

Sixth Column | Sever Plocker

Hi-Tech Land: Elron as a Parable

Israeli Hi-Tech is still going strong: Elron's incubator hosts dozens of companies that develop exceptional patents, such as electronic implants for stroke recovery, insulin patches, and airborne antennas for Internet services.

1. Not in a Hurry to Exit Companies

Elron? The name rings a bell, but is hard to pinpoint. This is a company that pioneered Israel's advanced electronic technology industry at the end of the 60s and 70s; was established by the visionary Uzia Galil (85 today); was the first to register its shares for trade on the NASDAQ before the NASDAQ became what it is today; produced Elscint, Elbit, Orbotech and Zoran; – and fell asleep on duty only to be forgotten during the 90s. Elron fell off the radar of public attention. Discount Investment Corporation, which holds controlling interest in Elron (50%), suffered from the fatigue characteristic of corporations whose controlling families lose interest in running them. Only after the family principalities were united and the united kingdom of IDB was established by the saving knight Nochi Dankner, did Elron regain consciousness. But time lost is hard to regain. Most technological companies tucked under Elron's wings have only begun emerging now from infancy and make their existence known. The impatient and short-sighted investors are neither supportive nor impressed by the estimates of analysts, who regard those companies as hidden gems. They want capital profits here and now. They were burned by Elron's loss in the third quarter of 2007: 20 million dollars, due to a write-off of one unsuccessful investment. Since the beginning of the year, Elron's share dropped by 19%. It is traded now at 10 dollars, which places the total value of the company at 300 million dollars.

I asked Elron's Chairman, Arie Mientkavich, and CEO, Doron Birger if they are worried. "No", they replied, "not at all. The market is completely wrong in their estimate of our value and does not know how to price us, and if anything we're ok with it".

Elron has holdings in nearly 30 subsidiaries belonging to diverse technological fields, three of which are public, and the rest private. How much are Elron's private companies worth? According to the current stock price, almost zero. According to estimates of analysts from the American investment management company Dutton Associates, Elron's private companies are worth at least 300 million dollars, and they claim these are conservative estimates.

In their last note issued in December 2007, Dutton's economists estimated Elron's stock at a target price of 22 dollars.

Birger and Mientkavich told me: "We are not in a hurry to sell any asset before

it becomes a self sustainable entity. We have a poor statement of operations and a strong balance sheet."

They are not in some movie theatre in which someone shouts "fire!" and everyone runs to an exit for salvation. The company runs a large hotbed where revolutionary future technologies slowly ripen. "This year alone we invested in our group companies an additional 60 million dollars from external sources, capital funds and other investors". "Come see", Mientkavich tells me, "We have products on the brink of imagination and beyond it".

I came and saw. I visited six small promising companies, each of which employs a few dozen workers and develops original Israeli patents, and all in which Elron has invested significantly – between 20-50%. The rest of the capital was raised from private funds in Israel and abroad. Here are the impressions from the tour in the land of technology, life and imagination.

2. Stroke Recovery Patent

We began at BrainsGate, one of the happy winners of the World Economic Forum's Technology Pioneer Award. The company is developing an implant which "opens" the brain's gates to sufficient blood flow. How does it work? A stroke victim is brought to the hospital, upon which, if having managed to get there within 3 hours, s/he will probably be given a blood thinner to dissolve the clot. But if, God forbid, s/he is late – which is the case about 95% of the time with strokes – the routine medication loses its effect. The human body protects the brain and blocks its entries. The obstruction hinders the belated treatment and prevents the delivery of medication that may improve one's quality of life. The molecules are stopped at the gateway of the brain, just as Israeli tourists used to be stopped at the borders of Eastern Europe.

Then came along the Israeli geniuses from BrainsGate who said: That which the body closes – we shall open. They invented two miniature electrodes, which are gently inserted through the upper palatine canals into the nervous center controlling the brain cells, namely, the "Blood Brain Barrier" (the "BBB"). Upon receiving an instruction from an external controller, the electrodes command the brain to lift the barrier and dilate the blood vessels. When they receive another instruction, or after an allotted time, the electronic implant relocks the gates. Lifting the blood brain barrier will also enable drug delivery for diseases such as Alzheimer's and Parkinson's.

The implant developed at BrainsGate will enable blood flow to the brain up to 24 hours following a stroke and will dramatically improve one's chances of survival and recovery. Success depends on the size of the blood clot and its location, but it is likely that if the device had been cleared for use by 2005, our former Prime Minister, Ariel Sharon, would have been a healthy person today, or at least relatively healthy.

The catch is that the road from concept to patent, from patent to active model, from model to clinical trials permitted by the Declaration of Helsinki, and from there to CE and FDA clearance – according to Doron Birger, is long,

zigzagged, and full of obstacles. BrainsGate has already recruited patients for its first clinical trials, the results of which have astounded – no exaggeration – the medical community. The condition of almost all of the stroke victims who were lucky enough to be the first patients to undergo the implantation has dramatically improved while no one's condition has deteriorated.

Stroke is the third leading cause of death in the West and the number one cause of handicap. Millions are struck with it every year in the US and in Europe. The market potential for BrainsGate's implant is thus estimated at billions of dollars. Once FDA clearance is received, it is expected to be an integral component of medical coverage policies.

Elron currently holds nearly 23% of the company's shares, in which about 50 million dollars have been invested to date. According to Chairman Mientkavich, this money is considered a "loss" in Elron's balance sheet: it is money spent that has yet to yield a profit. "Yet" is the key word, as Elron is used to burning cash until the gems emerge from the dust and are revealed before all.

3. The Lense is Better than the Eye

One of Elron's hidden assets is RDC (Rafael Development Corporation), a company jointly owned by Elron (50.1%) and Rafael (49.9%). This partnership grants Elron exclusive access to the fruits of military R&D with potential civilian applications. The agreement to establish RDC, which was signed between Elron and the Ministry of Defense in 1993 without any time restrictions, is priceless. Rafael has recently filed a lawsuit to restrict the agreement's validity; Elron of course objects. "Indeed", says Birger, "working with a governmental company is no easy feat –100% of the managerial problems are on our shoulders".

However, the effort pays off and will continue to pay off. There is no other partnership in the entire Israeli Hi-Tech industry like it. The most renowned product of this partnership to date is a miniature video capsule capable of passing through our small intestine, taking pictures of it from within and transmitting them to a computer monitor. It is based on Rafael's missile technology and is manufactured at Given Imaging, a company co-owned by Elron and Rafael, which has already gone public in the USA. Given is traded at a market value of 700 million dollars. Its potential, Birger admits, has not yet been realized. The use of the capsule is still relatively limited, although it is included in the national health coverage policies of France and Japan, in American health funds, and of course in Israel. "We pin great hopes on the Japanese market", says Birger. "The Japanese suffer from severe digestion problems and are treated by 20,000 gastroenterologists." Recognizing their market potential, the Japanese are attempting to get a hold of the capsule patent, and defending its intellectual property costs Elron millions of dollars. It is worthwhile: Given was chosen as a Technology Pioneer for 2007. Whoever has seen, even once, the video capsule capable of immortalizing our entangled intestines from within, knows it won't be long until all our insides, arteries, cells, and hidden nooks of our bodies will be made into a serial

movie.

The title of Technology Pioneer for 2008 was awarded to NuLens, a private company in which Elron alone holds 34%. Its main partner is the VC fund Warburg-Pincus. I visited NuLens as well, and its product likewise impressed me.

NuLens develops an implantable intraocular lens for patients in need of cataract surgery and/or who suffer from impaired vision and loss of ability to focus on near-by objects. The uniqueness of the lens (the invention of Dr Joshua Ben Nun) lies in its ability to adjust itself to our vision needs. It is a telescopic intra-ocular lens, miniature, smart and flexible, which can improve a patient's vision tenfold. It is placed over our eye muscles, and its focus can accommodate itself within a very wide range – unlike existing implantable lenses, whose focus is constant.

Israel's and the world's leading eye surgeons are members of NuLens's scientific advisory board, and they are ecstatic over what they see, in both senses of the word. The clinical trials are being conducted in an exclusive institute in Spain, so as to expedite European marketing clearance. NuLens's managers hope to launch the lens for mass use within 18 months, and its use is apt to be mass indeed: cataract surgery is common in the West – more than 10 million surgeries a year are performed in the USA and Europe, and it will become even more common once the revolutionary lens is in use. I held it between my thumb and forefinger and thought to myself: here comes an end to one of the most terrible fears of aging people – blindness.

For revolutionary companies such as BrainsGate and NuLens, Elron is a mother's womb. However, unlike pregnancy, whose time is limited, the incubation period of the start-up companies in Elron's incubator is unknown. "We are not in a hurry", says Mientkavich, "we are equipped with patience".

4. Cheap Internet In-Flight

I once flew from Tel Aviv to Frankfurt. On the way I opened my laptop and connected to the Internet. Great, I said to myself, no more boring flights, blankly staring at the monitor on the back of the seat in front of me. For 10 dollars I can surf, work, send and receive emails, chat and remain online – all the way from Tel Aviv until I reach the States. My delight was premature. After two years of operating the system, the aircraft manufacturer Boeing discontinued the in-flight Internet service. Apparently the service was not cost-effective: to provide the service a heavy antenna weighing more than half a ton had to be installed on the aircraft. This required downtime for days at a time in which the aircraft could not function, and the costs were too high.

Once again flights were a sad affair until Starling came along, another of Elron's subsidiaries (partners Elbit Systems and Rafael hold 25%). Starling develops a system for featured broadband Internet services in aircrafts.

The system is based on a very small antenna weighing the equivalent of two

suitcases or one skinny passenger, up to 50 kg. It can be installed within a few hours, even during a routine testing. The antenna is cheap, a mere 50 thousand dollars, and is a technological wonder: despite its minute dimensions – 15 cm high – its surface is sufficient for creating two-way communication with satellites in the sky and receiving and transmitting high quality signals.

Its market consists of the 19 thousand commercial aircrafts that cross the skies. Starling is also developing an even smaller model of an Internet antenna, which will be installed in executive airplanes, military fighter aircrafts and supply aircrafts, and even on the roofs of military field cars.

The broadband supplied by Starling's antenna will enable passengers to surf the net, talk on their cell phones or on an Internet phone, download content, watch online TV broadcasts, and feel connected all the time. It will also enable the crew to receive improved real time navigation and information services – and that's without mentioning the contribution to safety and security.

"No technology and communications company in the world", Starling representatives told me, "has a product that even comes close to ours". "So what are you waiting for?" I asked, "Start selling". "It is not so simple", they replied, "the costly failure of Boeing's Internet service is still haunting the aviation industry. Now things are beginning to move along. Last month two American companies revealed their intention to install narrowband Internet systems on planes, and the race has picked up".

Starling went public on the Tel Aviv Stock Exchange and raised 14 million dollars. Its chairman is the former IDF Chief of Staff Dan Haloutz. The company is now conducting intensive negotiations with multi-national firms that install the video systems in aircrafts, the future Internet providers. Starling will only manufacture and sell the antennas, and when selling to Arab airlines, it will not even use its name. As a company which is traded on the stock exchange, Starling keeps its cards close to its chest.

In February 2007 I met in Europe a senior employee of the German airline Lufthansa. "What's going to be with in-flight Internet?, I asked him, "you've stopped the service for good, have you?". "We haven't", he said. "We are checking alternatives. There's one very good one. In one year's time we will announce renewal of the service". Together with Starling, I am awaiting his announcement.

5. Patience is a Virtue

Waiting is indeed the most difficult test of maturity any technology company must brave. "We know it is not sufficient for a start-up company to have a potentially wonderful and astonishing product with huge market potential" says Mientkavich, "this market needs to be unlocked and developed. Money needs to be invested in protecting intellectual property and patents, obtaining regulatory permits and approvals, persuading buyers and health insurance companies, opening marketing channels, fashioning an appropriate financing

package – in all of these fields we have an advantage other companies lack.

"We are both skilled and strong enough not to become panic-stricken by a temporary recession in various technological sectors and not to run and sell our companies at any price, and we are mature enough not to lose our heads in times of prosperity and be tempted to make hasty exits".

Mientkavich brings to Elron his achievements from Discount bank, Birger his 25-year managerial experience. In a regular start-up company the inventor and visionary wastes time looking for investors, managers of venture capital funds, lawyers, regulation experts and marketing professionals. For the companies under Elron's umbrella, after a strict due diligence process, all those services are a given. "We take all this upon ourselves", says Mientkavich.

What else did I see touring Elron's start-up land? I saw Ellara, a company that develops thin ribbons and panels made of amorphous material. This material is a kind of solid frozen liquid created by complicated physical processes, which has amazing qualities. The USSR was the pioneer and leader in developing these materials, and no wonder Ellara's engineers are originally from there. The ribbon they manufacture is three times thinner than a human hair. It withstands all conditions, it heats, it protects, it conducts electricity, transfers and transmits information. It can be woven in our clothes thus rendering furs and wool coats redundant. It can be installed in car tires, beneath the road's asphalt and our home floors so that our kids can run barefoot during the winter; it already melts the snow under the grass in a large stadium in Finland. Is it so cost-effective and innovative that the fact that it is rarely used comes as a surprise.

And why not go one step further and produce amorphous powder, the last word in the development of composed materials? It is already being produced in Ellara (Elron's partner in the company is the American investment fund Shamrock, whose entrepreneurs are former IDF pilots). Now, instead of saying "Dad, turn on the heat", the child will say "Dad, pour some powder on the floor, so that we can warm up".

I also saw Medingo, which is developing a state of the art insulin delivery device for diabetic patients. The Medingo device is a smart miniature patch-like dispenser, which acts as a pump, transferring insulin to the body according to the blood's sugar level. The patch is controlled by the patient from a small cradle that need not constantly be at hand. The patients are free from pumping and injecting, and they can indulge in any activity they wish. The patch will do the work for them.

It is a unique patent millions are impatiently waiting for. It will be cheap – the cheapest in the market – user friendly, portable, and will function as an artificial pancreas.

The FDA is expected to clear the device for use in the first quarter of 2008.

"We are in contact with insurance companies, health ministries around the world, and doctors' and patients' organizations, and the responses are very enthusiastic", say Birger and Mientkavich. Dutton's analysts estimate Medingo's value, if it goes public, at 150 million dollars at least. Others are talking in terms of many hundreds of millions. Whatever its financial value will be, for diabetic patients it is worth more.

I have not mentioned here the names of the inventors with the gleam in their eye who told me about their inventions or the names of the business managers running around with samples and models in their briefcases wherever they go. I have not mentioned Pocared, which is developing a system for diagnosing bacteria in liquids (such as urine), capable of identifying bacteria within minutes, whereas today it takes from 24 to 72 hours.

I have also declined mentioning the financial complications and forecasts; they are not the main issue. Elron's importance, as I see it, is in its being one of the major reservoirs of Israeli innovation which has not been dried out, and it is limitless. Some of the private and public affiliates belong to Elron – but not solely. The title "Technology Pioneer of 2008" was awarded to two other Israeli start-up companies – which may be worth billions. Others will fail, as is often the case. Taken together they are the driving force of the Israeli technological industries, our only national resource.

Pictures:

1. Arie Mientkavich, Chairman
2. Nochi Dankner, Owner
3. Doron Birger, CEO

Large text:

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