

BGU now

WINTER 2009/10

אוניברסיטת בן-גוריון בנגב BEN-GURION UNIVERSITY OF THE NEGEV

It's Crystal Clear (page 42)

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From the President

Dear Friends,

The new academic year opened with a record 19,200 students registered at Ben-Gurion University of the Negev. My greatest pleasure is walking around the Marcus Family Campus, seeing throngs of students out and about, filled with the desire to learn and hopes for the future.



Whereas 40 years ago, the pioneering students at the University of the Negev had to make do with storefronts as classrooms, today's student body benefits from one of the most beautiful and modern campuses in Israel. Just this month we dedicated the new Caroline House at the Faculty of Health Sciences, providing a comfortable space for our health sciences students, the Medical School for International Health and the Health Sciences Student Association (ASRN). The magnificent building to house the Ilse Katz Institute for Nanoscale Science and Technology is also nearing completion, as is the Biomedical Resources Facility.

Over the past 40 years, BGU has transformed itself into a world-class center for cutting edge research with some of the most advanced laboratories in Israel and, in some cases, the world. We have expanded our collaborative agreements with many industry giants such as Deutsche Telekom, Exxon-Mobil and Microsoft, and continue to increase our success in winning competitive research grants.

This momentum is beginning to take real shape in the form of the Advanced Technologies Park adjacent to the campus. Scheduled to open in 2011, the ATP will be the "green and clean" anchor for technology companies to leverage the research at BGU, generating vital income for the University and employment opportunities .

It is truly gratifying to watch as some of BGU's founding principles go from being outside the consensus to the forefront of modern thinking. Two examples: when the Jacob Blaustein Institutes for Desert Research were created, environmental topics were considered interesting but not practical. Today, solar energy, water technologies and sustainable living are the main items on the global agenda. Similarly, when the Faculty of Health Sciences introduced the idea of community-based healthcare, it was considered outside the pale. Today, the Joyce and Irving Goldman Medical School has earned an international reputation for its pioneering approach that is now a model for multicultural medicine around the world.

None of this could have been made possible without you, our dear friends. Your encouragement has allowed us – sometimes in the most challenging of situations – to continue to grow and flourish. Thanks to your friendship and support, Ben-Gurion University of the Negev has become an internationally recognized institution of higher education and research and for this we are forever thankful.

On November 23, 2009, the University will mark Ben-Gurion Day by recognizing several important personalities from Israel and abroad. This occasion also marks the start of our 40th anniversary celebrations, which will be the main theme of our 40th Annual Board of Governors Meeting to take place May 9 - 11, 2010 inclusive. I look forward to seeing you here.

Until then, I remain sincerely yours,

A handwritten signature in blue ink, reading "Rivka Carmi". The signature is fluid and cursive, with a prominent initial "R" and a long, sweeping underline.

Prof. Rivka Carmi, M.D.
President

Dr. Galia Avidan

Facing the Brain

Dr. Galia Avidan wanted to study psychology as an undergraduate student, but when she looked into the possibility of doing a double major together with biology, she was told that it was impossible. “So I settled for biology alone, and loved it. I was fascinated with brain research from the very beginning, and studied it within the sphere of the life sciences.”

After completing her Bachelors degree at Tel Aviv University, Avidan enrolled in an interdisciplinary direct doctoral program at the Hebrew University of Jerusalem that focused on the brain. “I wanted to study the brain from an interdisciplinary outlook. The brain is so complicated that you need to study it from the perspectives of many different fields: computer science, physics, physiology – and, of course, psychology!”

It was then that Avidan became intrigued by how the brain processes visual information. She continued her post-doctoral research in the Department of Psychology at Carnegie Mellon University in the USA. “I became more and more interested in the way the brain processes the human face,” she explains.

Avidan joined BGU’s Department of Psychology in 2006 and is now conducting research in the subject of facial recognition. “There is a serious, ongoing debate in the field regarding the visual processing of the human face,” she explains. “Is this just a mere subset of object recognition, or are human faces so important that their images are processed differently in the brain?”

“Think of how much information we glean from the human face, as opposed

to, say, an automobile. Viewing a car can tell us its color, brand or age. But observing the human face provides us with a lot more information than age or gender. A person’s face often gives us clues about their intelligence or self-confidence and whether that person is open to social communication with us.

We may deduce that a person is in a good mood or angry or distracted. Facial recognition is an extremely complex task, and no computer program even approaches the recognition abilities that we humans have. How does the brain extract all that information? And is the process different for faces than for other objects?”



Observing the human face provides us with a lot more information than age or gender. A person’s face often gives us clues about their intelligence or self-confidence and whether that person is open to social communication with us

Initially, Avidan’s research focused on studying the brains of healthy volunteers by using functional MRI (fMRI), but she then turned to people who are impaired in the skill of facial recognition.

The inability to recognize faces is a condition called prosopagnosia. She is studying a form of it called “acquired prosopagnosia” which is caused by damage to specific regions of the brain.

“Individuals with acquired prosopagnosia have no problems with face recognition until they undergo brain damage that causes them to become so impaired that they may fail to recognize even close family members or themselves in the mirror. This deficit has been known for many years and studies have been carried out to infer what brain structures are necessary for face recognition in the healthy brain. In recent years, with the advent of fMRI, it has been shown that the region most consistently found to be damaged in acquired prosopagnosia – the fusiform gyrus in the right hemisphere – shows consistent face selective activation in healthy individuals. In fact, this critical area has been labeled the fusiform face area, or FFA, and was suggested to serve as a critical face-processing module in the human brain.”

Avidan explains that only recently has more attention been paid to another form of prosopagnosia called congenital prosopagnosia (CP), or the inability to recognize faces from birth, without any indication of brain injury. There is some evidence that this impairment may be genetic, as it runs in families and is estimated to affect two percent of the population. But when the brains of people with this deficit were studied



under fMRI scanners, they were found to have normal activation in the FFA. “This was very surprising,” she admits. “Given the involvement of this region in face recognition in healthy individuals and the fact that damage to it leads to acquired prosopagnosia, we had expected some obvious abnormality, either functional or structural, in this region, but none was found.”

Avidan has been conducting her CP research on two levels: behavioral and neural. Her behavioral lab is in the Department of Psychology itself. “Typically, our subjects look at images of faces or other objects on a computer screen and answer questions that test their ability to distinguish between the different images, and we record their accuracy and reaction time while doing so. We have special cameras that track their eye movements and have seen that people with prosopagnosia do not scan faces the same way normal people do.”

The other part of Avidan’s work is conducted in the Brain Imaging Research Center (BIRC) at the Soroka

University Medical Center. “We use fMRI to examine the brains of people when they look at faces and objects,” she explains. And that is where they are uncovering areas in the brain other than the fusiform gyrus that was implicated in acquired prosopagnosia (but not the congenital form).

“In addition to the more familiar ‘grey matter’ of the brain, there is white matter, which is composed of fibers that connect the different regions. We found that these fibers were of lower quality in the brains of people with CP. We also found that in normal people, additional foci in the brain are activated when viewing faces, and not only the fusiform. However, those with the CP deficit did not exhibit this additional activation. Hence, we suspect that the information processed in the fusiform gyrus of those with the CP deficit is not propagated properly by the ‘white matter’ in posterior areas of the brain to the more anterior regions,” she says.

Avidan lives together with her partner and their two young children on Kibbutz Gat in the Negev, where her mother grew up and her grandmother still lives. She



herself didn’t grow up on the kibbutz, as her mother left before she was born, but she has returned there to raise her own family.

Avidan hopes that greater attention to congenital prosopagnosia will lead to earlier detection of the deficit in children and to the development of treatment intervention programs as is the case with other disabilities, such as dyslexia or dyscalculia.

“I am very pleased to be here at Ben-Gurion University,” she says. “I appreciate the freedom to pursue interdisciplinary approach to the human brain.”

Dr. Simon Barak

Extreme Tolerance

In less than twenty years, our planet will need food for an additional two billion people. Where will it come from? An alarming thought indeed.

Clearly, more land is needed to grow more crops, says Dr. Simon Barak of the French Associates Institute for Agriculture and Biotechnology of Drylands at the University's Jacob Blaustein Institutes for Desert Research (BIDR) in Sede Boqer. "Unfortunately, most of the land with agricultural potential is in areas with harsh environments. Furthermore, over 60 percent of all yield losses from crops that are currently grown worldwide are due to environmental stresses such as drought, temperature extremes or soil salinization.

"Even in Europe, or other regions where you wouldn't expect there to be stresses such as water shortage, plants suffer drought," Barak continues. "With the global climate change there are more and more periods of drought in Europe. The phenomenon is spreading northwards all the time."

But while we have to find ways of improving crop tolerance to stresses in places where there is already agriculture, says Barak, "for new areas, we need to develop varieties of food crops that can withstand harsh environmental conditions."

Barak notes that plants do have mechanisms to cope with stress, so the question is how can we improve these mechanisms or introduce new ones. Can the genes that control tolerance to multiple environmental stresses be isolated and perhaps used to engineer crop tolerance to stress, he asks?

Using the model plant *Arabidopsis thaliana*, Barak's team has succeeded in

identifying two plant genes that affect tolerance to heat, salt and drought. Barak believes these genes function to slow down the plant's response to stress. "Stress causes a whole bunch of genes to activate and defend the plant against the stress itself. However, this uses a lot of energy and we know that if a plant's stress tolerance machinery is switched on permanently, the plant almost dies.



We need to develop varieties of food crops that can withstand harsh environmental conditions

So our genes may be important in preventing the plant from over-reacting."

Barak's team successfully disturbed the function of the two genes so that the plant's stress defenses were activated a little bit more than usual and the plants therefore showed increased tolerance to harsh environments.

The breakthrough in finding the genes, which were screened from thousands of possibilities, was made possible by recent dramatic changes in how biological research is conducted, as well as inventive lab work. "Biology has undergone a revolution," states Barak. "In the past, we would have had to measure the activity of each gene by itself; nowadays we have the technology to measure the activity of all the plant's genes simultaneously telling us which genes are switched on or switched off by stress."

In 2008, Barak's team published the results of its study in the prestigious journal *Plant Physiology*. Barak was well aware of the commercial applications of identifying genes that enable plants to better tolerate stress, but admits to being "amazed by the amount of

interest this generated, particularly from internationally known scientists," he recalls.

And indeed, in early 2009, the University's technology transfer company BG Negev Technologies signed an agreement for research collaboration with Bayer Bioscience, part of the Bayer CropScience Company, based on Barak's breakthrough method in identifying

stress tolerance genes. The partnership will allow the team to continue to hunt for new genes.

Barak and his team are also eager to find those native plants of the Negev desert, he explains. With the aid of Prof. (Emeritus) Yitzchak Gutterman, also of the BIDR's French Associates Institute, they began to search for *Arabidopsis*-related plants that are naturally tolerant to stress. "We have found one that's amazingly tolerant to heat, salt, drought and cold" says Barak. "This is a really nice project because we are collaborating with many of the plant scientists at the BIDR to examine the physiology, biochemistry and molecular biology of this plant to understand how it tolerates such a variety of stresses."

Barak and his wife Michal, an architecture technician at the BIDR's Department of Man in the Desert, live in the community of Midreshet Sede Boqer, adjacent to the University campus, with their two children. "The freedom here is wonderful, which makes it a real paradise to raise children," Barak notes.



Barak grew up in a traditional Jewish English family, but had never thought much about his identity until he was sent as a day student to a private school (or "public school" in British English). "It was very anti-Semitic. I had never experienced anything like this before," he recalls, "and it got me thinking about what it means to be Jewish."

In an experience shared by so many young people, it was reading the best-selling historical novel *Exodus* by Leon Uris that converted him to Zionism. "The book ignited something in me. I put the book down and told my mom, 'this is it, I'm making aliyah!'" he recalls.

Barak spent some time on a kibbutz before returning to the UK to study for his Bachelors degree in Agricultural Science at the University of Nottingham.

He then served as Director of the British Aliyah Movement, a division of the Jewish Agency that provides information for people who wanted to immigrate.

It was during that period, he relates, that "a brochure for the Jacob Blaustein Institutes for Desert Research fell in my lap and I thought "This is my dream. I can be a pioneer in the desert and do cutting-edge science."

And that is what he set out to do. After completing an ulpan at the WUJS Institute in Arad, he began his graduate and then doctoral studies at the BIDR in plant molecular biology. These were followed by post-doctoral studies lasting three years at the University of California at Los Angeles (UCLA), researching the circadian clock of plants. This regulatory mechanism that keeps track of the earth's 24-hour day/night cycle (and that is disrupted when humans zoom across time zones, causing jet lag) was first

discovered in plants. The clock controls many plant activities including gene activity, photosynthesis and flowering time.

Barak cites Prof. Yair Heimer and Prof. Ali Nejdat from BIDR and Prof. Elaine Tobin from UCLA as his mentors, noting the "incredible changes" that have taken place at Sede Boqer since he first arrived. "When we started, we were in old buildings, which held very small labs, although the Institutes were always fairly well-equipped. The changes over the last ten years have been amazing, and the level of science is first-rate."

Dr. Eitan Bar-Yosef

That Green and Pleasant Land

A self-described Anglophile in Beer-Sheva, Dr. Eitan Bar-Yosef of the Conrad and Chinita Abrahams-Curiel Department of Foreign Literatures and Linguistics explores the multifaceted relationship between Britain and the Holy Land.

Bar-Yosef has always been fascinated by English culture: growing up in Israel, he read *David Copperfield*, *The Wind in the Willows* and *The Famous Five* books, yearning – literally – for greener pastures. Studying at the University of Oxford, therefore, was a chance to realize a life-long dream; and yet, having

completed his doctoral work, Bar-Yosef was delighted to return home six years ago, when he joined the BGU faculty. “Somehow,” he says, “it is easier to be an Anglophile from afar.”

Bar-Yosef is a literary scholar, specializing in nineteenth-century British literature. The courses he teaches focus on themes such as “Imperialism and the Novel” or “Monsters in Victorian Fiction.” Nevertheless, his research has taken him to different disciplines, such as social history, visual art and the study of popular culture. “My work always falls back on literary texts,” he explains, “but

I see myself as a cultural historian.”

In his book, *The Holy Land in English Culture 1799-1917: Palestine and the Question of Orientalism* (Oxford University Press, 2005), Bar-Yosef examined the relationship between the Holy Land as a powerful metaphor in English Protestant culture and the Holy Land as a geographical space in the Middle East, in the context of nineteenth-century imperial and cultural politics. Bar-Yosef relied on a wide array of sources, beginning with works by authors such as William Blake, Benjamin Disraeli and George Eliot, but

also including a wide array of sources, from travel accounts and Sunday School prize books to the popular “Palestine Exhibition,” which toured Britain from the 1890s well into the 1940s.

This material fit neatly with the sentiment that, rather than simply denoting a place out there, in the Levant, Jerusalem could be built “in England’s green and pleasant land,” to quote Blake’s famous poem “Jerusalem.” Emerging in seventeenth-century England, this idea was perfected in John Bunyan’s *The Pilgrim’s Progress*, a Christian allegory recounting the journey of a man seeking salvation: though his path leads to Jerusalem, this coveted city of Zion is situated in a typical English landscape.

“I’m interested in how people take the Biblical vocabulary and make it their own,” says Bar-Yosef. “Bunyan’s vision demonstrates how a literal geographical concept can be appropriated and domesticated, made part and parcel of Englishness. My work follows and analyzes this process through various episodes in English history and culture. The itinerant Palestine Exhibition, for example, was a popular attempt to turn every local town hall into a miniaturized, vernacular, ‘Jerusalem in England.’”

Explaining his decision to study in England, he stresses that “To understand the English you must go to England, if only because many of the scholarly resources are there.”

His most exciting archival work was undertaken at the Imperial War Museum, where he read letters and diaries written by British soldiers who fought in Palestine during the First World War. “Holding those letters, sometime scribbled in pencil during a break in the march, was very inspiring,” Bar-Yosef continues. “You could almost



Academics should look beyond the Ivory Tower. My theater reviews help me think more clearly and creatively about my academic work, while my academic background enriches my journalism

hear the voices of those ‘Tommies,’ the common fighting men, describing their unexpected visit to the Holy Land.”

Today, Bar-Yosef and his family live in Beer-Sheva, in a house that sits a few hundred meters from the British War Cemetery, where some of those “Tommies” are buried. “When I wander through the cemetery, I feel I know these people,” he says. Like numerous other British War cemeteries worldwide, the Beer-Sheva cemetery is designed like an English garden. “With its dazzling green lawn, it represents an English fantasy, grafted, in this case, onto the arid land of Israel.”

Bar-Yosef was born in Rehovot. He earned his Bachelors degree in English Literature and Comparative Literature at the Hebrew University of Jerusalem, and his Masters degree and Ph.D. at Oxford. He and his wife Shira, a high-school teacher, are the parents of three daughters. “I feel extremely fortunate to be a part of BGU,” he says, “probably the most vibrant campus in Israel.” Only half joking, Bar-Yosef says that when he first saw the campus, he was reminded of Bunyan’s and Blake’s vision. “The artificial river running through the Kreitman Plaza, surrounded by stone

and concrete walls, echoes the New Jerusalem imagined in Ezekiel and the Book of Revelation. It’s a tiny Promised Land, built in the middle of what used to be the campus wilderness.”

Of late, Bar-Yosef has focused more on texts in Hebrew: his current project traces Zionist perceptions of “Black Africa,” from Herzl’s Uganda Proposal of 1903 – which envisioned the creation of a Jewish autonomous state in East Africa – to present-day Israeli culture.

“In the 1950s and 1960s, Israel was deeply involved in sub-Saharan Africa, offering assistance to the emerging African states – an idea anticipated in Herzl’s utopian novel, *Altneuland*. Today, when critics of Zionism draw an explicit analogy between Israel and the Apartheid regime, they tend to forget that before 1967, Israel joined the young African nations in harsh condemnation of South Africa’s racial segregation.”

In addition to his academic work, Bar-Yosef writes theater reviews for *Ha’ir*, a Tel Aviv weekly. He describes the pleasure of balancing the more arduous scholarship with writing concise pieces that meet tight press deadlines. For him, these divergent activities feed each other. “Academics should look beyond the Ivory Tower,” he explains. “My reviews help me think more clearly and creatively about my academic work, while my academic background enriches my journalism.”

Studying both British and Israeli cultures, so glaringly different, is not common academic practice, but this is precisely what excites Bar-Yosef. “I try to strike a balance between my interest in other cultures and in my own,” he says. “I hope my current work will allow me to do this, using insights gleaned from my past work on Britain, and explore what they could come to mean here, at home.”



Dr. Nihaya Daoud Health for All



What are the pathways that contribute to explaining poor health in disadvantaged communities and minorities? How can different subgroups of society attain the level of health enjoyed by the most advantaged group? What prevents the poor from attaining their health potential and making optimal use of available health care services?

For public health expert Dr. Nihaya Daoud, health promotion begins with a focus on the full spectrum of positive and negative factors that influence health; a “salutogenic approach.” She notes that “Health issues are more than disease control; they also include social determinants such as social, educational and environmental policies. It is also about equity and how wealth is distributed in the society.”

Daoud, the recipient of a highly competitive Pratt Foundation post-doctoral fellowship at the Department of Epidemiology and Health Services Evaluation at the Faculty of Health Sciences, has been involved for most of her professional life in health promotion and reducing medical inequalities among minorities and disadvantaged groups.

These days, together with BGU epidemiologist Prof. Ilana Shoham-Vardi, Daoud is studying the multiple factors that prevent most disadvantaged Bedouin Arab mothers from obtaining better healthcare for their infants. “Understanding these factors might inform policy makers on how the health of Bedouin children can be improved,” she maintains. “If we want to improve infants’ health and reduce infant mortality, we need to understand the social determinants of health for all

infants and not just those with health problems.”

Daoud, who grew up in the central Israeli Arab town of Tira, received her Ph.D. from the Hebrew University of Jerusalem. Her research focused on social inequalities in health among disadvantaged minorities. How does socioeconomic status – for example the level of education, income, assets ownership – translate into one’s physical and mental health status? Why are the richer healthier?

According to Daoud, the answers to these social-epidemiological questions are not at all obvious. Her dissertation, “Explanatory Pathways to Socioeconomic Inequalities in Health among the Arab Minority in Israel,”

published in 2009 in the *Journal of Epidemiology and Community Health*, was a breakthrough study that examined how socioeconomic inequalities influenced health issues within a minority population. It was the first such study conducted among the Arab minority in Israel.

“Our conclusion was that even with a higher education, if you are a member of a minority and you do not translate that education into equivalent work opportunity and income, you will not attain your full potential of good health,” she explains.

Daoud’s interest in public health began when she worked as a head nurse in a primary care clinic. She then decided to study for her Masters degree in Public Health. Quickly recruited by the Ministry of Health as a nation-wide health educator in the Department of Health Promotion and Health Education, she was responsible for health education for Jewish and Arab schools. This position made her curious about how health education could be integrated into the school system. She decided to pursue this interest and was accepted to the prestigious Mandel School for Educational Leadership in Jerusalem that specializes in the professional development of leaders in the educational sectors in Israel.

While working for the Ministry of Health, she also worked as a consultant for the Italian Cooperation Office in Jerusalem, and for UNICEF Jerusalem, which ran a “School-Based Health Promotion Project” for the West Bank and Gaza. When the Hadassah Women’s Health Center invited her to become a research consultant on a community-based health promotion project for women, it seemed a natural continuation of her interest.

The project of Women for Women’s Health involved empowering Jewish and Arab women to become lay health advisors in their communities. “When you work in the field of health promotion, you see the real need for community participation. Lay groups hold the local knowledge that we, the



Health is a fundamental human right; all groups in society should be able to achieve the status of health enjoyed by the most privileged group in society

researchers, do not have. We have our professional knowledge and the integration of the two can be a key element in enabling the community to control factors influencing their own health, and this is the essence of health promotion.”

Daoud and her husband Anwar and three children live in the village of Neve Shalom/Wahat Al-Salam – the Hebrew and Arabic words for Oasis of Peace – a multi-cultural and egalitarian community dedicated to coexistence. She is also on the board of directors of *Sikkuy* – The Association for the Advancement of Civic Equality in Israel and is on the Board of Trustees of Children of Peace, which is based in the UK.

Daoud is interested in international collaboration, working with health promotion researchers from the EU. This year, she participated as a tutor and a lecturer in the summer course organized by the European Training Consortium – “A Masters level health promotion course that we’ll try to launch at BGU in the future,” she says. “The message in my family was very clear,” she adds, explaining how the family was from a village that was destroyed in 1948. “We don’t have lands (as a source of income) anymore. What can be obtained is higher education.”

Since 2008, when she was appointed as head of the National Council of Health Promotion at the Ministry of Health, Daoud has been leading a process of defining a new mission and vision statement for the Council based on the Ottawa Charter declaration, focusing on health equity and reducing the health gaps among the different social groups in Israeli society.

The motto of the Charter in which she passionately believes is: “Health is a fundamental human right; all groups in society should be able to achieve the status of health enjoyed by the most privileged group in society.”

Daoud says that coming to work and teaching at BGU after years dealing with health promotion has been a meaningful point in her professional life. “The approach here is really community oriented, in which health promotion can be developed as an integral discipline in public health.” Work with the Bedouin community in the Negev has been a particular challenge, she notes. “This is a society in transition, and we need to re-evaluate and develop a unique approach to working in a participatory manner.”

It’s a challenge that Daoud will surely meet.



Dr. Alon Monsonego

Planning the Next Move

Sitting in his office in T-shirt and sandals, BGU immunologist Dr. Alon Monsonego draws some squiggly lines and weird little shapes on a piece of paper. It is a crude drawing of a diseased brain. “That’s what it looked like under the microscope,” he says, describing the moment of breakthrough in his career that has been focused on finding a cure for Alzheimer’s disease.

“It came after a few years of very hard work, at a point where we were quite frustrated. We couldn’t find the

right model that would show how immune cells interact with the diseased brain. Then, all of a sudden, under the microscope, we saw the presence of immune cells in the brain – not just anywhere in the brain, but right next to the regions of the brain that are affected by Alzheimer’s disease,” he relates with passion.

That was several years ago, when Monsonego was doing post-doctoral work at Harvard Medical School’s Center for Neurological Diseases. Five years ago he joined the University’s Shraga Segal Department of Microbiology and

Immunology, where he heads a team of students, researchers and technicians whose ultimate goal is to understand the dialogue between the immune system and the brain in health and disease and to develop a vaccine that can intervene with the effects of Alzheimer’s disease, or at least delay its onset. His research is generously supported by the Gural and Litwin families of New York.

Alzheimer’s disease is the scourge of the elderly, the most common form of dementia, afflicting mainly people

over the age of sixty-five. After being diagnosed with Alzheimer’s disease, sufferers live an average of seven additional years. It is one of the costliest diseases in the world – both financially and psychologically, with spouses and adult children commonly called upon to care for the sufferer at home, or to cover the exceedingly high costs of long-term stays in nursing homes.

In Israel, there are an estimated 100,000 victims. Worldwide, there are nearly 30 million, and the prediction is that by 2050, there will be over 100 million – unless a cure is found first.

In his office at the National Institute for Biotechnology in the Negev, Monsonego, incumbent of the Zehava and Chezy Vered Career Development Chair in Alzheimer’s and Neurodegenerative Diseases, says his work is part of a veritable revolution in the fight against disease in the last decade or so. “Until then, the immune system was boosted primarily to fight infections. Now scientists are trying to use the immune system to fight diseases such as cancer, arteriosclerosis and neurodegenerative diseases such as Alzheimer’s, Parkinson’s and ALS.”

Born in Safed, Monsonego is married and lives on Moshav Nir Banim outside of Beer-Sheva with his wife and three children. During his student years, he migrated from agriculture to biotechnology and then to neurobiology before hitting upon immunology as a doctoral student at the Weizmann Institute of Science. “I was studying brain trauma and I saw how the immune system can play a crucial role in both the recovery and the degenerative processes,” he recalls.

The symptoms of Alzheimer’s disease reflect the degeneration of cognitive functioning, and the malady is caused by toxins produced in the brain,

Monsonego explains. At present, there is no vaccine or medicine that can prevent the onset of the disease, only treatments such as diet, physical exercise, mental stimulation and drugs that can, at times, lessen Alzheimer’s effects and slow the disease’s advance.



Then, all of a sudden, under the microscope, we saw the presence of immune cells in the brain – not just anywhere in the brain, but right next to the regions of the brain that are affected by Alzheimer’s disease

A decade ago, the first hope arose that a novel type of a vaccine against toxic brain proteins might be developed. Research on lab animals found that the toxins in the brain consistent with Alzheimer’s disease could be “cleared.” A few years later, a clinical trial using that method was performed on patients with Alzheimer’s disease, but the trial was unsuccessful: six percent of the patients developed a severe inflammatory reaction in the brain and the vaccination program was halted.

Now, researchers believe that it is possible to safely clear out toxins from the brain found in Alzheimer’s disease. “But we don’t know if once the toxins are gone, the cognitive functioning in an Alzheimer’s sufferer will improve, which, of course, is the real sign of recovery,” says Monsonego. The symptoms he refers to include memory loss, confusion, irritability, aggression, mood swings, language breakdown and the gradual loss of bodily functions.

Currently there are some 10 clinical trials being conducted around the world to see if the immune system can be manipulated in a way that it will produce antibodies to fight the toxins, explains Monsonego. The unique aspect

of the work being done by his team is that it aims to get the immune system to produce other entities besides antibodies to fight the disease. “Our theory is that in order to get the benefit of the immune system’s abilities to counteract Alzheimer’s, you need to stimulate other

immune functions, not only antibodies,” he continues.

The team has already published several papers from its research in the *US Journal of Immunology*, *PNAS*, *FASEB Journal* and others, which are highly influential professional publications in the field.

Monsonego says the immunological approach to disease is connected to the popular concept of wellness, or preventative health care. “The immune system is constantly surveying the body, looking for any insult, for any injury, any cell death. The idea is to find a way to target the action of the immune system so that it goes after the source of disease,” he says.

“Until not too long ago, it wasn’t understood that the immune system had access to the brain. Now it is known that the immune system conducts a unique dialogue with the brain,” says Monsonego. The nature of that dialogue, the cause and effect relationship between the immune system and the brain, is what he and his team are seeking to understand. The potential benefits of such an understanding are incalculable.



Inbal Shlosberg

Intent on Change

Inbal Shlosberg hesitates at first when asked what her ambitions are. With a little coaxing, though, it comes out. “I want to be Israel’s Minister of Social Welfare,” she says. But it’s not that she’s a power freak or a frustrated politician. “I want to have an influence.”

A Masters student in the Charlotte B. and Jack J. Spitzer Department of Social Work, Shlosberg, 29, is totally committed to her ideals – in her case, justice, equality and empowerment of Israel’s poor. Attending classes in the morning, she spends her afternoons as a full-time social worker in the Bedouin town of Segev Shalom.

Raised on the northern Kibbutz Gesher Haziv, Shlosberg was always attracted to the desert. She lived for a year in Arad and did much of her army service in the Negev.

“I wanted to come to Ben-Gurion University of the Negev because its Spitzer Department of Social Work is known for its activism. I feel at home here – it’s a place where I can give expression to my principles. And I wanted to work with the Bedouin, precisely because they are at the bottom of Israel’s socioeconomic ladder and suffer the most from the inequities of the system,” she says.

But there’s another population she’s fighting for, one not nearly as downtrodden as the Bedouins, but one that is crucial to achieving the social justice she speaks about: Israel’s social workers.

“Our job is to get underprivileged people to stand up for themselves, to have self-respect, to take their lives into their own hands, but how can we do that if we can’t even stand up for ourselves?” she asks. To that end, Shlosberg has become a leader of a nationwide organization of social workers and social work students called *Atidenu* (Our Future). Winning a grant from the New Israel Fund, she and her colleagues seek to end the current situation whereby “social workers have literally hundreds of clients in their caseload, making it impossible for them to do their job. In addition, they have

to work many years before their salary rises much above minimum wage.”

Yet as badly as the pay and conditions are for most social workers – they haven’t received a raise since 1994 – about one-third of them are literally at the bottom of the job ladder, hired at minimum wage by the manpower companies who’ve become infamous here for exploiting janitors and security guards.

“We’re a depressed and defeated workforce,” she says, “so what sort of influence can we have on our clients?”

Shlosberg seeks to advance her ideals not only at work and at the University, but also at home. She lives on an “urban kibbutz” in Beer-Sheva with some 30 other people, most of whom were raised on established kibbutzim like her. The urban kibbutz movement, called *Kama* (Arising), is an attempt to emulate the simplicity and social commitment that once characterized the century-old movement, but which have fallen away as the kibbutzim, both from necessity and ideological fatigue, have become steadily more profit- and consumer-oriented.

Shlosberg’s “kibbutz,” which includes many other social workers as well as teachers, runs Beer-Sheva’s well-known Ringelbloom cafe, which employs disadvantaged youth from the city’s Dalet neighborhood to show them a different world from the streets.

Yet Shlosberg is well aware that the ideals she shares with colleagues and friends are out of fashion in Israel. Her ambition to become Minister of Social Welfare, then, is less a concrete goal than a symbol of her intent to change the country in ways that are already being felt in Segev Shalom, Beer-Sheva and beyond.



Sagi Shahar

A Negev Attraction

Sagi Shahar was a young Israeli businessman working in the hi-tech field in the Tel Aviv area when he decided he needed a break. "I wanted to get away from the center of the country, away from the business world for a while before I came back and spent another 30 years there," says the one-time officer in the Israeli military police, now, at 29, a student in Ben-Gurion University's Honors MBA program at the Guilford Glazer School of Business and Management.

Shahar is not so sure anymore that he wants to go back to the business world. "Working with the public sector is a different experience – you're not working only for money, you're working to improve society. I have to say that it attracts me."

What he and four other students in the Honors MBA program did was help a Beer-Sheva organization called the *Or* Movement develop a new way to attract Israeli tourists to the Negev. Working through the University-affiliated organization NOVA – "an NGO that gives strategic advice to NGOs," he says – the students came up with a "how-to manual" for a tourist center in Beer-Sheva's Old City. The center is to be called the "Gateway to the Negev."

"The Negev gets very little tourism. Everybody goes to Eilat and the Dead Sea," he says, noting that for all the high-level official talk of the Negev being Israel's future and Beer-Sheva being Israel's provincial capital, the proof is the pudding: in recent years a bypass highway was built around the city to allow tourists from the northern half of the country to get to Eilat quicker.

The tourist center is meant to counter this long-established habit, partly by breaking through the mental blocks Israelis in the center and north have about the Negev, such as that the distances are so vast. "The traffic in the Negev is so light

compared to the center and the north, so that driving from, say, Modi'in to Arad takes the same amount of time as driving from Modi'in to Tel Aviv in the rush hour, which people do every morning without a second thought," says Shahar.

The site has been purchased and remodeled, the plans are done and the grand opening is scheduled for the summer of 2010. The center will offer information about the Negev, but there will also be attractions, possibly connected to the archeological treasures in the Old City, which date back to Abraham's sojourn in Beer-Sheva 4,000 years ago. "The Internet can give you information, but to bring people to the Negev you have to connect with them on an emotional, up-close-and-personal level," explains Shahar.

Aside from the *Or* Movement, NOVA also gives strategic advice to the local Center for Victims of Sexual Abuse; Eden, which advances education for Bedouin women; the Fund for Rehabilitation of the Handicapped; and *Ahoti*, which promotes entrepreneurship for Ethiopian immigrant women.

"These sorts of programs connect the University to the community," says Shahar, "and they also give business students experience with projects that have social importance." So who knows? Thanks to BGU's Honors MBA program, the Israeli business world may have lost a real go-getter, but Israeli "civic society" may have gained one.



Liad Yosef

Helping a Whole Family

From the age of 11, Liad Yosef knew he wanted a career related to fighting cancer. "I had a cousin who was 10 years old when he died of cancer. He was like a younger brother," says Yosef, a third-year biomedical engineering student, adding that an aunt of his died of cancer five years ago. Today, at 26, he is planning his professional life around the battle against cancer, but he's not waiting until he graduates. For the last year, he's been volunteering at the Ma'agan – Community Cancer Care Center – which provides emotional and social support to people with cancer and their families and is run by BGU and the Soroka University Medical Center with the generous support of Sol and Edy Freedman of New York. For his volunteer work, he received a Lubner Prize for Community Service, made possible through the generosity of Vice-Chairman of the Board of Governors Bertram Lubner of South Africa.

Volunteers such as Yosef make weekly home visits to families of a patient; typically, they arrive at the home a few months before the patient's death. After training for several months under Soroka doctors, nurses, social workers and couples therapists, Yosef began making visits to the family of a 50-year-old man who was dying of cancer. "I came to him in the last month of his life – all I could do for him was help him get out of bed; I couldn't talk to him by that point." From the beginning, Yosef's training and focus was on the man's wife and their seven children.

"After he died, all the people who'd cared for him left, so I was there to try to fill the gap, to be sort of a transitional aid to the family for the year after the husband and father's death," says Yosef.

The family is not well-off financially; the mother had never worked and suddenly becoming the single mother to seven children, from the ages of 15 up, was a tremendous strain that Yosef tried to lift to at least some degree. "She didn't want to show 'weakness' to her kids, but when I

came over, we'd go out onto the balcony and she'd start talking, and she'd allow herself to cry, which she wouldn't let the kids see."

Sometimes he came over more than once a week, and besides the visits, there were long telephone conversations. Over the year, he convinced the widow to start a new life – to get out of the house, to learn a trade, to join the workaday world. "She went to the Employment Office and started a course in hairstyling and manicuring, which seems to have made a tremendous difference for her."

For the children, Yosef focused on speaking to them about their feelings, but for the one boy in the army, he did a lot more than that. With all the emotional and financial strain at home, the young soldier went AWOL from his army base, and Yosef, a reserve combat officer, had a talk with his commander about all the pressures he was under. "The result was that he was able to go back to the base with a relatively mild punishment and his hours on duty were arranged so that his afternoons would be free for him to work to help support the family," says Yosef.

The final stage of his volunteer year with the family was separation. "The idea is that I'm with the family for the year of mourning, but that they shouldn't become dependent on me," he says. It wasn't so easy for him or for the family to separate. "The mother saw me as another one of her children," he says, then adds with a laugh, "as if she didn't have enough."

Yosef spent the summer of 2007 volunteering as a guide at Ma'agan's week-long summer camp serving 40-50 children of the patients. This summer, he was one of the camp's leaders and program designers. "After classes at BGU resume," he says, "I'm going to connect with another family in the program."

students making a difference



Tahrir Alzbibi

Drawing the Line

"I couldn't just draw some pretty scenery," says Tahrir Alzbibi, 22, from the Bedouin village Ar'ara, who named her project in the Creative Arts Unit of the Department of Arts, "Mahram: Self-Portrait." A *mahram* is the piece of material that divides the traditional Bedouin tent in half: one side for the men, and the other for the women.

Her project, consisting of several self-portraits hung on cloth pictures, aimed for just the opposite: "Instead of covering myself as a woman, I put my own image on each of the *mahram* pieces of cloth, to express my personality and to feel alive, and not hidden behind a swath of material," she explains. "I wanted to show the reality of Bedouin women. The embroidery threads covering my photo on each of the pictures represent how society limits the Bedouin woman in her daily life."

Alzbibi is one of an increasing number of Bedouins studying at BGU, encouraged and supported by the Robert H. Arnow Center for Bedouin Studies and Development, which enables them to fulfill their dream of a higher education.

Alzbibi's original plan was to be a teacher, but she recently changed direction and has begun working as a counselor at a small factory in the Bedouin town of Rahat, where mentally challenged residents manufacture artwork. She finds it challenging and rewarding. "I'd rather work with people who are in crises, to help those who live on the margins of society to contribute and feel needed, than to just work with regular children," she says.

"The participation of Alzbibi and another female Bedouin student in the course, where everyone else was Jewish, deeply enriched our learning experience," notes Prof. Haim Maor, coordinator of the Creative Arts Unit at the Department. "They expressed their art from a different angle,

illuminating the 'backyard' of Israeli society – the discrimination, the Arab as a 'punching bag,' the dividing curtain we prefer not to see. It made all the students realize there are no 'right' and 'wrong' answers, and inspired their art as well."

Alzbibi comes alive when speaking about her work. "As women, we are like a dividing curtain or a rag hung on a clothesline to dry. My work expresses a kind of criticism on being 'transparent,' and reflects the transparency I feel from my family. She explains why she hung the pictures on a clothesline: "to air our dirty laundry, and to reveal what we Bedouins have been trying to hide."

She doesn't blame the Bedouin men in particular, but rather the entire Bedouin society which "hasn't changed its treatment of women, and is still hurting us, despite all the years that have passed." Nor does the outspoken Alzbibi consider herself brave.

"I am not afraid to say what I think," she says. "I did a project that speaks to me. We were asked to do a self portrait and for me, this is what is real. I am concerned about the situation of Bedouin women and wanted to draw attention to it."

Alzbibi, the second of eight children, is the first in her family to study at the University. Her parents didn't attend the exhibition opening. She didn't even tell them about it, or about her project, "because I knew it would only make them upset. They know that I say what I think and that nobody can make me do what I don't believe in, but I still need to keep my distance and protect myself."

Alzbibi hopes to eventually pursue her graduate studies in art therapy and social work, and "to continue my art, to let my voice be heard."



Maru Gete

A Different Life

Maru Gete was born in the Gondar region of Ethiopia, a middle child of eleven siblings. He never went to school, but took care of the sheep and cows with his older sister. "I was only about eight years old when we left Ethiopia," he recalls, "but I still remember how we lived and how my family always talked about making aliya to Jerusalem. That was our dream. Finally, one day, my family left for Addis Ababa, and we were on our way to Jerusalem. Then, after nine months, we were flown to Israel. When we arrived, we were in total shock! Everything was so different from what we had imagined."

Gete went to school for the first time and studied at the *Kiryat Hanoar* (Youth Village) in Jerusalem from seventh through twelfth grades, returning home at weekends. "I was a good student and I studied all the time. I had never gone to school before and I had a lot to catch up. In high school, I majored in physics and computers."

The transition from a traditional society to a modern one is traumatic. In Ethiopia, the father is the most important member of the household and the children are much lower in status, unlike in Israel. "My parents never really learned Hebrew very well," continues Gete, but they pushed us to study and to succeed. They wanted their children to integrate into Israeli society."

After completing his studies at the religious high school, Gete went on to study Torah in the Hesder Yeshiva of Ma'ale Adumim. After two years, he joined the Israel Defense Forces, becoming an officer, then platoon commander, for a total of four years of military service. "In the Second Lebanon War, we lost eight soldiers in our unit, and many were injured. It was a very difficult time, but it really solidified my commitment to Israel," he relates.

When Gete was a small child, he developed a severe ear infection. There were no doctors or clinics where they lived, and he suffered for three days until his

parents took him to the local church where there were medicines. "I remember that someone put drops in my ear, and almost immediately I felt better. It was a miracle to me! Since then, I've wanted to help others as a physician," he notes. His only concern was that he wouldn't meet the stiff entrance requirements to medical school. But he did, and moved to Beer-Sheva.

"The Joyce and Irving Goldman Medical School offers the only community-based program in the country, and I love it. For example, we had a wonderful course in the first year about how to interview and relate to patients, how to connect to them as human beings. That was very special," says Gete, who has now successfully completed his second year of studies.

"I married my wife Shaked before I started school, and our daughter was born right in the middle of first-year exams. It's been a little crazy juggling everything, but very rewarding."

Gete is also involved in a volunteer organization called *Ahara!* which literally means "Follow me!" – the call of the Israeli commander on the battlefield. "Four of us serve as counselors and we mentor about thirty high school youths from disadvantaged backgrounds," explains Gete. "Officially, our role is to conduct physical workouts and training sessions to prepare them for positions in their army service and to instill motivation to serve their country. But we keep in contact with them between meetings and also serve as role models, like 'Big Brothers.' We show them that they, too, can go to college and acquire a profession. It's a great feeling to see these kids mature and go on to do something significant with their lives."

Asked how he juggles his family life, his studies and his volunteer work, he replies, "I guess that what I really want is to make a difference."



Aviv Idan

A Matter of Pride

Ordinarily, BGU student Aviv Idan's volunteer counseling at the Beer-Sheva branch of the Israeli Gay, Lesbian, Bisexual and Transgender (GLBT) Association, where she leads a group called *Noar Ge'eh* – a play on words that means both "Proud Youth" and "Gay Youth" – would have been on hold for the summer break. But on the night of August 1st, a gunman dressed in black entered a clubhouse in the Tel Aviv branch, killing two people and wounding a dozen more.

"The summer ended early for us," says Idan, 26, an undergraduate student in sociology, anthropology and economics who received a Lubner Prize for Community Service for her volunteer work with the organization. "This has been a terrible trauma for the young people I work with. They are really scared and very angry."

Beer-Sheva is a conservative city. It's not easy to "come out of the closet" anywhere in Israel, says Idan, but it's harder in a place like Beer-Sheva than in the center of the country, which revolves around Tel Aviv, the "capital" of Israel's gay community. Unlike in Tel Aviv, Haifa or even Jerusalem, there is no above-ground gay scene in Beer-Sheva – no pubs, no clubs, and definitely no gay pride parade.

"Those who don't fit the traditional male or female stereotype feel they have to hide who they are in school and in public," says Idan. Above all, they have to hide who they are at home. There are some 15 Beer-Sheva boys and girls, ages 15-19, who attend the weekly meetings at a clubhouse – and only one or two have "come out" to their parents. In the wake of the shooting incident in Tel Aviv, the others have more to hide than ever.

"After the shootings, they wanted to get on the phone and call their friends and make sure they were okay, but they couldn't because they were afraid their parents would suspect them," she says. "At a time like this, they have a natural need to

talk to people in the same situation as they are, to send e-mails and look at gay-related websites, but they can't. One boy I counsel said he thinks his mother's been looking at him strangely and he's afraid she suspects him."

During the school year, Idan and a co-counselor at *Noar Ge'eh* provide the youth with "a social environment where they can talk with other young people going through the same things they are, where they find out, often for the first time, that they're not alone. It's a place where they can be who they are, where they can grow into themselves, where they can get information about things that are important to them as members of the GLBT community. It's a place where they can make friends."

Idan has seen a tremendous amount of personal growth in many of her charges. "For the most part, they came to the group very confused, feeling that there's no place for them in the world, and after a while they felt strengthened, they felt joy in life. At first, they came to express the pain and confusion they felt, but then they came because it was just fun to be there."

The shootings seem to have had a sobering effect on Israeli society, in which ridicule of gays is common, especially among the young. In Beer-Sheva, some 400 people, most of them "straight," marched from City Hall to the local office of the national gay rights organization in a show of solidarity with the victims of the shooting and to protest homophobia.

"In the long-term," says Idan, "I hope the murders will lead Israeli society to greater tolerance, to a greater understanding that blood is blood, that pain is pain, and that love is love."

Dr. Ofer Levi

One Plus One Equals 3D

It's not easy for Dr. Ofer Levi of the Department of Industrial Engineering and Management to pinpoint his area of research. A combination of mathematics, statistics, optimization, signal and image processing, as well as medical and biological imaging, Levi's broad, multi-disciplinary background defies simple definition. One feature that characterizes his work, though, is its applicability to numerous disciplines ranging from astrophysics to medicine.

"My interdisciplinary background connects well to applied fields," says Levi. "On the one hand, most mathematicians I know find it hard to really understand applied problems and see the link between methods and potential applications," he adds. "On the other hand, many applied scientists and engineers are lacking sufficient mathematical knowledge." This "broken telephone" can cause researchers to



I definitely look for applications related to biology and medicine. Some of my projects have the potential to improve diagnoses, like the early detection of cancer

remain in their own safe spheres, and may prevent fruitful interaction. "I think that I can serve well as a bridge between these groups," he declares.

Levi has always found the fields complimentary, originally earning Bachelors degrees in industrial engineering and management (IEM) and mathematics and a Masters degree in IEM – all from BGU. Urged by his mentor, Prof. Israel David, to apply for a graduate degree abroad, he was accepted to Stanford University's program in Scientific Computing and Computational Mathematics (SSCM).

At Stanford, Levi worked on image processing under the supervision of world-renowned Prof. David Donoho. He completed his doctorate on developing new methods for 3D image processing. While this imaging work was first intended for astrophysics – analysis of the 3D distribution of galaxies – Levi understood that his research was highly relevant to medical imaging, where there is a true need for advanced 3D image processing and analysis methods. It was only a matter of time before he began multiple fruitful collaborations with several radiology experts and physicians.

"Studying at Stanford was a truly enriching experience for me. I had the chance to meet some extraordinary people from all around the world and make long lasting friendships" says Levi. He met his wife Donabel during his studies there and they now have two children, Adam and Tom.

Returning to BGU to join the Department of Industrial Engineering and Management, he entered into a number of collaborative efforts with physicians from the Faculty of Health Sciences. He has worked with the head of the MRI Unit of the Soroka University Medical Center, Dr. Ilan Shelef, and neurophysiologist Prof. Alon Friedman on several imaging

projects related to MRI brain imaging and developing methods for analysis of the brain's blood vessel permeability by processing dynamic MRI data. One of the challenges in brain data analysis is to efficiently handle very large volumes of data and perform the analysis in a reasonable time.

In order to achieve that, Levi has been leading an effort to utilize the Medical Center's computers' idle time and process massive data sets in parallel on the idle machines using the Condor software. So far, the system includes a few dozen machines and is expected to expand to as many as 400 in the very near future. "This will enable us to analyze vascular permeability in just minutes instead of hours on a single

standard machine," says Levi. He also mentions that this project required a high level of coordination between many different groups, including Prof. Miron Livny and the Condor team from the University of Wisconsin at Madison and the Soroka Computing Center and Soroka's CIO, Ludovic Abraham, and his research student, Lucas Grogin.

Levi has been also collaborating with Dr. Shay Teyman-Yarden from the University of California at San Diego, a pediatric cardiologist, and Prof. Michael Saunders from Stanford University on developing pain markers based on ECG signal analysis. "We have very promising preliminary results and we have recently

Dr. Ofer Levi (right) and Dr. Adrian Stern

submitted an NIH proposal. We plan to carry out a series of experiments in the pain clinic at the UCSD Medical Center in order to validate and improve our methods," says Levi.

Together with partners from the business world, Levi has established a start-up company aimed to develop cheap high performance imaging devices based on a patent by Dr. Adrian Stern of BGU's Unit of Electro-optics. Incorporating special optical settings combined with advanced image reconstruction algorithms, the technology has been successfully tested and the company will soon begin building an initial prototype of its innovative device.

Levi is also working on founding a new startup together with Dr. Haim Golan, head of the Department of

Nuclear Medicine at Assaf Harofeh Medical Center, aimed to reduce the radiation level and scanning duration of nuclear imaging.

The opportunity to contribute on a human level, by playing a part in medical advancement, appeals to Levi. "I definitely look for applications related to biology and medicine. Some of my projects have the potential to improve diagnoses, like the early detection of cancer. At the same time, I am always interested in expanding my own knowledge and skills. I have a constant hunger to know more, to learn more."

In developing his special skill set, BGU has been the ideal location for Levi. "My Department gives me the tools to work in my fields of interest, even if they're not in the mainstream," he says. "The attitude and spirit of the Department allow people to excel where they're best and give them the option of developing new fields." While Levi has sometimes felt like a stranger in a particular discipline, he has always understood that the perfect place for him is an interdisciplinary framework.

Levi concludes with an anecdote, revealing that he used to be a very bad student and that none of his teachers believed that he would even finish high school. He was made to leave two different schools and was studying in a kibbutz school, as well as a "notorious" agricultural boarding school. "It was hard for me to focus on my studies then, but it all changed when I first entered the University gates to study subjects of my choice and interest."

Dr. Sharon Pardo

Hello Europe, This is Israel Calling

One of the first Israeli universities to recognize the importance of European studies, Ben-Gurion University of the Negev has evolved into a leader in this field. Dr. Sharon Pardo, current Director of the Centre for the Study of European Politics and Society (CSEPS) and a Jean Monnet lecturer on European Union (EU) affairs and international relations in the Department of Politics and Government, has accompanied BGU on the path to this leadership status.

“BGU’s actions have brought about an awakening regarding the importance

associated academic division, named for the late former German Chancellor Konrad Adenauer, who established relations with Israel, thanks to the generosity of the German foundation in his name.

European studies are hardly limited to the classroom. “Both the senior administration and my own Department are committed to bringing Europe to the Marcus Family Campus and sending our students to Europe. We believe that students cannot understand the EU only through books and academic journals –

Israel in regard to human rights and immigration policies. As Spain and Israel hold some parallel views vis-à-vis these issues, researchers involved are seeking to compare the experiences of their respective nations, to learn what they can from each other and make plans for facing their common difficulties.

Pardo is also involved in an international research consortium called the EU as a Global-Regional Actor in Security and Peace (EU-GRASP). Devoted to security issues, EU-GRASP studies the role of the EU as a global and regional actor in related partnerships. Oriented toward policy and foresight, this European Commission-funded group examines how the EU operates at a regional and global level in the field of security.

As part of an international consortium of 17 countries and entities, led by the University of Bologna at Forli, Italy, Pardo examines perceptions of non-EU countries toward the EU. Targeting four groups – the political elite, civil society, the public and the media – this research could also prove interesting to EU policy-makers. “After all,” he says, “the EU creates its own identity largely on the basis of how others see it.”

As a by-product of this project, the consortium is publishing a book that deals with the image of the EU in the eyes of non-EU member states, as well as non-state entities. Based on this project, Pardo began to conduct, together with the Konrad-Adenauer-Stiftung, an annual survey of Israelis’ attitudes toward the EU which, he says, “had some fascinating and unexpected results.”

In 2007, the survey revealed that 75 percent of Israelis favored Israeli membership in the EU. A propos this finding, Pardo points out that some forty



percent of Israelis represent would-be EU citizens, as they have family roots in Europe. In fact, proportionally speaking, Israel has the largest concentration of potential EU citizens anywhere in the world. This is an important factor in shaping EU-Israeli relations, he says.

“Overall, the findings of the research and of the survey indicate that Israelis are knowledgeable regarding

international organizations and are far less critical of them than is their government,” says Pardo. “We saw strong support of the EU, its member states and organizations among Israelis. But there is significant difference between Israeli Arabs and Jews in the way they perceive EU involvement in the peace process and international organizations in general. It is clear that Israeli Jews support the EU and the international community more than do Arab citizens.”

In his book *Uneasy Neighbors: Israel and the European Union*, written together with Dr. Joel Peters of Virginia Tech and formerly of BGU, Pardo presents a new paradigm of relations between the EU and Israel. The book suggests a novel model in which Israel would enjoy something more than its current status, but less than full EU membership (see review on page 35).

Pardo holds an LL.B. and LL.M. in international, commercial and EU law from Sheffield, England, and a Ph.D. in political and social sciences from the University of Ghent in Belgium. In addition to his role as CSEPS Director, his research and teaching, Pardo is a Senior Fellow at the International and European Research Unit, University of Ghent, a member of the National Executive of the Israeli Association for the Study of European Integration and a member of the National Executive of the Israeli Association of International Studies. He is one of the founders of the Israeli Ministry of Regional Cooperation and served as Director of the Ministry’s Projects Division, as well as a Senior Advisor to the Ministry’s Director General.

Considering all these activities, it does not come as a revelation that Pardo has little free time. He counts his work in with his hobbies of hiking and reading. “I completely enjoy what I’m doing: trying to research major aspects of the EU and becoming an advocate for better understanding of it.”

In addition to viewing work as pleasure, Pardo sees it as a kind of calling. “After all, the EU is one of the greatest political experiments the modern world has known and certainly so far, the most positive one, shaping as it does the relations between the individual and society on new and uncharted ground.”



The EU is one of the greatest political experiments the modern world has known, shaping as it does the relations between the individual and society on new and uncharted ground

of this discipline,” says Pardo. “Early on, the University acknowledged the fact that Israeli development in many academic, research and development, social, cultural and economic spheres is closely linked to the EU, and that the EU is a primary source for funding research in Israel.” A scholar of EU studies, Pardo specializes in issues of foreign and legal relations and policy connected with Mediterranean countries, which of course, include Israel. In his own estimation, Pardo examines issues with an eye to politics and governance, and as a lawyer, to legal aspects.

BGU established the CSEPS in 2003, when awareness of the field was minimal. At that time, programs for Russian studies far outnumbered those devoted to Europe. Also, during that period, Israeli-EU relations were at a nadir. Five years later, BGU enhanced the Centre’s status by establishing an

they must be there,” says Pardo, elaborating that the European Division/Track offers a program in which students go to EU headquarters in Brussels, where they meet with leading academics, researchers, NGO representatives, decision-makers, Jewish community leaders and NATO officials. BGU was among the first universities in Israel to implement such a program and now others are following suit.

In addition to teaching, Pardo engages in wide-ranging research activities. He has helped establish an international network of academic research on Euro-Israeli relations. “Europe was a persona non grata, which was reflected in a general lack of knowledge of this subject on both the academic and decision-making levels,” he says. “We wanted to bring Europe to BGU and BGU to Europe.”

Together with Spanish researchers, the CSEPS has entered into a project that examines Spain, the EU and

For those with chronic Post Traumatic Stress Disorder (PTSD), the trauma never ends. Whether they have been through a terrorist attack, natural disaster, sexual abuse or other ordeal, those afflicted feel constantly threatened. They perceive the event they survived as vivid, real and recurrent. There is no return to the pre-trauma period, as this state affects the patient's body, mind and emotions and can drag on for years, even a lifetime.

Prof. Hagit Cohen, head of the Anxiety and Stress Research Unit of the Faculty of Health Sciences and a researcher at the Beer-Sheva Mental Health Center, is determined to ease the distress caused by PTSD.

Cohen explains that the symptoms of PTSD patients resemble those occurring during a traumatic event. When an animal or human is under existential threat, it prepares for survival. Physiological changes take place, just some of which include increased arousal, alertness and vigilance, as well as improved cognition, focused attention and euphoria. Heart rate increases, while digestive function, growth, reproduction and immunity are inhibited. In other words, says Cohen, "In these situations, no one is thinking about their mortgage."

At the end of the traumatic period, these physiological elements generally return to normal and the person or animal resumes its regular routine. How long this takes depends on the type, duration and significance of the threat and the organism's psychological makeup, she explains.

As PTSD sufferers re-experience their trauma, they tend to avoid places, people, or anything else



Prof. Hagit Cohen
Stressed Out

that reminds them of the event and are extremely sensitive to normal life experiences. If not treated, PTSD can render patients unable to function in relationships, family life, work and society in general. Seven percent of the population worldwide suffers from PTSD, which has a wide range of severity. While some sufferers can perform day-to-day activities, others cannot get out of bed.

In her research, Cohen employs an animal model – the rat – "to see what happens in a mammalian brain so that ultimately we can treat it." She induces stress conditions by exposing the rats to cat urine so they feel the presence of their predators. After seven days of exposure, she checks the animals' behavior, anxiety level and response to a sudden unexpected stimulus, such as light, loud noise or quick movement. This "startle response" is often exaggerated in those with PTSD.

Next, Cohen determines which individuals do not resume normal function and attempts to ascertain why. To do this, she checks the animal's genes, brain receptors, hormones and stress levels. "By emphasizing the individual, we take a unique approach to studying PTSD," says Cohen. "We take the rats that demonstrate an extreme behavioral response and compare them to those that did not develop such symptoms." Finally, Cohen and her team compare the efficacy of different drugs. They also try to establish at what point after the traumatic event medicines have maximum effect.

Anti-depressants, in the form of selective serotonin reuptake inhibitors (SSRIs), are at present the only medicines approved by the US Food and Drug Administration (FDA) for PTSD. A large study at Cohen's lab recently showed that given immediately after the stressful event, SSRIs reduce the effects of trauma.

Cohen has also found that high doses of cortisol administered after a traumatic event helps an animal cope with stress. Generally referred to as the "stress hormone," cortisol is released in response to stress and anxiety. It increases blood pressure and blood sugar and reduces immune responses. During traumatic events, not enough cortisone is released, says Cohen, "so by giving cortisol, we can prevent PTSD and even induce amnesia, which, in some cases, is

Cohen found that in rats, oxytocin reduced anxiety from PTSD by inhibiting the release of hormones emitted during stressful events. "Oxytocin is a very attractive option," she says, stressing that the hormone is connected to bonding and attachment, and has been used effectively to treat autism.

Exploring the inclination of different populations to PTSD, Cohen found no difference between the sexes, but she

My discipline includes physics, molecular biology, psychology and genetics. Besides, what could be more fascinating than the human brain?



desired." She is also experimenting with anti-epilepsy drugs, which are frequently prescribed for depression. "When it comes to drugs, we try all directions," she says.

In addition to researching medicines, Cohen is currently working with a protein that she thinks is involved in the maintenance of memory. Having injected this protein in rats, she found it erased traumatic memories from a month before. As it would be hard to find someone who wouldn't want to rub out certain recollections, the implications of this protein are enormous.

Another option Cohen is exploring is the use of oxytocin to counter PTSD. A hormone that also acts as a neurotransmitter in the brain, oxytocin is best known for its roles in female reproduction. The body naturally releases this hormone to facilitate birth and breastfeeding. In addition, doctors often use oxytocin to artificially induce labor. Recent studies have begun to investigate its role in various behaviors, including social recognition, bonding, anxiety, trust and maternal behaviors.

did discover that religious belief and a sense of mission play a role regarding resilience to the illness. Checking populations in the Gush Katif region near the Gaza strip, Hebron and Tel Aviv, Cohen found that religious people display fewer symptoms of PTSD than secular people. Likewise, those with a clear purpose suffered less from the disorder than those without. "Faith and mission give strength and justification," says Cohen. "If these factors are taken away, all stress returns."

A member of the BGU faculty for the past 12 years, Cohen is more than satisfied with her career choice. "I always go to work with a smile on my face," she says. "What I do is also very relevant. We're constantly hearing about another terrorist attack, war or natural disaster somewhere in the world. There's nothing abstract about what I do." Further, she adds, "My discipline is very varied, it includes physics, molecular biology, psychology and genetics. Besides, what could be more fascinating than the human brain?"

Last Edition

Newspaper as art material in contemporary Israeli art



Michal Heiman, *Do-Mino # 4: Raphael, The Descent from the Cross (1507) / Anonymous Photographer (Haaretz, AP), An Incident in Bidu 27/02/2004*, 2008, digitally assisted readymades, 140x200, the artist's collection



Raffi Lavie, *Untitled ("The prophet is a fool")*, 1982, mixed media (acrylic, ink and oil crayon) on newspaper, 25.5x41, Benno Kalev collection, Tel Aviv



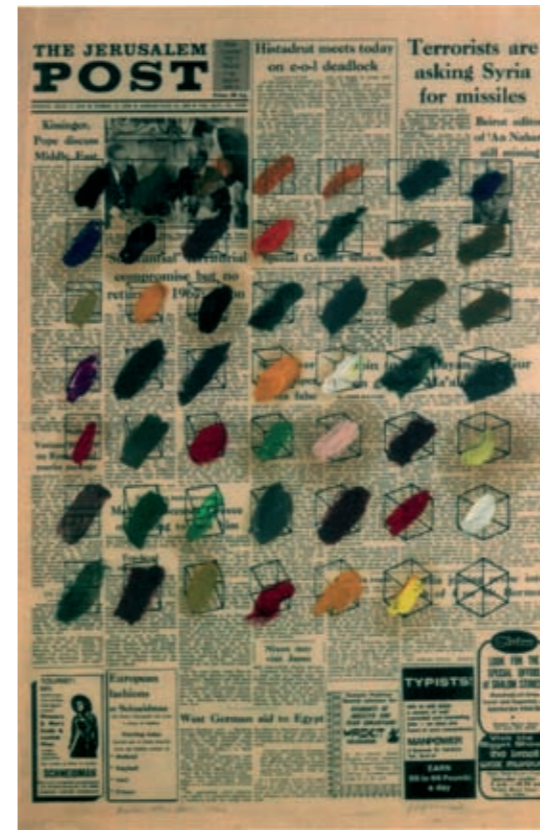
Henry Shelesnyak, *Untitled*, 1967, mixed media on photographic paper, 38x59, Benno Kalev collection, Tel Aviv

The title of the exhibition – Last Edition – curated by Prof. Haim Maor and the students in the Curatorship course in the Department of Arts, implies a process that is unfolding right in front of our eyes: the disappearance of the paper newspaper and its reincarnation in the form of an online information source, of a virtual image.

From the 18th century onward, visual images of newspapers and printing houses were associated with the concept of modernity. Paintings of the Impressionists presented images of people holding or reading a newspaper with an air of youthfulness and modernity. Since the beginnings of the printed press, newspapers and magazines were associated with the art world, be it in the form of publications by various artists, or of a source of critique and analysis. The presence of 20th century art movements on the pages of newspapers was felt in no uncertain terms. The press was a discourse and power field in which many battles were fought and harsh critique was voiced.

The newspaper became a source of inspiration, a raw material and an object for visual artists' creations. Pablo Picasso and Georges Braque incorporated newspaper cutouts into their collages. Robert Rauschenberg transferred texts and color photographs from newspapers onto his drawing paper by dissolving their ink with a thinner. Segments from comic strips featured in Roy Lichtenstein's paintings.

The exhibition shows possibilities for the use of newspaper as part of an artwork. It focuses on the uses of the printed press by Israeli art and brings together four artistic "uses" of journalism: newspaper as a raw material; newspaper as a medium and as a part of artworks that utilize multiple and mixed media; newspaper layout as a source of inspiration; and newspaper as a location for art discourse or as an alternative exhibition space.



Pinchas Cohen Gan, *Untitled ("Spatial Passage of a Cube – Offering for Art and Science")*, 1974, mixed media (oil and ink) on newspaper, 63x42, Benno Kalev collection, Tel Aviv



Yair Garbuz, *Europe Will Not Teach Us*, 2003, acrylic, collage, crayons, superlac paint and spray on polywood, 160x200, the artist's collection



Moshe Gershuni, *Untitled*, 1980, mixed media (glass paint on newspaper) mounted on canvas, 70x111, Benno Kalev collection, Tel Aviv

Dr. Amir Shapiro

It's Play Time

Dr. Amir Shapiro, a member of the Department of Mechanical Engineering and director of its Robotics Laboratory, says that he comes by his inclinations honestly. "My father works in agricultural mechanics for the Ministry of Agriculture and as I was growing up, our house was always full of LEGO blocks and pieces of machinery. I loved putting these together and taking them apart, and reading the copies of *Popular Science* and *Popular Mechanics* that my parents brought home. I just knew that LEGO blocks would be part of my future as well, though I didn't know how. After all, how many people can make a living and do something good for humanity while playing with toys?"

"Then, during my army service, I helped create a type of reinforced army jeep that could withstand explosive devices. This development proved itself in an attempted terrorist attack in Gush



My goal is to create robots that go 'where humans fear to tread'

Katif in which many lives were saved. Afterwards, I earned my undergraduate, graduate and doctoral degrees in mechanical engineering at the Technion – Israel Institute of Technology. It was there that I discovered the sub-field of robotics, and I knew it was tailor-made for me. Finally I had found a field that integrates all the elements that are important to me: making clever machines and helping people," says Shapiro.

"Many people view robotics as a tool to make our lives easier, such as cleaning our houses or doing our chores, for example," he adds. "That's true, of course, but my goal is to create robots that go 'where humans fear to tread' – to assume dangerous jobs that humans would ordinarily have to do."

Shapiro describes the use of robotics in several fields that are close to his own heart: the army and agriculture.

"When Nachshon Wachsmann was kidnapped and murdered by Hamas in 1994 during an attempted rescue operation, the elite soldiers who tried to liberate him had no way of knowing anything about the interior of the apartment, information that would have made a huge difference. The army subsequently developed a wall-climbing robot with a tiny camera that could slither up to windows and film the interior of houses," he explains.

Shapiro has developed such robot snakes – or snakebots – that operate by creating "rolling contact" with the environment just like wheels do; the rolling contact is maintained by a wave that travels through the snake's links. This contact provides odometry information, just like the wheels of a car tell us how far the car has travelled. The 2D (two-dimensional) snake can move backwards and forwards and also climb between two rigid surfaces



because it uses one traveling wave in its links, while the newer 3D snake uses two perpendicular waves – horizontal and vertical – to create a screw-like, rotating motion that can be steered right or left. "And of course," he adds, "the initial prototype was constructed out of LEGO parts."

In civilian life, earthquakes and other natural disasters can trap people within collapsed buildings, causing rescue crews to endanger themselves when searching for survivors. "A 3D snake robot could slither inside pipes, air ducts and narrow spaces around the walls of collapsed buildings, filming survivors with its cameras," explains Shapiro.

Another potentially life-preserving use of Shapiro's robots is in the tunnels between Gaza and Israel. These tunnels, used for smuggling weapons, need to be mapped in order to be destroyed properly, and GPS devices cannot be used in them. In this case, however, Shapiro realized that one robot was not enough. "As a robot advances in a tunnel, it is likely to slip as it rotates or turns, introducing error into the robot's angle and our mapping calculations," explains Shapiro. "In order to solve the problem, we use two tunnel-mapping robots that work in pairs. The arm that connects

the two robots records the positional information between the two, allowing for error correction, and transfers force between the two robots so that each robot can help the other to overcome obstacles."

In other words, to paraphrase King Solomon, "Two [robot] heads are better than one!" (Ecclesiastes 4:9).

In agriculture, too, robots can be used to save lives and not only reduce the need for human labor.

"In order to spray the tops of tall date palms, Israeli farmers have to stand on unsteady, moving high-rise platforms," explains Shapiro. "There have been many accidents over the years with their use, but a few years ago, one overturned and

killed two workers. While at the Ministry of Agriculture, my father actually led the way to outlawing the use of such platforms, and it was clear to me that we needed to develop a robot to do the job instead."

Shapiro is now working on a robotic apparatus for spraying palm trees, called "an autonomous sprayer." The prototype features a telescoping base that extends to the height of the trees, with computerized vision to detect the right place to spray. Only one human will be needed to operate the sprayer, and he or she does so firmly planted on terra firma, far from the fumes of the spray.

Shapiro lives with his wife Chaya and their three boys and a girl (and another one on the way!) in Meitar, near Beer-Sheva. "My home, just like the house in which I myself grew up in, is full of LEGO blocks, model airplanes and miniature robots," he says proudly. "I can see that at least two of my boys are following in my footsteps, as they have already submitted their first invention to a television competition."

Several articles about Shapiro and his robots have been published in *Popular Science* and *Popular Mechanics*. "This, too, closes a circle for me," says Shapiro. "I learned English as a child from these same journals that my parents brought home for us."

The Shapiros are happy to be Negev dwellers. "We love the open spaces here," says Shapiro. "And here, at Ben-Gurion University, I've proved to myself that I can make the world a better place and earn a living at the same time with inventing new 'toys.'"

Dr. Tzahit Simon-Tuval

Calculating the Costs

Dr. Tzahit Simon-Tuval is a southerner who was born and grew up on Moshav Nevatim near Beer-Sheva. She is excited to be a member of the Department of Health Systems Management at the Guilford Glazer School of Business and Management. “The School is promoting cutting-edge research in the field of health systems management, and I’m looking forward to making my own contribution as well,” she says.

Tzahit earned all three of her academic degrees – undergraduate, graduate and doctoral – at BGU. She became interested in health systems management while studying economics and management as an undergraduate student and then specialized in that field as a graduate student in the Department of Economics. “While public interest in economics tends to wax and wane based



Health economics is an inter-disciplinary field; sometimes we must direct recommendations from our research to professionals in other areas

on what’s happening in the world, I’ve found that health economics and health systems management issues are always on the public agenda due to their major impact on public welfare,” she explains.

Simon-Tuval emphasizes that the health management research conducted at BGU is directed towards practical recommendations in such issues as which medications should be included in the hotly debated “basket of drugs,” and what co-payments are required for a variety of services. Her research involves analyzing and improving patient compliance to treatment of chronic diseases such as obstructive sleep apnea, or OSA – a disorder in which a person experiences many pauses of breathing while asleep, resulting in a low oxygen level in the blood. In adults, it is a leading cause of daytime sleepiness and serves as an independent risk factor for high blood pressure, stroke and several types of heart problems; in children, it is associated with frequent upper and lower respiratory disorders, enlarged tonsils and adenoids, and other complications (see story on page 30).

“It is expensive to conduct the sleep-tests in special overnight clinics,” explains Simon-Tuval. “But studies have used the cost-benefit ratio to demonstrate that it is far cheaper for the public medical system to finance the tests and assume part of the costs of the expensive CPAP machines, than to pay for treatment of the long-range medical problems that result if OSA is not diagnosed and treated.” In other words, an ounce of prevention is worth a pound of cure.

“Currently, my research focuses on compliance issues,” explains Simon-Tuval. “Once we have determined that it’s to everyone’s benefit to properly diagnose and treat OSA with CPAP machines, we try to find ways to raise the

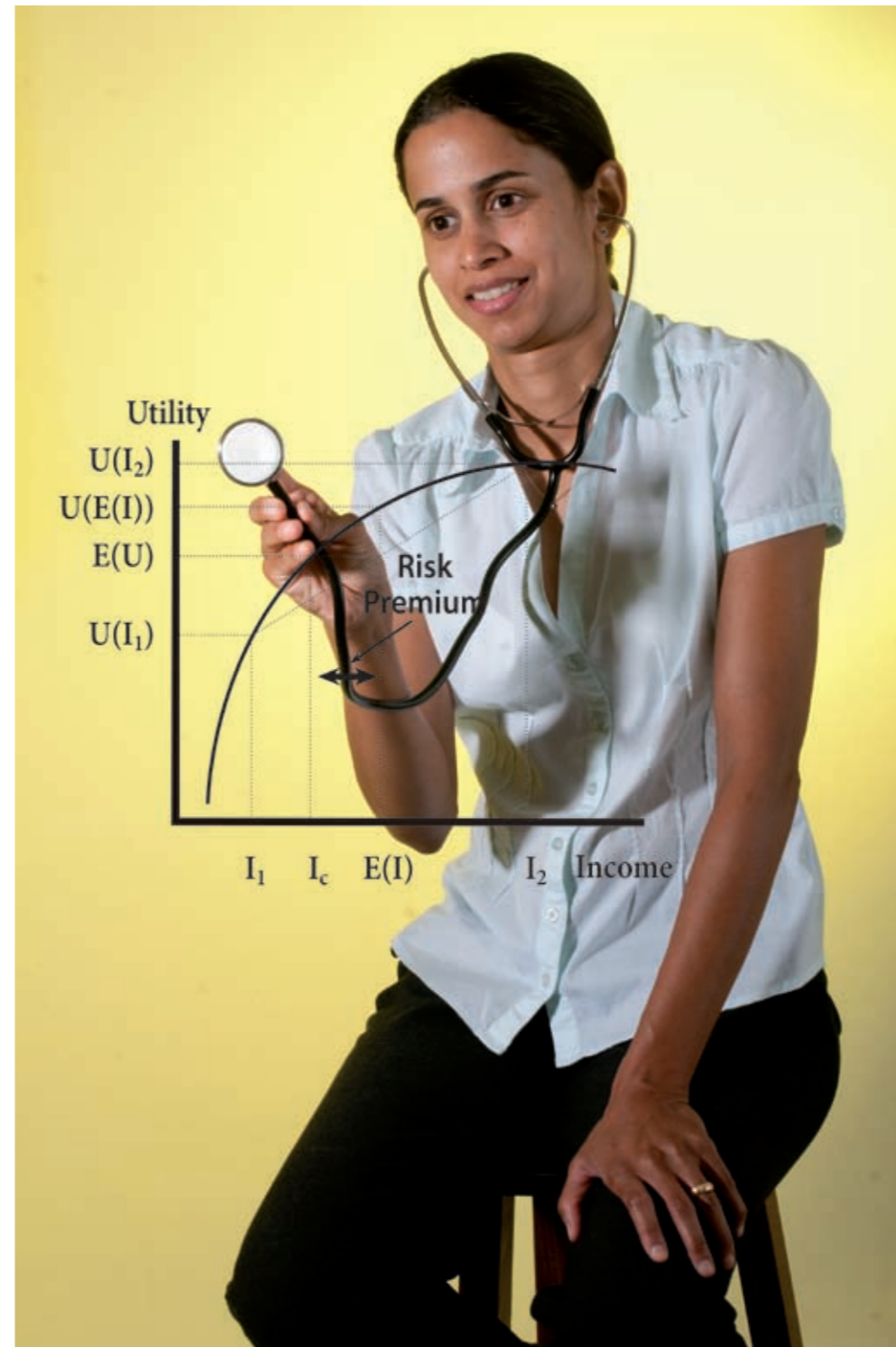
low compliance rate. Compliance in this disease has two stages: purchasing the machine (initial acceptance), and then continued use of it (adherence).”

In fact, her research as part of her Ph.D. dissertation under Prof. Ariel Tarasiuk of the Sleep-Wake Disorders Unit at the Soroka University Medical Center, revealed that low socioeconomic status is a risk factor for poor CPAP adherence. “Unsurprisingly, our study showed that the cost to the patient, or co-insurance participation, in the purchase of the machine, is a major factor for people of low socioeconomic status. We want to find the formula to lower the co-payment to a level the patient can afford, but not to lower it to the extent that people will take home the free machines in order to bury them in their closets,” she continues.

“The other aspect of compliance with treatment for chronic diseases is psychological: patients must first be aware of the health risks they face due to their illness and must understand how the treatment can contribute to their long-term health. Last but not least, they must possess ‘self-efficacy’ or the belief in their ability to change their behavior and comply with the treatment; they must be motivated to adapt themselves to the CPAP and adhere to the treatment.”

Simon-Tuval agrees that this belongs to the realm of psychologists, not health economists. “Health economics is an inter-disciplinary field; sometimes we must direct recommendations from our research to professionals in other areas. For example, in our study we found that family and/or friends’ positive experience with CPAP was an important factor in patient compliance; recommendations by health-care providers were not enough.

This lends itself to recommending



support-groups for OSA sufferers, she notes. Consequently, she looks forward to conducting research in the Department of Health Systems Management due to its fruitful inter-disciplinary cooperation with the Faculty of Health Sciences and other disciplines, including psychology.

In addition to health systems and health economics research, Simon-Tuval discovered another calling during her doctoral work, in a completely unexpected field. “When I was considering studying for my Ph.D., after I’d worked for a number of years as a health economist for Beer-Sheva’s Clalit Health Services, finances were an issue since I had to be self-supporting,” she says candidly. “So I was thrilled to merit a Kreitman Foundation Fellowship, which allowed me to pursue my studies without worry. I taught a course as one of the scholarship obligations, and when I stood before a classroom for the first time in my life, that’s when I realized that I loved teaching!”

Today, she teaches basic economics classes to first-year students who are not majoring in economics. “Many of these students have just returned to the classroom after years in the army and trips abroad. My goal is not only to transmit the necessary material of micro- and macro-economics, though of course that’s important too. I also want to teach them how to distinguish the important from the trivial and to provide them with analytical tools and critical thinking skills,” she notes.

Simon-Tuval lives with her husband Yarin in Eshkolot, a small rural community near Beer-Sheva. “After growing up on a moshav, I couldn’t imagine living in a high-rise apartment house. I love the rural space,” she admits. “We both love living in the south of the country.”

Dr. Aviv Goldbart **Breathing Easy**

Dr. Aviv Goldbart, pediatric pulmonologist, a sleep specialist at the Soroka University Medical Center and a member of the Faculty of Health Sciences, moved to Beer-Sheva at the age of three and has lived in the region ever since. After studying medicine at the Joyce and Irving Goldman School of Medicine, he did his pediatric residency at the Soroka University Medical Center. He also earned his Masters degree as a health administrator at the University's Department of Industrial Engineering and Management. Goldbart is a researcher and a physician in the

well: neurobehavioral issues such as hyperactivity or cognitive deficits. When they get older, many of them suffer from daytime sleepiness and in general, suffer from poor daytime performance. I long suspected that these children were at risk for complications later on in life, and I was determined to get to the root of the problem.”

Together with Tal, Goldbart, incumbent of the Dr. Gabi and Eng. Max Lichtenberg Career Development Chair in Pediatric Medicine, is studying children who suffer from sleep disordered breathing, which is

But OSA in children? This was new. In order to learn more, Goldbart headed to Louisville, Kentucky, to do his three-year post-doctoral research and clinical fellowship specializing in pediatric respiratory diseases and sleep disorders in the Kosair Children's Hospital and Research Institute – the foremost pediatric sleep program at the time. There, under the guidance of Prof. David Gozal, he performed basic research on animals, depriving them of oxygen to simulate OSA, then closely studied the affected proteins and genes in their brains. Sure enough, the proteins that are involved in cognitive and behavioral functioning were adversely affected due to the effects of insufficient oxygen reaching the tissues. In one of his studies, Goldbart demonstrated how junk food affects the brain in the same manner as OSA and also how, when the animals were exposed to both conditions – lack of oxygen as well as junk food – the animal's brain was profoundly affected and it performed even worse in intelligence-demanding tasks.

Were children, even young children, suffering similar effects, he asked? Goldbart says that as many as three percent of children suffer from OSA, compared to five percent of adults; among children, the main culprit is enlarged tonsils that block the breathing passage. Fortunately, the relatively simple surgical procedure of adenotonsillectomy, in which the tonsils and adenoids are removed, corrects OSA in about 75 percent of cases.

But the picture was more complicated than that. “We found that even in cases where there was no clear indication for surgery – the tonsils were only slightly enlarged, for example – if children had OSA in the sleep lab, then they also had systemic (body-wide) inflammation. That means that we found markers of inflammation in their blood, urine and



airways even though there was no sign of infection in the body. In short: those children are at increased risk for health problems due to propagation of systemic inflammation later on in life, just like adults with OSA, even though they may exhibit no clinical symptoms at all. Complications can include heart disease, strokes, cardiovascular problems, obesity and high blood pressure at a later age.

“Our goal is to find non-invasive treatments for OSA,” continues Goldbart. “Ideally, such treatment could replace surgical adenotonsillectomy for children or the use of a CPAP compressed-air device for adults. We must remember that about 15 percent of children still suffer from OSA even after adenotonsillectomy, and that any surgery carries risks such as infection, bleeding or dehydration. Also, many adults cannot adapt to a CPAP machine. Non-invasive therapy for OSA would be a blessing.”

Goldbart's research team uncovered how CRP, a marker for inflammation in the blood, correlates with cardiovascular problems – identified by an echocardiogram – in young children

with OSA. In subsequent research, Goldbart found that a medication called montelukast (a leukotriene modifier) currently used for asthma, led to improved breathing during sleep and increased the size of the airway. “In our study, parents gave their children chewable tablets of montelukast at night, before bedtime, instead of opting for surgery,” he explains. “It was well tolerated – and effective. But, of course, it will take a few more years until the drug is formally approved by the American FDA for OSA use.”

What are the remaining barriers to diagnosing and treating OSA in children? “We do not have enough pediatric sleep labs to confirm the condition,” Goldbart continues. “We only have four such clinics in Israel, and there are only 40 in the entire United States!”

Recently, the Israel Science Foundation, in collaboration with the Legacy Heritage Fund, awarded Goldbart a significant grant for his research in inflammatory changes in young children with obstructive sleep apnea syndrome. He was one of seven recipients chosen from more than one hundred candidates.

Goldbart is married with four daughters, two of them born in the United States, when he and his wife Riki were working in the Kosair Children's Hospital.

So are they a husband-wife doctor team? Goldbart laughs. “Not at all; I did my fellowship in Louisville while my wife did her post-doctoral studies there. Now both Riki and I are affiliated with Ben-Gurion University; Riki works in the Department of Chemical Engineering. She is the “real” doctor in the family – she has a Ph.D. in chemical engineering and biotechnology. Her research involves the controlled release of drugs and genes, mainly via ultrasound from an external source.”

Goldbart does volunteer work in the scouts and helps *Chaim Layed*, an organization for children with cystic fibrosis, accompanying the children to a summer camp in Europe as the in-house doctor. So whether at home with his family, at work in the hospital or on summer vacation, Goldbart is surrounded by and helping children live healthier lives.



Whether at home with his family, at work in the hospital or on summer vacation, Goldbart is surrounded by and helping children live healthier lives

Department of Pediatrics and is proud to work in the new child-friendly Saban Pediatric Medical Center recently dedicated at the Soroka University Medical Center.

It was during his residency that Goldbart came under the influence of Prof. Asher Tal, Head of Pediatrics Department B and incumbent of the Dr. Lillian Chutick and Dr. Rebecca Chutick Chair in Pediatric Medicine, whose research focuses on sleep-related pediatric illness. Goldbart became fascinated by the riddle of children who suffer from frequent upper and lower respiratory disorders. “Children with enlarged tonsils and adenoids tend to get sick two-and-a-half times more frequently than other children their age; their parents are the ones who are intimately familiar with the doctor's waiting room,” he says. “Often these children have other problems as

more often known as “Obstructive Sleep Apnea” (OSA). OSA is a disorder in which a person experiences many pauses of breathing while asleep, leading to a low oxygen level in the blood (a condition called hypoxia). Among adults, it has long been known that sleep apnea is a leading cause of daytime sleepiness and road accidents and is an independent risk factor for high blood pressure, stroke and several types of heart problems. Treatment for adults involves diagnosing the condition in a special sleep-test (polysomnography) to confirm that the patient is not getting enough oxygen due to the pauses in breathing, then teaching him or her to use a special machine in which a continuous stream of air under pressure is delivered through a mask worn over the nose, or nose and mouth, to keep the person's airway open (typically called CPAP or BPAP) while he or she is sleeping.

Dr. Tali Tadmor-Shimony

Soldiering On

In the first and second decades after the creation of the State of Israel, the waves of mass immigration swelled the numbers of school-age children several fold. The fledgling state was faced with an enormous increase in pupils, but with very few trained teachers.

As the saying goes, necessity is the mother of invention, and in response to this national education crisis, the peculiarly Israeli invention of young female soldiers recruited for the classroom was born.

“These soldier-teachers were a new and unique Israeli phenomenon,” explains Dr. Tali Tadmor-Shimony, a researcher at the Ben-Gurion Research Institute for the Study of Israel and Zionism. “Israel was the only country with compulsory military service for women where female soldiers taught in schools.”

Located in Sede Boqer, not far from David and Paula Ben-Gurion’s gravesite, the Ben-Gurion Institute allows a small group of University researchers to study the development of the nascent state. “There’s something very special about the atmosphere at Sede Boqer,” says Tadmor-Shimony. “Besides its quiet serenity and the rich library, there is something about the place that recalls the Israel of yesteryear. That’s what I love about it.”

For her work on this and other aspects of the role education has played in creating Israel’s collective national identity, this past spring, Tadmor-Shimony was awarded a Marc Rich Foundation Prize for Women Researchers. The newly-created prize is the first dedicated fund at an Israeli university created to promote the status of women in academia, specifically targeting women in the early years of their career.

While the role of education in the process of nation-building is widely acknowledged, Tadmor-Shimony is one of a very few scholars dealing with this topic in Israel. “One cannot understand Israeli society without understanding the significance of the educational system,” she explains. “This was the primary agent in the formation of the Israeli character. My studies are part of this conceptual framework, which examines how Israeli education was part of creating a collective national identity, as was done in many nations.”

In addition to her work studying the role of women in the early years



The soldier-teachers were the nearest and most tangible representatives of the national establishment

of the state, Tadmor-Shimony teaches undergraduate and graduate courses in modern Israeli history and the history of education.

It was Israel’s first prime minister, David Ben-Gurion, explains Tadmor-Shimony, who perceived the army as a vital socializing agent and decided that the situation in Israel made education a priority and that the army must give up some of its potential female labor force to meet those educational needs.



“The soldier-teachers, sent not only to teach but to live as members of the new immigrant communities, were the nearest and most tangible representatives of the national establishment as it absorbed the large number of newcomers from so many different cultures,” she says. “The task of creating a new Israeli society was something of a burden on all teachers at the time, who were called on to function as social workers, health professionals and representatives of the state, in addition to their teaching duties.”

“These girls can be regarded as social agents of Israeli culture,” posits Tadmor-Shimony, “and also as gender-related agents, that is, female role models, though they were surely unaware of this role.”

One can imagine these young women, often lacking pedagogical training,

whose own experience of the world was fairly limited, sent to do “battle” in the classrooms in communities of new immigrants.

Most of these “representatives of the state” came from Ashkenazi (European) families who had immigrated during the Yishuv period. They were often sent to teach in the outlying border areas or the periphery, where most of the new immigrants came from Islamic countries.

For the schoolgirls and their sisters, these female soldiers were quite different from the women in their own community. Although young, the women were “independent, educated and liberated – in terms of the period, if not in the contemporary sense – and served as gender-related role models

for the girls who were growing up in a patriarchal society, in which women serving in the army, free of parental or spousal supervision, were a rare phenomenon,” explains Tadmor-Shimony, adding that “their level of schooling enhanced their authority and status as educated women. They became a kind of gender prototype, albeit unwittingly.”

Much of Tadmor-Shimony’s research deals with the question of how a national identity was created in an emerging state. She examines how Israeli education contributed to achieving this identity, as was done in other developing nations.

About a fifth of the teachers in the first decade of the state were actually newcomers themselves who had arrived after the founding of the state. How did these teachers cope with the function of state agent on the one hand and with being immigrants on the other hand?

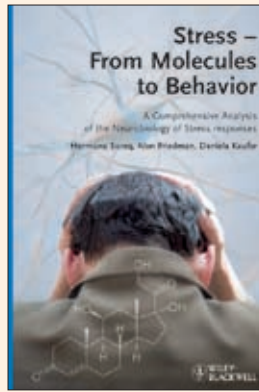
Her book on her research into how the Israeli character is depicted in the Israeli educational system, titled *The School as a National Identity Agent: Israeli National Education and the Formation of a New State (1953-1966)* will be published in Hebrew (Ben-Gurion University of the Negev Press, in press), and she is now working on a second book, *Teachers in Uniform Teaching Israeliess – Female Soldier-Teachers*.

Tadmor-Shimony’s husband, Eyal (Solomon) Shimony, a member of the Department of Computer Sciences at BGU, specializes in robotics and artificial intelligence. In the 1990s, the couple worked on their doctoral degrees while living in Providence, Rhode Island, for four years. Eyal earned his doctorate from Brown University and Tali from the Hebrew University. They decided to return to Israel to raise a family. They live with their sons Tomer and Eran in Lehavim, one of the small communities outside of Beer-Sheva.

Tali Tadmor-Shimony managed to locate many former women soldier-teachers, who are today in their 70s and 80s. In addition to archival documentation of the period, she has found these women to be rich sources of anecdotes from the time when they played such a key role in the immigrant communities.

“One woman I interviewed had served on Moshav Nevatim in 1957, settled by Jews from Cochin, India,” she relates. “Her pupils’ older sisters would come and ask her for advice about their first love affair and other personal problems. That soldier-teacher had a boyfriend who used to come and visit her and even stayed the night. That caused quite a stir in the Moshav, but she was admired by the teenage girls.”

On the Bookshelf



Stress – From Molecules to Behavior: A Comprehensive Analysis of the Neurobiology of Stress Responses

Hermona Soreq, Alon Friedman and Daniela Kaufer (editors)
Wiley-Blackwell, 2009

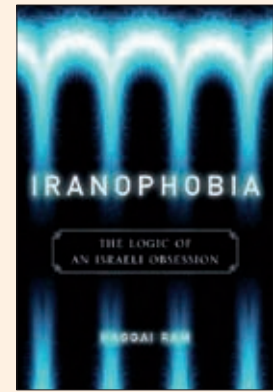
This volume comprehensively covers the molecular basis of stress responses of the nervous system, providing a unique and fundamental insight into the molecular, physiological and behavioral basis of the stress response of a whole organism. Edited by leading experts in the field, including Prof. Alon Friedman, a neurosurgeon and member of the Faculty of Health Sciences' Department of Physiology, the book summarizes the latest research advances in this area. It covers topics including: Systems in Stress Research; Cells and Circuits; Cognition and Behavior; Immune Responses; Post-traumatic Stress Disorder; and Vulnerability to Disease. It is an invaluable resource for clinicians dealing with stress-related disorders and biomedical researchers working in the field, as well as for pharmacology and biotech companies.



Coming Home: Media and Returning Diaspora in Israel and Germany

Nelly Elias
State University of New York Press, 2008

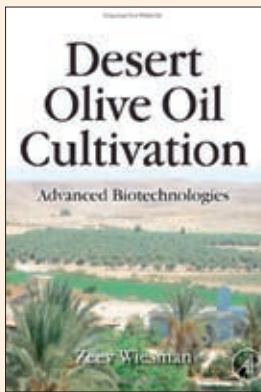
Nelly Elias of the Department of Communications examines the social and cultural integration of Russian-speaking Jews and Germans who returned to their respective historic homelands – Israel and Germany – during the 1990s and their experience in adjusting to these new countries. The book provides a glimpse into the social and cultural integration of this unique category of immigrants – the returning diasporas. Elias explores the social and cultural adaptation of these two groups by focusing on the roles played by their native language – Russian – and the language used by the media of each country. Based on one hundred in-depth interviews with immigrants now living in both Israel and Germany, she shows how media consumption is involved in both retaining Russian culture and getting involved with the culture, language and outlook of the host society. Elias considers media use to be an inseparable part of an immigrant's adaptation strategy, simultaneously reflecting construction of a new social and cultural identity while preserving their original cultural identity.



Iranophobia: The Logic of an Israeli Obsession

Haggai Ram
Stanford University Press, 2009

Israel and Iran are invariably portrayed as sworn enemies, engaged in an unending conflict with potentially apocalyptic implications. Dr. Haggai Ram of the Department of Middle East Studies offers an innovative and provocative reading of this conflict. Concerned foremost with how Israelis perceive Iran, he shows that this conflict is as much a product of shared cultural trajectories and entangled histories as it is one of strategic concerns and political differences. Ram explores prevalent Israeli assumptions about Iran to look at how these assumptions have, in turn, reflected and shaped Jewish Israeli identity. Drawing on diverse political, cultural and academic sources, he concludes that anti-Iran phobias in the Israeli public sphere are largely projections of perceived domestic threats to the prevailing Israeli ethnocentric order. He demonstrates that the conflict between Israel and Iran may not be as essential and polarized as common knowledge assumes. Israeli anti-Iran phobias are derived equally from domestic anxieties about the Jewish state's ethnic and religious identities and from exaggerated and displaced strategic concerns in the era of the "war on terrorism."



Desert Olive Oil Cultivation: Advanced Biotechnologies

Zeev Wiesman

Academic Press, 2009

Due to the adverse stress conditions typical of olive cultivation in desert conditions, the olive tree is responding with production of high levels of antioxidant substances. Studies have shown that saline irrigated varieties of olives have demonstrated advantages over those irrigated with tap water. Based on twenty years of research, this book by Prof. Zeev Wiesman of the Department of Biotechnology Engineering expounds on the appropriate selection of olive varieties with high productivity and oil quality, the impact of foliar nutrition on decreasing alternate bearing and increasing fruit quality, improving efficiency of mechanical harvesting and increasing efficiency of oil extraction and oil quality regulating analysis. Wiesman also discusses new irrigation techniques, including irrigation using recycled municipal waste water, extending the vegetative growth and development period, choosing proper genetic plant material and orchard design, and pre- and post-harvest advanced bio-methodologies, including image processing, low-resolution NMR, and quality analysis of semi-arid environmentally produced olive oil. In addition, he discusses factors that significantly affect the production and nutritional values of olive oil.



Sourcing the News: Key Issues in Journalism – An Innovative Study of the Israeli Press

Zvi Reich

Hampton Press, 2009

This book illuminates the sometimes obscure processes through which news is created. The innovative methodology of the face-to-face reconstruction interview, which was developed and implemented by Dr. Zvi Reich of the Department of Communications, enables a quantitative depiction of different aspects of news-making. Reich, who is also a journalist for a leading Israeli newspaper, focuses on the Israeli national press and addresses key questions that continue to trouble communities of journalists, academics and journalism educators. The book includes chapters on the growth of newspapers; book structure reporters as problematical witnesses of their own work; reconstruction of interviews; obtaining news as a two-phase process and the characteristics of news phases; the two-phase process and literature; the two-phase process and journalistic practice; news initiative and the public interest; the lure of spokespersons; leaks; format and news work practices; news beats and journalistic work; stability and news production; the significance of news practices; news reporting and efficiency; and epistemologies of news reporting.



Meso-Scale Shear Physics in Earthquake and Landslide Mechanics

Yossef H. Hatzor, Jean Sulem and Ioannis Vardoulakis (editors)

CRC Press/Balkema, The Netherlands, 2009

Prof. Yossef Hatzor of the Department of Geological and Environmental Sciences and incumbent of the Dr. Sam and Edna Lemkin Chair in Rock Mechanics has co-edited this book that brings together state-of-the-art, peer reviewed papers on shear physics at the meso-scale in earthquake and landslide mechanics. The identification of meso-scale phenomena occurring between microscopic and continuum length scales has been one of the most exciting developments in the last decade in understanding shear between material interfaces, as well as particulate systems, and is considered the bridge between the two length scales for studying material response. This research area has immediate bearing on our understanding of both earthquake and landslide mechanics – two geological processes that pose great risk to mankind worldwide. The articles are arranged in chapters that discuss Dynamics of frictional slip; Fault gauge mechanics; Experimental fault zone mechanics; Granular shear and liquefaction; and Dynamics of landslides.

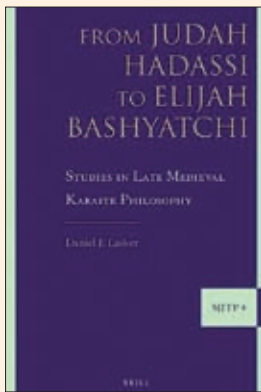


Uneasy Neighbors: Israel and the European Union

Sharon Pardo and Joel Peters

Lexington Books, 2009

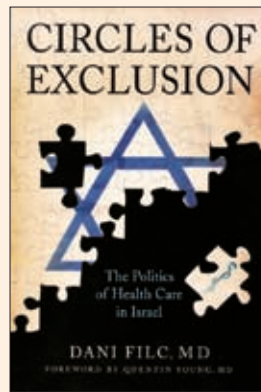
Dr. Sharon Pardo, Jean Monnet Lecturer in the Department of Politics and Government and Director of the Centre for the Study of European Politics and Society, and Dr. Joel Peters, founding Director of the Centre and now at Virginia Tech, analyze significant aspects of Israeli-European relations from the late 1950s to the present day. They examine major facets of the troubled Israeli-European relations, which are characterized by a love-hate relationship fueled by economic passion and occasional political hostility. Emphasis is placed on five broad themes that address different dimensions of the relationship: Israeli-EU relations and the Israeli-Palestinian peace process; Israeli-EU relations in a multilateral context; the bilateral nature of Israeli-EU relations; Israeli (mis)perceptions of the EU; and the future of Israeli-EU relations. The study offers insights into how the EU is actually judged by Israelis and how well European intentions have been translated into observable actions in both Israel and the Middle East. The authors offer both an analysis of Israeli-European relations and an observation on the Union's emerging role as an international actor, especially in the Middle East.



From Judah Hadassi to Elijah Bashyatchi: Studies in Late Medieval Karaite Philosophy

Daniel J. Lasker
Brill Academic Publishers, 2008

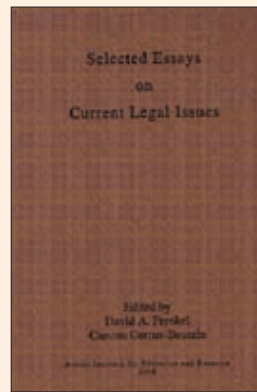
Prof. Daniel Lasker from the Department of Jewish Thought and incumbent of the Blechner Chair in Jewish Tradition and Values presents a pioneering account of the development of late medieval Karaite Jewish thought, challenging the oft-repeated assertion that Karaite thinkers remained loyal to Kalām, the dominant theological philosophy during the earlier Golden Age of Karaism. A careful reading of Karaite sources demonstrates that the watershed figure whose influence led to changes in Karaite thought was the Rabbanite Maimonides, whose attacks on the Kalām had revealed its scientific shortcomings. This book discusses major Karaite thinkers from the twelfth to sixteenth centuries, as well as the central themes in their writings. It also outlines the impact of Karaism on the dominant Rabbanite Jews and their major thinkers, especially Maimonides. It should be of interest to all those who study medieval philosophy, intellectual history, Judaism and sectarianism.



Circles of Exclusion: The Politics of Health Care in Israel

Dani Filc
Cornell University Press, 2009

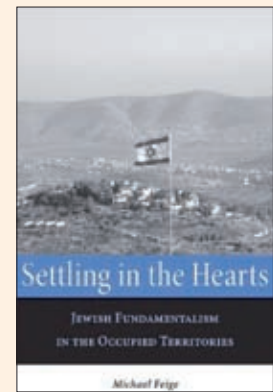
In its early years, Israel's dominant ideology led to public provision of health care for all Jewish citizens, regardless of their age, income, or ability to pay, but the system has become increasingly privatized and market-based. While the wealthy, the young, and the healthy have relatively easy access to health care, the poor, the old and the very sick confront increasing obstacles to medical treatment. Dr. Dani Filc, MD, of the Department of Politics and Government and Chairman of Physicians for Human Rights-Israel, argues that today, equal access to health care is systematically thwarted by a regime that does not extend an equal level of commitment to the well-being of all residents, whether Jewish, Israeli Palestinians, migrant workers or Palestinians in the Occupied Territories. Filc explores how Israel's adoption of a neoliberal model has pushed the system in a direction that gives priority to the strongest and richest individuals and groups over the needs of society as a whole, and to profit and competition over care. He also discusses how human rights, public health and economic imperatives can be combined to produce a truly equal health care system that provides high-quality services to all Israelis.



Selected Essays on Current Legal Issues

David A. Frenkel and Carsten Gerner-Beuerle (editors)
ATINER, Athens, Greece, 2008

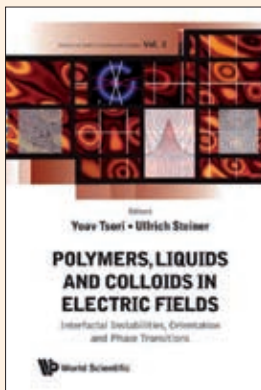
Prof. David Frenkel of the Department of Business Administration and head of the Law Research Unit of the Athens Institute for Education and Research, and Dr. Carsten Gerner-Beuerle of King's College School of Law in London, UK, present essays by contributors from around the world. As diverse as the essays are – spanning public and private law, human rights and criminal justice – they all seek to illuminate issues of current significance from an international perspective. Thus, the readers may focus on the areas of law that are of particular interest to them and find references to their own legal systems or draw a comparison to similar problems discussed in their countries. Apart from the natural distinction between private and public law, the editors have concentrated on topics of general interest, including Business Law, Intellectual Property, Contract Law, Consumer Protection, Criminal Law, Tax Law, Human Rights, Cultural Property, Media Law, Environmental Law and Land Planning and Public International Law. The volume concludes with articles on more abstract topics relating to the History of Law and Legal Education.



Settling in the Hearts: Jewish Fundamentalism in the Occupied Territories

Michael Feige
Wayne State University Press, 2009

Prof. Michael Feige of the Israel Studies program at the Ben-Gurion Research Institute for the Study of Israel and Zionism examines the attempts of Gush Emunim, a religious nationalistic social movement, to construct Israeli identity, collective memory and sense of place. Gush Emunim traces its roots to the 1967 Six Day War and the development of a Greater Israel ideology, which sought to maintain Israeli control of the West Bank and other newly-acquired territories. It became a political force by constructing settlements within contested territory and it is one of the key players in the Israeli-Palestinian conflict. Feige analyzes the success of Gush Emunim through an examination of its ideology, practices and symbolic construction of space and time. He explores how the settlers reinterpret Jewish history, secular Zionist ideology, religious faith and the Bible and identifies the crucial principles at work in their attempts to appropriate land, particularly in their use of collective memory, referring both to ancient times and to more contemporary events. He concludes with an analysis of the contemporary changes, conflicts and crises that have affected Gush Emunim.

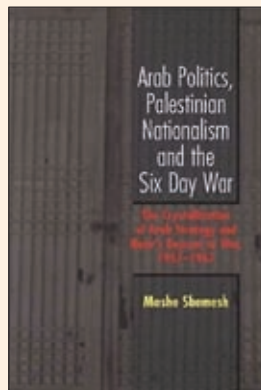


Polymers, Liquids and Colloids in Electric Fields: Interfacial Instabilities, Orientation and Phase Transitions

Yoav Tzori and Ulrich Steiner (editors)

World Scientific Publishing Company, 2009

This book, co-edited by Dr. Yoav Tzori of the Department of Chemical Engineering and incumbent of the Joseph and May Winston Career Development Chair in Chemical Engineering, exposes a wide range of phenomena that occur when soft matter systems are put under the influence of an external electric field. It shows how an electric field can be used to affect objects at the submicron scale and how it controls the phase behavior of liquids and polymers. Each topic is covered by theory, experiment and simulation, providing a broad perspective of the underlying physical phenomena. Topics discussed include: The Phenomenology of Modulated Phases: From Magnetic Solids and Fluids to Organic Films and Polymers; Change of Critical Mixing Temperature in a Uniform Electric Field; Electrohydrodynamic Instabilities of Thin Liquid Films; Electrowetting: Phase Separation and Morphology of Polymer Mixtures Driven by Light; Thermodynamics and the Phase Diagrams of Block Copolymers in Electric Fields; and Orienting and Tuning Block Copolymer Nanostructures with Electric Fields.

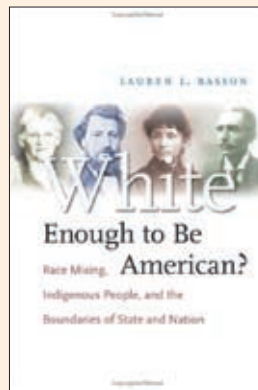


Arab Politics, Palestinian Nationalism and the Six Day War: The Crystallization of Arab Strategy and Nasir's Descent to War, 1957-1967

Moshe Shemesh

Sussex Academic Press, 2008

The Six Day War was the climax in the deterioration of the Arab-Israeli conflict, which began in 1957 when Nasir began preaching the idea of Arab nationalism, placing the Palestinian problem at its center. The decade before the Six Day War was marked by preparations by both sides for an all-out military confrontation. As the Arab states formulated their goals and the ways of attaining them, differences of opinion erupted between Egypt and Syria. Nasser consciously led Egypt to war, carefully weighing the implications of each political and military step. This study, by Prof. Moshe Shemesh from the Ben-Gurion Research Institute for the Study of Israel and Zionism, reveals conclusions regarding Arab strategy that differ from previous scholarly and political-military assessments. Issues discussed include: the relevance of the Palestinian problem as key to understanding the descent to war; Nasser's military blunders and his acceptance of the principle that Egypt had to absorb the first Israeli strike; and the Hashemite regime's response to the Palestinians' heightened national awakening.



White Enough to Be American?: Race Mixing, Indigenous People, and the Boundaries of State and Nation

Lauren L. Basson

University of North Carolina Press, 2008

Racial mixture posed a distinct threat to European American perceptions of the nation and state in the late nineteenth century, claims Dr. Lauren Basson of the Department of Politics and Government, as it exposed and disrupted the racial categories that organized political and social life in the U.S.A. Offering a provocative conceptual approach to the study of citizenship, nationhood and race, Basson explores how racial mixture challenged and sometimes changed the boundaries that defined what it meant to be American. Drawing on government documents, press coverage and firsthand accounts, Basson presents case studies concerning indigenous people of "mixed" descent. She reveals how the ambiguous status of racially mixed people underscored the problematic nature of policies and practices based on clearly defined racial boundaries. Basson demonstrates how the challenges to the American political and legal systems posed by racial mixture helped lead to a new definition of what it meant to be American – one that relied on institutions of private property and white supremacy.



Optical Supercomputing: Second International Workshop

Shlomi Dolev and Mihai Oltean (editors)

Springer, 2009

Prof. Shlomi Dolev of the Department of Computer Sciences and incumbent of the Rita Altura Trust Chair in Computer Sciences, together with Prof. Michai Oltean from Babeş-Bolyai University in Romania, present the refereed proceedings of the Second International Workshop on Optical Supercomputing, OSC 2009, held in Bertinoro, Italy. Being an annual forum for research presentations on all facets of optical computing for solving hard computation tasks, OCS addresses topics of interest including: designs of optical computing devices; algorithmics and complexity issues of optical computing; computation representation by photons and holograms; neural and brain inspired architectures; electro-optic devices; practical implementations; analysis of existing devices and case studies; optical photonics and laser switching technologies; optical and photonic memories; optical signal processing subsystems; optical networks for high-performance computing; optical interconnections; quantum optical systems; applications and algorithms for optical devices; Alpha particles, X-rays and nano-technologies for optical computing.

Dr. Assaf Hasson

A Never-Ending Process

Quite often, when I'm lying in bed at night staring at the ceiling, my wife will ask me, 'Are you working?' and the answer is . . . yes."

Such is life for Dr. Assaf Hasson of the Department of Mathematics. "On the one hand, I work a lot at home so my time is flexible, but there's really no such thing as being finished with work – ninety percent of the time, I'm thinking about some math problem or other."

Speaking with a hint of a British accent left over from his three-and-half years doing a post-doctorate at the University of Oxford, Hasson, 37, tries to explain his particular field of mathematics: "model theory."

What practical use does it have? Hasson isn't ashamed to say he has no idea. "But I don't know of any mathematical advance that went 50 years without being applied in some practical way," he adds.

Growing up in Jerusalem, he always had a good idea of where he was headed. "I always liked riddles," he says. He received his Bachelors degree in computer science, but he knew that he didn't want to study computers or become a programmer – which is his wife Michal's profession.

At the Hebrew University, he came under the tutelage of two of the world's leading model theorists – Hrushovski and Prof. Saharon Shelah.

not hesitate to accept the offer at BGU.

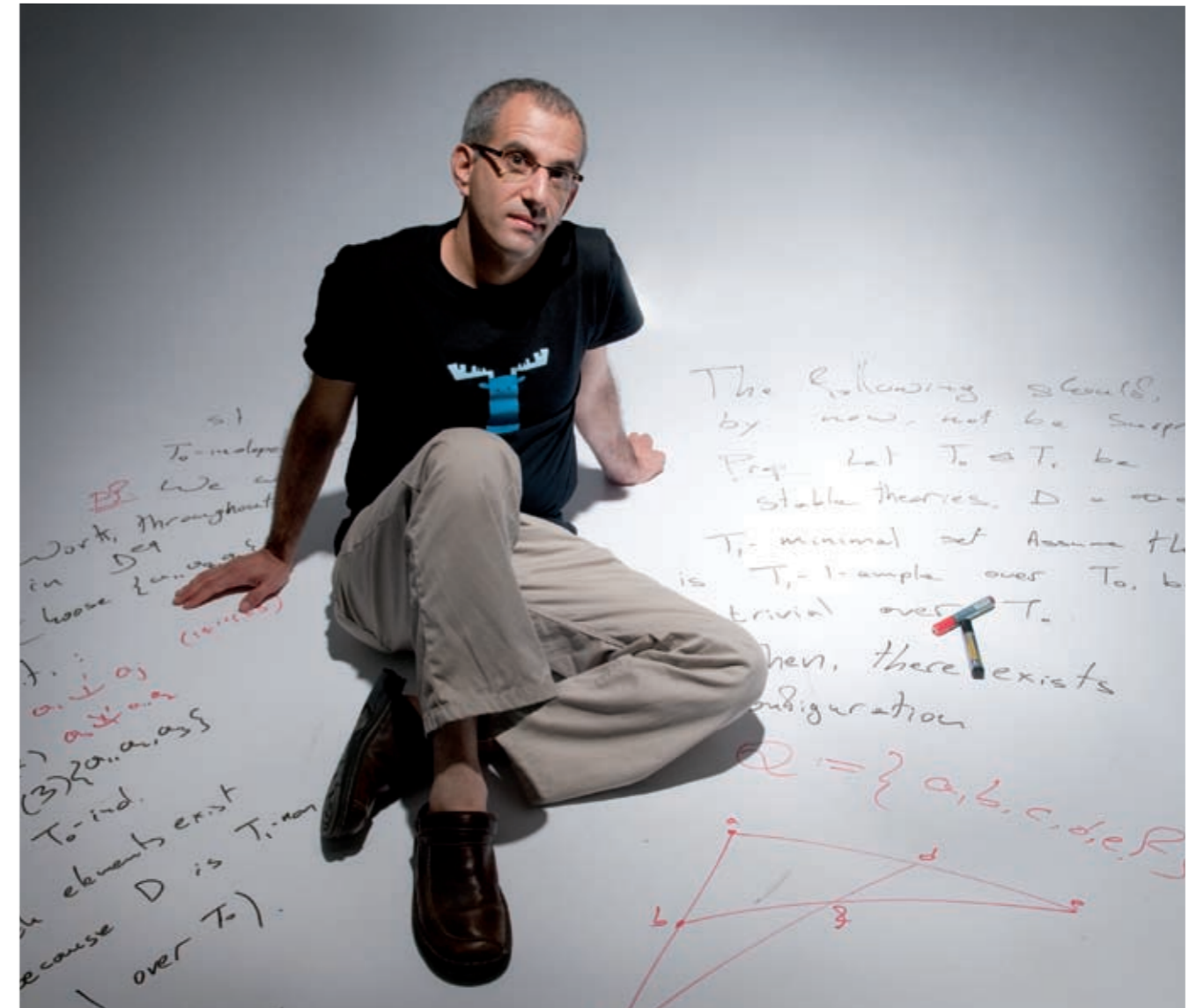
He recounts that when he meets someone and tells them he's a mathematician, "The first two things they say are, 'I was never good at math,' and, 'You must be really intelligent.' The truth is that there are mathematicians who are terribly intelligent, who are geniuses, but there are many who are not." He can only discuss math with colleagues. "Sure, I have friends who aren't mathematicians, and I can talk about anything with them except my work."

Hasson doesn't have any heroes in the field because the "greats" of mathematics are doing things beyond his and the great majority of professional mathematicians' abilities, so they are not role models. He can't point to any specific goals, such as solving this or that mathematical mystery – it's an ongoing, never-ending process.

"For instance, I've been trying to solve one particular math problem for the last three or four years. I'm always on the lookout for ideas that can bring me closer to the solution, and I'd be very, very happy to solve it. But it's not an obsession of mine. It's not the only problem I think about. There are always many more interesting problems, and aspects of problems, to work on than there is time."

He feels extremely lucky and says most other mathematicians do too. "My profession is also my hobby. I'm sure if you asked my colleagues in the Department, they would say, just as I do, that they find it amazing that someone is willing to pay them to pursue their hobby."

He does have one non-mathematical interest he pursues in his spare time, though. "I read novels, many of the classics – Dostoyevsky, Gogol, Dickens.



Mathematics takes highly intelligent people who could be designing weapons and engages them in something that has absolutely no practical application



"Any question in Euclidian geometry can be solved, but what is it about Euclidian geometry that makes that so? Model theory would try to answer that question. But this is just one way to illustrate it," he explains.

If the reader still doesn't understand, not to worry. "I'm not sure I could present a paper on model theory to my colleagues because I'm not sure many of them know enough about it," he says. Model theory is such an obscure discipline of mathematics that only one model theorist – Prof. Ehud Hrushovski, one of his mentors as a student at the Hebrew University of Jerusalem – has ever even been short-listed for the Fields Medal, which is equivalent to a Nobel Prize in mathematics, says Hasson.

For Hasson, Oxford was the natural choice for his post-doctoral studies. The Mathematical Institute there has traditionally had a very strong group of scholars in the field of mathematical logic and model theory in particular. Studying under such giants had an intimidating effect on Hasson. "I knew I wasn't in their league. But when I got to Oxford, the mathematicians there seemed of more human proportions, and I said to myself: 'I can do this.'"

After receiving a one-year post-doc grant from the Hebrew University, he received a three-year scholarship from the British Engineering and Physical Sciences Research Council. It had always been his intention to return to Israel, so when he was then offered a position in the Department of Mathematics, he did

Also the modern novelists, Nabokov, Rushdie and some Israeli novelists, Susan Adam, David Shahar."

Usually, though, it's only on vacations that Hasson can take his mind off math long enough to be able to sit down and concentrate on a novel. "When your mind is constantly exploring this math problem or that, it's very hard to unwind and do other things. It usually takes me the first three or four days of a vacation to change the mind-set."

Hasson seems to live very comfortably with the obscurity of the field in which he toils, the unlikelihood of people "being able to understand

model theory, or even being interested in it." He says that "If a paper on model theory gets read by 50 people, that's a huge number. If I write a paper that gets read by five people, I'm happy."

He's well aware that "normal people" don't have the deepest appreciation for the kind of "purely intellectual" work he does as a pure mathematician. "A friend of mine once said that 'an important theorem in mathematics allows you to explain other theorems in mathematics.' It's true that many branches in math just relate to themselves. And in mathematics you do sometimes get lost going off on tangents." It's so abstract, so infinite that "in many cases, asking the right question is at least as important as solving it."

But Hasson takes a humorously philosophical attitude to the ethereal nature of his work. "Once a Fields medalist gave a talk entitled, 'Does mathematics contribute to humanity?' And his answer was – 'of course it does.' It takes highly intelligent people who could be designing weapons and engages them in something that has absolutely no practical application." Asked if he was thinking of the brilliant physicists of the Manhattan Project who designed the atom bomb, Hasson nodded his head. "Sometimes just preventing people from doing bad things is an achievement," he smiles.

Dr. Iris Visoly-Fisher

Here Comes the Sun

For Dr. Iris Visoly-Fisher, research is as much a mission as it is a profession. “Modern life as we know it depends on our ability to sustain our environment,” she maintains. “With the increasing financial and strategic costs of conventional fuels, an alternative energy source, like solar, is the natural choice.”

Though Visoly-Fisher is a member of the Department of Chemistry, her multi-disciplinary training influences everything she does. Born and raised in Haifa, with degrees in physics and materials engineering from the Technion – Israel Institute of Technology, and in chemistry from the Weizmann Institute of Science, she came to BGU after a post-doc at Arizona State University and has dedicated herself

produce and offer little flexibility. For these reasons, Visoly-Fisher focuses her attention on organic (hydrocarbon based) cells – which include materials like plastics. Organic cells are cheaper and simpler to manufacture than silicon and other semiconductors and their production requires no acids or harsh solvents.

Organic cells are lighter-weight and more portable than conventional semi-conductors. They are also more flexible, both mechanically and in terms of planning and applications. “There has even been talk of putting organic cells in paint and windows,” says Visoly-Fisher. Since organic cells are foldable, they can be integrated into electricity-generating tents, or other products made from

and won’t break in your backpack.”

Visoly-Fisher acknowledges that organics are not without drawbacks. They are less efficient and have a lower theoretical limit than other semi-conducting materials in use. These shortcomings, however, can be overcome. One option for increasing their efficiency, she believes, is to incorporate materials that absorb different colors, in order to make use of more light energy.

In building and characterizing new devices, Visoly-Fisher adopts a “bottom-up” approach. That is, she asks: if we understand the properties of a single building block of a system, can we deduce the properties of the entire system? Can we make a better system by designing this single building block? She investigates what happens to all the system’s building blocks and how scientists can play with them to build new devices.

“I can characterize a single building block and from that, see how the whole device works. This is the opposite of what most people do,” she explains. “I say, let’s see what one part does and then put them together to get the big picture. It’s like a puzzle, or like putting together LEGO bricks. You can connect the pieces in different ways and find novel approaches for joining them.” This can be practically applied to studying molecular building blocks of solar cells and light-activated microelectronic devices. “We can take existing cells and do optic manipulations on them to capture the light within a device so it remains for a long time,” she adds.

Along with the bottom-up approach, Visoly-Fisher says she is most interested in and inspired by the nanometric architecture of a device. The nanoscale measures objects one hundred-thousandth the thickness of a single human hair.



Let’s see what one part does and then put them together to get the big picture. It’s like putting together LEGO bricks. You can connect the pieces in different ways and find novel approaches for joining them

to finding innovative solutions for the development of sustainable energy in the form of solar power. Such work, she holds, has significance for economics, security, environmental quality and energy independence. While there are other alternative options, such as bio-fuels, they generally tend to defile the environment. In contrast, solar energy is clean and unlimited, and while not as affordable as bio-fuels, is generally more cost effective when the other costs are taken into account, she says.

Photovoltaic cells – devices that convert sunlight directly into electricity – are ideal, according to Visoly-Fisher, as they offer a clean and free energy source. Generally, these cells are produced with traditional semiconductors like silicon, which, she explains, are expensive to

cloth. One current aim, she says, is to make sheets of active materials that can be rolled up. “Some of these ideas are more practical than others,” she says, adding that with organics, “the sky’s the limit.”

In this context, Visoly-Fisher is developing new methods for producing innovative organic cells that are similar to silicon, but lighter, less expensive and more effective. At the present, these ideas are not commercially feasible due to issues of price, manufacturing and stability. “We’re working to solve these problems in the Elaine and Sarah Sklar Molecular Opto-Electronics Lab,” she says. “If we do succeed, it will be easier to achieve portable energy sources that could power your laptop or charge your cell phone. They will be light and cheap

High resolution scanning probe microscopy and other recently developed methods allow the measuring of the electronic properties of very small objects. “With scanning probe microscopy, we can measure to the size of one atom,” says Visoly-Fisher. “You can examine a single molecule and measure its properties at high resolution. I couldn’t do my research without this tool.”

While using some of the most advanced hi-tech research methods available today, Visoly-Fisher says that her main teacher is nature. For example, she looks to biological photosystems, like those involved in photosynthesis, to provide the knowledge needed to design artificial, bio-inspired materials for solar photovoltaics (the conversion of light to electricity). “People have already made synthetic molecules that mimic the active part of the photosynthesis process – and can manufacture them at will,” says Visoly-Fisher. “We are now trying to do this with solid cells.”

Another original application of this work is the creation of single-molecule photovoltaic cells that can serve as miniaturized energy sources. Tiny and portable, these truly nano-scale devices can be made into medical technologies like bio-sensors, small enough to be placed on a chip. These devices will use a very small volume of materials and energy and will need only light to be activated.

“I believe that ultimately, the alternative energy world will benefit from a combination of alternative sources,” says Visoly-Fisher. “Likewise, the photovoltaic arena will reap the benefits of different technologies: silicon may be efficient, but it causes pollution. Organics, while somewhat less efficient, are far cheaper and cleaner than conventional materials.”

Visoly-Fisher admits that her interest in clean energy manufacture is linked to the asthma from which the elder of her two children began to suffer when they were living in the heavily-polluted center of Tel Aviv. It is also linked to the area

her husband is involved in as an architect specializing in “green” planning and construction.

“There’s a lot of interest in this area for many reasons,” continues the researcher, whose work itself has drawn the attention of the Marc Rich Foundation, which recently recognized her work with a Marc Rich Foundation Prize for Women Researchers. “The pursuit of energy independence is a large part of the security program in countries like Israel and the US,” she adds. “Other factors, like global warming and predicted oil shortages, also contribute to increased attention on sustainable energy.”

In addition to its great relevance, sustainable energy attracts Visoly-Fisher due to its interdisciplinary nature. “Chemistry gives us the ability to change organic materials at will. Physics allows us to understand properties of these materials. Engineering puts everything altogether so we can best make use of it, and biology is the inspiration for it all,” she says.

Dr. Raz Zarivach **It's Crystal Clear**

For structural biologist Dr. Raz Zarivach, seeing is not only believing, but doing. A member of the Department of Life Sciences and the National Institute for Biotechnology in the Negev, Zarivach explains his initial attraction to structural biology, which seeks to explain the three-dimensional structure of biological macromolecules. “As a chemist, I liked 3D views of molecules. When I see something in 3D, I know it's there and how it looks. I liked the challenge of finding these ‘blueprints’ and putting them to best possible use,” he says.



Think of a protein as a house for which you can get a blueprint. Structural biology allows you to see the shape of this house at an atomic level

“Think of a protein as a house for which you can get a blueprint,” continues Zarivach. “Structural biology allows you to see the shape of this house on your computer at an atomic level. It provides information extending from the atomic level, to the electron level, to the general shape. By knowing the location and use of each room in the house, you can understand how to make the most of it.”

As another example, we can look at a machine. “Structural biology gives you a clear diagram of where the bolts and wheels are located, how they are connected and what each part does,” says Zarivach. This is crucial, he explains, since by illuminating structural information, we can understand function and determine how to proceed.

In concrete terms, explains Zarivach, “by understanding function – and how molecules move, interact, bind and fit with each other – we can create important new designs, which can contribute to basic scientific research, or lay the foundation for innovative drugs or industrial products. We can also use existing blueprints to understand structures for which we have no blueprints. Let's say, a home without a plan, which sits in a housing development. You can modify this home based on blueprints for similar structures.”

Perhaps the most important application of this work, carried out with the support of the David and Inez Myers Foundation, is countering disease. To this end, in one of his current research projects, Zarivach examines proteins involved in pertussis, a highly contagious disease commonly known as whooping cough. Causing respiratory tract infections, pertussis is characterized by a paroxysmal cough. While vaccines

and antibiotics against pertussis exist, resistant strains are rendering current drugs useless. Seeking to understand how this disease works, Zarivach hopes to help create new and effective anti-pertussis medications.

In another project, Zarivach focuses on magnetic nano particles, which are key players in the nano-biotechnology field for catalysis and for biomedical uses, such as the treatment of some cancers, as well as the detection and separation of biomolecules. Here, he concentrates on magnetosomes, or organelles present in bacteria, which can “swim” according to magnetic fields. Serving as a compass, these magnetosomes orient the bacteria in geomagnetic fields, simplifying their search for their preferred environment. By understanding the formation of magnetosomes, Zarivach hopes to be able to design new nano materials that can serve as nano wires and nano machines as well as shed light on basic processes in a living organism. These basic processes have implications in many diseases.

Using the tools of X-ray crystallography, Zarivach deduces the 3D structure of magnetosome-related proteins at an atomic level. “The results of this project will yield important insights into iron biomineralization, reveal new bacterial inner membrane protein families and provide new tools for the production of magnetic nanomaterials. These findings should contribute to the battle against cancer by enabling the design of magnetic nano particles that can enter the body, target cancer cells and kill them by drug delivery or even by boiling them (locally) as a result of radiation absorption by the magnetic particles.”



Zarivach began in this important field by earning his B.Sc. in chemistry from Tel Aviv University. He went on to receive his Ph.D. in the same discipline from the Weizmann Institute of Science – where he was part of a research group headed by Nobel Prize laureate Prof. Ada Yonath – and continued as a post-doctoral fellow at the University of British Columbia in Vancouver, Canada.

When not in the lab, Zarivach mostly enjoys spending time with his wife and three small children. Once, before the children were born, he was an avid reader, particularly of science fiction, a hiker and traveler. Now, between the demands of research and family, these activities are mostly on hold, but Zarivach has no complaints. Largely content with his chosen profession, he praises the University's pleasant and stimulating atmosphere and the caliber of his students. He is no less positive about Beer-Sheva, which he says is “relaxed, free of traffic jams and a great place to raise kids.”

As director of his own laboratory, Zarivach holds responsibility for purchasing equipment, hiring personnel and overseeing the projects of graduate students. He also chooses subjects of research, which he hopes will ultimately lead to improved human health.

“Again, if we have the blueprint, we can design crucial drugs. We can create different artificial molecules that will block the entrance of molecules that lead to wrong processes and diseases. It's possible to say that the body contains many doors with different locks. Through our work, we try to design various keys that can each unlock a different door.”

Dr. Gitit Gur-Gershgoren

Money Makes the World Go 'Round

The good news is that Israel's financial system isn't nearly as bad off as that of the United States, Britain or much of the rest of the world. The bad news is that Israel isn't out of the woods by any means, and that rising unemployment remains a serious danger.

That's the word from Dr. Gitit Gur-Gershgoren, who recently joined the Department of Business Administration at the Guilford Glazer School of Business and Management, where she teaches courses on financial policy, portfolio management and Israel's financial

run and pick up her 2-year-old daughter, Arielle, from nursery school. "I'm going 'round the clock," she says, trying to juggle two jobs and a family.

For Gur-Gershgoren, being an economist combines the natural affinity for mathematics that she's had since her childhood in the Negev town of Arad, along with the curiosity about human behavior that she developed during her army duty as a psychological researcher. She studied economics and international relations as an undergraduate student at the Hebrew University of Jerusalem

Asked why Israel's financial system weathered the latest financial crisis more successfully than the American one, she explained that Israel learned the hard way – by the bank shares scandal of the early 1980s, in which the banks played fast and loose with the public's money – which resulted in much tougher controls on how the banks handle the fortunes placed in their trust.

Thus, Israeli banks, unlike their American counterparts, were not crippled by the effects of what amounted to a pyramid scheme with sub-prime

prices are deflating, many Israelis are left with huge debts on property that isn't worth nearly what it used to be – a painfully familiar story to Americans and Europeans. In recent months, however, Israelis have been buoyed by the performance of the stock market,

that unemployment has gone up over the last month, but to say that it didn't go up as much as people expected, so that's supposedly a good sign. No, it's not a good sign. It's just a relatively less bad sign. It still shows that your economy is contracting. And when you combine this

lot better anytime soon."

Gur-Gershgoren was lured to BGU by Prof. Shmuel Hauser of the Department of Business Administration, her former boss at the Securities Authority, when he was chief economist and she was his deputy. "They see the combination of



Unlike American banks, Israeli banks are required to have capital reserves to back their loans; they can't, as a rule, sell off mortgages as securities and they thereby avoid taking the hit when a mortgage-buyer defaults

markets. She hopes that the experience she has garnered in her professional capacity and her research in fields such as the microstructure of the financial market and corporate governance can have practical applications for her students. In one of her course seminars, the students are allotted a certain fictitious sum of money which they have to invest in companies on the stock exchange and make a profit by the end of the semester.

What makes Gur-Gershgoren's opinion on national and international financial matters worth listening to? Besides teaching at BGU, she's also the chief economist for the Israel Securities Authority, which is this country's equivalent to the U.S. Security and Exchange Commission.

Gur-Gershgoren, 36, talks about her work and her life in Lapid, a small town near Ben-Gurion Airport, where she lives. It's a Friday morning and she doesn't have much time before she has to

and then went with her husband, Erez, to the University of Colorado where he did research as a post-doctoral fellow in physics.

"I didn't have kids then and I didn't ski so, having begun my Ph.D. studies in Israel, I decided to continue in Colorado," says Gur-Gershgoren. Later, she did a post-doc at Yale and afterward took the job at the Securities Authority. "We wanted to come back to Israel. We wanted our daughter to grow up here."

Her job is to "maintain investor confidence" in the financial system – in the integrity and truthfulness of corporations trading on the Tel Aviv Stock Exchange. "We make sure that investors are getting accurate information in the financial disclosures of corporations, and that the advice they're getting – from analysts and consultants, for instance – isn't tainted by a conflict of interest," she says. As chief economist, she's in charge of research into these matters.

mortgages. Unlike American banks, Israeli banks are required to have capital reserves to back their loans; they can't, as a rule, sell off mortgages as securities and they thereby avoid taking the hit when a mortgage-buyer defaults. In other words, they take pains to ensure that the buyer can actually pay back the mortgage before lending him the money to buy a house, she explains.

Yet while Israeli financial conservatism in mortgage loans prevented the worst of the crisis facing the United States and many other countries, the Israeli economy, just like the rest of the world, is now suffering the consequences.

Noting that the credit extended by the world's ten largest banks grew by 250 percent from 2002 to 2008, Gur-Gershgoren says there was also a credit bubble in Israel during those boom years that has now burst. "A lot of money was borrowed in this country to buy real estate," she notes. Now that real estate



leading many to a sense that the worst is over, that recovery is on the way. But Gur-Gershgoren isn't sure, and she counsels against over-confidence.

"There's a tendency to see things through rose-colored glasses – to see

with the fact that foreign investment has stopped, I think it's still too early to say the crisis is behind us. It may well be that the economy is not going to get worse, but that doesn't necessarily mean it's going to turn around and start getting a

academics and real-world experience as an asset," she says. "I do, too, she laughs, as she rushes off to get her daughter and, finally, enjoy the weekend with her family at home.

Drs. Talya and Arik Wolak

Committed to the Negev Population



Working in the south, I have the sense that I'm needed, that I can make a difference. Here, every pair of hands makes a difference

If you arrange your priorities right, you can do almost anything



BGU's Faculty of Health Sciences and the Soroka University Medical Center taught Drs. Talya and Arik Wolak their trade and helped them advance their successful medical careers. No less important, it brought them together. Today, after more than 20 years in Beer-Sheva – where they have built a mutual profession and a family – the Drs. Wolak remain deeply committed to their alma mater and their work with the local population.

“The Soroka Medical Center houses one of Israel's largest and most active cardiology departments,” says Arik, a cardiologist who specializes in cardiac imaging. “This is the only hospital in the entire Negev – an area stretching from Sderot (Ashkelon has its own hospital, though much smaller, that is affiliated to BGU) to Eilat – that provides treatment for them and it serves a huge number of patients.”

“This is the place for doctors who want to give – and get – something extra,” he continues. “People at BGU and Soroka feel tremendously connected to this place. If I see a crooked picture in the hallway, I'll straighten it – this is my home and the people here are my family. I feel confident in saying that everyone who works here feels the same way.”

Dr. Talya Wolak concurs. “I am closely affiliated with the University, the hospital and the people of the Negev. Our hospital serves vastly diverse populations such as veteran Israelis of different backgrounds, new immigrants from Russia and Ethiopia and Bedouins. As a result, we deal with an unusually large and varied range of medical situations.”

Talya specializes in the treatment of hypertension, the state of repeatedly elevated high blood pressure that can cause blood vessel changes in the retina, abnormal thickening of heart muscle,

kidney failure and brain damage. She traces her interest in hypertension to rotations during her residency. “Hypertension is a narrow field that affects many organs,” she says. “It can be extremely frustrating, as doctors can administer good treatment and still lose their patients, but generally, the right hypertension treatment makes for lower heart and brain damage and a higher rate of survival.”

Talya decided to undertake a fellowship in nephrology since the kidney is one of the main organs that control blood pressure and comprehending how the kidneys work helps to understand the pathophysiology of hypertension. Arik terms his own area, cardiology, “a very potent field in which you see results.”

“Cardiology is a way of thinking. It's very practical and I do better medicine with this type of approach,” he says. “You must know your strengths and weaknesses and choose your field accordingly.”

For both Wolaks, research and clinical work enjoy a symbiotic relationship. “There is a cross-fertilization between these activities. Questions emerge in your clinical work that can be solved through research and vice-versa,” says Arik. “The more research I do, the better I can treat patients.”

“Yes, you must do both research and clinical practice to stay updated,” interjects Talya, who insists that this union enhances her teaching as well.

Talya Wolak is a full-time clinician, a member of the hypertension unit, an attending physician and year-round teacher at the Faculty of Health Sciences and for external students. Together they are the parents of two daughters, aged 16 and 13, and a son aged seven. ▶





Talya's research involves epidemiology and basic science. Currently, she is working on a successful project that she began at UCLA where she worked for two years as a researcher while Arik did his post-doctoral fellowship in cardiac imaging at Cedars-Sinai Medical Center in Los Angeles. In her research, Talya checks information about mediators, which are agents that act as intermediary substances, like enzymes or hormones, in chemical or biological processes. These mediators may serve as markers of inflammation. She is exploring their role in organ damage due to hypertension.

Having studied this condition in animals and cells, Talya now focuses on clinical applications. "I want to turn my attention to hypertensive damage to the carotid artery, specifically the role of plaque (fatty deposits within arterial walls) on instability and vulnerability," she says.

This research has great clinical importance, as it promises to shed light on the causes of cerebral damage caused by ischemia – blood supply restrictions generally due to factors in the blood vessels. Unstable plaque is prone to rupture and can cause ischemic damage. "If we can manipulate this mechanism, we will be able to prevent some of the hypertensive damage," says Talya.

Like Talya, Arik tries to balance his time between his two loves. "Whenever

I have a few spare moments, I'll work on my own projects," he says. "Sometimes I start the day at 5:00 a.m. to pack in some research, which always manages to put smile on my face." A doctor's routine can be draining, points out Arik, who finds research a constantly fresh and stimulating addition.

In his investigations, Arik does cardiac imaging using CT, MRI and nuclear studies. His goal: to address the epidemiological relationship between this imaging finding and prognosis. To make proper assessments, though, Arik holds that more advanced technology is needed. To this end, he is appraising and comparing the performance of different software developed to analyze nuclear studies, a project he started at Cedars-Sinai. In another project, he evaluates the benefits of nuclear studies using new hardware devices: revolutionary gamma cameras (D-SPECT) developed in Israel by Spectrum Dynamics Ltd.

"What most interests me," says Arik, "is how software or devices change the way we read the results of a test. Ultimately, this will help us improve the quality of diagnostics."

Peering into the lives of the Wolaks, one cannot help but be struck by their great productivity. Talya's secrets: excellent juggling and micro-management. "My oldest daughter was born when I was in the middle of

medical school. I managed by being very organized and by constantly multi-tasking. If you arrange your priorities right, you can do almost anything," adds Talya, who also succeeds in squeezing sports and reading into her schedule.

"We are both workaholics, but almost always, someone is home with the kids after 4:00 pm. Our lifestyle is very ordered and efficient. It all hinges on what you do with your windows of time, and a laptop is crucial," says Arik. "Our life is based on family and work."

Considering this regimen – and despite its inherent fascination and vital contributions – medicine holds no attraction for the Wolaks' children. Talya says they "don't want to be, or marry, doctors." Despite the great demands of her work, Talya, whose mother and father are physicians, is enamored of her work. "I love medicine and think it's a great profession."

Her husband agrees. "I love what I'm doing," says Arik, who regards the medical profession no less than "beautiful."

"Working in the south, I have the sense that I'm needed, that I can make a difference. At Cedars-Sinai, I felt I was on top of the world, but didn't feel needed in the same way. Here, every pair of hands makes a difference."

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