Tamir Eshel outlines the evolution of the Israeli homeland security and counter terrorism industry, and explains why it has become a world-leader in the field

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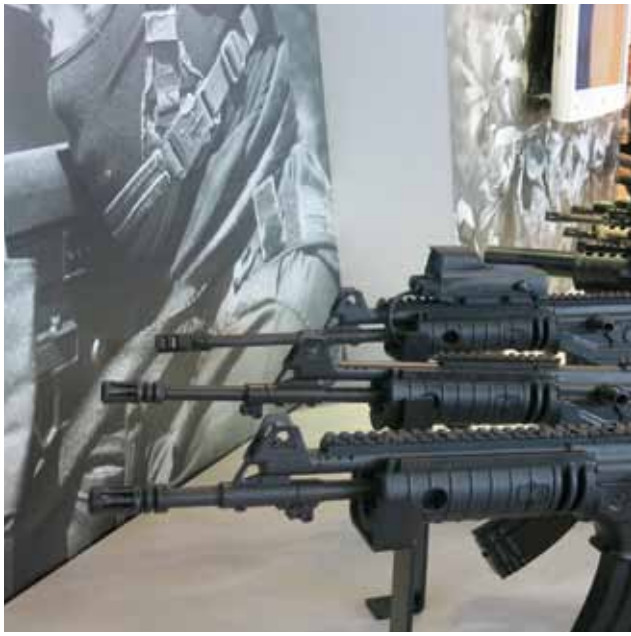
Israel has always faced a mix of high and low-intensity threats, representing different challenges that required specific military and security responses. While regular military forces, operated by neighbouring or distant nation states, historically posed an "existential" threat, Palestinians militant groups have subsequently established irregular forces, mounting continuous pressure on Israel since the mid 1950s in the form of terror attacks. These operations were often supported by neighbouring Arab nations, as a means to combat the Jewish state by attrition, rather than by full-scale war.

Facing these multi-pronged threats, Israel strengthened its internal security services, establishing border guards, special police units and committed military formations to guard its "hot" borders. In addition, Israel also developed clandestine capabilities, through special operations and commando units that gained freedom of action across borders in the periods between wars. Such units formed part of Israel's counter terrorism campaign, aimed to deter terror activists and their supporters across the border in the Gaza strip and the West Bank (then occupied by the Hashemite Kingdom of Jordan).

The Six Day War of 1967 changed all that. Israel defeated the military forces of three Arab countries – Egypt, Syria and Jordan– and seized the Golan Height, West Bank, Sinai Peninsula and the Gaza Strip. The Palestinian groups that by now operated training bases and operational paramilitary sites, semi-organised under the Palestinian Liberation Organisation (PLO), suddenly found themselves isolated from their support and were forced of disperse into the civil population of the "occupied territories".



ROM WITHIN

The PLO depended on foreign support to survive, but that drip was met with massive Israeli counter-insurgency activity along the borders, alongside an equally extensive internal security campaign, directed within the newly occupied territories, in an effort to contain and eradicate the terrorists and eliminate their influence on the local population and prevent association with Israel's Arab minority.

At that time Israel's defence industry was in its infancy. Most of the innovative technological solutions came from the nationally-owned defence technology centre that later evolved into Rafael, and Israeli Military Industries (IMI) that traditionally specialised in land warfare systems. Among the leading systems at the time were small arms and ammunition manufactured at IMI.

Countering the growing flow of cross-border infiltrations, the IDF deployed ground surveillance radars and night observation equipment, tightening the border surveillance coverage. In addition, physical obstacles were erected along hot borders to slow down these infiltrations. These obstacles, consisting primarily of fences and land mines, also included electronic sensors – primarily taut wire systems which provide localised warning of infiltration attempts and enable the military to support the obstacle with minimal numbers of troops. Following attacks from the sea, a coastal security system was also established, including land-based coastal radars, observation towers and naval patrols. IAI, through its subsidiary Elta Systems, became one of the world's leading providers of ground surveillance radars; its latest generation system is now operational along the US-Mexican border.

As terrorist attacks began targeting civil aviation, Israel's airlines and airport authority, supported by the Internal Security Agency (ISA), implemented a comprehensive security network that covered air terminals, passenger screening, aircraft security, baggage handling and supply chain. The system that introduced profiling methods also introduced baggage screening and matching and extensive use of explosive and weapon detection methodologies that have since been adapted by numerous countries around the world. Implementing those systems are veterans of those security systems, now providing training and consulting services worldwide.

At the time Israel has maintained a strong conventional military force that was not well trained for complex counter-terrorist operations, and particularly not hostage situations. After several misfortunate counterattacks that resulted in significant loss of lives, the Israeli military improved its special operations counter-terrorism techniques, while the national police established a special operations unit trained and equipped to negotiate hostage situations.

Israel's firm counter-terrorism policy in the early 1970s was reflected by the introduction of advanced operational and technological capabilities acquired by special units, such as the GHQ special operations unit (Matkal) and police force special operations unit (YAMAM), specially trained for dealing with hostage situations. Defence companies, included IMI and Rafael, supporting those capabilities by providing numerous innovations that later evolved into successful export products. For example, the "Eyeball" remotely controlled sensor can be rolled into a room, providing operators a quick scan of its surroundings. Other products also provide a "view through walls" capability, using ultra-wide-band radar technology.

Hot breeching systems have also been developed which use explosive frames or projectiles, as well as hydraulically powered tools which provide "cold breeching". Both methods enable rapid access through doors. Once in, "flash bang" stun grenades enable assault teams to dominant the situation during an assault by temporarily incapacitating unprotected people at the scene.

Since the early 1970s, after Israel yielded to those attacks in exchange for prisoners, the terrorists' "cost" continually increased. By the late 1990s and early 2000s Israel had gradually lost most of the deterrence gained in the firm standing against the terrorists in the 1970s, when "dealing with terrorists" was not acceptable – a stand that has brought about great victories like the Entebbe raid, but also miserable defeats like the failed rescue attempt of school children taken hostage by terrorists in the town of Ma'alot in Galilee, an operation that resulted in the terrorists killing 25 children and adults.

While relations between Israel and the PLO became more moderate as confrontation gave way to negotiation, a new wave of extremism erupted in the 1990s, carrying the military struggle to new heights. The most dramatic change was the harnessing of radical Islamic influence that, in the early 1990s, paved the way to recruiting Muslim "martyrs" to join the fight. Through these years suicide bombings became the most effective and devastating type of terror attack, targeting mainly civilians in busses, shopping malls etc. While the Palestinian attacks in Israel were carried out mainly by individual suicide bombers, suicide attacks in South Lebanon using vehicle-borne improvised explosive devices (VBIEDs) were common, tracking back to 1982 when such attacks claimed the lives of hundreds of US, French and Israeli military service members and Lebanese civilians. Another innovation at that time were attacks utilising a range of airborne platforms, from sky gliders and ultralights to unmanned vehicles and commando raids, often directed against military targets.

Following Israel's withdrawal from South Lebanon in 2000, the Palestinians launched a second "popular

Top of the range: Israeli defence and security products have been refined through years of operational use

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uprising" in the West Bank and Gaza between 2000 and 2002, which was the bloodiest in Israel's history in terms of civilian lives. This round of violence was dominated by suicide attacks directed at Israel's main population centres. In 2002 Israel answered these attacks with a massive military counterattack, resulting in the destruction of most terror bases in the West Bank. In the following years Israel has re-established the physical separation line along its borders, particularly between its territory and the West Bank and Gaza Strip. Since the completion of this barrier, terror attacks have almost ceased, as terrorists' access is practically eliminated. A similar obstacle raised over 240 km along the Israel-Egypt border in 2012-2013 successfully ceased the flow of illegal immigrants from Africa to Israel.

But the threat has not ceased. In the second decade of the 2000s, Israel is gradually becoming exposed to international terror as jihadist groups are settled in Sinai, Syria and Gaza. Unlike the local roots of the past, most extremist organisations are driven by different motivations and are not necessarily controlled by local authorities. The complex bilateral agreements in the region involving Gaza and Sinai, (Gaza strip being a de-facto ex-territorial area and the Israel-Egypt peace agreement limiting military presence and activity in Sinai) are creating a safe haven for radicals in Sinai and Gaza, which Israel and Egypt are struggling to eradicate under the current political situation.

While targeting the terrorist bases abroad was the task of Israel's military, internal security was the responsibility of the ISA and Israeli police, which developed comprehensive capabilities in intelligence-gathering, early warning, pre-emptive and mitigation actions, and, in case of attack, forensic analysis.

Some of the capabilities developed for the military, such as RF jammers that protect patrol vehicles in South Lebanon from remote-controlled IEDs, were also employed to prevent remote activation of explosive charges in terror attacks inside Israel. Such equipment was rapidly deployed following attacks where explosive charges were remotely activated by cellular phones. Other counter-IED systems evolving in Israel were C-IED lasers, designed to deal with explosive charges from standoff distance. Mobile X-ray screening also became indispensable in the endless effort to detect, screen and defuse IEDs. With the growing threat of VBIEDs, new methods of vehicle identification, tracking and screening were introduced, particularly with the increasing regulation of traffic through the separation lines between the West Bank, Israel and the Gaza strip.

With terror groups moving from the mountains and woods into the villages and cities, the process of detecting, tracking and targeting terror activists and individuals has changed, requiring intelligence agencies to develop persistent surveillance capabilities. Such techniques harness aerial reconnaissance electronic surveillance, communications eavesdropping and cyber intelligence to monitor, track, identify and target potential hostile activities. Unmanned Aerial vehicles (UAVs) have been developed by IAI, Elbit Systems and Aeronautics. These have proved invaluable for their ability to remain overhead for days, maintaining persistent surveillance of a wide area while carrying multiple remotely-operated payloads. In areas where tethered platform-based surveillance is also practical, new wide-area surveillance systems relying on telescopic masts or hovering platforms and lightweight aerostats are also maintaining an "unblinking eye" over regions that require special attention. Such systems are offered by IAI, SkySapience, RT, Aeronautics and Shilat.

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The Sandcat carries a combination of mast-mounted radar and EO sensors as well as advanced command, control and communications systems

Counter-terror operations have also adapted new "kinetic" capabilities, by implementing legal authorisation, technological capabilities and command and control methods enabling the prosecution, targeting and killing of specific individuals considered 'ticking bombs'. This approach has met growing criticism in Israel and abroad, primarily due to the risk of collateral damage associated with kinetic operations in an urban environment.

New vulnerabilities currently being addressed include offshore and cyber threats. Offshore platforms are being established in the Eastern Mediterranean Sea, tapping newly-discovered gas fields. These strategic, stationary and extremely vulnerable facilities could be lucrative targets for terrorists and if hit or destroyed, and could cause significant long-term damage. Israel is aware of the risk and has implemented several layers of security to protect those assets, beginning with the deployment of existing naval assets. It has also begun to develop and field new and innovative manned and unmanned surveillance, patrol and countermeasure systems, addressing the air, surface and underwater domains, in order to protect those strategic assets in the most efficient and cost-effective way.

Other new threats that require special preparation are those evolving through modern "cyber terror". While currently in its infancy, cyber terror represents a significant threat to Israel, particularly when empowered by foreign nations that can provide vast technical and financial resources. If vulnerabilities are not mitigated, the risks from cyber terror could be extremely high, in terms of human lives, disruption of the supply of essential services, and the risk of collateral damage. Realising the potential threat, Israel is harnessing its best technological talents through a cyber-security campaign orchestrated by the prime minister's office, that will gradually plug vulnerabilities, harden the networks, and protect the country's commercial services and key infrastructures. These efforts are also implementing situational monitoring and collaboration networks that enable early warning, rapid response and quick recovery following cyber attacks.

Tamir Eshel is a professional writer and consultant specialising in the field of defence technology. With more than 30 years of experience, his work has been published in professional publications worldwide, including *National Defense, US Navy Proceedings, Jane's Defense Weekly, Military Technology, intersec, Vayu, Asia Pacific Defense Reporter, Technologia Militar, Naval Forces,* and *Defense-Update.*