

January 9, 2017 – DRONES

Just one item today; it is from [Commentary](#) and tells the almost 50 year history of drones. Last night's 60 Minutes had a segment on autonomous drones. [See it here.](#) *"The agent is back," the analyst said as he popped his head into Shabtai Brill's office. "He has pictures." The year was 1968. Brill, a major in the IDF Military Intelligence Directorate—known by its Hebrew acronym, Aman—set aside the report he was reading and got up.*

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It was. Egypt had moved the bridge to less than a mile from the Suez Canal, the strategic waterway that connected the world of commerce but separated Egypt from the territory it had lost to Israel during the Six-Day War. The bridge could be used by tanks and armored personnel carriers to cross the canal and invade Israel—far too close for comfort.

Before sending the agent to Egypt, Israel had pursued other avenues to gather intelligence on what Egypt was doing just over the canal. One officer designed a special platform to mount on tanks so that intelligence officers could stand on them and peer over the 30-foot-high sand barriers the Egyptians had erected on their side of the Suez. The platforms seemed effective until the day an Egyptian sniper took a shot at one of them. ...

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Before Israel bombs Gaza in retaliation for rocket attacks, UAVs are there to survey the target; as helicopters and fighter jets move in to bomb a car carrying a Katyusha rocket cell, UAVs are there to ensure that children don't move into the kill zone; when IDF ground troops surround a compound where Hamas terrorists are hiding, UAVs are there to provide real-time air support and guide the soldiers safely inside. And when needed, the drones can reportedly also attack.

At the smaller end of the IDF drone scale are drones not flown out of air-force bases but pulled from soldiers' backpacks and literally thrown like a quarterback throws a football. One such drone, the Skylark, was delivered to IDF ground units in 2010. Weighing a mere 13 pounds, the Skylark has an operational endurance of three hours at altitudes as high as 3,000 feet. ...

And yes, drones have cartoons too.

Commentary

[How Israel Took a Toy and Made It a High-Tech Weapon](#)

by Yaakov Katz and Amir Bohbot

"The agent is back," the analyst said as he popped his head into Shabtai Brill's office. "He has pictures." The year was 1968. Brill, a major in the IDF Military Intelligence Directorate—known by its Hebrew acronym, Aman—set aside the report he was reading and got up.

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Before sending the agent to Egypt, Israel had pursued other avenues to gather intelligence on what Egypt was doing just over the canal. One officer designed a special platform to mount on tanks so that intelligence officers could stand on them and peer over the 30-foot-high sand barriers the Egyptians had erected on their side of the Suez. The platforms seemed effective until the day an Egyptian sniper took a shot at one of them.

Next, the Israeli Air Force flew reconnaissance aircraft along the border and took pictures of what was happening on the ground. But because of Egyptian surface-to-air missiles, the aircraft had to fly at high altitudes, rendering the pictures of little or no value. That left the IDF with only one viable alternative—live agents on the ground in Egypt, passing for Egyptians, looking like Egyptians, and traveling to the Suez Canal via Europe to take photos of what was happening along the border.

Arnan walked the photo down the hall to alert Aman's top brass. Brill stood there thinking how crazy it was that one single photo held the key to Israel's survival.

"We need to launch such an operation to get a single photo of what is happening just over the canal?" Brill asked. He could grasp the significance of the intelligence, but something felt wrong. It just didn't make sense that there wasn't an easier way to see what was happening a few hundred feet away.

On his drive home that evening, Brill couldn't shake the feeling that there had to be an easier way to gather intelligence over the canal. Suddenly he recalled a movie he had seen a few weeks earlier in Tel Aviv. The feature had been preceded by a short newsreel that included a story about an American Jewish boy who had received a toy airplane as a gift for his bar mitzvah. Brill's imagination started going. He remembered that the planes came in different colors, were wireless and pilotless, and could be flown by remote control. What Brill conceived seemed almost too easy: Buy a few remote-control airplanes, attach cameras to their bellies, and fly them over the Suez to photograph Egyptian military positions.

Brill knew he would need partners to implement his idea. So he went to air-force headquarters, snooped around, and discovered Shlomo Barak, an officer who spent his weekends flying remote-control airplanes. He was one of a handful of people in Israel at the time who had the necessary experience for what Brill had in mind.

Brill tried to get the air force to assume responsibility for the idea. He was unsuccessful. "Remote-control planes are toys, and we have no use for them," officers from the air force's technology branch told Brill.

So he went back to his own commander. "We can buy a few of these planes for real cheap, install cameras, and fly them over the Suez to spy on the Egyptians," Brill told Arnan. Arnan wasn't convinced. He first asked to see the planes in action.

Later that week, they met at a small airstrip outside Tel Aviv for a flight demonstration. Barak piloted the remote-control plane, did some maneuvers, a flip or two, and landed it flawlessly. Arnan liked the idea but wanted to know what it would cost. Brill didn't know and, so, together

with Barak, he compiled a list: three airplanes, six remote controls, five engines, a few spare tires, and propellers. The grand total: \$850.

Arnan approved the budget, and a member of Israel's defense delegation in New York went to a Manhattan toy store, purchased the equipment, and sent it back to Israel in the embassy's diplomatic pouch. This way, no one would question why an Israeli was traveling with so many toy airplanes in his luggage.

After their safe arrival in Israel, the planes were brought to the Intelligence Directorate's technological team for further development. They were fitted with 35-millimeter German-made cameras with timers programmed to take pictures automatically every 10 seconds.

"We're ready to go operational," Brill told Arnan a few weeks after the planes arrived. The senior officer was still skeptical. He feared the planes would be shot down by Egyptian anti-aircraft fire and suggested that they first see if IDF anti-aircraft teams could shoot them down.

On a hot summer day, Arnan and Brill drove down to the IDF's anti-aircraft training base in the Negev Desert, restricted one of the roads so it could serve as a runway, and even gave the anti-aircraft gunners a heads-up as to the direction from which the planes would be flying.

The plane took off and started circling over a patch of sand, and the gunners opened fire. The sound was deafening, lasting what seemed like a lifetime. Brill lost sight of the plane and feared the worst. To his surprise, after the smoke cleared, the toy was still there, soaring above. Barak tested flights at 1,000 feet, 700 feet, and then at a mere 300 feet. The gunners could not make a successful hit; the toy airplane was too small a target. After the plane landed, the astonished Arnan turned to Brill and gave him permission to take the plane for flights over Egypt.

The first target was a row of Egyptian military positions located near Ismalia, a town along the Suez and next to Lake Tismah, otherwise known as Crocodile Lake. The team chosen to fly the plane consisted of two people, one a "pilot" who operated the remote control and the other a "navigator" who watched it through a set of 120 x 20 binoculars and ensured that the pilot did not lose his line of sight.

The dramatic first flight, in July 1969, didn't go as smoothly as planned. First, since there were potholes everywhere, it was difficult to find a piece of road that could function as a runway. After the discovery of a 100-foot airstrip, takeoff was finally approved. Arnan gave permission to penetrate about a mile into Egypt. But then, when the plane was airborne, it entered a cloud of sand. Its momentary disappearance triggered panic that it would crash in Egypt and Israel's new secret weapon would be discovered. Barak, who served as the navigator, told the pilot to fly the plane in circles and to increase altitude. "Don't be pressured. Just keep flying until we see it," Barak told him.

After a few tense moments, the plane finally emerged from the cloud, and the pilot managed to land back in Israel. The film was immediately taken to be developed, and when the photographs came back, Arnan and Brill were stunned. The resolution was amazing. They could clearly see the trenches the Egyptian military had built along the canal. Even communication cables connecting the different positions were visible.

For the first time, Israel had clear photos of the obstacles the Egyptians were building along the Suez and how they were preparing for a future war.

After another mission, this one over the Sinai, Arnan sent the team to the Jordan Valley, where similar fights were conducted over Jordanian positions. The success was mesmerizing, and by the end of the summer, Major General Aharon Yariv, head of military intelligence, had decided to establish an official development team to build a small but sturdier remote-control airplane that could be integrated into regular service. Yariv sent Brill a letter thanking him for his invention: "You deserve praise for this invention because without innovation at all levels and ranks, there would be no IDF."

A few weeks later, Brill was promoted and put in command of all early-warning intelligence systems in the Sinai. He was confident that he had left his pet project in good hands. It was time to move on. One day, some months later, he received a phone call from one of his original partners. The team appointed by Yariv had tried to build a new airplane, instead of relying on existing platforms, and it kept crashing. As a result, Aman's top brass decided the project was too expensive and, anyhow, should be overseen by the air force. Aman was shutting the project down.

Brill refused to go down without a fight. Through the course of 1969, he sent a number of letters to Yariv and the rest of the country's intelligence brass and warned of devastating consequences should the project be abandoned. He pleaded with his commanders not to end the project. They refused to listen.

On October 6, 1973, on Yom Kippur, the Egyptian military launched a surprise and successful attack across the Suez, proceeding practically unopposed up through the Sinai Peninsula. While Israel ultimately held on to the territory during the bloody debacle, when the war ended, the country was left in a state of trauma. More than 2,000 soldiers had been killed, the most since Israel's War of Independence.

Brill could barely contain his anger. He was certain that if his project had not been canceled, Israel would have detected Egyptian military movements and had time to bolster defenses or even prevent the war. Seeing what was happening just over the border could have saved thousands of lives.

"Had we continued taking pictures of what was happening just three miles over the canal, we would have seen the Egyptian tanks, bridges, and equipment amassing and understood they were preparing for war," he said. "Unfortunately, this didn't happen."

Aman understood its mistake, dusted off Brill's old plans, and reached out to local defense companies to begin designing an Israeli lightweight unmanned aerial vehicle (UAV)—what today is more commonly referred to as a drone.

It would take another few years for the Israeli design to become operational, but in the meantime two things were clear: Israel needed quality intelligence, and that meant getting into the drone business. Brill could not have known at the time, but what he started on the shores of the Suez Canal in 1969 would burgeon one day into a massive, billion-dollar industry for Israel and position it as a global military superpower.

After several years of research, development, and test fights, Israel's first drone—the Scout—was finally delivered to the air force in 1979. The first version of the Scout was launched by a rocket, but soon enough, state-owned Israel Aerospace Industries upgraded the model so it could take off and land on a runway, just like an airplane.

In June 1982, Israel had decided to invade Lebanon to end the rising cross-border terror and rocket attacks by the PLO. The greatest obstacle was the presence of nearly 20 Syrian Soviet-made surface-to-air missile (SAM) batteries deployed in Lebanon's Bekaa Valley. The SAMs severely limited the air force's ability to maneuver.

The IAF had been preparing for war. In the weeks before, Scout drones flew over the valley to collect radar and communication frequencies from the SAM batteries. This was precious data needed for what the IAF planned to do next: electronically neutralize the batteries.

Israel's full-force attack was launched on June 6. An electronic warfare system succeeded in blinding and neutralizing most of the missile systems, and the Scouts assisted Israeli fighter jets in identifying and bombing the missile batteries. The operation was a major success. The IAF destroyed almost all of the Syrian SAMs, and in one fell swoop, knocked 82 Syrian MiGs out of the sky without losing a single Israeli fighter jet.

That operation caused a shift in Israeli thinking. Officers who until then had refused to believe in these new unmanned aircraft had a change of heart. The potential of these miniature drones suddenly seemed unlimited.

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In December 1983, the U.S. finally decided to ask Israel for help. A few weeks earlier, the U.S. Navy had launched a botched attack against Syrian anti-aircraft batteries stationed near Beirut in response to the downing of an American spy plane. The attack was a disaster: Two American planes were shot down, a pilot was killed, and a navigator was captured. While a few Syrian guns were destroyed, the Syrian anti-aircraft fire forced the U.S. planes to drop their bombs far from their targets. An inquiry into the botched raid concluded that a nearby U.S. battleship had had cannons in range of the Syrian air-defense systems and that they could have been used without endangering American pilots. The problem was that the Navy had no way of knowing where the Syrian missile systems were located. It needed eyes in the sky to direct them.

A few weeks after the botched operation, Secretary of the Navy John Lehman traveled to Beirut and decided to use the occasion to fly to Tel Aviv to learn about Israel's use of drones. He had heard about the Scouts and their success in 1982 but had never seen them up close. When he arrived at Israeli military headquarters, Lehman was taken into an operations room and asked to sit in front of a small TV. He was handed a joystick and given control over a drone in flight. Similarly, Marine Corps Commandant General P. X. Kelley visited Israel to view the drone program. At the end of his trip, he was presented with a kind of home video, shot by a circling drone. In some of the footage, Kelley's head was fixed in the camera's crosshairs.

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Both men were sold. The next stage, though, was to figure out how to push the deal through the complicated U.S. bureaucracy. Lehman decided simply to skip over the usual procedures and had the Navy directly contract Israel Aerospace Industries (IAI) to develop a new drone based on the Scout. The Americans wanted something bigger and stronger, with a more advanced avionics system that could serve as a spotter for battleships. IAI soon had a prototype, which it called the Pioneer. After a flight demonstration in the Mojave Desert, the U.S. Navy ordered 175.

Delivery of the Pioneers started in 1986. In 1991, Saddam Hussein's Iraq invaded Kuwait. The U.S. went to war to free the Gulf state. During one operation, a Pioneer drone flew over a group of Iraqi soldiers, who saw the aircraft and, not knowing what it was, took off their white undershirts and waved them in the air—the first time in history a military unit surrendered to a robot.

A few months after returning to the U.S. in 1983, Lehman learned of another drone under development in Los Angeles, which he was told could also potentially serve as a spotter for Navy gunships. This drone was the work of an Israeli engineer who had recently left a senior management position at Israel Aerospace Industries—manufacturer of the Pioneer—to try his luck in the U.S.

Born in Baghdad in 1937, Abe Karem had moved to Israel just after the state was established, in 1948. By the time he was eight, Karem knew he wanted to be an engineer, and a few years later, he found his true love—aviation. At 14, he built his first airplane and within two years was an instructor in his high school's toy-plane club. After high school, Karem went to study aeronautics at the Technion, Israel's equivalent of MIT. He then joined the air force, and after his discharge he went to work for IAI.

During the Yom Kippur War, in 1973, Karem built his first unmanned aircraft. The IAF was having difficulty penetrating Egypt's Soviet air-defense systems, so within a couple of weeks, Karem's team had developed a decoy—basically a missile that could be controlled with a joystick—the IAF could use to activate the Egyptian radars, detect their location, and then hit them with anti-radiation missiles fired from nearby fighter jets. Despite its success, after the war, the IAF decided to buy similar decoys from the U.S.; Karem's version was buried. He argued for the importance of investing in domestic systems to create a local industry but failed. Frustrated, he quit and decided to try his luck in America.

Karem and his family moved to Los Angeles. He set up Leading Systems in his 600-square-foot garage in Hacienda Heights and began building a new drone. Called Amber, the prototype was made of plywood and fiberglass with a two-stroke engine that Karem pulled out of a go-kart. He had the Amber in the air for as long as 30 hours. Eventually, Karem's company ended up a part of General Atomics, and there Karem built a later generation of the Amber called the Gnat 750.

The turning point for Karem came from a combination of the most unlikely of places—Bosnia and Israel. In 1993, ethnic war broke out in the former Yugoslavia. The combatants wore civilian clothes, and the U.S. government was encountering difficulty in assessing the situation on the ground.

During a brainstorming session one day at Langley, then-CIA Director R. James Woolsey recalled a trip he had made to Israel as undersecretary of the Navy where he had seen a new

drone unit the IDF had established. Woolsey saw footage there of a convoy of three Mercedes sedans drive on a road in southern Lebanon. Intelligence, his host explained, had identified a passenger in the second car as a senior Hezbollah operative. The drone, the officer continued, "lit up" the car with a laser target designator, enabling a nearby IAF helicopter to fire a missile and destroy it.

Woolsey had seen this use of laser guidance—referred to as "lasing"—when he served as general counsel for the Senate Armed Services Committee during the Vietnam War. Back then, fighter jets did the lasing, but Woolsey had positive recollections of the accurate airstrikes that followed.

"We need a long endurance drone," he told his staff. He was told it would take six years and cost \$500 million to develop. Woolsey then called Karem, whom he'd met a few years earlier. "How much would it cost, and how long would it be before you could be up and operating over Bosnia?" he asked.

"Six months and \$5 million," Karem said. Woolsey teamed Karem up with Jane, a CIA employee (whose full name cannot be published) who had developed a special command-and-control system for drones. In six months, the Gnat 750 was flying reconnaissance missions over Bosnia. A few days later, a live feed from the drones was installed in Woolsey's seventh-floor office at Langley, and the CIA director was able to watch foot traffic over a bridge in Mostar while communicating with the ground station through an early form of chat software.

The Pentagon awarded General Atomics a contract to develop a more robust drone based on the Gnat, with a bigger engine and new set of wings.

The biggest change to the Gnat was General Atomics' decision to place a satellite communication link on the aircraft. The company decided that the more advanced drone needed a new name, so it held a competition. The winner was "Predator." The drone would go on to become infamous as America's most lethal weapon in the global war on terror, responsible for countless strikes in Pakistan, Afghanistan, Iraq, and Yemen. It took Israel and an Israeli engineer to help make that happen.

What makes drones appealing for militaries is that they can successfully carry out "3D" missions—dull, dirty, and dangerous. "Dull" refers to routine, mundane missions like patrols along borders or maritime surveillance of seas and oceans. These are physically demanding and are extremely tedious and repetitive. While humans tire after 10 or 12 hours, the Heron drone—the Israeli Air Force's main workhorse since 2005—can stay airborne for 50 hours.

"Dirty" involves entering airspace infected by chemical or biological agents. While a human would have to wear cumbersome protective gear, drones can operate risk-free, making them more versatile. And "dangerous"? That's more open to interpretation, but it basically covers missions that can be done by a robot instead of a pilot who could be injured or killed.

In today's IDF, drones are used by all military branches. The air force, for example, maintains drones like the Heron for reconnaissance missions on all of its various fronts—Gaza, Lebanon, and Syria.

Drones have an almost endless list of advantages, which make them preferable to manned combat aircraft. They are smaller, lighter, cost less, and can hover over targets for longer.

Fighter jets have the advantage and disadvantage that they can break the sound barrier, and while speed is an advantage in a dog fight or a mission that requires a quick in-and-out, it means that the aircraft's presence can be identified almost immediately. Drones can hover over targets while their engines' humming noise blends into city traffic. It makes them the perfect weapons to hunt and eliminate moving targets, such as terrorists.

Since the delivery of the Scout, in 1979, the Israeli Air Force has used and retired a number of different drones. But unlike the larger fighter jets, attack helicopters, and transport aircraft that are purchased overseas, Israel's drones are strictly blue and white, developed and manufactured by homegrown Israeli companies. Since 1985, Israel has been the largest exporter of drones in the world, responsible for 60 percent of the global market, trailed by the U.S., whose market share is just 23.9 percent. The customers have been dozens of different countries, including the United States, Russia, South Korea, Australia, France, Germany, and Brazil. In 2010, for example, five NATO countries were flying Israeli drones in Afghanistan.

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With a length of about 27 feet, the Heron is just a bit shorter than a Cessna light aircraft, although its wingspan is significantly longer, by about 20 feet. It is powered by a rear propeller, emitting a steady lawnmower-like sound. Its best quality is its autonomous flight system, allowing the operators to insert a flight route before takeoff and then get the aircraft off the ground by pressing just four buttons. The drone then flies to its target and can be programmed to return to a predesignated point at the end of the mission. This allows the operator to focus on the mission instead of on flying the plane.

Heron's manufacturer, Israel Aerospace Industries, does not publicly divulge the drone's exact cost, but industry estimates put the price tag at approximately \$10–\$15 million, far less than the cost of a manned combat aircraft. For the price of one F-35 fifth-generation multi-role fighter, one of the most recent IAF purchases, the air force can buy about 10 Herons.

The Heron can fly in two different modes, line-of-sight or satellite. The operator must be located within 250 miles of the drone at all times if it flies in line-of-sight mode. In satellite mode, the drone is controlled via a satellite linkup, meaning that distance is limited only by the amount of fuel it can carry. But the real significance of a drone is in its payload. Herons, for example, carry their cargo in more than one space—in their bellies, on their wings, and in rotating gimbals mounted under the nose. The gimbals include the sensors, which vary based on the mission—day/night cameras, infrared vision, laser targeting, as well as special sensors to identify weapons of mass destruction (WMD).

One Israeli-designed sensor shows the advantages these sensors afford. Called the Chariot of Fire, this sensor can detect changes in terrain, revealing possible locations of underground rocket launchers, a critical capability in a place like the Gaza Strip, where Hamas buries its rockets. Basically, the sensor can detect the invisible.

Israel's drones were originally designed for ISR missions—intelligence, surveillance, and reconnaissance—to fly over targets and monitor developing situations. Early on, though, Israeli military planners understood that they could do more—that the unmanned aircraft could adapt.

The drones were already carrying laser designators, which could be used to "light up" targets that would then be attacked by helicopters or fighter jets. Why couldn't they carry the missiles,

too? Today, Israeli drones, including the Heron, reportedly have the ability to locate targets and destroy them as well. Israel does not confirm that it has drones with attack capabilities. It is, however, well documented that this capability exists; Israeli drones have appeared at defense exhibitions with missiles mounted under their wings, and in WikiLeaks cables, Israel confirmed that some of its strikes in the Gaza Strip were carried out by armed drones. The Heron and the Hermes 450, another medium-sized drone developed by Israel's Elbit Systems, can reportedly carry laser-guided Hellfire missiles and smaller munitions like the Israeli-developed Spike missile. The Spike causes less collateral damage and is said to be particularly effective in accurate strikes against wanted terrorists.

The Gaza Strip is ground zero for Israel's drone revolution. There, on a daily basis, the lawnmower hum of drones can be heard in the narrow alleyways. Gazans have given the drones the nickname "Zanana," Arabic for "buzz" or "nagging wife." In Gaza, drones collect intelligence and help the IDF build its "target bank" in the event of a conflict.

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At the smaller end of the IDF drone scale are drones not flown out of air-force bases but pulled from soldiers' backpacks and literally thrown like a quarterback throws a football. One such drone, the Skylark, was delivered to IDF ground units in 2010. Weighing a mere 13 pounds, the Skylark has an operational endurance of three hours at altitudes as high as 3,000 feet. These Skylarks can be utilized in all types of operations, from random patrols in the West Bank to large-scale ground offensives in places like Lebanon and Syria. This new state of warfare provides commanders with quick over-the-hill intelligence. Commanders are no longer solely dependent on the Israeli Air Force, which in turn can focus its attention on larger, more strategic missions. The miniature UAVs are so popular that by 2016 they were being used by military forces in Australia, Canada, the U.S., South Korea, France, Sweden, and Peru.

In 2009, Israel reportedly achieved a new level in drone performance. It was the middle of January, and Israeli soldiers were operating deep inside the Gaza Strip, the first large-scale ground operation since the "Disengagement," Israel's unilateral withdrawal from the Palestinian territory four years earlier. The government had just launched Operation Cast Lead in response to the ring of more than 2,000 launched rockets and mortars in the previous year alone. Prime Minister Ehud Olmert had decided enough was enough.

While the country's focus was on the Israeli infantry and armored brigades operating in Gaza, a new threat was brewing far from Israel, in distant Sudan.

Intelligence obtained by the Mossad, Israel's super-secret spy agency, indicated that a ship packed with advanced Iranian weaponry—including Fajr artillery rockets—had docked in Port Sudan, on the Red Sea. These weren't ordinary rockets; they would change the strategic balance.

Up until then, Hamas's arsenal had enabled the Palestinian terror group to threaten the homes of the 1 million Israelis who lived in the south of the country. The Fajrs had the capability to go much farther and strike Tel Aviv. The containers, the Mossad learned, were being loaded onto trucks, to be transported north through Sudan and Egypt, where they would then be delivered to a depot near the Gaza border. Then the rockets would be smuggled into Gaza through underground tunnels.

The chief of staff of the IDF, Lieutenant General Gabi Ashkenazi, started drafting a plan to attack the convoy, but the clock was ticking. The moment the trucks crossed the border into Egypt, the strike option would be off the table. Israel couldn't mount an attack in Egypt, a country with which it had a fragile peace treaty. If the missiles then made it into Gaza, they would be swallowed up into one of the most densely populated territories in the world. While Israel's intelligence coverage over Gaza was good, it wasn't a sure bet. The rockets had to be stopped before reaching Gaza, meaning that the attack had to take place in Sudan.

An argument erupted within top defense circles. The doves—those opposed to the strike—warned of Israel's growing international isolation. The country was already under intense criticism for the rising death toll and extensive devastation in Gaza. News of a strike in another country would be difficult to explain. The hawks, on the other hand, argued that Israel could not sit by and allow advanced weaponry to reach Gaza. The potential threat was just too big.

The final decision was brought before Olmert. In operations like this, the prime minister usually asks a few technical questions about the mission and its risks before giving approval. In this case, in addition to the usual procedures, it would have been important to ensure that the strike could not be traced back to Israel. The mission would have to be done without leaving fingerprints.

The question now was how. Sending fighter jets to Sudan was risky. The entire mission could be jeopardized if there was a malfunction or one of the planes was detected by Egyptian or Saudi radars, which covered that part of the Red Sea. There were also technical considerations, since the target—a convoy of trucks—would be on the move and, as a result, difficult to track. Timing was everything. The intelligence would have to be precise; the fighter jets wouldn't be able to stay in Sudanese airspace for very long, and they would have limited fuel. The IDF reportedly chose an unconventional route—to strike the convoy with the help of drones. This was a first. Drones had never before been used in long-range strikes in a distant country like Sudan.

Only a handful of officers knew all aspects of the mission. Everyone knew that if word got out, the mission would be scrubbed, and the Iranian missiles would reach their destination in Gaza. The next time Israel saw them would be when they slammed into homes in Tel Aviv.

The yellow, sun-scorched Negev Desert is mostly barren, with little water or vegetation. Few Israelis settled there, leaving the large, dry terrain as the IDF's primary training ground. Israel's UAV operators were already experts at tracking moving vehicles, but until they began training

for the Sudan mission, they had been focused on a single terrorist driving in a car or riding a motorcycle. To prepare for this one, they had to practice locating and following a couple of trucks loaded with missiles. In the expansive Sudanese desert, this would be like finding the proverbial needle in a haystack.

The Heron TP, Israel's largest drone, with the wingspan of a Boeing airliner, and the Hermes 450, the IDF's main attack drone, were the UAVs chosen for the operation. The Heron TP would fly in first, at altitudes where it could not be detected, to locate and track the convoy. The next wave would consist of Hermes drones and, if needed, fighter jets, which would dive in for the strike.

On the night of the bombing, there were some clouds, but for the most part the skies were clear, typical January weather in Sudan. As the Sudanese and Palestinian smugglers made their way through the desert, the last things on their minds were the Israeli drones tracking them from thousands of feet above. Even if they saw the incoming missiles, it would have been too late. Forty-three smugglers were killed, and all of the trucks were destroyed.

The initial mission was a success. A few weeks later, in February, Iran tried again. Olmert reportedly approved another strike. This time, 40 smugglers were killed, and a dozen trucks were destroyed.

The Sudanese were stunned. They had known that Iran and Hamas were using their country as a clandestine smuggling route, but Sudanese president Omar al-Bashir's government thought Israel would never do something as daring as launch an attack on a sovereign African nation. This analysis led the Sudanese government to the wrong conclusion: that America must have been behind the strike. On February 24, a few days after the second strike, the chargé d'affaires at the U.S. Embassy in Khartoum, Alberto Fernandez, was summoned to the Sudanese Foreign Ministry, on the banks of the Blue Nile River, for a meeting with Ambassador Nasreddin Wali.

"I have sensitive and worrisome information to relate to you," Wali told Fernandez. The U.S. official knew what was coming but played it cool. Looking down at his handwritten notes in Arabic, Wali pulled out a torn and worn-out map of Sudan and pointed at an empty patch of desert in the eastern part of the country. Fernandez listened as Wali read out the number of people killed and vehicles destroyed. "We assume the planes that attacked us are your planes," Wali told the American diplomat.

Fernandez mostly listened as Wali lamented America's decision to unilaterally strike Sudanese territory and to undermine the two nations' "tight cooperation" on security.

"We protest this act and we condemn it. Sudan reserves the right to respond appropriately, at the right time, in a legal manner consistent with protecting its sovereignty," Wali concluded. Fernandez did not deny the Sudanese accusation but promised to relay the démarche to the State Department in Washington.

Even if the U.S. knew that the strike had been carried out by the IDF, as reported, Fernandez refrained from outing Israel to Khartoum. Nevertheless, Olmert could not hold back from publicly hinting at the possibility that Israel had been involved in the operation. A few days after Fernandez's meeting, the prime minister took the stage at a security conference near Tel Aviv and revealed that Israel had carried out counterterrorism operations in places "not that close" to home.

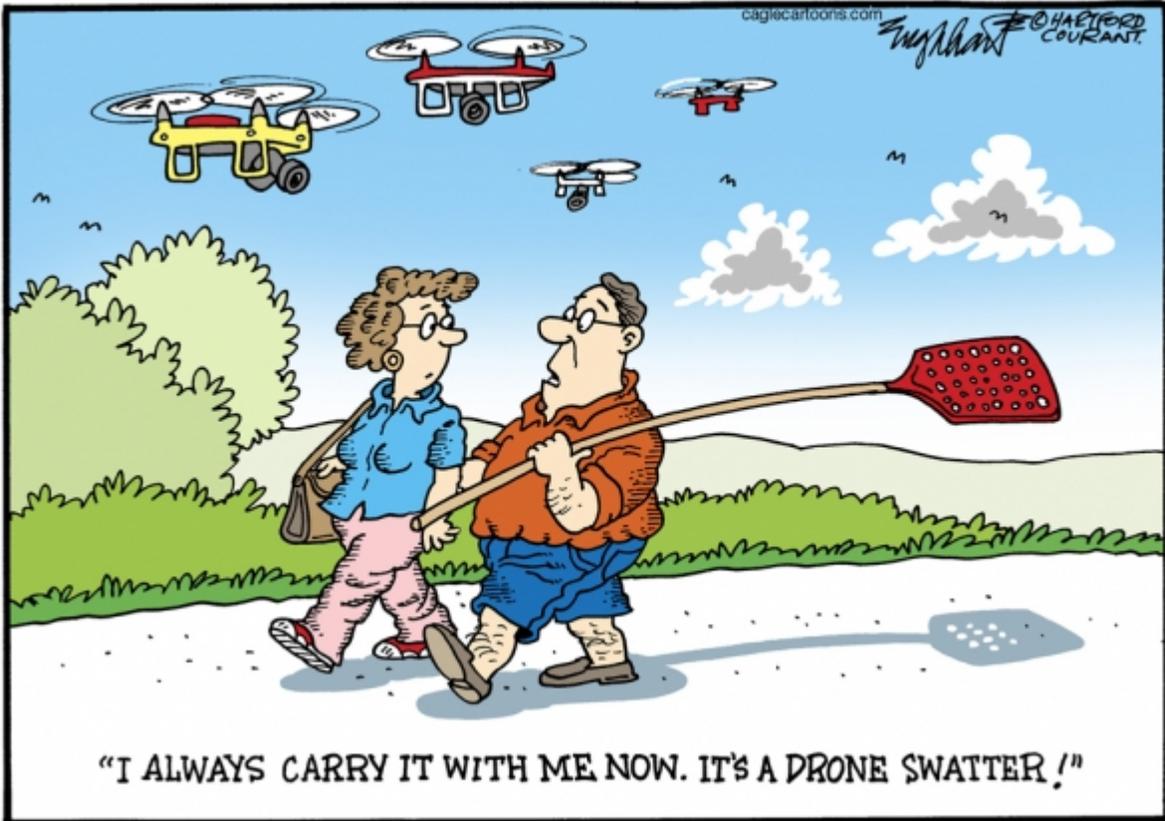
"We are hitting them, in a way that strengthens deterrence and the image of deterrence, which is sometimes no less important, for the State of Israel," the prime minister said. "There's no point getting into details, everyone can use his imagination. The fact is whoever needs to know, knows...there is no place where the State of Israel cannot act."



*"I prefer the term 'arrows' to
'unmanned drones.'"*



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- THE TALIBAN IN WEST-PAKISTAN CHOOSES A NEW LEADER-

..NO!..I DON'T WANT TO!!..



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