

JCT Perspective

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Green and Clean

JCT Develops Solutions to Environmental Problems



JCT Perspective



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COMMENTARY



Shalom!

Of the many things we are proud at JCT, nothing is more prized than our students. In every issue of "Perspective"

we profile one of our students as a way of showing who they are and of sharing their accomplishments with you.

Our student body of 2,500 is a microcosm of Israeli society: 21% are Olim (immigrants) from the former Soviet Union, Ethiopia, South America, North America, Europe, Australia and South Africa, whilst 32% come from Israel's development towns and peripheral areas. Over 30% of our graduates continue for M.Sc and MBA degrees and 6% receive their PhDs - and of all of those serving in the Israel Defense Forces, 35% become officers.

Perhaps the most striking fact is that our graduates do not leave Israel. Although courted by high-tech industries throughout the world, 95% of JCT graduates remain in Israel to help develop Israel's industry. Over 60 high-tech companies have been started by our graduates and faculty expanding the country's economic base, particularly in Jerusalem.

What attracts our students to the Jerusalem College of Technology is the

opportunity to receive an excellent education allowing them to become highly-skilled, sought after professionals. More important for our students is the opportunity available at the College to receive an education focusing on Jewish values. It is this education towards values that has always been the hallmark of JCT and it is this commitment to Jewish ethical values that forms the foundation from which Israeli society will grow and flourish - and our students and graduates take pride in being committed to this process.

As we approach the Pesach holiday, the 60th anniversary of the State of Israel and the 40th anniversary of JCT, let us reaffirm our commitment to the present and future generations of JCT students; may we continue to be blessed with students and graduates who we believe represent the finest ideals of Judaism and academic professionalism.

I wish all our friends and supporters throughout the world a Happy and Kosher Pesach

Reuven Surkis

Vice President for Development
and External Affairs

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PRESIDENT'S MESSAGE

Dear Friends,

An ancient *Midrash* on *Kohelet* (Ecclesiastes) relates: “When the Almighty created Adam, he showed him all the trees of the Garden of Eden and told him: ‘Look at My handiwork, how fine everything is. All this is for your benefit! Take care not to destroy My world,

for if you do so no one will be there to repair it.”

Whether or not the human race is to blame for the hole in the ozone, for global warming, for extinction of many species of wild life, or generally for the increasing pollution of our planet; whether or not Adam’s descendants have been careless in preventing a host of ecological disasters with which we are threatened daily - there is no doubt that we are obligated morally, as individuals, as Jews and as members of human society, to do all that we can to strengthen the sustainability of our fragile world and to protect it from further deterioration.

It is only natural (no pun intended) that everyone is looking expectantly toward the disciplines of science and technology for innovative solutions that will provide clean energy resources to replace fossil fuels. Development of environmentally friendly alternatives, which are economically viable, is not only a major ecological concern. The benefits for the global economy and for our national security are manifold.

We are therefore excited that JCT scientists working on campus are actively involved in research that could have profound implications on the viability of solar and wind power sources. Some of this research is highlighted in the present issue of *Perspective*.

As we approach the fifth decade of JCT, it is evident that our growth is not only in the number of students - now beyond 2,500, in the number of campus buildings at Machon Lev – now 16, and in the number of academic programs at Machon Tal – now 12. The growth is also in excellence. JCT is now rated among the top six academic institutions in Israel, according to recent comparative studies of tertiary education.

The State of Israel, as it celebrates its 60th anniversary, has learnt that it can expect outstanding performance from our graduates, in terms of hi-tech innovation, responsible management, and Jewish leadership. It is now learning that JCT researchers are helping to solve some of the world’s greatest environmental challenges.

You, our friends, can be proud of what your support has achieved.

Wishing you all a חג פסח כשר ושמח

Joseph S. Bodenheimer

Joseph Bodenheimer
President of JCT

SEDER NIGHT

A LESSON IN EDUCATION



By Rabbi Amnon Hedri

The Rambam (Maimonides) in *Hilchot Hametz Umatza* (7:1) summarizes the *mitzvah* of reciting the *Haggada* on Seder night as follows:

It is a positive commandment from the Torah to speak about the miracles and wonders that were performed for our forefathers in Egypt on the fifteenth night of Nissan... and even great scholars are obligated to retell the story of the Exodus, and anyone who speaks at length about what was, is praiseworthy.

The fundamental difference between the commandment to remember the Exodus (*z'chira*), which must be fulfilled daily, and the commandment to relate the story of the Exodus (*sipur*) is that remembering the Exodus is fulfilled with a short, concise mention, whereas the commandment to relate the story through the *Haggada* demands of one to expound upon the story and internalize its meaning. In addition, the commandment to relate the story of the Exodus demands that one share the story with others, and specifically that one share the experience with his children, as the Rambam himself writes in the following *halacha* (law): "A person is commanded to tell his sons, even if they did not ask, as it says, 'and you shall tell your children...'"

The need for the involvement of the children in the fulfillment of the commandment "*v'higadta l'vincha [And you shall tell your children]*" created a rich infrastructure of guidelines and specific actions aimed at ensuring the success of this mission. Indeed, it seems as though these guidelines were not intended exclusively for the fulfillment of "*v'higadta l'vincha*" but rather were intended to present a prototype for Chazal's (our sages of blessed memory) ideal approach to the

educational process.

The *Tosefta* in Yoma (Perek 4) relates the behavior of Rabbi Akiva:

"They said with regard to Rabbi Akiva that he would never say 'It's time to cease studies', except for the eve of Pesach and the eve of Yom Kippur: on the eve of Pesach so that the children wouldn't fall asleep and on the eve of Yom Kippur to allow them to feed their children."

Rashi explains that Rabbi Akiva would end the studies early on the eve of Pesach to allow his students to put their children to sleep during the day and thus enable them to be awake that evening for the reciting of the *Haggada*. Rabbi Akiva's model highlights the importance of proper preparation and forethought. Education is not a sporadic, situational event; rather, it demands prior preparation. In this particular situation, it was the simple fact that tired people have difficulty focusing and learning that drove Rabbi Akiva to ensure that the children would rest amply prior to the *Seder*.

An additional guidance is found in the *Tosefta* brought in Tractate Pesachim (109A): "Rabbi Eliezer said: *hotfin matzot* on the night of Pesach for the children so that they should not fall asleep."

In his second explanation of this piece, Rashi explains that "*hotfin matzot*" means that one should be quick to eat so that the children will be focused and alert during the recitation of the *Haggada*. And thus codifies the *Shulhan Aruch* (Code of Jewish Law OH 472:1):

One's table should be set already from the previous day so that the meal may begin immediately at nightfall, and even if one is studying in the Beit Midrash, one should conclude [early],

as it is a mitzvah to hasten the meal for the children so that they not sleep.

Fundamentally, we learn from here that, similar to tiredness, hunger impedes one's ability to learn, and thus it is incumbent upon the father to feed his children early. However, upon further examination, this directive appears to present a practical problem, as the meal (*shulchan orech*) comes only *after* the actual retelling of the Exodus (*in maggid*). May we thus conclude that the directive of the *Shulchan Aruch* is to shorten the *maggid* section in favor of reaching the meal earlier?

The *Mishna Berurah* in *Sha'ar HaTziyun* (Ibid, 2) presents a number of ways to understand the directive of the *Shulchan Aruch*. One possibility is simply to begin the *seder* without delay, as the children, upon seeing that an effort is being made not to draw things out, will make a special effort to remain awake and alert for both *maggid* and subsequently the meal. Another possibility, presented in the name of the *Yachin Shmua*, is to feed the children early, i.e. prior to the formal meal, so that hunger will not impede their ability to focus. The final, and most surprising, explanation of the *Mishna Brurah* is that the directive of the *Shulchan Aruch* should be taken at face value, i.e. that one should indeed speed up the *maggid* section so as to arrive at the meal so that the children will ask questions during the eating of the *matza* and *maror*.

Furthermore, beyond a basic sensitivity to the children's physical predispositions, to the tiredness and hunger that are liable to hamper their focus, we can identify a number of additional, more fundamental guidelines. The *Gemara* in *Pesachim* (108B) cites a dispute with regard to the obligation of the children in the commandment of drinking four cups of wine:

Our rabbis taught: all are bound to [drink] the four cups: men, women, and children. Rabbi Yehuda said: Of what benefit is wine to the children? Rather, we distribute to them seeds and nuts on the eve of Pesach so that they not fall asleep, and ask.

It was related of Rabbi Akiva that he used to distribute seeds and nuts to the children on the eve of Pesach so that they would not fall asleep.

Chazal understood that in order to ensure that the children listen and focus; there exists a need to stimulate them, to create an atmosphere that is interesting and stimulating rather than monotonous and boring. Indeed, this is how the Rambam explains the phrase "*hotfin matzot*" from the aforementioned *Tosefta*:

And one must make changes on this night so that the children will take note and ask...and how should one make these changes? By giving them seeds and nuts, removing the

table from before them, 'snatching' the matzah from each other and so forth.

The concluding phrase in the Rambam, "and so forth," places the onus upon the one leading the *Seder* to initiate additional stimulants in accordance with the makeup and nature of his family.

This desire to stimulate the children and share the story of the Exodus with them has a profound effect on the very structure of the *Seder*. One of the explanations for the *karpas* section as brought in the *Gemara* (*Pesachim* 114B): "And the reason that we require two dippings is so there may be a distinction [shown] for the children."

An additional aspect of the evening that appears integrated into the structure of the *Seder* is empowering and encouraging the children to ask questions. An educator must be open to questions and indeed must initiate them as well. The *Braita* in *Pesachim* (116A) establishes that the retelling of the Exodus must be done via questions:

Our rabbis taught: If his son is intelligent, he asks him (his father), while if he (his son) is not intelligent his wife asks him; if not he asks himself.

The demand that one asks even himself comes to highlight the imperative need to stimulate and encourage questions. Indeed, one could suggest that the very creation of a rigid framework for questions is what brings about spontaneous questions from the *Seder* participants.

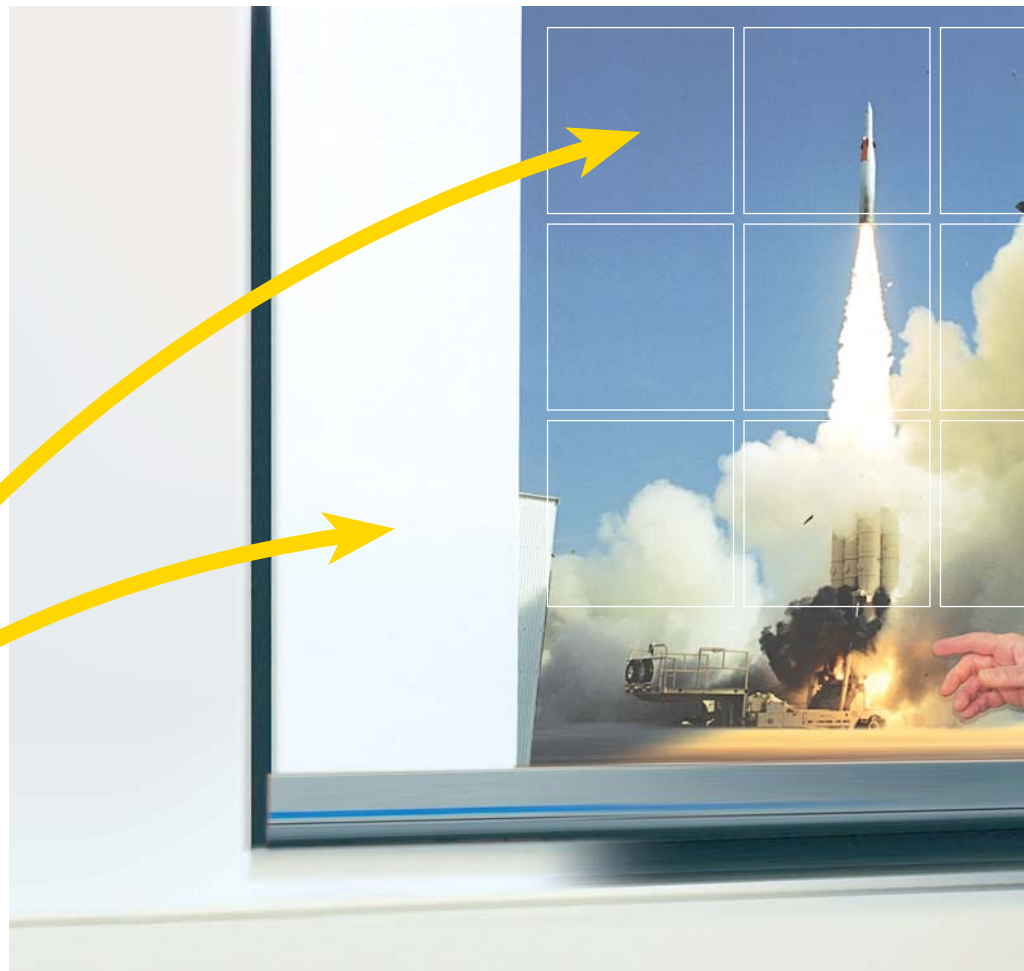
And thus, we can conclude from the guidelines laid down by Chazal that it is incumbent upon the educator to exhibit basic sensitivity to the physical predispositions of the child/student. He must take care to create a dynamic, flowing atmosphere devoid of any feeling of dullness or stagnation. And, more fundamentally, he must stimulate his student and teach him to continuously question.

To highlight this message and to add a new, exciting dimension to it, we conclude with an idea from Rabbi Tzadok HaCohen from Lublin:

The Exodus must be retold through questions, as everything comes only as a result of toil and effort – 'If one tells you I have labored [in the study of Torah], and I have succeeded, do not believe him.' ...And therefore [the retelling of the Exodus] must be specifically by the use of questions, to symbolize that the 'light' of the original Exodus, which we recreate through the retelling of the Exodus, does not appear by itself but rather one must expend his own minimal effort and immediately Hashem will light his way.

Rabbi Amnon Hedri is a Ra"m (teacher) in JCT - Machon Lev's Beit Midrash.

Straight as an Arrow



By Aharon Granot

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The details of what goes on in the building complex where the Arrow missile system is designed and produced – somewhere in Israel – are cloaked in secrecy. Almost nothing about the site can be revealed, and even the details that can be shared with the public are thoroughly censored.

The expressions on the faces of the tens of engineers who work here are always serious. A weighty task has been placed on their shoulders. In an era when offensive ballistic missiles are a major threat to life and property, their work on the Arrow, an anti-ballistic missile intended to destroy incoming missiles before they can reach their intended targets, can be considered *pikuach nefesh*, a matter of life and death.

In the midst of this key engineering group is **Yeshayahu Deutsch**, a Machon Lev graduate and member of its Board of Trustees for the last twelve years. Wearing a black suit and hat, he stands out in an environment where everyone makes a conscious effort to maintain a low profile. During the day, he is one of the top engineers working on the Arrow missile project. At night, he learns in a *kollel*.

“I dress like the *haredi* person that I am, all day long,” he says. “Very often, when I try to enter the factories where I work, the guards ask me for ID. People who don’t know me can’t understand what a *haredi* Jew is doing here. After they learn who I am and what position I hold, they immediately apologize.”

Mr. Deutsch has been working on projects such as the Arrow missile, in the defense theater of Israel Aerospace Industries (IAI) for seventeen years. Based



While his co-workers wait in suspense for the results of the Arrow missile test flight, Mr. Yeshayahu Deutsch gives his Gemara class and prays that the outcome will be successful. In this exclusive, Aharon Granot interviews Mr. Deutsch, one of the leading engineers in charge of the Arrow's development, a Machon Lev graduate and member of its Board of Trustees.

at the MLM division of the Systems, Missiles and Space group of IAI, he is responsible for research and development of electro-optic sensors, which identify and target incoming enemy missiles. He spends days and nights in this complex.

"This work demands a lot of personal sacrifice," Mr. Deutsch tells us, "Sometimes we have a deadline and we suddenly run into problems. When that happens, I have to forgo Torah learning, and on rare occasions, even *davening* (praying) with a *minyan* (quorum of ten men). But I have no other choice as we are involved in *pikuach nefesh* (saving lives)."

One of the systems currently being developed is called "Green Pine" – a radar system the size of a semi-trailer produced by Elta, a defense sub-contractor for the Arrow missile. The Green Pine radar detects an incoming missile and alerts the operations room. Then an Arrow missile

is fired, to intercept and destroy the threat before it can hit the ground. There are six missile tubes in each launcher, and each missile can be fired towards a different target. The electro-optic sensors, that Mr. Deutsch is helping to develop, track the incoming missiles in mid-flight, allowing the Arrow missiles to "chase" them. Then, one of two things can happen. Either the two missiles will collide, sending the enemy missile off course, or the Arrow will impact the enemy missile with enough force to detonate it in mid-air. If the interception is not successful, Patriot missiles are available at the same launch sites.

Sometimes, when Mr. Deutsch is faced with a work-related problem, he consults with rabbanim. He used to consult with Rav Shach, *ztz"l*, for guidance, but now, his teacher and spiritual mentor is Rabbi Nissim Karelitz, *shlita*, the head of the Bnei Berak *Beit Din*. "The Arrow missile is a

lethal weapon, which, when used correctly, can help save Jewish lives. That is where the opinion of a rabbi plays a part in their design and production," says Mr. Deutsch.

"His door is always open to me. He knows what I do and what kind of questions I ask. When I arrive, everyone in the room is asked to leave since many details of my work are top secret. Unfortunately, I cannot reveal every detail even to the Rav. My superiors at work know that I consult with him on various matters and they advise me how to present my questions without saying anything I shouldn't. The solutions the Rav has given me have proven to be very useful."

During a recent test flight which was heralded as a success in the media, additional capabilities of the Arrow were analyzed, including how well the missile performs versus ballistic missiles using non-conventional materials, and at

From Start to Finish

It all began during the Gulf War. Iraq fired Scud missiles into Israel and the Ministry of Defense, after seeing how Patriot missiles were not the exclusive answer to Israel's defense needs, decided that it was crucial to develop a system to defend Israel against long-range ballistic missiles.

Since the cost of developing and operating such a system was exorbitant, Israel Aerospace Industries attempted to interest the United States in footing the bill for the first Arrow missile project. The American government agreed to fund almost three-quarters of the project, with the Israeli government covering the balance. Nobody knew if it would even be possible to produce the kind of missile that had been designed in theory.

"The initial design on paper," says Mr. Deutsch, "was a missile shot from a cannon that flew at the speed of light. Its job was to locate the incoming ballistic missile, and destroy it. For that to happen, the intercepting missile had to reach a very high altitude. In the initial experiments, there were a number of failed attempts, but there were also a number of successful hits."

The partial success of Arrow I led to the development of Arrow II.

"The computerized defense system we have today identifies and locates all sorts of enemy threats. It sends the information to a central intelligence center, where the weapon's capabilities are analyzed, and then we try to create viable solutions. The experiments are not always successful, but when a missile proves to be useful, the Army buys it. Usually, our rate of success is ninety percent. One of our missiles was tested in the United States against a real Scud, and it succeeded in putting the Scud out of commission. A successful experiment gives us the motivation to keep working hard to turn more of our ideas into reality."

different speeds. All the experiments were planned according to innovations discovered in the weaponry of enemy nations. Following this successful test flight, the United States, Israel's partner in the project, agreed to extend its funding for another five years.



"When I came to work the day after the most recent test, my boss told me that the complicated experiment had been successful in the merit of the mezuzah we had put up at the factory entrance just the day before"

— Yeshayahu Deutsch

"It takes a lot of time and effort to prepare for such tests," says Mr. Deutsch. "You must understand," he explains, "when you are designing an aircraft, you send a pilot up with the plane to test it out. He returns and tells you what needs to be improved or changed. With a missile, that is impossible. If you make a mistake in the design or capabilities of the missile, it can explode during the experiment, and you have to start from scratch. The money spent is gone, and your reputation is damaged."

"Therefore, when planning a test flight, everything has to be meticulously thought out and planned, down to the smallest detail. Everything has to be checked and rechecked, again and again. Sometimes when I sign documents authorizing that everything about the experiment is in order, my hand literally shakes. Don't forget that even the space shuttle which exploded with Israeli astronaut Ilan Ramon aboard, was designed by intelligent, experienced people, who thought that everything was going to be fine."

"You need a lot of *siyata d'Shmaya* (G-d's help). When I came to work the day after an important test, my boss told me that the complicated experiment had been successful in the merit of the *mezuzah* we had put up at the factory entrance just the day before. Even my colleagues at work understand that in the end, everything depends on G-d's will."

When the Ministry of Defense orders a missile system like the Arrow into production, engineers must take into

account all of the parameters involved in the intended use of the weapon. They design all of the electronic connections and the type of motor that will activate the missile. Hundreds of engineers are involved in a project of this scope, as well as sub-contractors within and outside of Israel. Each one has a role to play, within his particular area of expertise.

After the planning stage is completed, everyone meets to figure out how to launch the missile and how it will "behave". Before the real missile is tested, a "dry run" is conducted in a simulation chamber. All of the wires are connected, an "enemy missile" is launched, and everyone waits to see if the Arrow missile detects it. Does it work? Is everything functioning as expected? All of this must be done before the real test takes place.

Most of the missile experiments are conducted on the beach at the Palmachim Air Base, which is far from any residential areas. When the missile is fired, parts of it fall back to the ground and it is safest if they fall into the ocean. Hundreds of people take part in such an experiment. They include reserve-duty soldiers from the Navy and the Armored Corps, among others, and of course, the Americans. The United States funds a portion of the Arrow missile system project and government representatives are present during every experiment. A new test is conducted every three years and everyone involved must follow a strict timetable.

"Sometimes, a problem is discovered with one of the missiles", Mr. Deutsch explains. "Since it is not possible to alter

the timetable, the missile is sent back to us and we have to work hard and fast to solve the problem. Sometimes, we figure out what is wrong in just half an hour. Other times, it can take us days or weeks to make the needed repairs. I pray for us to have *siyata d'Shmaya* and find the root of the problem quickly. Otherwise, I will end up missing a Torah class or even



praying with a *minyan*. Usually, my prayers are answered”, he says.

On the day of such a test flight, the mood in the halls of the factory look like the streets of Bnei Brak on *erev Rosh HaShanah*. Everyone working on the project is extremely tense. It is the “day of judgment” for the Arrow. That is when Mr. Deutsch moves to center stage. All of the computers are shut down and files are closed and put away in cabinets. Only one book is open – Mr. Deutsch’s *Tehillim* (Book of Psalms). He recites the verses aloud and his colleagues repeat the words after him and then answer “Amen”, even the ones who claim that the success of a test is all a matter of hard work and brainpower.

“Once, before an especially complicated experiment that was to involve a lot of different components, and which we doubted would be successful, I went to Rav Kanievsky and asked for a *brachah* (Blessing).”

Did he give you one?

“He did. And the experiment was a success.

After I heard his blessing, I was totally at ease. I had no doubts that everything would work out for the best”.

On another occasion, a scheduled experiment was more complex than any that had ever preceded it. Everyone held their breath and chewed on their fingernails, waiting to see what the outcome would be. Mr. Deutsch decided that this time, he would not miss giving his weekly Gemara class.

“I had in mind that in the merit of the class, the experiment would be successful. I just couldn’t tell that to my students!” he relates. “*Baruch Hashem* (thank G-d) the experiment was successful beyond what anyone had imagined.”

Is it possible that one day there will be a missile that will be able to provide one hundred percent protection to the citizens of Israel, in the event that we are attacked?

“There can never be such a missile. Our true protection comes from God. “*Im Hashem lo yishmar ir shav shakad shomer* [If Hashem doesn’t guard a city, in vain is the watchman vigilant]” (*Tehillim*, 127:1).

A Parshah Lesson for Employees

After studying for years in a yeshiva and in the kollel of Yeshivat Itri, Yeshayahu Deutsch, a native of Bnei Berak, enrolled at **JCT’s Machon Lev**. “When I started looking for a job, I saw an advertisement in a newspaper, that Israel Aerospace Industries was interested in a computer engineer. I misunderstood the ad and thought they were looking for electronic engineers, which is my field. I made an appointment for an interview, and once I realized my mistake, I asked them to interview me anyway. “Perhaps you will need someone with my skills in the future”, I told them. The man who interviewed me eventually became my department manager. He spoke with me for just a few minutes and decided on the spot to hire me to work with him. That is how, through *Hashgachah Pratit* (Divine intervention), I was accidentally hired.

“After the interview, I had to undergo a security check. They asked me if I had a Rabbi. I told them that my Rabbi was the Rosh Yeshiva of Ponevezh, the Gaon Rabbi Elazar Menachem Man Shach, who was still alive at the time. They warned me not to discuss anything about my work with him. I promised not to reveal any of the country’s secrets, but they knew that I would be seeking his advice on a regular basis. They briefed me on how to ask relevant questions, without giving too much information. I still adhere to that method when I approach Rav

Nissim Karelitz with my questions.”

Mr. Deutsch is the father of nine children as well as a grandfather. He gives a Gemara class twice a week – one in Ramat Gan and the other in Petach Tikvah to graduates of JCT.

“The managers of the factory, headed by Uri Sinai, along with the manager of human resources, David Applebaum, are uncommonly accepting of their religious and haredi employees,” Mr. Deutsch emphasizes. “The meals here are *kosher l’mehadrin*, the meat is *glatt* and we have a *mashgiach* (supervisor) here all the time. Even when events are scheduled outside of the factory, those of us who request it are provided with kosher l’mehadrin food. We have a *minyan* for *Mincha* on most days. When the Rabbis announced that we would say the *selichot* of *Yom Kippur Katan* on the day before *Rosh Chodesh*, the factory manager allowed 150 observant employees an extra hour off from work to complete the *selichot* and *Mincha* with a *minyan*.”

Once a week, after work hours, the haredi engineer gives a lecture on *Parshat Hashavua* (the weekly Torah portion) for employees. Most of the men who come to the *shiur* are not religious. The factory management provides transportation for Mr. Deutsch to get home after his *shiur* as he misses the regular bus ride on that day.

Rich versus King:

The Founder's Dilemma



“Most entrepreneurs want to make a lot of money and to run the show. New research shows that it’s tough to do both. If you don’t figure out which matters more to you, you could end up being neither rich nor king.”

Harvard Business Review, February 2008

In an article published in the Harvard Business Review (HBR) in February 2008, **Professor Noam Wasserman** of the Harvard Business School and visiting Fellow at JCT’s **Mark Schuman Center for Entrepreneurship**, presents findings that show that most founders of companies surrender management control long before their companies go public. “Every would-be entrepreneur wants to be a Bill Gates, a Phil Knight, or an Anita Roddick, each of whom founded a large company and led it for many years. However, successful CEO-cum-founders are a very rare breed.”

Here are three founder scenarios, all with parallels to case studies that Professor Wasserman teaches MBA students at Harvard Business School and taught to JCT students in March:

- 1.** You have an idea for a great product and want to start a company. Do you start it yourself (and keep all of the equity) or do you find a good co-founder (with whom you have to split the equity 50/50)?
- 2.** You have 2 similar offers from potential investors. However, one is from angels (who want one board seat out of 3, leaving you in control of the board) and the other is from VCs (who want 2 of 3 board seats). Which do you take?
- 3.** You have been doing a good job as a founder-CEO, and have really enjoyed being able to control major decisions and being able to “put my stamp on my company.” However, you are starting to feel that a more experienced CEO would be able to grow a more valuable company than you could. Should you keep your CEO seat, or should you offer to step down (into a “ceremonial CTO role) and find a better CEO to take over your “baby”?

Is there a common thread running through these decisions?

Founders must, as the old Chinese proverb says, “decide on three things at the start: the rules of the games, the stakes and the quitting time.”

To Prof. Wasserman, the *first choice* in each decision would increase the chances that you will be able to keep control of the company and retain more of its equity. However, this control might come at the expense of building a more valuable company; you would probably end up with a less-capable founding team, lower quality investors, and a less experienced CEO, preventing the venture from reaching its full potential.

In contrast, the *second choice* in each decision would require you to give up more control and more equity, but it would enable you to attract more and higher-quality people who could help build the company's overall value.

Prof. Wasserman refers to these choices as “Rich versus King.”

King options are ones that will enable founders to keep control of key decisions (by keeping control of the CEO position and of the board) and, often, to keep more of the equity for themselves.

Rich options are ones that should enable the company (and, likewise, the value of the founder's equity stake) to become more valuable, but which often sideline the founder by taking away the CEO position and control over major decisions. In the 3 scenarios above, each of the first choices are “King” choices, each of the second choices are “Rich” choices. These tradeoffs are starkest in high-potential new ventures where the founder lacks many of the resources needed to build the venture and must attract those resources to the venture.

The matrix below captures what should result from the consistent selection of King or Rich options when making (1) co-founder decisions (scenario #1 above), (2) investor/board decisions (scenario #2), and (3) non-founder hiring/succession decisions (scenario #3).

The ideal scenario is one in which the founder can be both rich and king. (“**Rich and Regal**”, if you will.) It's easy for all of us to name some founders who achieved this ideal: Gates, Dell, Phil Knight, et al. However, these founders are by far the exception. (That is why they are so well known!) In an academic paper entitled “Rich versus King” (2006 *Academy of Management Best Paper Proceedings*) and a recent *Harvard Business Review* article entitled “The Founder's Dilemma” (February 2008), Prof. Wassermann establishes that most founders face the Rich-versus-King tradeoff, where the actions they take to build financial value can compromise their ability to control key decisions and to retain equity, and, conversely, the actions they take to keep control and equity harm their ability to gain financially.

His field research indicates that a critical factor in this tradeoff is the founder's motivation: Is the founder starting the venture in order to “run the show” and leave his or her imprint on the venture, or is the founder pursuing the good old profit motive? ***The key isn't that a particular Rich choice is better than the competing King choice (or vice versa), but how well each choice fits with the founder's motivation.*** Founders who make choices that are consistent with their motivations and goals (e.g. a King-motivated founder who doesn't give up a lot of equity

The Founder's Dilemma

		FINANCIAL GAINS	
		WELL BELOW POTENTIAL	CLOSE TO POTENTIAL
CONTROL OVER COMPANY	LITTLE	Failure	Rich
	COMPLETE	King	Exception

and decision-making control to co-founders, non-founder hires, or investors; a Rich-motivated founder who does give up equity and control to attract excellent co-founders, hires, and investors) should have a much better chance of achieving their goals.

It could be argued that the key isn't what *percentage* of equity the founder holds but the *value* of that equity stake (a “smaller slice of a larger pie” analogy), and that when equity value is considered, there won't be a Rich-versus-King tradeoff. In actuality, even when using an estimate for the current value of the founder's stake, Prof. Wasserman finds a significant tradeoff between that value and whether the founder has kept control of the CEO position and board.

This is how Prof. Wasserman sums up his findings in the HBR article:

Choosing between money and power allows entrepreneurs to come to grips with what success means to them. Founders who want to manage empires will not believe they are successes if they lose control, even if they end up rich. Conversely, founders who understand that their goal is to amass wealth will not view themselves as failures when they step down from the top job. Once they realize why they are turning entrepreneur, founders must, as the old Chinese proverb says, “decide on three things at the start: the rules of the games, the stakes and the quitting time.”

This article was compiled from articles and blogs written by Prof. Wasserman.

Noam Wasserman is an associate professor at Harvard Business School. His research focuses on the early choices faced by founders that have important long-term implications for them and their ventures. Dr. Wasserman received his PhD from Harvard University, his MBA from Harvard Business School (HBS), and undergraduate degrees in engineering and business from the University of Pennsylvania. Prior to coming to HBS, he was a principal and practice founder at American Management Systems, and he worked as a venture capital associate at Pioneer Capital in Boston. He writes a research blog at www.founderresearch.blogspot.com.



Green &

JCT Develops Solutions to Environmental Problems

by Channa Koppel

“Many people today assume mistakenly that the Earth is so big that we humans cannot possibly have any major impact on the way our planet's ecological system operates. That may have been true at one time, but it is not the case any more.”

Al Gore, 2006

For some time now, people have known that the trappings of modern civilization – its industries, transportation systems and huge energy consumption – are harming the planet, but in recent years environmental issues have begun to loom larger.

Early Warnings

Environmental concerns first began to attract public attention when the so-called “Killer Fog” hit London in 1952. A mass of cold air covered the city, preventing the smog created by coal-burning heaters from escaping. Daytime visibility was reduced to less than a foot and the air became so toxic that 2,000 people died over the course of four days. Although there had

price of a barrel of crude oil rose from \$5 to \$45, forcing Western countries to confront their petroleum dependence and earnestly search for alternative energy sources. Despite the good intentions, many governments and most industries were heavily invested in existing technologies and no readily viable options were at hand; it takes time to develop new technologies that are energy and cost efficient. Temporary fuel-cutting measures were enforced, but as soon as the embargo was lifted most of the industrialized world slid back into “business as usual” mode.

Natural Limits

Fossil fuels - oil, coal and natural gas - are problematic not only because of the pollution and resulting environmental damage they cause, but also because they are not renewable. Although the oil crisis of the 1970's has passed, our future supply of fossil fuel is naturally limited by the earth's reserves.

Since the Industrial Revolution, the use of fossil fuels has skyrocketed. Modern lives have become so dependent on automated devices that it is estimated that per capita energy consumption today is 20 times greater than it was 100 years ago. And whereas there were less than two billion people living on the planet in the year 1900, the current global population is over six and a half billion. Our energy outlays are enormous and multiplying exponentially. Some scientists estimate that if our usage continues to grow at the current rate, we will run out of petroleum in 50 years and coal in 200 years.

The cleanest, most renewable sources of energy appear in the first chapter of Genesis, in the description of the world's creation – water, wind and sun. They are free for the taking but it requires human ingenuity

been two similar incidents earlier – in Belgium and Pennsylvania, U.S.A. – the scale of this environmental disaster hit home.

In the aftermath of the London tragedy, a small but determined environmental movement took hold. Environmental research became more prevalent and citizens' groups began to lobby for clean air legislation. But change was slow in coming. Economic considerations got in the way; many industries were - and still are - built on the availability of cheap fossil fuels.

Then, during the OPEC oil embargo of 1973, the

Clean



to capture and tame them. Not all methods of green energy production are efficient, in terms of both cost and the amount of energy invested compared to the amount of energy produced. Two other alternative sources are problematic: biofuel, made from plants, often requires more energy to produce than it yields, and nuclear energy poses many safety and security risks.

At present, approximately 86% of the world's energy comes from burning fossil fuels. The European Commission has proposed that the European Union set a binding target of increasing the level of renewable energy in the EU's overall mix from less than 7% today to 20% by 2020. Europe and Asia have made significant strides in introducing green energy by giving financial incentives to businesses and private home owners who use alternative fuel sources and adopt energy-saving measures.

Innovative Solutions

The increased global demand for clean energy has led various foreign concerns to contact the experts at the Jerusalem College of Technology, which has an international reputation for important research in the field of solar energy and especially, photovoltaics. JCT scientists are currently developing a more efficient energy collecting system with the potential to advance solar energy use worldwide.

Most solar cells only collect the sun's energy on one side – the side facing the sun. In order to produce solar energy commercially, huge fields of solar panels must be erected. The reverse sides of most solar panels are unused. But, if designed properly, the reverse side can absorb the sun's rays that are reflected off the ground and use them to generate energy, too. Increasing the active area of a solar cell means it can generate 10 to 70% more energy per square foot depending on the application and therefore improve its commercial competitiveness.

JCT scientists, under the leadership of **Professor Naftali Eisenberg**, Director of JCT's **Non-Conventional Optics Center and Center for Photovoltaic Solar Energy**, are developing economically viable bi-facial silicon based solar cells and this has caught the attention of many foreign governments. European agencies, in particular, have been actively consulting with JCT scientists to find out how they can improve the efficiency

of their solar energy programs and make them more cost-effective.

Bi-facial solar cells are significant for outlying communities not connected to central power grids and they also have important applications in space, where they can power satellites and space ships more efficiently.

Another exciting application now being developed at JCT is the use of bi-facial solar cells in "smart dust." Smart dust devices are tiny wireless sensors, the size of sand specks that can detect light, movement, sound, temperature and other variables and then process and communicate the data wirelessly. The dust can be scattered in a battlefield to track enemy movements, in mines to detect radioactive elements or in hospital wards to chart changes in temperature and humidity.

Several research groups in the world have been working on this technology over the last few years, but they keep running aground of a basic technical problem: What happens when the batteries run out? This difficulty has plagued developers of smart dust and prevented it from becoming a practical technology.

Drawing on their solar cell expertise, JCT scientists have proposed powering smart dust with minuscule bifacial solar cells. Minimizing the size of a solar cell to the millimeter dimensions of smart dust is beyond the capability of most researchers, but JCT's engineers have made significant progress on this front.

For Israel, where sun is plentiful, solar energy is an obvious choice, but it is grossly under-utilized. Environmental ethics specialist **Akiva Wolff** says, "We need to develop ways to use solar energy to address our ongoing water shortage. Desalination plants today use huge amounts of fossil fuel energy, which is expensive and harmful to the environment. However, we've got plenty of sunshine – especially in the summer months, when water supplies are low. Using clean, renewable solar energy to make sea water drinkable would be a much more efficient use of our limited resources."

The Membrane Challenge

In recent years, there has been a growing interest in reusing treated wastewater, especially in areas where an abundant supply of water is lacking. At the same time, public health and environmental legislation is demanding more stringent compliance. This has led

to a growing need for enhanced treatment processes that will ensure unrestricted reuse of effluent for irrigation and environmentally safe disposal of industrial brine.

Dr. Amos Bick, a senior lecturer at JCT's Department of Industrial Engineering and Management, is currently carrying out research that is aimed at enhancing wastewater treatment processes through the use of membranes which remove particles, bacteria, viruses and cysts from groundwater, surface waters and wastewater.

The use of different membrane processes in combination with biological and biotechnological treatment processes has been developed intensively over the last decade. They have exhibited improved performance as well as a reduction of operating and maintenance expenses. Popular applications in use today are ultra-filtration for colloidal removal and reverse-osmosis high pressure process for seawater desalination as well as the high-flux low pressure reverse-osmosis systems for desalination. The Membrane BioReactor is the latest in this trend and several treatment systems based on this technology are already in operation.

A joint collaboration between researchers at JCT and Ben Gurion University aspires to take membrane treatment one step further. Together with his colleagues, Dr. Bick is producing a Membrane-Coupled Hybrid Growth BioReactor that uses a novel combination of mathematical modeling and environmental engineering expertise to optimize the present system. This will keep the membranes cleaner so that they last longer.

Dr. Bick comments, "It is hoped that a reduction in the amount of membrane scaling and fouling and its ability for producing economical water supply for unrestricted irrigation will result in a wastewater treatment process that will be both more efficient and environment friendly."

What are Greenhouse Gases?

Greenhouse gases are components of the atmosphere that cover the earth and help keep the sun's warmth in. This vital function, discovered by Joseph Fourier in 1824, is known as the greenhouse effect. Without the greenhouse effect, the Earth's mean surface temperature of 15 °C (59 °F) would drop to about -19 °C (-2 °F), too cold to support most life forms.

There are many greenhouse gases, including water vapor, carbon dioxide, methane, nitrous oxide, and ozone, that play an important part in our atmosphere. When people talk about the dangers of greenhouse gases, the specific problem they are referring to is that concentrations of certain greenhouse gases, notably carbon dioxide, have increased over time as a result of human activity.

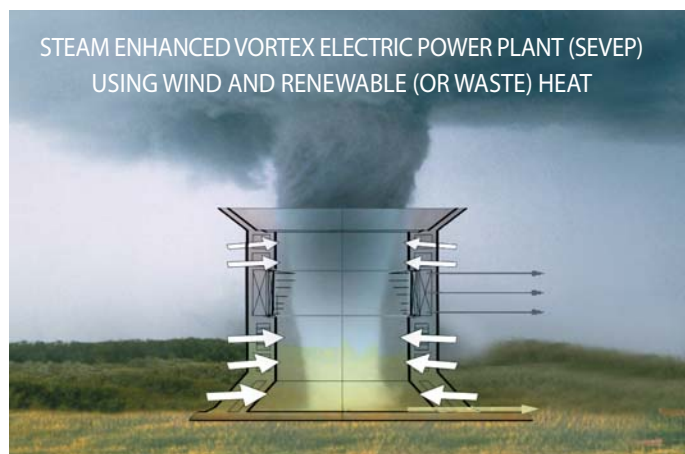
High concentrations of carbon dioxide in the atmosphere can lead to an enhanced greenhouse effect which prevents heat from escaping the atmosphere. The result is global warming, a dangerous phenomenon with the potential to cause changes in weather patterns and sea levels that can threaten human and animal life.

The Answer is Blowing in the Wind

Another innovative project at JCT aims to manufacture clean energy by combining natural elements – air, water and sun – to produce wind.

People have been harnessing wind energy with windmills for centuries, but wind is generally considered an unreliable energy source; it is highly variable and not always available in large, commercial quantities. The greatest wind energy is to be found in the epicenter, or eye, of the tornado. However, tornadoes are a highly dangerous, destructive and uncontrollable force.

Professor Solomon Kaploun, a foremost designer of turbines for electric generation, has been investigating an unusual and creative solution: the production of an artificial analog to a tornado, to be contained within a tower approximately 100 meters high. Strategically placed steam and air inlets would produce high velocity wind vortices and a turbine at the top would convert the wind power into electricity.



The "Power Tower" itself would be powered by renewable solar energy or waste heat. For example, the steam used to create the tornado would be generated from solar heated ponds or banks of solar collectors so as to cause minimal environmental damage.

JCT's former President, **Zvi Weinberger**, current Chairman of the Applied Physics Department says, "Although the idea is at the cutting edge of present technology, its scientific foundations, developed from the principles of the natural tornado, have been demonstrated. Its implementation will be difficult – taming a tornado within the confines of a hundred meter high tower presents immense engineering challenges. When successful, though, it may solve energy problems – and perhaps even political problems – for many countries."

JCT is proud to be developing technologies that help keep our air, water and soil clean. It will no doubt take many decades for the world to wean itself off harmful fossil fuels. Much depends on the determination of environmentally-concerned individuals, organizations and governments, but it is the work of scientists like those at JCT that makes a clean environment possible.

Judaism and the Environment

by Akiva Wolff

The Torah tells us that man was created “*b’Tzelem Elokim*” – in the image of G-d¹. But how can something be ‘in the image’ of an All-Perfect Being with no physicality? According to one interpretation, this refers to man’s creative intelligence. In the words of Rabbi Joseph B. Soloveitchik²: *Man’s likeness to The Creator expresses itself in man’s striving and ability to be a creator*. While only the Creator can create an entire universe *ex nihilo*, man’s ability to create lies in the intellectual realm. Man can create *Chidushei Torah* (Torah insights). Man can also create new and better ways to utilize the physical resources around him.

This becomes especially relevant today with the awesome challenges and opportunities presented by environmental problems such as climate change (see page 12 in this issue). Our climate is becoming warmer and less stable. The possible ramifications of these changes on the world around us are truly daunting.

A threat like climate change presents a tremendous opportunity for the harnessing of man’s creative intelligence. It was human innovation in the way we utilize the earth’s limited resources that allowed humanity to progress over the past two centuries from less than 1 billion people struggling to survive at a standard of living far below current poverty levels, and an average lifespan of less than 50 years to a population of over 6.5 billion, with most living longer, healthier, more productive lives than ever before. Now the focus of man’s intellectual creativity is shifting to learning to improve the quality of our lives and our environment in a sustainable way.

The Torah teaches how to improve the quality of our lives on an individual and societal level. Lest we think that improving the quality of our environment is outside the purview of Torah, we have the words of R. Aryeh Carmell³: *We see that the Rabbis considered the safety of the environment as well within the province of Torah... This is in accordance with their view of Torah as the Divine Law governing man and his environment in the widest sense... It follows that anything which bears on the health and well-being of human beings is ipso facto of spiritual import and within the sphere of Torah*.

There are many areas of Jewish law relevant to sustainability and environmental protection (see for example, JCT Perspective Vol. 6). One example is the prohibition of *bal tashchit* (waste), which proscribes using more fuel or other resources than necessary even for the performance of a mitzvah⁴ – all the more so for other pursuits. In today’s world, where *per capita energy* consumption is over twenty times greater than it was just 200 years ago, and where the environmental effects of this consumption (including climate change)

are becoming increasingly evident - how much more so we must we try to avoid wasting energy.

The mitzvah of *bal tashchit* originates in Devarim 20:19: *When you lay siege to a city for many days to wage war against it to seize it, don’t destroy its tree, by swinging an axe against it, Instead you should eat from it, rather than cut it down - for man is like a tree of the field – to come against it in a siege*.

Remarkably, in these verses, the Torah compares man to a ‘tree of the field’. The Ibn Ezra, based on the Sifrei⁵, interprets this verse as “*Because a man is a tree of the field*” teaches that the life of a person is dependent on the tree. Indeed, trees provide a myriad of benefits to man, including the production of edible fruits, medicines, wood, shading, soil protection, and, of more recent significance, the sequestration of carbon dioxide (one of the main greenhouse gases thought to be contributing to climate change). It should be of no surprise, therefore, that planting and protecting trees is given great importance in the mitzvah of *Yishuv Eretz Yisrael* (settling of Israel),⁶ which also relates to sustainability and environmental protection.

The comparison between Man and trees can be interpreted in another way that especially relates to our discussion. Trees have the amazing ability to transform ‘ordinary’ materials of little value, such as sunlight, water, carbon dioxide and soil into valuable resources, in the form of fruits and wood, as well as other benefits like shade and carbon sequestration. In a similar way, man,

through his creative intelligence, is able to transform a wide and growing array of ‘ordinary’ materials into valuable and sustainable benefits for himself, his society, and for the entire world. For example, at a time when the harmful effects of reliance on carbon-based energy sources (such as coal and oil) are becoming all too apparent, we are learning to produce sustainable and affordable energy from the sun and wind. Today more than ever, we need to develop and harness the ‘Tzelem Elokim’ - creative intelligence that distinguishes man in G-d’s creation.

¹ Genesis 1:27, 9:6.

² R. Joseph B. Soloveitchik, *The Lonely Man of Faith* (New York, 1992), p. 12.

³ R. Aryeh Carmell, “Judaism and the quality of the environment,” *Challenge - Torah views on science and its problems*, 2nd ed. (Jerusalem, 1976), p. 505.

⁴ B.T. Shabbat 78b

⁵ Sifrei on the book of Deuteronomy, piska 203.

⁶ See for example Shulchan Aruch, Choshen Mishpot, 175:21

Akiva Wolff is Director of the Environmental Responsibility Unit at the Business Ethics Center of Jerusalem on the JCT - Machon Lev Campus.

Faculty Profile

Dr. Avi Kay is the newly-appointed Head of JCT's **Technology Management & Marketing (TMM) Department** and directs the **Mark Schuman Center for Entrepreneurship** where JCT students are given the opportunity to develop skills, aptitudes and the abilities needed in today's business, industrial and entrepreneurship worlds.

Kay's vision for the TMM department includes specializations such as Human Resource Management, Public Relations and Financial Investments. "One of our main goals at JCT is to produce graduates who will take leading positions in the business world in Israel. This requires an educational experience which combines both an understanding of the existing academic knowledge in the area along with the inculcation of marketable professional skills".

As part of this idea, Kay was behind a recent international conference at JCT addressing search engine optimization. Kay notes that the TMM department exists "in order to prepare students to understand the business of technology and how technology affects business."

As a proponent of academic programs for the Haredi population in Israel, Kay has combined his experience in educational programming for Haredim with extensive research on employment and academization trends within this community. This interest serves him well at JCT which has undertaken to provide a suitable framework for people from this community seeking an academic education.

Characteristically, Kay's interest is both academic and pragmatic. His research focuses on Haredi socialization in academic studies and in the workforce. He points out that in twenty years; twenty percent of the adult population in Israel will be Haredi. "It is imperative that a working model be created to support both formal training and

socialization processes towards gainful employment for this community, in order to both allow the community to realize its human capital and to contribute to the continued growth of the Israeli economy".

Kay notes that the situation is a complex one and involves cultural, religious and political issues. "It's not enough to train people. You have to make sure they go through a socialization process which prepares them for the reality they will be facing such as interactions with people from different cultures, unwritten rules and expectations at the workplace and the balancing of work/life challenges."

Kay sees the trend of separate Haredi workplaces as a bridge towards full involvement in the workforce. With that, he adds, "It seems obvious that this model cannot be sustained over time".

Kay sees a change in Haredi society with regard to women as well. "Where you once had a very narrow career path, geared solely towards making a living, you now have more choices open to women. While for many, the main concern is to make a living, increasing numbers of women see the employment sphere as one in which they can achieve a sense of fulfillment as well as a career".

Kay, who was born in Detroit in 1958, decided to make Aliya when he was eight: "My father's entire extended family was murdered in the Holocaust. I understood even then that the existence of a strong Jewish state could have prevented some part of that tragedy." Kay made Aliya in 1981, after completing his Bachelor's degree in psychology at the University of Michigan.

Kay, who resides in Jerusalem is married to Hedva, an architect, and takes pride in the fact that while he may be a "relative" newcomer to Israel, his three children are eighth generation Israelis.



Dr. Avi Kay

Student Profile

Micha Danziger wants to know how the world works. That is how he came to be working with Prof. Ya'akov Friedman, JCT's former Rector and current head of Research, on a problem that Einstein tried to solve.

"I was so fascinated by the problems posed in the Math and Physics courses I was taking, I would go up to lecturers after class was over and ask them whether there was any work being done on these topics. I kept asking until Prof. Friedman agreed to involve me in his research".



Micha Danziger

Together with Prof. Friedman, Micha will be presenting a paper on a new Mathematical Model to describe the behavior of a particle in an electromagnetic field, at MIT's renowned PIERS conference.

"This model was accepted for presentation because it represents a breakthrough in the way we solve physics problems. Our model gives instant solutions to problems that previously covered entire pages of textbooks".

What drives Micha's research is an intense desire to comprehend the world he lives in: "The Rambam is very clear in his opinion that one must strive to understand the world, as an expression of love of the Creator. He goes so far as to say that one who has not delved into natural phenomena is lacking in his or her fulfillment of their faith. G-d created a world that is possible for humans to

understand - it's a commandment".

That is precisely what Micha wants to do; he wants to translate lofty philosophical ideas into empirical models that can be tested. "If you believe, like I do, that the world revolves on a central axis, and operates accordingly, then you want to try and discover it."

Discovering it is something that has eluded scientists for many years, resulting in two types of physics: relativity and quantum, which occasionally contradict each other.

Micha, himself the son of a scientist, knows it's a long way to a complete solution, but describes his research as a journey. "You want to get from point A to B, but having said that, the journey and the discoveries along the way are what count".

Micha will be graduating from JCT at the end of this year with a B.Sc. in Medical Engineering. He will continue his research with Prof. Friedman and Prof. Sandler, who is doing research on protein folding. He hopes to go on to a PhD program in Applied Mathematics, using his current research.

Micha has been in JCT's Excellence Program for Gifted Students since his second year. His first year was spent in the English Speakers Program (ESP).

"ESP was a perfect solution for me. I wanted to come to Israel but I needed something that was not only a Yeshiva program". Micha's family knew Prof. Bodenheimer from the time he was on a Sabbatical in Los Angeles, their hometown, and so the connection was made.

Micha has recently married Rachel Sharansky daughter of Avital and Natan Sharansky, and has subsequently made Aliya.

ON CAMPUS

Shabbat Respite for Families from Sderot

■ JCT has once again opened its doors to families seeking refuge from the ongoing bombardment of Kassam missiles. Every Shabbat families from Sderot stay at JCT's Machon Lev campus where they rest and relax, far away from the continuous barrage that has been rocking the south of the country. JCT's hospitality may well have saved lives – one of the families returned home to find that their home had received a direct hit from a missile causing extensive damage.

Harvard Entrepreneurship Expert at JCT

■ As part of its efforts to increase both interest in and knowledge concerning entrepreneurship in the greater Jerusalem area, the **Mark Schuman Center for Entrepreneurship** hosted



Professor Noam Wasserman

Professor Noam Wasserman of the Harvard Business School. Professor Wasserman is an internationally known expert on entrepreneurship who has received numerous academic and professional awards for his research focusing primarily on issues related to the behaviors and preferences of founders in the early stages of business ventures. During his stay at JCT in March, Professor Wasserman lectured to a variety of classes in his area of expertise and also taught case studies that have been published in the Harvard Business Review. In addition, Professor Wasserman held a lecture for local entrepreneurs to discuss similarities and differences between entrepreneurship in the United States and in Israel.

During his visit Professor Wasserman led a panel discussion for both JCT faculty and faculty from other Israeli institutions who are engaged in research concerning organizations and entrepreneurship.

Sphinncon Israel 2008

■ JCT's **Department of Technological Management and Marketing (TMM)** recently hosted the first **Search Engine Optimilization Conference** ever held in Israel.

The conference was attended by over 170 people with leading business and technical figures in the field from both Israel and abroad, including Barry Schwartz of Rusty Brick, who brought the conference to Israel and Avi Wilensky of Promediacorp, both from New York, Eli Feldblum of RankAbove, Alon Sheafer of

Kenshoo, Ofir Cohen of Compucall and Tal Cohen the Industry Manager for Google Israel. The main topic addressed at the conference were the ways in which those engaged in marketing and information dissemination via the internet can increase the effectiveness of their messages. The conference topic is closely related to TMM's vision of increasing knowledge regarding the business of technology and how technology affects business.

ISO 9001 Accreditation

■ As part of JCT's efforts to ensure quality service, additional departments at JCT have received the highly respected ISO 9001 accreditation. The newly accredited departments are Human Resources, Purchasing and Organizational Development. This is in addition to the existing ISO standard in the Office of Student Affairs, which has now been upgraded to be compatible with the new ISO 9001:2000 standard.

JCT is the second academic institution in Israel (after Haifa University) to adopt the ISO 9001:2000 standard which is a quality assurance standard in the management field that encourages the adoption of a process oriented approach, to improve customer satisfaction.

Recruitment Fairs

■ Two leading companies recently held recruitment fairs on the JCT campus in conjunction with the Department for Industry Relations. **Microsoft Israel** sent representatives to meet students from the Department of Computer Science whilst **Elbit Systems** met with students from Software Engineering, Medical Engineering,

Publications

■ The Jerusalem College of Technology has recently published a book by **Rabbi Yehuda Zoldan**, a Ra'm in the Bet Midrash of Machon Lev called *Shvut Yehuda veYisrael*. The book is a collection of essays that deal with public issues and social questions that have arisen on the national agenda in recent years in three areas concerning the Land of Israel - Gush Katif; Leadership and Army; Community and Society.

■ **Dr. Shlomo Engelberg's** latest book, *Digital Signal Processing: an Experimental Approach*, has been published by Springer. During 2007, Shlomo Engelberg, Head of the Electronics Department, was appointed Associate Editor-in-Chief of the IEEE Instrumentation and Measurement Magazine.

Electro-optic Engineering and Electronic Engineering departments. JCT students are trained in a variety of desirable cutting-edge professions, and have a well-earned reputation for being valuable potential employees, attracting the consideration of top notch companies.

Scholarships

■ Scholarships for Academic Excellence were awarded to 230 students at ceremonies held recently at JCT. For the second year running, the pharmaceutical company **Teva** through the **Jerusalem Foundation**, **RAD**, the **Kemach Fund** and **Halamish Program** have awarded scholarships to students from the Haredi community whilst the **Jacob Safra Foundation** awarded scholarships (which have been pledged for three years)

for Haredi and Ethiopian students.

■ JCT was recently honored by the visit of France's Chief Rabbi **Yosef Haim Sitruk**. The Beit Midrash was filled to capacity with students and faculty who came to hear the Chief Rabbi speak on *Torah im derech erez*. Following his inspiring talk Rabbi Sitruk met with JCT administration and expressed appreciation of the work being done "at this prestigious and important institution".



Graduate News

Top Accounting Firm opens Branch for JCT Graduates

The **BDO International** accounting firm and financial business consulting franchise, one of the "big five" in Israel, has launched a new branch in Bnei Brak. This branch will employ only Haredi women, almost all of whom are graduates of JCT's **Lustig Program** in Ramat Gan.

This venture was created when the BDO franchise discovered the great potential in Lustig graduates, due to their professional excellence and high ethical standards. The Bnei Brak branch started operating in January 2008 with 15 workers, with plans to increase its staff to 25 workers over the year as more graduates join.

This unique branch is instrumental for Lustig in its placement efforts, as the school makes a great effort to place its graduates in an environment that is "close to home" both physically and culturally. The distance and working hours are crucial as most of them are mothers of young and growing families.

The women will benefit from professional training and supervision and have the opportunity to specialize in hi-tech,

finances, industry and real estate. Unlike some companies which employ only Haredi women, BDO will be employing these women at their usual pay scale. To launch this new venture, BDO Ziv-Haft held a reception with 300 participants from the Bnei Brak business community. The evening was attended by former **Chief Rabbi Yisrael Meir Lau**, **Mr. Danny Margalit**, BDO Ziv-Haft Managing Partner, **Rav Yaakov Asher**, Deputy Mayor of Bnei Brak, BDO International Chairman **Jeremy Newman**, who came especially from Britain, **Dr. Shimon Weiss**, JCT's Director General, **Prof. Herzl Fattal**, Head of JCT's Accounting and Information Systems Department and **Rabbi Dr. Zvi Ilani**, Administrative Director of the Lustig Program.

"Hevre" site sold to Global Networks

Hevre, the first Israeli social networking site, has sold seventy percent of its stock to Global networks for 20 million shekels. The highly successful site was founded in 2001 by JCT graduate **Shlomi Unger** and his partner Shlomo Waldman.

Shlomi, who lives in Rehovot with his wife and five children, graduated from **Machon Lev** in 1997 with a degree in Accounting and Information Systems. After completing his studies, Shlomi established the **Mahshava** software company and went on to study for a Masters degree in Business Administration.

"I came to Machon Lev because I wanted to combine Torah learning with professional and academic studies," replies Shlomi, when asked why he chose to study at JCT. "I have fond memories of late-night studies, with a group of us sitting around a pizza pie", he adds.

Now that Hevre has been sold, Shlomi plans to focus on the global market. "After seven years of managing a profitable initiative, we decided to let go of the reins and focus on overseas initiatives." He knows it is not going to be easy. "We received thousands of emails from users who found their friends from 30 or 40 years back. It will be a challenge to repeat such an exciting experience with any new internet initiative." says Shlomi.



From L-R: Dr. Shimon Weiss, Prof. Herzl Fattal, Jeremy Newman, Rabbi Yisrael Meir Lau, Mr. Danny Margalit, Rabbi Dr. Zvi Ilani

New English Speakers' Program Launched at Machon Tal



“Give a man a fish and he will eat for a day; teach a man to fish and he will eat for a lifetime” quotes **Abby Gershowitz**, one of the first students in the **English Speakers' Program (ESP)** at JCT's **Machon Tal**. “This is a phrase which I believe aptly describes this special program which, in accordance with the ideology of the whole institution, strives to provide my friends and myself with the necessary tools to become successful religious Jewish women in modern Israel and the Jewish world.”

“As pioneers of the program, we already see the difference between this and other one-year post high-school programs. The unique combination of the *Kodesh* (Jewish Studies) and academic courses on the curriculum can be characterized as beneficial and invaluable. For example, the class devoted to guiding us around a Jewish library, teaching us when and how to use the various Jewish sources are skills which will no doubt serve us well in the future. The selection of high-tech academic courses offered, such as Management & Marketing and Computer Programming, are all subjects that will be advantageous in almost every future career area.”

In addition to an intensive program of Torah learning and academic studies, the English Speakers' Program also offers a comprehensive *Ulpan* class that gives the girls the confidence to speak Hebrew and improve their conversational and academic vocabulary. The girls also enjoy extra-curricular events such as trips around the country which greatly add to, and enhance the year in Israel.

“As a group made up of new and potential *Olim*, we have been immersed in the local culture at a comfortable pace, living together in the dormitory with the Israeli girls in the heart of Jerusalem. The fact, that we live, study and mix socially together with the rest of the Machon Tal students, has greatly enriched our lives and experiences here.” continues Abby, from Des Moines, Iowa. In fact all the girls in this year's program intend to stay in Israel, with several planning to continue their studies next year at Machon Tal.

“Moving somewhere, especially alone, is a difficult and highly emotional transition, but **Mrs. Linda Deroan**, Director of the Machon Tal program, together with the rest of the staff, have helped us acclimatize to our new environment by treating us as they would their own; inviting us to their homes for *Shabbatot and Chagim*, and being there for us at all times.”

Summing up the year, Abby concludes, “With important lessons in hand, good memories in our hearts and new friends by our sides, we are ready and equipped to continue on our journeys.”

JCT runs programs for English Speakers at both Machon Lev and Machon Tal. For more information please contact **Rabbi Yehoshua Geller (Machon Lev) - 972 2 6751011 or Linda Deroan (Machon Tal) - 972 2 6547238 or email espw@jct.ac.il.**

Jerusalem Science Quiz in Chicago

Davida Wachstock of Block Yeshiva in St. Louis won First Prize in the 5th Annual Jerusalem Science Contest, 2008 – Chidon HaMada HaYerushalmi, 5768, held in Chicago last month. Second prize went to Ahuva Fox, also from the Block Yeshiva in St. Louis.

Nearly 80 high school junior and senior students competed in the nationwide contest. Only nine students qualified for the finals and competed in the oral question and answer session at

the finale. The contest is a joint project sponsored by the Jerusalem College of Technology and Integrated DNA Technologies, Inc. to foster excellence in scientific pursuits together with dedication to Torah studies and support of Israel.

The winner received a four-year scholarship to JCT and \$1,000 in cash. The second place finalist also received \$1,000 and both finalists and five additional top-scoring students all won a 10-day

trip to Israel in early June. The remaining twelve won cash prizes commensurate with their final scores.

Participants follow an arduous four-month schedule of study, lectures and tests to achieve mastery in the contest's annual theme (This year – forensic science). In addition to an introductory college level course in the science, the students augment their studies with a related Judaic curriculum.

The contest concluded on March 11th with a public verbal examination at Integrated DNA's auditorium in Skokie, IL. In addition to the general public, professionals in science and education packed the room to question, judge and enjoy the lively and erudite responses offered by the contestants to difficult problems posed in Forensic Science and Judaism.

After open greetings by **Dr. Yosef Walder**, President and CEO of **Integrated DNA**, the contestants were verbally quizzed by the community's best minds in science and religion. After a short recess for refreshments to tally the final scores, the winners were announced and the assembly addressed by **Rabbi Gedalia Dov Schwartz**, (Head of the Rabbinical Council of America's National Beit Din & Head of the Chicago Rabbinical Council's Beit Din.) The festivities concluded with the prayer for the State of Israel. MC of the evening was **Rabbi Heschel Weiner**, Integrated DNA's Director of Educational Outreach and

administrator of the contest.

This year's contestants represented a range of participating U.S. high schools from nine states coast to coast. All Jewish high schools are invited to participate in this one-of-a-kind Torah and Science contest for eleventh and twelfth graders.



From R- L: Rabbi Mordechai Raizman, Dr. Joseph Walder, Dr. Arthur Friedman, Rabbi Heschel Weiner with contestants

The Annual Conference on Torah and Science

The Annual Conference on Torah and Science has become a permanent feature on the Israeli Torah landscape. The Conference venue alternates yearly between the Jerusalem College of Technology and Bar-Ilan University. The 15th Conference was held before Pesach at JCT's Machon Lev.

A highlight of the Conference was the awarding of the **Professor Ze'ev Lev Prize in Science and Jewish Values** which has been established by the Jerusalem College of Technology to honor the memory and achievements of JCT's Founder and first President. The Prize is awarded in the area of Science and Jewish values, areas close to the heart and professional work of Prof. Lev. This year the prize was awarded to **Rabbi Yisrael Rozen, eng.** in recognition of his outstanding achievements.

Rabbi Rozen, one of JCT's first graduates, founded the **Zomet Institute** in 1976 and heads it until this



day. The Zomet Institute, a non-profit, public foundation which deals with Judaism and Technology, has developed many Techno-Halachic applications and inventions. also Editor of **Tchumin**, published annually, dealing with Torah, State and Society, So far 25 volumes have been published. He is Editor of **Shabbat BeShabbato**, a well-established weekly Parsha sheet in Israel and has published books, research and essays on Halacha and on current events.

Rabbi Rozen was born in Tel Aviv in 1941 and is married with 5 children who live in Israel. He learnt at **Yeshivat Kerem B'Yavneh** for 10 years and served in the IDF as one of its first Hesder soldiers before completing a course to become an officer in the Rabbinic Corps where he served as a Battalion Rabbi. Rabbi Rozen studied at **JCT** in its early years and graduated with a degree in Electronic Engineering.

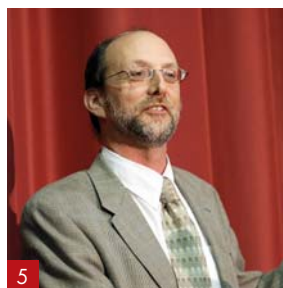
JCT GLOBAL

New York

Israel's Leading Businessman & Philanthropist, Eitan Wertheimer Headlines Benefit Luncheon for JCT

■ **Friends of the Jerusalem College of Technology** hosted over 100 friends and supporters at a recent luncheon featuring Israel's leading businessman and philanthropist, **Eitan Wertheimer**, the Chairman of Iscar, a company founded in the 1950s that is today a leading global innovator of metal cutting tools and techniques for machining. Mr. Wertheimer became a household name outside of Israel in 2006 when Warren Buffet, Chairman of Berkshire Hathaway, purchased an 80% stake in Iscar.

During the Luncheon, Mr. Wertheimer lauded JCT for its unique mission, programs and role in Israeli education and the economic arenas. *"JCT, to me, is one of the most critical elements of education in Israel,"* he noted. *"In Israel, many institutions teach people to 'know,' not how to 'do.' JCT does both."*



1. From L – R: General Manager/VP of NDS Americas, Dov Rubin, Eitan Wertheimer and JCT President, Prof. Joseph Bodenheimer
2. From L – R: U.S. Friends of JCT President Elly Libin, Eitan Wertheimer, Rob Bernstein and Rabbi Moshe Kinderlehrer
3. From L – R: Eitan Wertheimer, Rori Cassirer and Bob Webb
4. Yehudit and Dr. Kloni Lieberman with Reuven Surkis, JCT's V.P. at the Hans Bachrach Memorial Oration
5. Herb Keinon delivering the Hans Bachrach Memorial Oration

He also praised JCT for its efforts in educating and working with the ultra-Orthodox (Haredi) community. Increasing the participation rate of Haredi men in the Israeli economy is one of his main goal and JCT is a vital partner in this venture. He noted that the program he started a few years ago aimed at the haredi community – “**Atidim Chalamish**” - already has over 100 haredi students studying for degrees in engineering, optics, computer science, accounting & business management – and JCT has the largest single share of these students. He noted proudly: “*Today we have 102 (students), and in a year or two, if we don’t make too many mistakes, we will be talking about 1,000 or 2,000 students,*” he said.

He also talked about his fascination with, and excitement about JCT. He explained: “*I was completely fascinated when I came to JCT for the first time a few years ago...JCT has a few unique areas. First, thanks to its founder, Dr. Ze’ev Lev, they are the leader in the area of electro-optics which is one of the most important professions in today’s high tech world...JCT also has the world’s only Women’s School of Engineering,*” (referring to JCT’s Machon Tal).

He concluded his presentation by speaking about the sale of his company in 2006, and provided additional insights into the Israeli economic scene. He concluded his remarks by saying, “*I urge all of you to join hands in supporting JCT...Everyone can make a difference.*”

The Luncheon, held at the Sheraton New York Hotel & Towers was attended by JCT supporters from virtually every industry. Sponsors of the Luncheon were global law firm, **Troutman Sanders LLP**, whose Chairman and Managing Partner, Bob Webb, delivered introductory remarks during the program. **Ed Low** of Low & Sons, **NDS** (a leading global media technology company in Jerusalem, whose founders are JCT graduates), and **SATEC** (a power industry company also with roots in Israel.)

After his presentation, JCT President, Professor Joseph Bodenheimer, Friends of JCT President, Elly Libin, and JCT board member, Robert Bernstein, made a special presentation to Mr. Wertheimer, thanking him for all his efforts on behalf of JCT, the State of Israel, and the Jewish People.

Friends of JCT Board News

■ **Louis “Elly” Libin** has been elected President of the US Friends of the Jerusalem College of Technology. Mr. Libin is the Founder and President of **Broad Comm, Inc.**; an internationally

renowned consulting group specializing in wireless and digital technology, and has been working with Israeli client companies for almost ten years.

■ The newest Board member is **Robert S. Bernstein**, a trial attorney and litigator and partner at McCarter English. His areas of experience include Real Estate related litigation with an emphasis on the construction industry, and the jewelry industry.

Canada

■ **Professor Joseph Bodenheimer**, President of JCT, spoke recently to a capacity crowd at the Thornhill Community Shul/Aish HaTorah in Toronto. He addressed the challenges of Torah and Science in the encounter with modernity. Later in the day, Professor Bodenheimer gave a shiur to *Ivrit* speakers titled “What Did Chazal know About Science?” at one of the largest orthodox congregations in North America, BAYT, or Beth Avraham Yosef, which was followed by a *dvar Torah* to the entire congregation during *Seuda Shlishit*.

■ Canadian Friends of JCT has created a Professional Advisory Board for the Nursing School at Machon Tal. Among those who have already joined the board are some of the most senior and world renowned professionals in the nursing and medical fields.

Australia

This year marked the **10th Hans Bachrach Memorial Oration**, jointly sponsored by the Jerusalem College of Technology and AIJAC. The Oration held on February 24th in Melbourne featured **Herb Keinon**, the Jerusalem Post diplomatic correspondent as the speaker. **Mr. Keinon** spoke on *Israel at 60: The Zionist Dream Adapts to a Confronting Middle East*. Over 400 people attended the event, including the daughter and son-in-law of **Hans z”l and Gini Bachrach**, **Yehudit and Dr. Kloni Lieberman**, a JCT graduate. JCT’s Vice President for Development and External Affairs, **Reuven Surkis**, also attended and spoke about recent developments at the College.

JCT wishes a Happy Pesach to all our Friends and Supporters around the World

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Jerusalem College of Technology

SDEROT – JERUSALEM

Pesach 5768-2008

Please join us in helping families from Sderot celebrate Pesach at the JCT-Machon Lev campus – away from the danger of missile bombardment.

JCT is opening its campus facilities for families from Sderot for the week of Pesach.

The cost of our initiative is great and we turn to our friends throughout the world to help by taking part in this mitzvah!

Donations can be sent to the Jerusalem College of Technology's offices throughout the world.

JERUSALEM •

• SDEROT

