite constellations to cue it in a timely manner.²

This was reiterated during the second day of the conference in a panel focusing on the enablers underpinning precision strike contests. As noted by Lieutenant General Henry Obering, former director of the US Missile Defence Agency, transformative changes in the domain of outer space will have a notable impact on both offensive and defensive dynamics. Developments in areas such as AI-enabled processing and space-based tracking will make dominance of the space domain increasingly vital to the effective conduct of both strike and defensive operations. This

2. See, for example, Ian Easton and Mark A Stokes, 'China's Electronic Intelligence (ELINT) Satellite Developments: Implications for U.S. Air and Naval Operations', Project 2049 Institute, 2011.

was evidenced by recent tests in which an Aegis destroyer, the USS John Finn, conducted an intercept based on space-based tracking, highlighting the potential for birth-to-death tracking of an adversary missile using space-based assets. The proliferation of low-cost satellites and surface-based sensors will be crucial to this effort. As noted by Sarah Kirchberger, head of the Center for Asia Pacific Strategy and Security at the Institute for Security Policy at the University of Kiel, this vision is central to Chinese visions of future warfare, with efforts to achieve situational awareness in regions such as the South China Sea using distributed networks of terrestrial, sea and space-based sensors already underway. In the same panel, Peter Layton, a RUSI associate fellow, noted that AI could render the battlefield transparent in tandem with the deployment of distributed low-cost sensor networks. However, as a symmetry emerges between adversaries deploying AI-enabled battle networks, the ability to deceive AI (by, for example, taking actions designed to reinforce the existing biases within a system) will become increasingly vital. New methods of deception will likely be combined with disruption through jamming and dazzling satellites, as well as cyber attacks on the systems enabling the processing and dissemination of data.

Competition between duelling prompt strike networks must, by necessity, be nested within a wider approach that emphasises the deception and disruption of adversary C4ISR systems. This raises important questions regarding escalatory thresholds, particularly in cases where specific systems serve both conventional and nuclear functions.³

Any Sensor, Which Shooter?

The question of which domains should serve as the springboard for prompt strike was the subject of some discussion on the first day of the conference. Karako made the case for ground-based fires and noted the potential advantages of dispersed launchers which can be readily supplemented with decoys. The challenge of identifying these assets in complex ground terrain could force an opponent to waste valuable time and resources. However, as noted by Bryan McGrath, team lead on the US Navy's 2007 maritime strategy and currently managing director at national security consultancy The FerryBridge Group, ground-based fires require complex pre-existing political arrangements with allies and partners who may not necessarily relish the additional attention drawn to their territory by the presence of prepositioned strike assets. Accordingly, McGrath argued that surface vessels represent an optimal launch platform for long-range strike capabilities given their inter-theatre mobility, ability to deploy without pre-existing allied permissions and the relative ease of communicating with them as compared to subsurface assets which also represent a viable launch platform.

3. As is the case with Chinese C2 systems which control both conventional prompt strike assets and nuclear systems. See Tong Zhao and Li Bin, 'The Underappreciated Risks of Entanglement: A Chinese Perspective', in James M Acton (ed.), 'Entanglement: Russian and Chinese Perspectives on Non-Nuclear Weapons and Nuclear Risks', Carnegie Endowment for International Peace, 2017.

Decision Points

While the importance of offence–defence integration was central to discussions at the conference, decisions need to be made regarding the relative weight attached to each function in resource-constrained conditions. As Brad Clark, director of nuclear policy at the US Department of Defense, noted, the appeal of launch solutions should not obscure the need for robust active defences given that completely neutralising an opponent’s reconnaissance strike complex is unlikely. Similarly, Clark noted that key decisions will need to be made regarding the relative weight of strategic stability and strategic advantage, with views in the US shifting over the course of several administrations. As precision strike competition becomes entwined with information warfare and states’ nuclear postures, these decisions will have an outsized salience.

Conclusions

Several key takeaway points emerged from the conference. There was a broad consensus that conceptual boundaries between offence and defence will become increasingly blurred in the context of precision strike competitions. Against peer competitor salvos, the ability to integrate the planning of strike and defensive operations will be vital to delivering efficiencies, given that the needs of each mission can no longer be determined in isolation. The requirements of active defences are delineated by what strike assets can achieve, while the latter depend on defended logistical springboards to deliver effects.

Moreover, the need to dominate the information space to win strike competitions, coupled with the ability of strike assets to contribute to efforts to secure information advantage (by, for example, eliminating C2 nodes or key radar) suggest that strike ought to be conceptually nested alongside cyber capabilities, counterspace assets and special forces as part of a wider toolkit. This would provide the means by which states can penetrate and disintegrate an opponent’s system of systems. Adversary efforts to achieve similar effects will make dispersion, camouflage and signature control increasingly important across domains, with operations becoming more temporally bounded.

The operating environment that emerged at the conference is one in which delivering effects in bounded temporal windows will be critical. The ability to secure one’s rear area and disrupt that of an opponent’s will be central to ensuring that one’s own forces have sufficient time to deliver effects. The offensive and defensive dimensions of a precision strike campaign will be central to achieving this.

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