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SECRET WEAPON

How an Elite Military School Feeds Israel's Tech Industry

Groomed for Defense Jobs,
Talpiot Grads Go Private;
The Cradle of 'Star Wars'

By CHRISTOPHER RHOADS

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JERUSALEM -- After graduating from high school in 1993, Arik Czerniak entered a secretive Israeli military program called Talpiot. The country's most selective institution, it accepts 50 students a year and trains them in physics, computers and other sciences. Its mission is to create innovative, tech-savvy leaders capable of transforming Israel's military.

Upon graduating from the nine-year program, Mr. Czerniak took a different route: He helped launch Metacafe Inc., an online company that lets users post short videos, such as a clip of an acrobatic squirrel and one of a bikini-clad woman making a snow-angel. Now 32 years old, Mr. Czerniak spends most of his time in the Israeli company's new offices in Palo Alto, Calif.

Three decades after Talpiot was founded to modernize the Israeli army, the program has created an unforeseen byproduct -- a legion of entrepreneurs that has helped turn Israel into a technology juggernaut.

With fewer than seven million inhabitants, Israel has more companies listed on the

Nasdaq stock exchange than any country except the U.S. Its start-ups attracted nearly \$2 billion in venture capital over the past two years, equal to the amount raised during that time in the much larger United Kingdom. Israeli companies pioneered instant messaging and Internet phoning.

Mr. Czerniak and other Talpions, as graduates are called, have started dozens of these companies in recent years, specializing in security equipment, encryption software, communications and high-end Internet hardware. Many, like Mr. Czerniak, have moved to Silicon Valley.



Christopher Rhoads

The Talpiot program's symbol

But the results have prompted concern about whether government resources should go toward minting tech millionaires. In its goal of creating a new generation of military leaders, critics say, the program has fallen short. Graduates and Talpiot officials say fewer than a dozen Talpions in recent memory have gone on to attain senior ranks in the Israel Defense Forces. The IDF wouldn't disclose

the number of Talpions in top positions.

Some early supporters of the program are now asking whether the military, rather than a university, is the best way to nourish some of the country's brightest minds -- something they say a small country surrounded by enemies can ill-afford to waste. They also acknowledge that the booming tech sector Talpiot helped create, with its big paychecks, could work against the program's goal of retaining graduates in the military. The questions arise as Israel's military leadership comes under broader scrutiny for last summer's stalemate against Hezbollah in Lebanon.

"The successful high-tech industry is a problem for the military," says Zohar Zisapel, 58, considered a father of Israel's technology industry. Mr. Zisapel's Tel Aviv-based RAD Group has launched 28 tech start-ups over the years, six of them listed on Nasdaq. "It provides opportunities for Talpions the military cannot match," he says.

Israel's military says it has been more successful than it expected at retaining program graduates. "We think it's excellent these people who carried out important jobs in the army later move on to contribute to the development of the high-tech sector in Israel," the IDF said in a statement.



Christopher Rhoads

Uzi Eilam, a retired brigadier general who fought under Ariel Sharon during the Six-Day War in 1967, gives a tour of battle sites around Jerusalem to first-year Talpilot cadets.

Unlike Talpilot's sometimes highflying graduates, the program itself operates mostly out of view. During a rare recent visit to the classified program, housed on the Hebrew University campus here, officials would not disclose the work done during the military phase of the program and identified cadets only by their first initials. Though the cadets, who include a handful of females in each class, spend most of their days together, they do share some classes with other students on campus.

Talpilot's roots lie in the 1973 Yom Kippur War, when Syria and Egypt launched attacks on contested lands held by Israel. The conflict shattered confidence within Israel in its military prowess.

"It was the anguish of this surprise war -- there were so many casualties," says Shaul Yatsiv, a retired professor of physics at Hebrew University, who with another physics professor proposed the idea for Talpilot. Mr. Yatsiv, along with some in the defense community, argued that given Israel's scant manpower and limited natural resources, its military needed a technological edge.

Young Talent

Many in the military opposed the idea, arguing that the country's young talent could be put to more immediate use as pilots and intelligence officers.

After several years of debate, the military leadership agreed to launch Talpilot, drawing the name from a Hebrew word loosely meaning a well-built structure. Hebrew University agreed to host it. In 1979, the first class of 25 cadets entered Talpilot. The class size was later increased to 50.

Each year, the program selects the most promising high-school graduates in science and submits them to three years of grueling study, paid by the government, followed by six years of paid service in the military. That's twice the normal military service required of Israeli men. Women serve two years.

Instead of serving in combat units, Talpilot cadets are charged with improving the armed services through technological innovation. Some of the cadets delivered. Avi Loeb, who entered Talpilot in the early-1980s, developed a way to make projectiles travel at more than 10 times existing speeds, propelled by electric rather than chemical energy.

In 1984, Mr. Loeb, who was then 21, was asked to present his project to a visiting



Amir Beker

U.S. military officer, who turned out to be the head of President Reagan's Strategic Defense Initiative, the missile-defense program known as Star Wars. Mr. Loeb says the officer, Lt. Gen. James Abrahamson, agreed to provide U.S. government funding for the project, which quickly grew to a group of about 30 people headed by Mr. Loeb. Lt. Gen. Abrahamson, now retired from the military, didn't respond to calls for comment.

Another Talpiot innovation came from Amir Beker, who turned down medical school to attend the program. During his military service under Talpiot in the late 1980s, Mr. Beker learned that Israeli helicopter pilots were suffering from severe back pain from vibrations during flight. To build a better seat, he first had to determine how to measure the effect of vibrations on the human vertebrae.

Together with a Talpiot classmate, Mr. Beker led a team that installed a custom seat in a helicopter simulator, cutting a hole in its backrest. Training a pen on a pilot's back, the team used a high-speed camera to photograph the marks caused by a range of vibrations. The researchers analyzed the computerized data to come up with a way to redesign the seats.

In the program's early years, many Talpions went into academia or stayed in the military. "We had no idea about tech start-ups then," Mr. Beker says. "Only the grand pursuit of helping our country."

Mr. Beker, now 42, earned a Ph.D. in physics after the program and helped start a private college for financial studies in Tel Aviv. Mr. Loeb, now 45, pursued postdoctoral studies in astrophysics at Princeton University and is now a tenured professor of astronomy at Harvard University.

Talpions' pursuits began to change in the 1990s, as the global tech boom got under way.

Israel began to develop its own start-up culture, in part by using tax incentives to establish a local venture-capital industry. The country also benefited from an infusion of talent from abroad, primarily from the collapsing Soviet Union. Among more than one million Russian Jews who arrived -- increasing the total population by one-fifth -- were well-trained scientists and engineers.

By the current decade, U.S. cash began pouring in. In 1999, Sequoia Capital, the Silicon Valley venture-capital firm that invested in Yahoo Inc. and Google Inc., opened an office near Tel Aviv. It now has five partners there managing close to \$400 million in funds devoted to Israeli start-ups. Venture-capital firm Accel Partners has directed about 35% of its \$500 million for Europe and the Middle East to Israel, after opening a London office in 2000.

Today, the office parks in northern Tel Aviv and in nearby Herzliya -- housing lawyers, venture-capital firms and start-ups -- evoke the atmosphere of U.S. tech hubs like Silicon Valley and Boston's Route 128, even down to the coffee shops where deals are done. Some call the area Silicon Wadi, after the Hebrew word for a dried-up stream bed.

"Taking risks, realizing it's OK to fail once or twice, wanting to strike out on your own and make something happen -- that is very hard to replicate," says Moshe Mor, a partner with Greylock Partners, a Waltham, Mass.-based venture-capital group with an office in Israel. "Those attitudes are very prevalent in Silicon Valley and Israel."

About 30 Talpiot graduates return every year to run a two-day test to select the next class from a group of about 100 applicants. That number is winnowed down from the several thousand top scorers on a test taken each year by all of the country's graduating high-school seniors.

During a blustery winter afternoon in a drab, four-story stone building where Talpiot's 150 cadets reside on the Hebrew University campus, the two-day selection test was taking place. Talpions ran one exercise by dividing applicants into groups of 10 in different classrooms. A psychologist who helped design the exercises moved silently among the groups.

In one classroom, the 10 applicants, wearing blue T-shirts with the program's winged symbol emblazoned on the back, were given several minutes to complete a task. Without warning, a Talpion said they had less time than they had been promised. At other times, they were told suddenly to switch roles.

"We need to move on! We need to move on!" one candidate shouted to the other group members. After more minutes passed, a Talpion stopped the exercise. The allotted period had already expired, and he wanted to know why they hadn't kept track of the time. The idea was not whether they got the right answer, but how they tried to find it -- testing for creativity, leadership and social skills.

Final applicants appear before a panel of judges -- professors, military leaders and other officials -- who ask for explanations on things like the theory of relativity and how solar heating works.

Missiles in Haifa

Some of those selected by Talpiot say the biggest challenge is realizing they will devote their military service to research, not fighting. During Israel's war with Hezbollah in Lebanon last summer, missiles rained down on the northern part of the country, reaching as far as 30 miles inside the country to cities including Haifa. Cadets say it forced friends and family in the area to abandon their homes.



Arik Czerniak

"All of our friends were fighting in the war, and we were here studying for exams," a lanky third-year Talpiot cadet said one evening, sitting in his dorm room. Posters of rock bands and the Kramer character from "Seinfeld" covered the walls. "I felt ashamed that I couldn't do anything." Another in the room, with a neatly trimmed dark beard, said he has to convince himself that the "changes we are making are far bigger than anything we could do in a combat unit."

Over dinner in the building's simple cafeteria, cadets lamented that soldiers, in particular fighter pilots, are far more popular with girls than "computer geeks." But they think that is beginning to change as tales of technology IPOs become more common.

The commander of Talpiot, Maj. Roy Shefer, says he tries to counter the trend toward the high-tech world by instilling in the cadets a sense of obligation to country. He recently took the first-year class on a tour of the Nazi concentration camps in Poland.

"We view them as a national resource, and we want to determine how they can best contribute to the state," says Maj. Shefer, a 28-year-old with thick-framed glasses. He acknowledges, however, that the private sector's pull is difficult to resist. He sometimes questions whether the country, and in particular the military, benefits as much as it should from the program. "Some commanders have tanks," he said. He nodded toward photo identifications of the 150 Talpiot cadets, attached to a whiteboard on the wall next to his desk. "I have them."

Second Thoughts

Talpiot co-founder Prof. Yatsiv says he's having second thoughts about the program. There's no evidence that cadets couldn't receive better training elsewhere, he says. "No one knows if we developed resourcefulness -- or if such things just grow naturally in people," he says. He doesn't mind that graduates are getting wealthy, but says that if they aren't working in the country, "Israeli money should not be invested in them."

Aharon Beth-Halachmi, who helped create Talpiot as the brigadier general in charge of the military's research and development arm in the 1970s, says the Talpiot approach is necessary in a small country. "What we are showing is that you don't need a lot of people for breakthroughs, just the right people," he says. Today he runs his own venture-capital firm from offices next to a seaside hotel his company owns in Tel Aviv.

Mr. Czerniak of Metacafe suggests the military could retain Talpions by managing their careers more carefully. Mr. Czerniak and his class were trained in

paratrooping, operating armored tanks and firing a variety of weaponry, and he realized a childhood dream by becoming a fighter pilot.

He considered working on a multimillion-dollar flight-radar project, but he says a superior made him a flight instructor instead. The military "didn't always step back and look at the big picture," he says. The IDF says it places a priority on using Talpions to their full potential.

After completing his service in July 2003, Mr. Czerniak was recruited to help launch Metacafe, first in the basement of his grandmother's house near Tel Aviv, then in a loft and now in an entire floor in a large office building in downtown Tel Aviv. During one afternoon, employees dressed in jeans and T-shirts, most in their 20s and 30s, moved about desks made of light wood and separated by glass walls.

Mr. Czerniak, who last November opened the company's Palo Alto office, has tapped his Talpion network for new recruits. A year ago Mr. Czerniak hired Ido Safruti, a Talpion who finished the program last July, to run the Tel Aviv office. Talpion is "a very aggressive, extremely competitive, stressful environment," says Mr. Czerniak. "This is why we hire from there -- it's a stamp of approval."

Mr. Beker, who developed the helicopter seat, has gotten the start-up bug as well. Three years ago he began working full-time on a new company, Biological Signal Processing Ltd., that has developed software he says can test for heart disease at one-tenth the price of prevailing methods. After listing on the Tel Aviv Stock Exchange last year, the company opened a sales and marketing office in Rockville, Md.

The company's head of research and development is also a Talpion. Though most graduates aren't involved in defending Israel, Mr. Beker acknowledges, their role in the country's economy is just as important to Israel's survival. "What we are doing is generating new ideas and solutions," he says. "That is very difficult to wipe out in a war."

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