Olympus under threat: Armoured warfare and the future of the Main Battle Tank (2012 – 2040). Dr. Jeffrey Bradford, the U K Defence Forum's Director of Research, returns to a theme first explored by us in 1998

Nearing its first century since deployment in the European battlefields of World War I the Main Battle Tank (or MBT) remains arguably the most potent symbol of land warfare (1) Highly maneuverable, heavily armored and possessing devastating firepower, the tank was regarded until the 1970s as impervious to anything other than facing another of its kind. In recent decades analysis has focused, despite armored warfare successes in the Middle East, on the vulnerabilities and obsolescence of the king of land warfare.

This article is concerned with the proposition that whilst employment of armour has and needs further to evolve, fundamentally the tank remains a supreme battlefield asset providing a unique range of capabilities, not least of which, in an era of drone warfare, is its persistence. The timeline in the title of this article is implied to cover the period in which we could anticipate the armored platforms which are immediately recognizable to continue in service, such as the western M1 Abrams, the Challenger, Leopard and T-72 variant Main Battle Tanks.

Considering the future environment in which amour will find itself employed is an interesting exercise in itself. Fast moving crises in far-flung locations where nationals, assets or interests are at risk does not match well with the timeline to deploy today's heaviest armour formations and logistics tail. The 1990-91 Gulf War saw a multi-month logistical movement of armoured assets, supplies and personnel to enable the swift manoeuvre warfare campaign of February 1991 (2)

It could be suggested that the future environment will be characterised by medium weight armour assets being flown into theatre to commence operations within hours rather than weeks or months. However, this assumption is dependent, aside from military doctrine, on the outcome of two technological lines of development alongside the peacetime issue of whole fleet management.

The first technological issue is the reduction of weight whilst maintaining or indeed enhancing armour protection. Similar to the automotive industry who are focused with the challenge to meet ever more stringent environmental targets - applying exotic metal alloys, composites and

carbon fibre with the aim of reducing weight to enable better fuel efficiency – take for example the new 2013 Range Rover which will be 300 kgs (700 lbs) or some 15% lighter. The issue for the defence environment however is that lightening the combat vehicle cannot be done at the expense of capability coupled with smaller production runs posing the question of how to ensure a suitable spares stockpile of very expensive parts. Defence industry economics does not tend to favour low unit cost given the extensive Research and development and political vaguaries affecting the overall acquisition.

The second issue driven largely by technology is how to address shrinking the logistics support required for armour formations. From the perspective of crisis responsiveness and military readiness this is as important as the design trade-offs between firepower, armour protection and mobility.

Looking to developments in civil society, interest is growing in energy efficiency matched by political desires for energy independence, including renewable sources, wherever possible. The defence establishment is currently piloting a range of schemes from experimenting with the use of biofuels to power a naval task force (3) to the US Marine Corps and Army evaluating tents with built in solar energy generation (4)

The whole fleet management issue has arguably been complicated by the conflicts in the Middle East and Afghanistan for the leading western armed forces. The pace of operations and ongoing threat from IED's led to a series of Urgent Operational Requirements (UOR) for mine-resistant vehicles which, aside from cost escalation could be seen as derailing the US Future Combat System and UK's Future Rapid Effects System programs. (5)

The result of the UOR acquisitions on the positive side offered the opportunity to have evaluated a wide variety of vehicles in actual operations – the negative side of this is that there may be a reticence coupled with lack of political will to consider a major new MBT and IFV program in the near future. Also add in the complication of maintaining several ageing vehicle classes.

The optimistic assumption is that the two technological lines of development will deliver and result in more compact armour formations capable of speedy deployment the operational environment.

In this environment armour will operate in smaller formations and be far more of an integrated combined asset than ever before. Given the almost exponential development of UAV's it is extremely likely that Autonomous anti-armour equipped UAV's will come into being. One can also foresee anti-UAV UAV's (AUAV's ?) being deployed by armored formations.

Given that future conflicts will tend on the whole to be in or around urban areas, the ability to block cellular communications will be a key electronic warfare asset to protect the maneuver formation. Today, every citizen is potentially, with a smartphone camera an ISTAR reconnaissance asset. Imagine the early 1990s experience of the United Nations and US peacekeeping forces were the Somalis to have had modern smartphone communications with sharing images and so forth. Armour will operate near exclusively at night, in small formations, with sophisticated EW to avoid improvised explosive devices and jam potential telegraphing of their operations.

In considering the role of armour and the future of the Main Battle Tank in particular it is very clear that whilst the nature of its capabilities and contribution to military capability ("the what question ?") is obvious how it will be employed ("the how question ?") is not so clear.

The era of sweeping large scale manoeuvre operations such as in World War II, standing as sentinel during the Cold War convention stand-off between East and West and then two sweeping armour dominated operations in the Middle East perhaps represent the aberration when compared with the multitude of "small wars" or low intensity operations in complex terrain and/or urbanized environments. Additionally, in operations focused on "hearts and minds" or winning over the support of the civilian population it could be argued that the Main Battle tank definitely focuses minds, though may have less success winning hearts.

The future of the Main Battle Tank is clear conceptually and doctrinally – the issue is how fast will technologies evolve to enable faster employment, greater endurance within a smaller logistical footprint whilst keeping the characteristics that make it the king of the battlefield. The lesson, quick forgotten of combined arms operations needs to be relearnt fast – akin to the 1980s where the helicopter gunship became the core threat to armour, the 2010s is seeing the rapid evolution of drone warfare and the Main Battle Tank needs to embrace the drone as an extension of its own capabilities or else risk sinking one rung further down on the pecking order of military assets

Footnotes :

(1) A typical definition encapsulating the nature of the Main Battle Tank range is, "an enclosed armored military vehicle; has a cannon and moves on caterpillar treads".
(2) For a UK perspective see White M, Gulf Logistics: Blackadder's War (Brasseys 1995). For a US view on logistics see Pagonis WG, Moving Mountains (Harvard Business Press 1992).
(3) Lane J, The Navy's Green Strike Group Sails on Biofuels Blend: Will It Sail Again? (Biofuels Digest www.renewableenergyworld.com July 19th, 2012). During the RIMPAC 2012 exercises some 900,000 gallons of 50:50 (50-50 blend of traditional petroleum-based fuel and biofuel) biofuel were delivered to the CNV 68 (USS Nimitz)Task Group.
(4) Osborn K, Army evaluating transportable solar-powered tents (www.army.mil December 8th, 2010).
(5) Improvised Explosive Devices. For a more detailed discussion see, Cordesman AH (et.al), Afghan and Iraq metrics and the IED threat (www.CSIS.org, November 2010).

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