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Technological Surprise and Technological Failure in the Current Lebanon Crisis

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Military technologies have played a crucial part in the shaping of the modern Middle East. Since the earliest days of the State of Israel, it was clear to its leadership that qualitative advantages would have to be developed if the nation were to survive in the face of the quantitative advantages – especially in manpower and natural resources – of its neighbors. Over the years, Israel's military superiority became a reality due in part to the ability of the Israeli Defense Forces (IDF) to maintain an overwhelming technological edge over its adversaries. As a result, the development, acquisition and successful deployment of advanced military technology became an issue of strategic importance for Israel.

Israel's neighbors – both state and non-state actors – have had a hard time adapting successfully to this approach. Though able to obtain military technologies from various sources, they lacked the technology and industrial bases to effectively field state-of-the-art military technologies. However, they discovered that no matter how great the rival's military superiority, an Achilles' heel could always be found. Proof of this came in 1973: despite fielding some of the most advanced fighter aircraft and main battle tanks in the world, Israeli pilots and tank crews suffered considerable casualties in the early phases of the Yom Kippur War due to the use of improved Sagger anti-tank missiles and SA-2 anti-aircraft missiles by the Egyptian and Syrian armies. The key to these successes was technological surprise: the ability of one side to catch the other unawares with a military capability that it was not thought to possess, or with never-before-seen improvements to a known capability.

In the current conflict in Lebanon it was Hezbollah's turn to spring several technological surprises on Israeli forces. The ability of its fighters to bypass the complex surveillance system used by Israel to monitor its border with Lebanon led to the kidnapping of two Israeli soldiers and the killing of eight. The firing of a Noor anti-ship cruise missile (an Iranian version of the Chinese C-802) resulted in the loss of four Israeli sailors and the crippling of an Israeli missile ship. Two Merkava IV tanks were destroyed and their crews killed or wounded, probably by a combination of Raad anti-tank missiles (the Iranian version of the Russian Sagger AT-3) and advanced improvised explosive devices (IEDs).

That is not to say that Israel's ability to surprise its opponents has been eroded. Using a wide array of sensors and target designators – from unmanned aerial vehicles to Special Forces with laser guidance systems – Israel has managed to shorten the "sensor to shooter" loop to mere minutes. By the time a Katyusha launcher or Fajr rocket is taken out of hiding and readied for launch, chances are that an Israeli F-16 or Apache may already have it in its sights. The Barak ship-to-shore missile, deployed with the Israeli navy to defend ships against aircraft and cruise missiles, is now being hastily converted into an anti-missile system to protect critical installations in Haifa and other Israeli coastal cities.

Though technological surprise can provide crucial advantages on the battlefield, a more strategic issue for national security is the inability to understand the effects of scientific and technological innovations on the conduct of warfare. Sometimes referred to as "technological failure", it is tied to the attitudes of people toward the ever-changing world of science and technology, and the danger of their misunderstanding, mistrusting, and mismanaging innovative capabilities in ways that place military operations at risk. The focus here is on military capabilities that could have been built and used but were not, resulting in loss of lives and resources.

When U.S. co-funding for the Nautilus anti-rocket system was discontinued, the Israeli Ministry of Defense did not consider the system important enough to fund out of its own pocket. At the same time, a proposal by an Israeli consortium to develop the Barak Shield system – based on the same Barak missiles deployed today on Israel's warships – was rejected, though an offshoot of this proposal resulted in the Defender system currently operational in Venezuela. Similarly, counter-measures to modern anti-tank missiles, anti-ship missiles, and IEDs were not successfully developed and deployed. These actions caused a technological failure that Israel is paying for today in tens of casualties and hundreds of millions of dollars in damage – both on the battlefield and within its cities.

Hezbollah, on the other hand, has conceded fewer such failures. Based on technologies and know-how provided by Syria and Iran, it has created a military infrastructure that has anticipated many of Israel's capabilities and countered them successfully. Israeli technological advantages in reconnaissance and target acquisition systems were countered by shrewd bunker construction and camouflaging techniques. Advanced military capabilities, including night vision devices, unmanned aerial vehicles, and improved anti-tank and ground-to-ground rockets were studied, acquired, and successfully incorporated into the organization's military doctrine and tactics. Moreover, weaknesses in Israeli defensive and offensive weapons systems were learned and exploited. All of Hezbollah's more sophisticated capabilities were provided by Syria and Iran, and their effectiveness is particularly impressive given Israel's great technological and industrial advantages over these countries.

Technological failure and technological surprise may stem from intelligence failure or from lack of scientific and technological expertise. However, as is the case in the recent conflict in Lebanon, they often involve the inability to effectively manage scientific and technological resources and use them to create military measures and countermeasures. Since these are processes that may require prolonged time periods to undertake successfully, forward-looking policies are required to address them. When the guns roar and the troops clash, it is often too late to do so.