BGU now

WINTER 2008/9

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

"Herstory" of a Journey *(page 17)*

BGU now

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Director: Faye Bittker

Editor: Angie Zamir

Acting Editor: Patricia Golan

Contributors:
Sandra Bloom
Larry Derfner
Patricia Golan
Dina Kraft
Roberta Neiger
Jessica Steinberg
Edward L. Tepper
Galia Walsh

Photos: Dani Machlis
Additional Photos: Wolfgang Motzafi-Haller

Design: Shai Zauderer

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Ben-Gurion University of the Negev
P.O. Box 653, Beer-Sheva 84105, Israel
Fax: 972-8-647-2803
E-mail: prpub@bgu.ac.il
Website: www.bgu.ac.il

From the President

Dear Friends,

The University has come alive with activity now that the new academic year is underway. This is no small accomplishment. It took a collective protest by students, faculty and presidents of universities nation-wide to avert yet another crisis in Israeli higher education.

In late October, a somewhat satisfactory budgetary solution was reached with the prime minister that we hope the Finance Ministry will respect and uphold.

Despite these challenges, we are now looking forward to a year of productivity and accomplishment thanks to the commitment of our wonderful students, faculty and staff who strive for excellence, in both teaching and research. By all objective standards, Ben-Gurion University of the Negev is a success story. This is evident in the quality of students who have chosen to study in one of our myriad of academic programs and in the noteworthy increase in the competitive research grants that our faculty have received over the past few years.

More than ever, we are focusing on issues of great importance to the Negev and the world, with our mission inextricably linked to the fate of the region. With the aim of both advancing research and promoting development of the Negev, the University continues to reinforce its relationship with industry via both academic collaboration and development of our Advanced Technologies Park, whose infrastructure is currently under construction.

Parallel to the setting of research priorities in the areas of water and alternative and renewable energy – all in the general context of promoting the sustainability of drylands – a new University-wide initiative has been launched to "color the campus green." This includes initiatives that range from creating educational programs that encourage energy conservation and environmental preservation, while investing in a long-term plan to make our infrastructure more harmonious with the environment.

Continuing to mark a special year – the 60th anniversary of the establishment of the State of Israel – the University recently marked Ben-Gurion Day, commemorating our first prime minister, by recognizing several important personalities in the arts, history, law, politics, philanthropy and the sciences from Israel and around the globe.

During these days of economic turmoil around the world, it is all the more important to thank our friends and supporters who have made all of this possible and encourage you to continue seeing in us an important and sustainable investment.

In friendship,

Prof. Rivka Carmi, M.D.

Lord of the Flies

Dr. Uri Abdu

Asked to name the positive characteristics of the pest known as the common fruit fly, most people will draw a blank. Not Dr. Uri Abdu from the Department of Life Sciences and the National Institute for Biotechnology in the Negev, whose work on understanding the development of cancerous cells in humans has led him to study the genetic model of the fruit fly, the *Drosophila melanogaster.*

"The fruit fly genome was mapped about ten years ago," Abdu explains. "It quickly became apparent that at least 50 percent of fly genes have direct counterparts – homologous genes – in man. Even more important, 75 percent of human genes known to be associated with disease have homologous genes in the fruit fly," he says excitedly.

To understand the research performed in his lab and its connection to cancer, Abdu says that it's important to understand the function of "DNA damage checkpoints" in the human body. These are the proteins that repair genetic mutations that cause cancer.

"Genes are coded messages inside a cell that tell it how to behave, and intact genes are necessary for proper functioning of the human body," he continues. "When a gene is damaged or lost, a mutation occurs and some kinds of mutations cause a cell to start reproducing itself uncontrollably. This cell is cancerous and uncontrolled reproduction causes tumors."

Human genes can be damaged by external factors such as radiation, chemical or UV light exposure, as well as internal factors like cellular metabolism and replication errors. "These 'DNA damage checkpoints' repair damage done to genes," he explains. "They apparently detect the presence of damage in the genome and relay a message to other components of the cell that give the cell enough time to repair it."

So here is the riddle that Abdu is trying to solve: Why do certain cancer cells have dysfunctional checkpoints that allow these cells to continue to mutate and proliferate uncontrollably?

Born and raised in the Negev, Abdu received his undergraduate and graduate degrees from the University's Department of Life Sciences. "I did my post-doctorate research in Princeton University's Department of Molecular Biology. When it was time to come back to Israel, it was a no-brainer that I'd want to return to my roots in the Negev," relates Abdu, whose wife, Dr. Sigal Abramovich, is a researcher in the Department of Geological and Environmental Sciences. "I was fortunate to be able to work out a dual appointment with the NIBN and the Department, which allows me to look beyond the basic science issues to see how this may have applications for the treatment of cancer.

"We want to understand how these 'fixer' genes work and why they go awry," says Abdu. "We hope that this will help us to find new ways to control cancer cell growth and develop new drugs that will pinpoint these specific genes."

It quickly became apparent that at least 50 percent of fly genes have direct counterparts – homologous genes – in man

And here he returns to the advantages of the common fruit fly in a laboratory setting.

Take eyes, for example. A gene for the human eye has a homologous gene in the fruit fly eye, even though the two eyes are obviously very dissimilar; the same genes that cause eye degeneration in flies are also present in humans. Amazingly, a gene from a human eye can rescue the loss of a drosophila eye and human eye-genes can be introduced into the humble fruit fly to cause growth of numerous drosophila eyes!

"The drosophila works as an excellent model system for research," says Abdu, citing their low maintenance cost and short life cycle – only 12 days. "In fact, the lowly fruit fly has become such a popular model organism for studying human disease that it is often described as a 'little person with wings'.

"In short, drosophila cells use many of the same genes and proteins to control growth and organization as human cells," he says. "Drosophila has proven value in revealing the fundamental mechanisms by which human cells control their behavior."

Abdu is specifically looking at the BRCA2 gene in women, which, when damaged or mutated, clearly puts the carrier at a greater risk for developing breast or ovarian cancer than the general population.

"We have found a gene in the fruit fly (CG31069) that is homologous to the human BRCA2," explains Abdu. "We are investigating the interaction between BRCA2 and what we call the "9-1-1 complex" in the fruit fly's DNA damage checkpoint, and also in humans. This, he hopes will help researchers understand the way these genes work.

Other proteins are emerging as key "players" in DNA damage checkpoints with a well-established position as a bona-fide tumor suppressor. "We hope that our research will lead us to understanding the occurrence of cancers in which certain proteins are intact, but others are defective," declares Abdu. "Each such protein could serve as a target for drugs."

As the father of two little girls, Abdu hopes this research will provide successful genetic cures for the next generation of women. ■

On the Seventh Day, They Rested

Dr. Galit Nimrod

After a decade in the corporate world working in marketing and advertising, Dr. Galit Nimrod is studying and teaching about leisure for a living and can hardly believe her luck.

Nimrod has begun to make a name studying leisure and older adults, specifically looking at how retirees spend their newly bountiful free time and how the choices they make affect the quality of their lives and off-set the trauma that sometimes accompanies the transition into retirement. Her research has taken her from studying seniors' tourism styles to on-line surfing to see how retirees are tapping into the Internet as a new form of community.

"Today, people are retiring earlier and living longer. Some have retirements as long as 30 years, but many don't know what to do with the time, seeing it not always as a blessing but sometimes as a curse," says Nimrod, a lecturer at BGU's Department of Hotel and Tourism Management, who bubbles over with an almost infectious enthusiasm for her topic.

"My focus is transitions later in life such as retirement, widowhood and health decline, and how we can use leisure to deal with them," she says. "Today's new seniors are so different from the old times' seniors that you cannot call them 'old' anymore. Even the term 'old' is so subjective. When does a person start to become old today? When they retire? When they get sick?"

Her interest in the topic was first piqued after observing the decline of a family friend who, soon after he retired, transformed from being vibrant and successful to depressed and even physically frail. Like many other people moving into retirement, he seemed lost in a world where he was no longer defined by his career.

In her research, Nimrod has looked at the links between being innovative and having a successful retirement. When people are older, she explains, they are generally thought of as conservative and uninterested in pursuing the new.

"But I argue that if you can start something that is completely new, you can benefit from expanding your interests, and that the challenges the new activity gives you can eventually grant you more meaning in your life," she says.

This does not mean that people have to completely reinvent themselves and their interests once they are retired, she notes. Rather, her research has shown that people have also found success in retirement when they choose a new activity that builds on their life-long interests or previous career. For example, the lawyer who turns to writing legal mystery books or the now arthritic drummer who can no longer perform but finds achievement and fulfillment in organizing music festivals.

Nimrod came up with some surprising results while conducting a cross-cultural study of both Israeli and American retirees: that Israelis are not good at leisure. Americans are "better" at transitioning into retirement she found, because the culture itself has a stronger built-in leisure ethic.

She notes that Israelis, especially older Israelis, have a strong work and family ethic, but leisure is often dismissed by them as a frivolous pursuit.

Americans' hobbies like fishing and sailing are almost unheard of in Israel. Instead, Israelis over 65 tend to spend much of their free time with their families, more than their American counterparts, but genuine leisure time tends to be scarce.

Nimrod jokes that while Jews were perhaps the first to honor the importance of leisure time through the creation of Shabbat, a sanctified time acknowledging the role of leisure and rest, Israelis themselves seem to have forsaken the concept.

"We invented leisure and are among the last to enjoy it," she says, laughing.

The study of leisure itself, a discipline that began over a century ago, is virtually unknown in Israel.

"Here, no one has ever heard of it and when people hear what I do, they think I'm going to the beach," she says, laughing again.

Nimrod recently won the prestigious Max Prohovnik prize of the Israel Gerontology Association, awarded once every two years for research in the area of old age. She is now introducing leisure studies into the Hotel and Tourism program, which is the first of its kind in Israel.

"Ben-Gurion University is perfect for this because it's an open, innovative university that is friendly to new disciplines. It really enables research and helps provide all the support one needs," says Nimrod.

She explains that even before completing her Ph.D. at the Hebrew University of Jerusalem, she had her eye on BGU, hoping to obtain a position here. But after receiving a Fulbright Award, she traveled to the United States to work with Prof. Douglas Kleiber of the University of Georgia, who is one of the world's leading leisure scholars.

Nimrod is hoping that her research on how older adults use leisure time will eventually contribute to developing good leisure services for Israelis at large and in so doing, will help contribute to a better quality of life for what is an ever-increasing population.

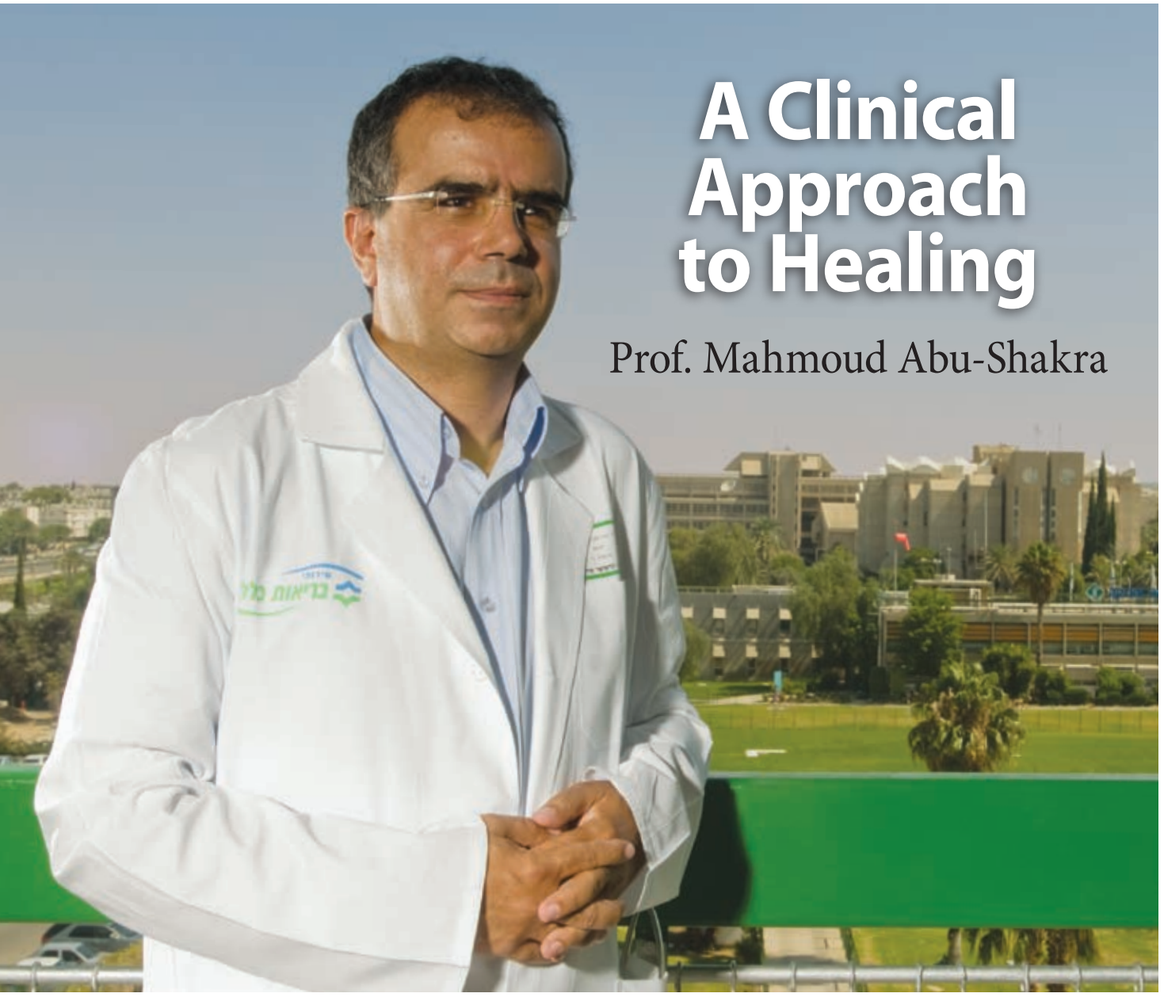
Nimrod's research has recently turned to the use of on-line communities for seniors on the Internet. The results of her research have brought surprises, most notably that the tone of such discussions is markedly upbeat and even playful.

"I was expecting older adults to be discussing serious issues, like health, retirees' rights and families, but what I found is that most often they discussed fun topics and play social games. Having fun is the best way to cope with all these challenges posed by age and that is what they do on-line," says Nimrod.

She recently won a $60,000 grant from the U.S. Mental Health Research Association (NARSAD) to specifically study how the topic of depression is dealt with on-line. This study does not focus on older adults exclusively, but is most relevant for them, as an estimated 30-40 percent of seniors suffer from depression. Her research examines how people use depression forums and chat rooms to share information, find understanding and possibly even improve their situation.

Israelis over 65 tend to spend much of their free time with their families, more than their American counterparts, but genuine leisure time tends to be scarce

"For people feeling isolated and depressed, such contact can serve as a lifeline," says Nimrod, "so I became deeply interested in how people use on-line communities to get inspiration to cope with depression and share their feelings." ■



A Clinical Approach to Healing

Prof. Mahmoud Abu-Shakra

Mahmoud Abu-Shakra didn't set out to become a professor of medicine. Growing up in Umm Al-Fahm, the largest Arab city in northern Israel, he was always good at math and figured he would become an engineer. But somewhere along the way he was drawn to medicine, first as an internist and then to the world of rheumatic diseases.

Abu-Shakra races between his research projects, clinical work with patients and helping students.

But upon reflection, sitting in his paper-piled office at the Soroka University Medical Center, he relates that it was the untimely death of his mother at age 49 from heart failure that changed his career plans. "I understood that I was more curious about medicine than engineering."

After graduating from Tel Aviv University's Sackler School of Medicine, Abu-Shakra moved with his family to Beer-Sheva for more training and then to the University of Toronto School of Medicine for three years, where he expanded his research into rheumatic diseases, focusing on systemic lupus erythematosus, known more commonly as SLE or lupus, in which the immune system attacks the body's cells and tissue.

"I was exposed to research on the disease there and wanted to understand more about it," says Abu-Shakra, who, upon his return to Beer-Sheva, opened a lupus clinic at Soroka.

An autoimmune disease, SLE mostly affects young women, who are usually diagnosed by the age of 30. Like with other autoimmune diseases, the body mistakenly identifies normal cells as "foreign tissue" and produces antibodies that attack them.

"Once a person has lupus (SLE), it's for life," says Abu-Shakra. One in 1,000 women contracts lupus, which is "not a few," he adds, and each case differs from the next, ranging from mild to serious symptoms of the disease. But while the disease can be fatal if left untreated, there are treatments and medications that allow people to live with it. Meanwhile, the prognosis for those stricken with lupus has improved: whereas in the past 50 percent would die within five years of contracting the illness, today 80 percent of those stricken with the disease survive for 20 years.

There is increasing interest around the world in both autoimmune diseases and women's health. Abu-Shakra's research into SLE combines both. More than five years ago, he and five other rheumatologists established a special lupus clinic, conducting clinical studies that he hopes will eventually provide a cure for SLE and other debilitating autoimmune diseases, whether by gene therapy or other techniques.

The clinic, staffed by five rheumatologists and two nurses, "gives an answer to those who need it and a place for us to do our research," says Abu-Shakra. Patients with other rheumatic diseases also frequent the clinic, offering a "real range" of patients, which, he explains, is very helpful for his research.

Among his discoveries made while treating the disease is the usefulness of the flu vaccine in lupus patients by preventing potentially fatal infections, despite concerns about the safety of the vaccine for those with a troubled immune response. He found that the vaccine is safe for lupus patients and doesn't create a clinical flareup of SLE, which would require steroids. He has also been examining cardiovascular disease in lupus patients, who are at an increased risk before the age of 50, although early detection can help improve their survival.

"It's all about helping and alleviating symptoms and gaining more of an understanding for what affects this disease," he says. "Bottom line, it's an autoimmune disease and we want to understand it."

Besides his work at the clinic, Abu-Shakra heads the Rheumatic Diseases Unit at Soroka, working with patients with chronic diseases and with students from the Joyce and Irving Goldman Medical School.

Abu-Shakra spends much of his time shepherding third- and fourth-year students, as he believes that clinical work allows them to become doctors in the true sense of the word.

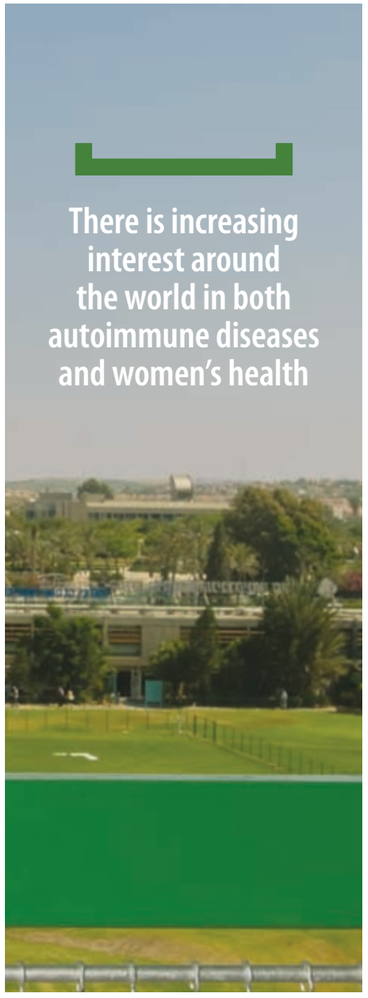
"Internal medicine is the basis of medicine," he says. "This is where they really encounter all kinds of cases and where they learn to click with the patients. You have to learn how to check patients thoroughly and find what others don't. You have to learn how to decipher."

With all of his responsibilities, Abu-Shakra still finds time to volunteer at a health clinic in Rahat, the largest Bedouin town in the Negev, where he offers basic care to local residents who wouldn't otherwise have easy access to medical care.

For Abu-Shakra, who was raised in the north, living in Israel's south has distanced him from his extended family, but as compensation, it offers him the combination of work at the University and in a clinical setting, with a wide variety of patients.

Abu-Shakra is also currently researching rheumatic diseases in athletes and conducting research into the causes and symptoms of fibromyalgia. "For a doctor, academia is important," he says. "Here, a doctor can combine clinical work with research."

There is increasing interest around the world in both autoimmune diseases and women's health



As for being the first Arab-Israeli doctor who is also a professor, he doesn't have much time to think about it, although he does make time to act as a mentor to many of the Arab students who are working toward similar goals. With that cue, there's a knock on his door as a student arrives to ask the good doctor a question. ■

The Law of Learning

Dr. Rami Reiner

Dr. Avraham (Rami) Reiner, a devoted teacher and scholar of Jewish thought and *Halacha* (Jewish law), received his most significant research break in an unexpected place: a cemetery in Würzburg, Germany. The recent discovery by German colleagues of what are considered to be the earliest collection of 12th and 13th century Jewish tombstones in Europe, including graves of people who had been killed during the Second Crusades, as well as during the period of the Black Plague in the 1340s, provided new insight into these critical periods in European history.

For Reiner, a member of the Goldstein-Goren Department of Jewish Thought, this discovery provided an opportunity to learn about the life of the Jews in Europe in medieval times from primary sources. He had long been curious about the actual lives of the great Talmud and Torah commentators Rabbenu Tam, and his grandfather, Rashi, the rabbi from France who wrote one of the first commentaries on the entire Talmud and Torah.

What were the mundane textures in the lives of these great commentators, who have shaped his own studies and research so profoundly?

"There is no page of Talmud in which Rabbenu Tam is not there; he's the senior commentator," says Reiner. "It was Rashi and Rabbenu Tam in the West and Maimonides in the East. I want to see who they are, what they thought, how they lived, to deal with their daily lives."

And there were some of the answers, carved into tombstones. Here was the chance to delve into the lives of ordinary Jewish communities.

"We needed to understand the structure of the community," says Reiner, who, with his colleagues in Germany and Israel, studied writings from the period as well as clues uncovered by the gravestones. "Were children buried the same way as adults? What did people do for a living? Why and how did people die?"

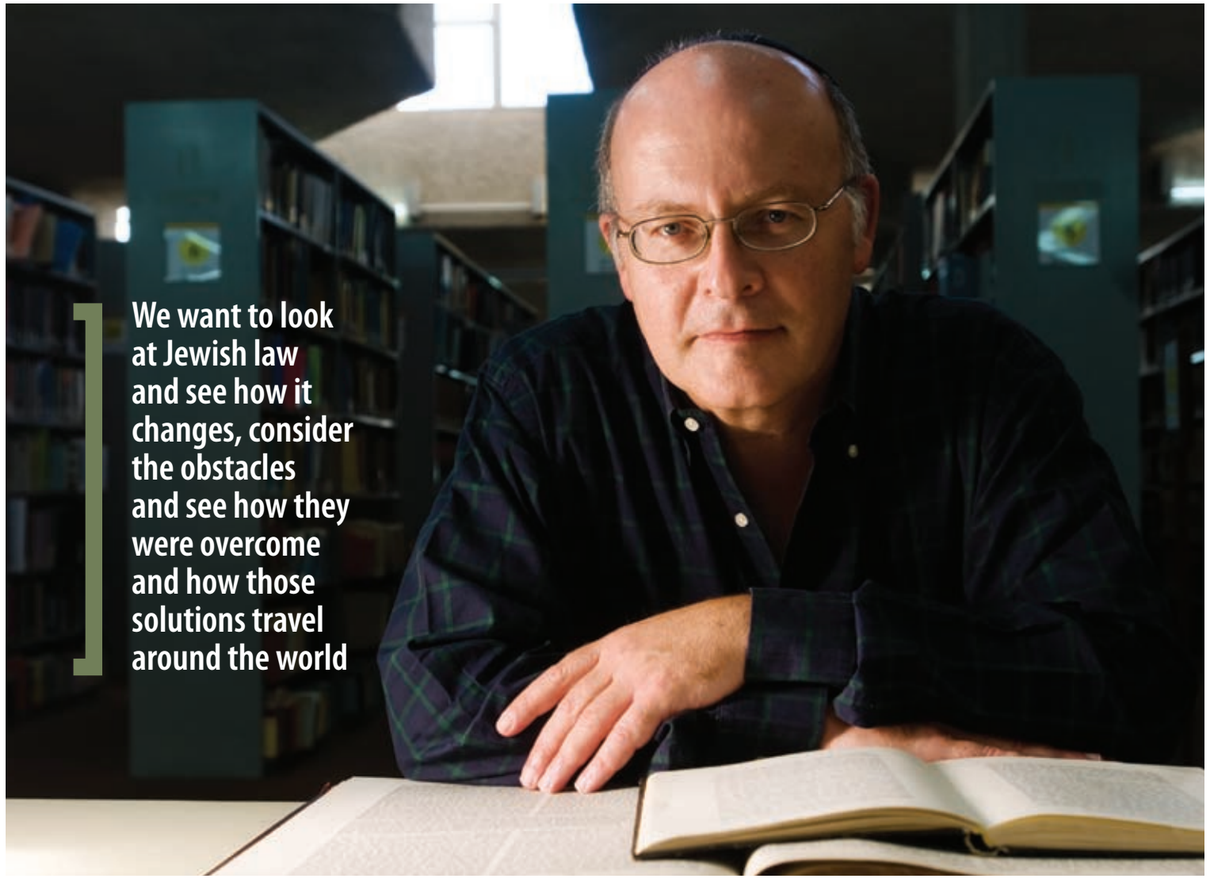
According to their findings, the reasons for death were not unusual for those times: women died in childbirth; people were killed by criminals or because of religious persecution; there were any number of illnesses. Children died at such a frequency that they often did not even have gravestones.

"It's all there in Jewish law: love and death, a huge world of culture," he says. "It allows us to understand the culture of the times. The gravestones opened my eyes to the history of the times, widening my spectrum."

Reiner's research group also found that there were many amongst the Jewish community who had converted from Christianity during the 1100s. That trend began to change, however, as Jews became increasingly marginalized; with the rise of the Crusades, they were regarded as impure and a threat to Christianity. The First Crusade of 1096 marked the unleashing of the violent European persecution of the Jews.

In an intriguing footnote to this period, Reiner relates that 200 years later, in the year 1240, contemporary Jews believed their salvation was near. "This corresponds to the year

◂ 12th and 13th century Jewish tombstones in Europe



We want to look at Jewish law and see how it changes, consider the obstacles and see how they were overcome and how those solutions travel around the world

5,000 of the Jewish calendar, which was considered a millennial year for Jews, that would usher in redemption, sort of like Y2K for the Jews," says Reiner. Indeed, many French Jewish families traveled to the Land of Israel in anticipation of the arrival of the messiah.

Aside from his interest in Jews of medieval times, Reiner, who earned all three of his academic degrees at the Hebrew University of Jerusalem, has been devoting the last few years to studying modern Jewish law and its ability to adapt to change. He has also explored the nuances of change in modern Israel as seen through the prism of Jewish law.

"There's a sense that Jewish law is frozen and in conflict with modern culture," comments Reiner, a father of five who grew up in the ultra-Orthodox world and then moved into academia in his late twenties. "But it's not."

"What I am doing is really cultural studies," he explains. "We want to look at Jewish law and see how that has changed, consider the obstacles and see how they were overcome and how those solutions travel around the world. It's like orchestral music; I look at the minor questions and major questions, as in a musical movement."

Reiner's students run the gamut from religious yeshiva graduates to secular students who have never been exposed to the concept of Jewish law. For those who have never opened a book of Talmud in their lives, the language of the texts is different, unique and requires its own level of understanding. For those students who have grown up steeped in precepts of *Halacha*, their classes with Reiner may be the first time they are critiquing these texts.

"Modern Jewish law is fascinating because there are so many challenges," says Reiner. "I tell my students that you can love it or not but it is a whole cultural world to explore." ■

Biologically Determined

Dr. Michal Ziv-Ukelson

Dr. Michal Ziv-Ukelson always dreamed of being a biologist. She studied biology in high school and at university, but then her "dream crashed head-on with reality," she says, relating how she discovered that she has, "two left hands, and I hated dissecting animals." She had no choice but to accept the fact that laboratory work was not in her future. Instead, she found that she had a knack for computers.

"I was drawn into the computer-science field of pattern-matching that is used to determine whether certain things have a desired structure," she explains. She found herself at IBM's T.J. Watson Research Center in New York, where she was part of their cutting-edge handwriting recognition project.

"We each have our own unique handwriting style, and even though our handwriting may vary slightly from day to day, there are enough similarities to create a certain distinct pattern," she explains. She developed an algorithm to "teach" the computer to recognize handwriting, so that it can accept user-input from a pen-based computer screen, instead of the standard keyboard, and automatically convert it to text as it is written. This became part of IBM's "electronic-ink" computer products.

After five years at Watson, Ziv-Ukelson decided it was time to go back to school. She received her Masters degree in 1997 from Polytechnic University in New York, and then came back to Israel to complete her doctoral studies at Haifa University.

"In my studies and research, I used my pattern-matching experience to improve dynamic programming algorithms, which involves developing programs that break down complicated computer tasks into incremental steps so that at each step you face a sub-problem," explains Ziv-Ukelson, who is now a member of the Department of Computer Sciences.

"It's a bit like organizing a messy closet," she suggests. "If you give in to the temptation to flit between organizing a few hanging suits and then a few pairs of shoes in no apparent order, you'll get nowhere. You have to divide the task – organizing the closet – into sub-tasks, like 'organize shoes' and 'hanging clothes' and work on each sub-project in systematic, incremental steps.

"In other words, I devised algorithms to perform the same pattern-matching a lot more efficiently – hence a lot faster – than the old programs," she says with characteristic simplicity.

The inducement that drew Ziv-Ukelson back into biology was the enormous scientific breakthrough that resulted in the mapping of the human genome. Consisting of three billion letters that make up the human DNA, the genome holds the genetic blueprint of life.

"Since genome data are represented as strings of text," she explains, "I was able to apply the same principles of combinatorial pattern-matching I'd used before to invent more efficient computer algorithms. These can be implemented as practical software tools to assist scientists to make sense of the genomic data and unlock genetic secrets."

This marriage of computer science and biology – what is now referred to as bioinformatics – "allowed me to go back to biology, without going back to the traditional laboratory. Instead, my computer is my lab," she says.

Ziv-Ukelson says she has found the University's Departments of Computer Science and Life Sciences, "wonderful, collaborative environments." These days, she is working to unlock the mysteries of ribonucleic acid (RNA). A chemical cousin of DNA, RNA is responsible for translating the genetic code of DNA into proteins, and for other chemical activities of the cell. Researching binding sites of micro-RNA has involved her in the "RNA revolution".

"I am trying to unravel the makeup of these sites because there are some forms of disease or cancer that may be attributed to mutated messenger or micro-RNAs," she says, adding that this aspect is new. "For many years, we thought that DNA research was the key to finding a cure for cancer. Today, we focus on RNA research as well."

Her research focuses on predicting target mRNA structures and accessible RNA binding sites. The adjective "accessible" is critical here, because it turns out that mRNAs "fold" themselves in such a way that many binding sites are simply not accessible for matching mRNAs.

For many years, we thought that DNA research was the key to finding a cure for cancer. Today, we focus on RNA research as well

Using her hands to clarify the point, Ziv-Ukelson explains that "to visualize this, press your fingers together and look at your hand. The only parts of your fingers that are really accessible are your finger tips. Now spread your fingers as far apart as possible; more areas between the fingers are now accessible. Similarly, we need to know how the mRNA 'folds' itself in order to focus on binding sites that are accessible."

"Once we know how all the forms of RNA work, we can tinker with them and start looking for a cure. But first we must find out how they work," she concludes. ■

Managing the Masses

Dr. Amir Grinstein

As a Ph.D. student with few resources for cutting-edge research, Dr. Amir Grinstein, now a lecturer at the Guilford Glazer School of Business and Management, tried out one of his management theories on himself.

Can academics, like societies and nations, turn disadvantages and constraints into assets?

Spinning off from a theory of global history, which maintains that it is during times of war, economic crises and shortages that societies become the most innovative, he and a fellow Ph.D. student had the idea of examining whether academics from developing countries with less resources and support for conducting research could outperform counterparts from wealthier countries. Similarly, could women who suffer social discrimination surpass their male counterparts in academia?

Taking a sample of research papers that were published in four major marketing journals during the 1965-1990 period and written by a variety of contributors, including women and individuals from places such as India and Israel, what are called "second tier" countries in the professional lexicon, Grinstein and his colleagues, Stav Rosenzweig of the Hebrew University of Jerusalem and Elie Ofek of Harvard University, measured the papers' success by how often they were cited and referenced by fellow academics.

"The issue is how people overcome challenging or constraining situations and in turn develop special skills that help them," says Grinstein.

What they found was that both women and people from second tier countries *did* excel, despite, and perhaps, *because*, of the challenges they had to confront.

"Blessed are the resource-poor," jokes Grinstein who specializes in marketing, in discussing this research. Grinstein, who did his post-doctorate work at Harvard Business School, originally thought he would take up a career in marketing before he fell in love with academia. He says he relishes unearthing the unknown. "I want to tell people stories that will take them by surprise, to tell them things they did not know before," he relates.

Grinstein says that feedback to the research has been strong and "this is part of why we feel this is a strong theory. Because it can be seen in real life, people can relate to it, especially those who consider themselves underdogs."

He and Rosenzweig recently started work expanding the research to examine how companies deal with challenging times and conditions – a project they are carrying out together with Christine Moorman, a professor at Duke University who is a leading authority in marketing.

Getting a chance to work with someone of Moorman's caliber, Grinstein says, is another example of his theory. When you live in Israel, you have to develop good and even aggressive social networking skills, he explains. "You have to be clear, interesting and persuasive."

Grinstein has been drawing attention for his research on the impact of non-marketing – or "demarketing" as he calls it – in the public sector, specifically among minorities.

"Demarketing," Grinstein explains, "is when an effort is made at reducing or discouraging the demand for a product that is in scarce supply." The usual strategy to reduce demand is by raising prices or applying regulations.

Grinstein wonders if the demarketing concept could be applied to the public sector, specifically to minorities.

Would it be possible to examine the success of government demarketing for a non-commercial product? He and his co-researcher Udi Nisan, Director-General of the Israel Government Companies Authority, examined the use of tap water in Jerusalem during an acute water shortage in 1999-2001 as their test case.

"I wanted to show that demarketing could succeed in decreasing demand, and also to see how this strategy produced different responses from different ethnic groups," he says. Specifically, how would the diverse residents of Jerusalem respond to an aggressive government ad campaign to reduce home water consumption?

What he and Nisan found was that response to the campaign varied depending on the consumers' feelings of national connection. The non-religious Jews were the most responsive and had the greatest decreases in water consumption, followed by the Russian immigrants, ultra-Orthodox Jews and finally, Jerusalem's Arab residents.

Among Jerusalem's Arab population there were discrepancies. Most notably, Arabs who sent their children to the mainstream Israeli educational system were more responsive than Arabs whose children went to Arab or independent schools. This further strengthened the thesis that national ties increase responsiveness to government campaigns and that approaches to minority communities have to be adjusted accordingly.

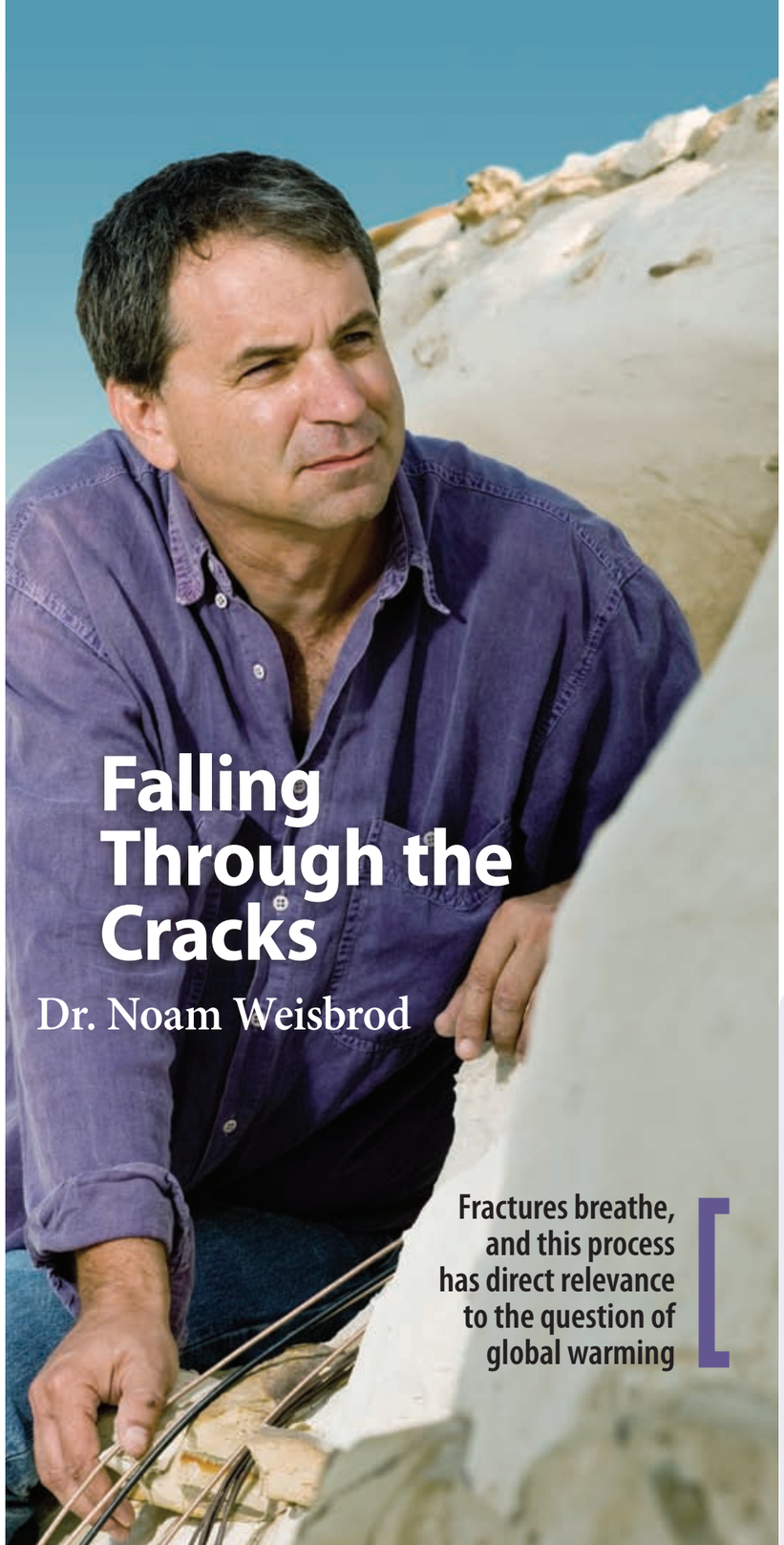
Can academics, like societies and nations, turn disadvantages and constraints into assets?

"The implications for policy makers are that marketing, or in this case demarketing, can be used to complement other policy tools that are typically being implemented," comments Grinstein. "Policy makers often prefer to use economic incentives and regulations rather than marketing because it's hard to measure marketing campaigns' effectiveness."

But in this case, Grinstein and his colleague were able to present hard data, which showed a dramatic overall reduction in use of water – about 6 percent. If the government had wanted to reach the same results without such a demarketing campaign, they theorized, it would have had to raise water prices by 35 percent.

These findings can be applied to other public campaigns, Grinstein suggests, such as ones for recycling, using smaller cars, reducing pollution and the war against drugs and alcohol use. "I think it's important for people in academia to have an impact on public policy makers," he says.

Grinstein says he has found a nurturing and supportive academic home at the University, a prime example, he says, of his theory that challenged people and places can often be very successful. "It's the most challenge-oriented university in Israel. We are the youngest and hungriest of the schools and now we are the fastest growing one too," he declares. ■



Falling Through the Cracks

Dr. Noam Weisbrod

Fractures breathe, and this process has direct relevance to the question of global warming

With the ever increasing shortage in the world's water resources and dire warning of Israel's own ongoing drought, research to reduce contamination of existing water resources while developing new potable sources has become a pressing concern, here, as in the rest of the world.

For example, due to massive deterioration of groundwater quality, the Israeli coastal plain aquifer now provides less than 50 percent of its output 20 years ago.

Thus the need to halt or reverse the degradation of the country's groundwater is crucially important. Hydrologist Dr. Noam Weisbrod's research is providing the basic knowledge that can help in solving this crisis by understanding how pollutants reach the subsurface and how they behave underground.

Weisbrod, a member of the Zuckerberg Institute for Water Research of the Jacob Blaustein Institutes for Desert Research at the University's Sede Boqer campus, is investigating the transport of various contaminants into the groundwater from land-surface, through the soil to the aquifer, and within the aquifer to vital production wells for fresh water.

Weisbrod, together with his fellow researchers and students, has been studying how pollutants travel to reach the groundwater below industrial sites at various locales around the country. "Of special concern is the leaching of contaminants from military-related industries, such as chromium, missile fuel residues, explosives and volatile organic compounds, which have been released at the surface for decades," he says with concern. At the largest waste reclamation project in Israel, the Shafdan, Weisbrod is working on exploring the migration of treated wastewater from filtration ponds through deep sandy layers.

The local chalk formation in the Negev desert is a very different kind of surface compared to the sandy soils of the coastal aquifer. "Hydrologists once thought chalk was a natural barrier protecting the groundwater under what is now the Ramat Hovav industrial complex, located south of Beer-Sheva, but they were wrong," he continues. "The chalk formation may be impermeable in most areas, but it is fractured: the maze of cracks and fissures create a kind of by-pass from the surface to the water table, allowing pollutants and salts to migrate through the cracks crossing the chalk rock and reach groundwater at surprisingly high velocities," he explains.

Weisbrod's first face-to-face confrontation with such aquifer pollution took place during his graduate studies at the Hebrew University of Jerusalem in the early 1990s when worrying signs of groundwater degradation under the hazardous waste depository at Ramat Hovav began appearing. He became a member of the scientific team looking into why this was happening, studying the role of the fractures as carriers of pollutants to the deep subsurface.

Weisbrod found the multidisciplinary challenges in this field exciting. It involved the interface between chemistry, physics, flow behavior and material properties, against the politically charged backdrop of social, commercial and governmental inputs. All these aspects came into play during his postdoctoral studies at the Department of Bioengineering at Oregon State University, where he worked at a government nuclear waste site in Washington state. There, he studied transport processes in the local sandy soil, which had been contaminated by highly radioactive wastes that had leaked out of the site's huge storage tanks.

Having spent years studying how pollutants move down through natural soil and rock fractures, Weisbrod, now a resident of Sede Boqer with his wife and two small children, has recently focused his research on what is coming up through these fissures. "Gases, particularly water vapor," he explains, "are being released from deep underground through the earth's fractures into the atmosphere. Until now, scientists have neglected this critical aspect of fracture physics," he says.

Fractures have been intensively studied for their role in aquifer recharge

or aquifer contamination during periods of liquid infiltration. In general, they have been considered inactive when there is no precipitation. In arid and semi-arid environments, this is the case more than 90 percent of the time.

But here's a surprising fact: "Fractures breathe," declares Weisbrod, "and this process has direct relevance to the question of global warming. The role of geological fissures in global water-cycles has been entirely neglected in the design of modern climate models," he notes.

Weisbrod and his group have shown that in dry arid regions, such as the Negev desert, there is a nightly escape of water vapor from fractures. They've proven that, in fact, water vapors are being released at a much greater rate during the night than during the day, through fractures. During the day, the air deep inside the fracture is cooler than the warm air at its opening. This is a stable condition. At night, the air cools down and unstable conditions develop, which is when convective movement takes place: the now cooler atmospheric air invades the fracture and the relatively warmer and lighter humid inner air goes out.

"We've demonstrated and quantified this process both in the field and in a specially designed climate controlled laboratory," says Weisbrod. "We believe this mechanism plays an important role in the gas exchange rate between the earth and the atmosphere and may also be important in our understanding of the energy balance across the earth's surface."

In addition to water vapor, movement of gases through fractures affects the exchange of many other "greenhouse" gases, including carbon dioxide and methane. "Even small changes in such gases are thought to have large repercussions on global climatic function," he continues. Since there are untold numbers of cracks, shafts, caves and other cavities on the earth's surface, if climatologists were given accurate data on earth-atmosphere gas exchange rates via these cavities throughout the world," contends Weisbrod, "they could design better models predicting climate change and CO_2 concentrations. And this is a completely untouched area of geoscience."

By demonstrating how gases move up and out of natural fissures due to temperature differences, Weisbrod believes his research has opened a small window into a novel mechanism that may have serious implications for better prediction and understanding of global climate change and the global water cycle. ■

A "First" for Hebrew Literature

Newly-expanded Hebrew literature archives, under the auspices of Heksherim – the Research Institute for Jewish and Israeli Literature and Culture, have opened in the Helen Diller Family Center on the Marcus Family Campus. The archives reflect the University's commitment to creating comprehensive research archives for the "First Israelis" – the authors, poets and playwrights who began to write after the establishment of the State and whose works reflect the historical and cultural currents that shaped Israel's development.

The archives, made possible with the generous support of the Caesarea Foundation Edmond Benjamin de Rothschild, already include the works of internationally renowned authors such as Amos Oz, Aharon Appelfeld, Yehuda Amichai, Ruth Almog, David Avidan, Yocheved Bat-Miriam, David Schutz and Nissim Aloni.

Amongst the tens of thousands of articles housed in the archives, one can find a wide range of materials, from Aharon Appelfeld's original manuscripts to David Avidan's typewriter and translations of Amos Oz's books into dozens of languages, including Korean and Finnish. The archives include the various editions of books in all the languages into which they have been translated; research papers and articles pertaining to the authors and their works; articles and interviews in newspapers, on television and radio in various languages; photographs and films; diverse correspondence; original manuscripts preserved under appropriate conditions of heat and humidity; and other items worthy of display. Some of the material is still in the process of being collected, classified and catalogued.

The archives are open to researchers, students and the general public. There are computer terminals for visitors, comfortable work areas, and a friendly staff that includes professional librarians, students and volunteers who dedicate their time and expertise to organizing the material.

Diversity of Spirit

Our international student body brings a wide range of experiences and perspectives to Ben-Gurion University's family. These profiles celebrate the variety of interests and multitude of talents – both academic and extracurricular – of just a few of these exceptional people.

"Herstory" of a Journey

Asefu Bero, a doctoral candidate in Hebrew literature, traces her penchant for writing to her grandfather in the Gondar region of Ethiopia, who was a Torah scribe. Yet her literary inheritance didn't reveal itself until she was in high school in the moshav Kfar Hasidim, studying at a boarding school with other immigrant children, including many Ethiopians.

Today, Bero, 32, is a published novelist – author of *Yare'ach Acher* ("A Different Moon") brought out in 2002 by the prominent Israeli publishing house Keter. "The book tells about my journey from Ethiopia to Israel," says Bero.

"The book is about men and women," she says, commenting that she didn't intend it to be that way, "but that's the way it came out." She defines herself as a feminist, adding that she didn't plan that either, but that her life has taken her in that direction.

Bero completed both her Bachelors and Masters degrees at the Department of Hebrew Literature in the special Folklore Studies program, graduating with honors. For her Masters thesis, she focused on the role of magical talismans in stories among Israeli Jews of Ethiopian origin. The study was based on her own family history.

Once she completes her dissertation, Bero will be the first Ethiopian to receive a Ph.D. from BGU. For her research, she plans to investigate the *Zar* trance ceremony among Israelis of Ethiopian origin, under Prof. Tamar Alexander and Dr. Yuval Harari from the Department of Hebrew Literature.

The phenomenon – which has been compared to the Jewish folklore concept of a dybbuk – is a form of trance-possession prevalent among people of southern Sudan and Ethiopia, including the Ethiopian Jews. Bero's idea is to use the ceremony as a tool for examining the changes that occurred during the community's migration from Ethiopia to Israel. Because *Zar* is a sensitive topic, and members of the Ethiopian community are very reluctant to share their beliefs with outsiders who have not proven to be receptive to such ideas, the research project presents rather unique challenges.

Bero left Ethiopia as a little girl in 1986 with her parents and brothers and sisters. It took them two years to get to Israel. "There was a civil war going on in Ethiopia," she says, explaining the long route. They arrived in 1988, when she was eight years old.

She went to boarding school in Haifa, then stayed with her grandparents in the northern Negev town of Kiryat Gat before being sent to the boarding school at Kfar Hasidim where she discovered her love of writing.

Her most avid readers, she says, are young Ethiopians, especially women, whom she meets at conferences. "The young generation of Ethiopians in Israel doesn't know what it was like in Ethiopia," she notes, so the saga she describes is all new to them.

But this is part of the problem for an Ethiopian novelist in Israel – or anywhere, for that matter – finding a large enough audience to make her books economically worthwhile to publish. "The book industry is very commercial," she says. "Not too many people want to read about Ethiopians dying in a Sudanese refugee camp."

While today Bero regards herself as a feminist, she says she came to this understanding as an adult through literature, particularly works of African-American writers. "This reflected my own experience, that of being doubly repressed: as a woman and as someone from a different ethnic background."

Being an Ethiopian feminist isn't a ticket to popularity; the Ethiopian community tends to be extremely patriarchal, with women expected to obey the husband. "There is a lot of fear of feminism in the Ethiopian community," says Bero.

"A Different Moon" ends in the year 1994, but Bero, who is now married and the mother of two small children, is working on her next novel that will pick up her personal/historical journey from there. "But I'm busy with classes for now," she says, "so I'm going to have to finish it when I can find the time."

All in the Family

You could say the Yedidsion family – the name means "friend of Zion" in Hebrew – has come of age with Ben-Gurion University. Ten years ago, brothers Liron and Harel were lured here by scholarships from their native city of Ra'anana. Today, they and four other members of the Yedidsion family – mother Ronit, sister Ma'ayan, brother Sivan, and Liron's wife Adi – have all completed, or are studying toward, advanced degrees at the University. They marvel at the changes that have taken place during the decade they've been here.

Ma'ayan, the youngest of the Yedidsion clan, is a student at the Joyce and Irving Goldman School of Medicine, while Ronit is studying for her Masters degree in gerontology. Sivan is beginning his career as an accountant after receiving his Bachelors degree in economics and accounting.

"In 1998, the University wasn't particularly well known. All I knew was that it was in Beer-Sheva, which was this little backwater town you drove past on weekend leave from the army," says Harel, who is a doctoral candidate in the Department of Industrial Engineering and Management. "The difference between BGU then and now is like night and day. It has so many more students, more and better faculty members, more facilities, more funding. Today, people know it as one of the best universities in the country."

The city of Beer-Sheva has grown as well, though not nearly as dramatically as the University – but the Yedidsions see this as an advantage for BGU, a key to its unique standing on the Israeli higher education scene.

"Other universities in Israel are in the big cities – Jerusalem, Tel Aviv or Haifa – so the students there generally go to class and go home. There's so much to do off-campus, so that's where their social lives are," says Adi, who earned her Masters degree from the Department of Education and now works in the University's Computation Center. "Here, people spend more time together on campus – studying and getting to know each other."

Her husband Liron, who completed his doctoral degree in Industrial Engineering and Management, illustrates the BGU difference by describing a recent visit to the Technion. "I was there on a Wednesday afternoon, and my host told me the reason I saw so many students sitting on the lawn, chatting and listening to music, was because the university sets aside two hours every Wednesday for this activity. I said to myself: "At BGU, you always see students sitting on the lawn chatting and listening to music; you don't need to schedule it in."

Adi believes that because of BGU's distance from the populous center of the country, it has a larger proportion of students who've moved away from home than is found at other Israeli universities. In fact, 50 percent of BGU's student population comes from outside the Negev. Thus, she says, attending BGU is more like the American experience of "going away to college" than in other universities in the country.

Liron, Harel and Adi all agree that their years at BGU were part of their maturation process; "self-confidence" is the benefit they all mention, and they attribute it to their scholastic success at the University.

Harel has grown so attached to BGU – and, yes, to Beer-Sheva – that after three years of working at a large hi-tech company in the North, he missed the University and the city, so he returned. Now a student and lecturer, he hopes to build his academic career here.

The Road from Jordan

It was about a decade ago that Fawzi Abdoh, a Jordanian water engineer, first visited Ben-Gurion University while working on a Danish-funded, five-year water project in the West Bank. Today, he is a doctoral student at the Department of Geography and Environmental Development, beginning work on his dissertation. Standing in his backyard in Jebel Mukaber, the neighborhood of East Jerusalem where he lives with his wife and three children, Abdoh points to the hazy sky in the east and says, "On a clear day, you can see the slopes of Jordan." He is holding his nine month-old son, Ridha; the name means "satisfaction" in Arabic.

Abdoh, 39, finished the Palestinian project in 2003, but was ultimately interested in learning more about the science of water. Israel has a great deal to offer the Middle East, and Jordan in particular, he explains, in the all-important issue of water use. "Agriculture in Israel isn't a matter of tradition, it's a science. In Jordan, it hasn't developed to that extent yet," he comments.

"I thought I could serve as a good example of peaceful co-existence – a Jordanian who had worked in the West Bank on a project for Palestinians and who was now studying in Israel," he says. His doctoral coursework took place in Hebrew, which wasn't easy, but he credits the support he received from other students and lecturers for his grade point average of 93.

"To accommodate me, one of my professors taught his course in English – with the other students' agreement. In another course, the professor showed the slides in English. One of my classmates, Yaniv Monbaz, volunteered to tutor me for free. Now he is receiving a stipend from the Office of the Dean of Students for assistance he has given me and has been to Jordan as part of his studies," says Abdoh.

"My time at the University has been a wonderful experience. The academic standard is very high. The courses are very useful in my field. The facilities are highly advanced and all the students and professors have been extremely friendly and helpful."

Israelis hear a lot about the anti-Israel attitudes of academics and professionals in the Arab world. Wouldn't it be difficult for him to work as an engineer in Jordan after living and studying for years in Israel?

"It might be a problem for an engineer just starting out, but not for someone with a lot of experience who has worked on international projects," says Abdoh, noting that at the Jordanian firm where he was employed, he had responsibility for budgeting and manpower on projects in 30 different countries, adding that he himself headed a major project in Uganda.

On a clear day, Abdoh can also see the Dead Sea from his backyard. While the severe receding of the Dead Sea is a terrible setback to the Israeli and regional environment, he believes it is also a source of hope. Noting that preliminary work on the canal linking the Red and Dead Seas began in August, he says that one day that canal will provide at least 500 million cubic meters of fresh water every year to the parched nations of the Middle East. While the issue of water is a linchpin to peacemaking in the region, Abdoh says that the problem is not a shortage of water, but a shortage of "cooperation and coordination."

What's needed are more "examples of peaceful coexistence," and in a Jordanian water engineer living and studying in Israel, the University has found a remarkable one.

Knowing without Seeing

Eynav Maharabani has been blind from birth but she says she doesn't "feel" like a blind person.

"Most of my life has been spent in the community of 'seeing' people," she explains. "From the time I was born, my parents decided that I would be treated like a regular child and learn in a regular school."

And indeed, that is just what she did, above all with determination. Maharabani recently received her Masters in Business Administration (MBA), with a specialization in marketing. She received her undergraduate degree from the Department of Management at the Guilford Glazer School of Business and Management.

In addition to a tutor, she relied upon friends and teachers to read what was written on the blackboard, and family members read textbooks at home. "I'm lucky to have an excellent memory and I was also able to write into a special Braille typewriter," she says with characteristic modesty.

Born and raised in Beer-Sheva, Maharabani's path to BGU wasn't always easy, but was helped over the years through technological innovations, encouraging teachers, and the support of friends and family. While she was still in high school, a special scanner was developed that converts written texts into Braille, enabling her to "read" textbooks instead of hearing them. Another technological innovation of the time was a special laptop computer with a "Braille screen" attached. "That was a real breakthrough because it could convert regular text into Braille on my own computer," she says.

When it came time to present a subject for her Masters thesis, Maharabani decided to carry out research inspired by her own experiences. "Honesty and Helping Behavior – Testing Situations Involving Temptation to Cheat a Blind Person," describes the reactions of actual vendors and service providers faced with the opportunity to take advantage of a blind person.

One of the test situations involved two people ordering taxi rides from identical points of departure and destination; one passenger was sighted while the other was blind. The results revealed that while time from departure to destination did not differ significantly, meter readings and actual payments were significantly lower when the passenger was blind. "It seems as if the taxi drivers were less inclined to overcharge the blind passengers than the 'regular' ones!" she concludes.

Maharabani is uncertain whether she would find similar results in other countries. "I spent some time in the United States when I was in high school and I noticed two very contradictory tendencies: one is that there is much greater accessibility for disabled persons, including the blind, in the US than in Israel. But on the other hand, the people in New York were very unhelpful to strangers, including those with disabilities. People are a lot more helpful in Israel. So…I don't know how my test case with taxi drivers would have turned out in New York."

After earning her Masters degree, Maharabani trained as a Life Coach, a profession that helps people determine and achieve personal goals. "I coach a lot by telephone," she says. "People seem to prefer that mode of communication, as it saves time."

"I have a great listening ability," she says, explaining how she compensates for lack of sight. "I don't need to see body language, I feel it. In fact, I think that seeing the way people dress or how they look only creates an illusion of reality and gets in the way of really understanding who they are. I understand the essence of the person, under all the layers and disguises. That's what makes me a successful life coach."

Maharabani is also working at the University as an instructor's assistant to Dr. Hila Riemer in the Department of Management while she considers her future.

Maharabani says she'd like to have a family and children, and also a career. "I enjoy my coaching work, but academia beckons me as well. My dream is to combine my people skills with academia in the teaching field. My motto is and has always been: 'If you will it, it is no dream'."

Combining Feminism and Judaism

Sharon Orshalimi is a complex young woman. Raised in the Ramat Aviv Gimmel neighborhood of Tel Aviv, what is known as Israel's "Beverly Hills," she now devotes her time to advancing a variety of causes that range from Bedouin rights to feminism and conservative Judaism.

It's not easy for a 23-year-old woman to put all these parts of an identity together. "But at Ben-Gurion University, I've found my place," says Orshalimi. "It's me."

Orshalimi has a connection to American Jewry through her mother who was raised in Detroit, where Orshalimi has spent a lot of time. "I loved going to *shul* in the United States," she says, adding that this love of Judaism is something she missed in her childhood environment in Israel, and something she, by joining Hillel at BGU, is trying to communicate to the University's student body.

"The kids I grew up with in Ramat Aviv Gimmel don't know how to say *Shma Yisrael*, they're not familiar with the Book of Esther from Purim," she says. "When you go on the March of the Living in Poland, the kids from Israel are the only ones who don't know how to say the most basic prayers in Judaism."

Hillel: the Foundation for Jewish Campus Life, established its first branch aimed primarily at Israelis, at BGU in 2003. The organization is rooted in the United States and its first two branches in Israel were mainly focused on offering services to American students studying in the country. The organization's popularity at BGU brings close to 3,000 students to its activities.

The advent of Hillel on Israeli university campuses was, argues Orshalimi, a way to counter Israeli complacency about Jewish identity, that is, the commonly held notion here that Judaism is alive and well only in the Jewish state, while in the Diaspora, it's dying. Orshalimi insists that Israel has a lot to learn from the Diaspora about keeping Judaism alive.

"The founding of the State of Israel ended the connection with Judaism for a lot of people in this country," she says. By involving students in learning Jewish texts, in learning what Judaism has to say to modern women and in fostering social justice for minorities – "the stranger" – Orshalimi feels she is helping restore the Jewish dimension for the country's young generation – a dimension she inherited from her mother's American side.

This is a void Orshalimi tries to fill with her work in Hillel and the Conservative movement's youth group. Yet her Judaism isn't strictly religious and traditional – it also has an inextricable social component, part of which is feminist.

She has found herself working closely with female Bedouin students as part of her overall commitment to advocate on behalf of the Bedouin community.

Around 200 BGU students and professors attend the various Bedouin-related activities, says Orshalimi.

It's not surprising that she plans to return to the US next fall as a Ph.D. candidate in women's studies, her ultimate goal being to return to Israel and devote herself to the fight against sexual harassment. "It's part of who I am," she says – part of the process of self-discovery this young woman from Ramat Aviv Gimmel went through in a new-found community at BGU.

In Case of Emergency

Dr. Dagan Schwartz

At 10 p.m. on Oct. 7, 2004, two suicide bombers crashed their car into the Hilton Hotel in Taba, Egypt, very close to the Israeli-Egyptian border, just south of Eilat. A few hours later, there was another suicide bombing in the Sinai desert resort area of Ras a-Satan, some 50 km to the south. In all, 38 people died and 185 were injured in the bombings.

The nearest medical facility to the sites was Yoseftal Hospital, a small hospital in Eilat, a few kilometers from Taba, on the Israeli side of the border. In the pandemonium immediately following the bombings, bewildered Egyptian officials barely loosened border-crossing regulations, allowing only a trickle of Eilat rescue workers into Taba.

Dr. Dagan Schwartz, a reserve Lieutenant Colonel flight physician in the Israeli Air Force's airborne Rescue and Evacuation Unit, was drafted that night and participated in the airborne transportation of victims from Eilat to Tel Hashomer hospital near Tel Aviv. He experienced first-hand the confusion that delayed the evacuation of the injured by almost a full day.

As a member of the professional team that subsequently analyzed how that Sinai rescue operation functioned, Schwartz, Chairman of BGU's Department of Emergency Medicine at the Leon and Mathilde Recanati School for Community Health Professions, says he understands today that "trying to create cooperation in the midst of an emergency situation is almost impossible. Everything needs to be organized and in place beforehand, so that there can be a coordinated effort."

A decorated veteran of the Israel Defense Forces (last year he was awarded a Certificate of Merit for his role in the air-evacuation of wounded soldiers during the Second Lebanon War in 2006), Schwartz served until recently as the director of paramedic education and was the assistant medical director of Magen David Adom (the Israeli national EMS) for eight years. He confidently claims to personally know every paramedic in the country.

"Luckily in Israel we haven't had experiences of incidents of huge mass casualties, such as an earthquake where there are hundreds of thousands of injured," he says, adding that through force of bitter circumstances, Israelis have become experts in the field of what he terms "small mass causalities," as the result of wars and suicide bombings.

Schwartz is skeptical about the cost-effectiveness of rescue missions carried out by teams flown into scenes of catastrophes around the world. "What is effective is to develop local resources, preparing the local population or people who are close by. If you have an ambulance driver across the border 30 minutes away, he can help," he says.

Towards this end, he has had a key role in the development of unique cooperation with the Jordanian Emergency Medical Services to establish a three-year academic program in emergency medicine tailor-made for Jordanian paramedics, to be taught at BGU.

Starting in March 2009, the planned course will offer instruction in English and Arabic for 18 students. The curriculum will give the Jordanians both in-depth academic knowledge and hands-on experience that will lead to a Bachelors degree in Emergency Medicine. "We will be working with Jordanian hospitals on this program," he explains. "Third-year studies will take place in hospitals and then with actual emergency services in Jordan. The skills they acquire in this program will help the Jordanian paramedics respond to everyday medical emergencies as well as to disasters."

Schwartz directs the Faculty of Health Sciences' undergraduate degree program for paramedics – the only academic course in emergency medicine in the country, which is, he says, the main reason he decided to come to BGU five years ago. This year, Schwartz oversaw the creation of a Masters program in emergency medicine.

What drew Dagan Schwartz into emergency medicine? "In the army I became a medic and eventually a combat medic course commander. That's when I found it really fascinating." At the time that Schwartz finished medical school, there was no residency program in emergency medicine in Israel, so he did his initial residency in pediatrics. He then went on to do his residency in emergency medicine in Cleveland, Ohio, at Mt. Sinai Hospital.

From teaching medic courses in the army, to teaching paramedic courses at Magen David Adom, to his current position at the University, Schwartz says he has always loved teaching. "I enjoy it enormously. I find teaching really fun."

What is effective is to develop local resources, preparing the local population or people who are close by. If you have an ambulance driver across the border 30 minutes away, he can help

One of his biggest concerns as an educator of emergency medicine is patient safety. According to US statistics, medical errors are the seventh leading cause of death. "In the past, the medical community was always very closed regarding debate on medical errors," says Schwartz, who set up the sophisticated Center for Medical Simulation at the Leon and Mathilde Recanati School for Community Health Professions, the only university-affiliated center of its kind in the country.

"Medical simulation allows people to make mistakes without causing damage, and to learn from their mistakes," he explains.

The stars of the simulation center are extremely sophisticated dummies. They can talk, move and breathe. Some dummies can even imitate heart attacks or breathing difficulties, such as simulating only one functioning lung. "This is really very close to reality and the dummies are getting better all the time," says Schwartz, adding that such centers have been proven to decrease medical errors and also create an atmosphere where procedures can be discussed.

The Center is used to train paramedic teams, who must be able to work together. Usually there are at least three in a team: the physician, the paramedic and a volunteer. "We give them the actual equipment they will be using in the field. They go into a room where there is an instructor and either a dummy or an actor, and they're told, for example, 'this is a 55-year-old man who has had chest pains since yesterday.' They have to ask questions, examine the patient, treat him with IVs, shock, whatever is needed, and to efficiently use the members of the team. At the end of the scenario they watch a video of what happened, actually observing how they performed. This is a wonderful teaching tool."

Schwartz's wife Rama is a pediatrician who specializes in emergency medicine at Schneider Children's Hospital in Petach Tikvah. The couple has three children. "We're very close professionally."

Does Dr. Schwartz ever lose his cool? "Rarely," he replies. "I imagine if I weren't calm, I wouldn't have gone into emergency medicine. It's got crazy hours. You have to like it: the stress, the adrenaline; you have to be able to function well under stress." ■

SOUVENIRS

Repressed Historical and Personal Memory in the Works of Israeli and Polish Artists

A ground-breaking exhibition juxtaposed Israeli and Polish artworks to highlight the similarities and differences reflecting the joint historical legacy of the two countries, while addressing the more abstract questions of how people process memory and commemoration.

Named Souvenirs, the exhibition examined the dual meaning of these items – as a memento from a specific place or time, or as a relic from the past that has unrelated, but significant meaning. In the latter case, a souvenir gains a new life and produces a narrative that may be linked to its "origin" in a distant and vague manner, but which is nonetheless intense and moving.

The opening of the exhibition was accompanied by an international conference that attracted scholars and historians from around the world who examined the question of personal and historical memory according to psychology, history, theology, literature and the arts. The two projects were made possible by collaboration between the University's Department of the Arts and the Adam Mickiewicz Institute in Warsaw and was one of the highlights of the Polish-Israeli Season, 2008-2009, with the support of the Chaim Herzog Center for Middle East Studies and Diplomacy and the Polish Institute.

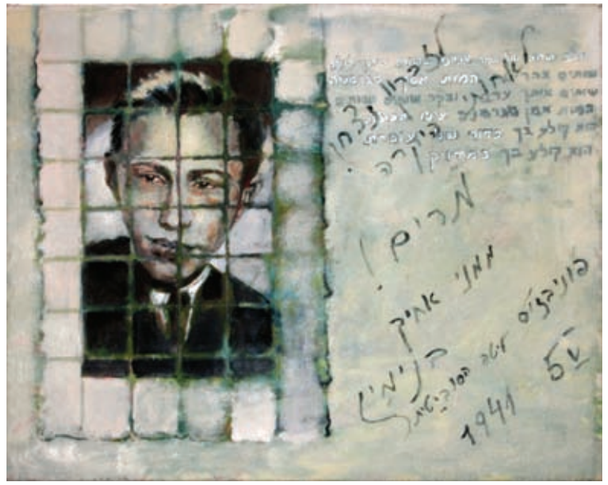
Contemporary Israeli and Polish artists reworked inherited or acquired objects, words, tunes, photographs and other memorabilia.

Curators: Teresa Śmiechowska, Adam Mickiewicz Institute, Warsaw; Prof. Haim Finkelstein and Prof. Haim Maor, Department of the Arts, Ben-Gurion University of the Negev

Yair Garbuz, *Hora Parents,* 2006, central panel of the triptych A Life of Rattle, 2006, mixed media on plywood, 160 x 120 cm, courtesy of Gordon Gallery, Tel Aviv

Haim Maor, *Untitled (mother's blouse),* 1994, cotton blouse and light box, 15.5 x 50 x 70 cm, artist's collection

Krzysztof M. Bednarski, *I, Bruno Schulz,* 1982, installation, 86 x 62 x 32 cm



Sara Katz, *Benjamin,* 2006, oil on canvas, 43.5 x 55 cm, artist's collection

Michal Na'aman, *scar let pain ting,* 1997, masking tape and oil paint on canvas, 130 x100 cm, artist's collection

Yifat Lajst, *Rynder's Dream,* 1982, video installation, 25 mins, without a soundtrack

A Culture of Understanding

Dr. Michal Krumer-Nevo & Dr. Gidi Nevo

Dr. Michal Krumer-Nevo and Dr. Gidi Nevo both deal with narrative, or the telling of stories.

Krumer-Nevo, a faculty member of the Charlotte B. and Jack J. Spitzer Department of Social Work, treats the subject of poverty by getting the story from the source: the people, particularly women, who know what poverty is from their daily experiences. In contrast, Gidi Nevo, of the Ben-Gurion Research Institute for the Study of Israel and Zionism in Sede Boqer, uses a range of Hebrew texts to illuminate the story of the Jews over the last two centuries, culminating in the establishment of a Jewish state. While these fields differ, they have overlapping areas that sometimes unite the researchers in joint efforts.

Married for 22 years and the parents of two boys, Michal and Gidi share a personal narrative as well. Like all couples, they deal with the pressing day-to-day issues of housekeeping and family life. At the same time, they are academics, pursuing the truths and revelations of their respective fields, and occasionally entering the other's territory.

"We sometimes act as each others' critics and editors, though we deal with different disciplines," says Gidi Nevo. "We may transfer texts between ourselves, read each others' work and fight over a word or an idea."

In her research, Krumer-Nevo focuses on the issue of poverty as economic inequality. She deals not only with the material aspects of poverty, but with its symbolic features. "People living in poverty are perceived as fundamentally different from the non-poor, as having no strengths, agency or insight, thus they are effectively excluded from the public discourse," she states, adding that this is reflected not only in the inequitable distribution of wealth and property, but also in unequal opportunities for housing, education, work and personal safety. The aim of her work, says Krumer-Nevo, is "to bring the voices and knowledge of people who live on the margins of society into the public debate.

"Very often academic research focuses on the individual or family pathologies of people in poverty, as if they are responsible for their situation," says Krumer-Nevo. "This is a superficial picture of the causes of poverty. The forces that play the dominant role in the phenomenon of poverty are not the behavior or attitudes of people living in poverty, but the overall social milieu that denies them social opportunities.

In her book, *Women in Poverty: Gender, Pain, Resistance* (in Hebrew), Krumer-Nevo presents the life stories of 13 women. Through her subjects' experiences, she attempts to identify how social ills are manifested in their daily lives, how the women resist their predicament and what they think about society and how to overcome poverty.

"People in poverty are experts on poverty," she says. "When we ask them about the welfare or housing systems, we can learn a lot about how to improve these systems and make them more just."

Krumer-Nevo's views are grounded in the concept of a democratic notion of knowledge. "Everyone, educated or uneducated, has knowledge. In a democracy, each citizen should be treated as having legitimate knowledge," she contends, adding that "recognition and respect for this knowledge allows one to perceive them, not as carriers of pathologies or as mere victims, but as people who understand the limitations of their circumstances and who resist their deprivation."

People living in poverty are perceived as fundamentally different from the non-poor, as having no strengths, agency or insight, thus they are effectively excluded from the public discourse

In addition to teaching and research within the Spitzer Department of Social Work, Krumer-Nevo is Chairperson of the Israeli Center for Qualitative Research of People and Societies (ICQR). The Center, founded by Prof. Lea Kacen, strives to understand and analyze situations holistically, rather than using measurements and statistics. Established in 2000, the Center provides support to qualitative researchers from various disciplines around the country. Under its auspices researchers develop novel, qualitative and culture-sensitive methodologies, conduct related research and disseminate project results.

The Center's projects probe wide-ranging subjects, including girls "at-risk", domestic violence in the Ethiopian immigrant community and the "identity wounds" of immigrant youth from the Caucasus.

ICQR also organizes community activities. In one visual ethnography project focused on new immigrant youth, the youngsters were taught basic movie-making skills, then assigned to make their own documentaries.

"The kids captured what it is like to grow up in their neighborhoods. They interviewed their parents, peers and key figures in the community and portrayed their day-to-day world," says Krumer-Nevo. "This helped them to develop critical awareness, understand their own lives and gain basic leadership skills. ▶

"In eight years we've succeeded in making a real home for qualitative methodology in Israel," says Krumer-Nevo, explaining that qualitative methodology has enabled her to combine her two areas of interest: narrative and social reality.

Dr. Gidi Nevo also loves narratives. He concentrates on Hebrew culture as expressed in Israeli and Jewish literature, movies and popular music. In his forthcoming book, *The Seat of the Scornful: The Rhetoric of Hebrew Satire* (in Hebrew), Nevo traces Hebrew satire from the Jewish Enlightenment (1770s to 1880s) to the present. He examines several important "way-stations" during the last 200 years.

Nevo starts with the early 19th century writer, Joseph Perl, who wrote anti-Hasidic satire. "This brilliant parody was on an equal footing with anything written by Jonathan Swift," claims Nevo, who also explores Sholem Aleichem, Ephraim Kishon, Hanoch Levin and Doron Rosenbloom. Elsewhere, Nevo examines the offbeat Israeli comedy group *HaChamishia HaKamerit* ("The Cameri Quintet"), which he maintains, "introduced Hebrew satirical performance into the post-modern world."

According to Nevo, "Verbal weapons have always been a central part of the Enlightenment movement, which encouraged self-criticism."

While every satirical work has its own particular object of criticism, repeated themes are ignorance, hypocrisy, corruption, self-importance, vanity and irrationalism, he explains. "Different eras generate different targets. In both the Enlightenment and the Zionist period, however, orthodox Jews came under attack as being irrational, corrupt and mystical (the Hassidic branch), or overly stringent, suffocatingly cloistered and divorced from esthetic values and romantic ideals (the Lithuanian one)."

Nevo cites as a contemporary example Ephraim Kishon, who, consistent with his personal philosophy, attacked the socialist establishment of Labor-Zionism. "Writing in the 1950s, Kishon eloquently expressed socio-economic sentiments that later came to be embodied in such policies as those of Margaret Thatcher in the United Kingdom, Ronald Reagan in the United States and Benjamin Netanyahu in Israel," he posits.

Nevo points out that the Holocaust changed the direction of Jewish satire. "After the destruction of Eastern European Jewry, there were voices that reacted very negatively to traditional satire aimed at the Jewish shtetl. Critic Abraham Kariv, for example, claimed that by portraying shtetl Jews as miserable, impotent and repellent, these satires did injustice to the light and warmth of shtetl life," he says, adding that the Holocaust figures in satire today. Several Cameri Quintet skits are critical comments on what it views as manipulation of the memory of the Holocaust.

While Nevo deals essentially with Hebrew works, he draws a parallel with the work of American Jews, for example Woody Allen, whose fictional world, he maintains, can be linked to those created by Sholem Aleichem and S.Y. Agnon. "Allen's film *Crimes and Misdemeanors* is a critique of bourgeois Jews in the United States, just as Agnon's *A Simple Story* targets those in Eastern Europe," says Nevo. "Both artists dissect this world; that is their strength as critics."

Looking ahead, Nevo would like to research the link between "high" or "elite" Hebrew culture, such as the "notoriously inaccessible" Agnon and Natan Alterman, with performers such as Israeli singer Ehud Banai and the Cameri Quintet. "This would make for some interesting dialog," he muses.

In addition, Nevo believes that even "low" culture, in the form of soap operas and reality TV, is a subject ripe for study. "You can carry out revealing and interesting research on vulgarity," he argues.

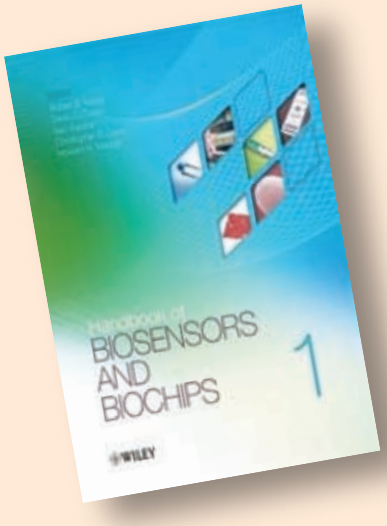
"Zionism has had many achievements," says Nevo. "I believe that some of its most impressive accomplishments lie in the area of culture. The dynamism and vibrancy here make Israel a crazy cauldron of culture."

Together with Hebrew University colleague Deborah Gilula, Nevo is currently working on a ten-volume edition of the political verse of Natan Alterman, whom Nevo considers the most influential poet in Israeli culture. The collection will include an extensive introduction, historical background and indices and reflect pre-State and Israeli history from the 1930s to the 1960s.

Together, Michal and Gidi are planning to teach an interdisciplinary course on social problems and protest in Israeli literature, film and music. Gidi refers to BGU as "young and energetic," which perfectly suits him and Michal. "We love the atmosphere and students in this dynamic place. There's a great feeling on campus. It's very much alive, and we're happy to be part of it." ■

Writing in the 1950s, Kishon eloquently expressed socio-economic sentiments that later came to be embodied in such policies as those of Margaret Thatcher in the UK, Ronald Reagan in the US and Benjamin Netanyahu in Israel

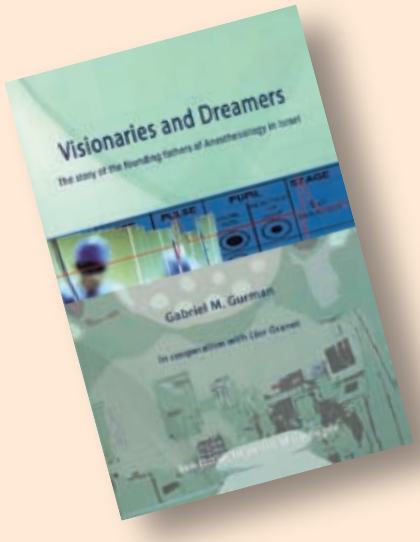
On the Bookshelf



Handbook of Biosensors and Biochips (2 Volume Set)

Robert S. Marks, et al, editors
Wiley – Interscience, 2008

Biosensors are small devices that give a signal (electronic or optic) in response to a specific event that occurs on the surface of the device. The development of biosensors technologies started in the 1980s and now has applications in a number of core research areas within biomolecular and bioanalytical sciences. Their success is demonstrated by their application in a growing number of interdisciplinary fields such as the diagnostics of diabetes and the monitoring of nitrous gases in the atmosphere. With contributions from Dr. Marks of the National Institute for Biotechnology in the Negev and other experts in the field, the book provides an essential reference, underpinning many of the applications used in medical diagnostics, environmental control and pharmaceutical and food industries. It presents an invaluable addition for those in both academia and industry.



Visionaries and Dreamers: The Story of the Founding Fathers of Anesthesiology in Israel

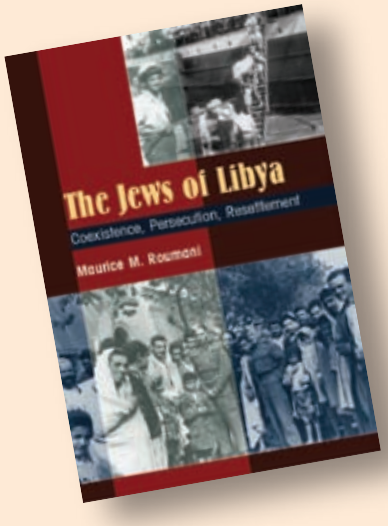
Gabriel M. Gurman
In cooperation with Lior Granot
Ben-Gurion University of the Negev Press, 2008

Anesthesiology is one of the youngest fields of modern medicine. Almost sixty years after the creation of the Israel Society of Anesthesiologists (1952), a book containing the stories of the founding fathers of the profession in this country has been written and edited by Prof. Emeritus Gabriel M. Gurman, M.D. of BGU's Faculty of Health Sciences, a past president of the Israel Society of Anesthesiologists and a former chairman of the Division of Anesthesiology at the Soroka Medical Center. The book was written in collaboration with Lior Granot, a young poetess and a BGU alumna, who interviewed pioneers of Israeli anesthesiology and their families. These founding anesthesiologists were highly dedicated to their patients and their profession. Printed in a bilingual edition – Hebrew and English – it reflects the fact that modern anesthesia today is a universal profession, practiced more or less in the same way in every country. It describes the endless efforts of anesthesia's founding fathers in Israel to bring this profession to a level accepted all over the world. It includes stories, memories, facts, personal opinions, successes and failures – in short, the lives and struggles of the pioneers of Israeli anesthesiology in the second part of the last century.

Israel Since 1980

Guy Ben-Porat, Yagil Levy, Shlomo Mizrahi, Arye Naor and Erez Tzfadia
Cambridge University Press, 2008

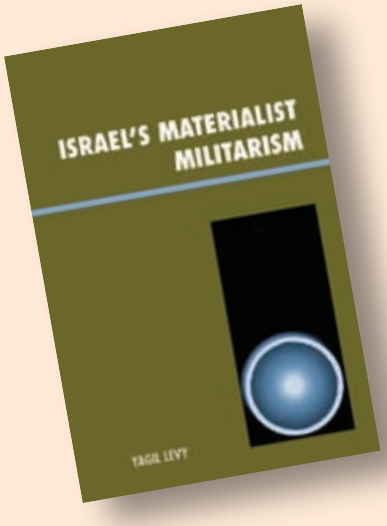
Over the last quarter century, a radical demographic, economic and political transformation has been taking place within Israel, where people are beginning to ask some fundamental questions about the country they live in and what it means to be an Israeli. This book, written by Dr. Ben-Porat, Dr. Levy, Dr. Mizrahi and Prof. Naor of the Department of Public Policy and Administration at the Guilford Glazer School of Business and Management, together with Dr. Tzfadia from Sapir College, probes the changing nature of Israeli society over the last twenty-five years. It considers the deep rifts in that society caused by ethnic, cultural, class and religious divide. It is an informed and informative account of the political and economic changes and how privatization has undermined the welfare state. It questions the role of the military in light of the wider social and economic changes. Finally, and crucially, it asks whether new political initiatives can offer a realistic alternative to the inadequacies of recent governments. This is an informative account of Israel's recent past and the challenges it faces in the twenty-first century.



The Jews of Libya: Coexistence, Persecution, Resettlement

Maurice M. Romani
Sussex Academic Press, 2008

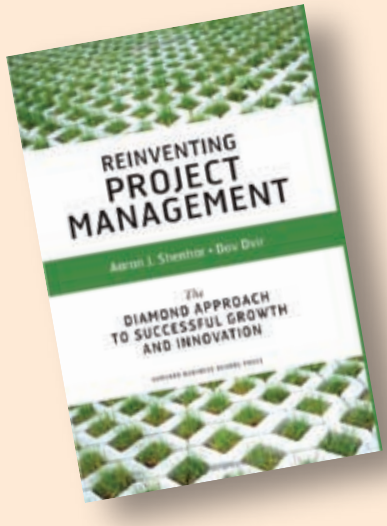
In 1948, 36,000 Jews lived in Libya. Today, none do. Born in Libya, Dr. Roumani, a political scientist and Chairman of the J.R. Elyachar Center for Studies in Sephardi Heritage, gives a comprehensive account of the last decades of this vanished community. The book investigates the transformative period in the history of the Jews of Libya (1938–52), a period crucial to understanding Libyan Jewry's evolution into a community playing significant roles in Israel and Italy and in relation to Qaddhafi's Libya. In 1911, the Italian army conquered Libya. As anti-Semitism grew in Italy during the fascist period, anti-Jewish incidents increased in Libya, and as the Axis oriented its foreign policy toward the Arabs, Rome imposed anti-Semitic race laws on both Italy and Libya. Libyan Jews were interned in local labor camps, deported, and, in some cases, transferred to the Bergen-Belsen concentration camp. These war-related calamities and violent expressions of Libyan pan-Arabism culminated in mass migration to Israel in the period 1949–52. By focusing on key socio-economic and political dimensions of this process, the author reveals the capacity of Libyan Jewry to adapt to and integrate into new environments without losing its unique and historical traditions.



Israel's Materialist Militarism

Yagil Levy
Lexington Press, 2008

The book examines the theoretical aspects of Israeli society, politics-military relations in general and the linkage between Israel's war/peace policies and the social structure of the military in particular. It looks at the changes in Israel's military policies, from the moderation expressed in the Oslo Accords and the unilateral withdrawal from Lebanon to the Al-Aqsa Intifada and the collapse of the Palestinian Authority. From here it moves back to the disengagement from Gaza and again moves forward to the Second Lebanon War. Dr. Levy, who teaches in the Department of Public Policy and Administration at the Guilford Glazer School of Business and Management and in the Division of Military and Security in the Department of Jewish History, examines how these upheavals have impacted policies, outlining how the shift in the social composition of the combat field units from reliance on the secular Ashkenazi middle class to religious and peripheral groups, resulted in zigzagging management of military policy, between restraint and show of force, between the pressures of the market society and the interests of the military and the belligerent proclivities of the groups that serve within it.



Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation

Aaron J. Shenhar and Dov Dvir
Harvard Business School Press, 2007

No organization can survive today without successful projects. Projects are the drivers of innovation and change. They make organizations better, stronger and more efficient. Yet, in the field of business strategy, project management has been largely overlooked. The fact that most projects still fail suggests that conventional project management does not meet current business needs. Drawing on high-profile examples such as the Chunnel, the Denver International Airport and the Sydney Opera House, Prof. Dvir, Chairman of the Department of Management in the Guilford Glazer School of Business and Management, together with Prof. Shenhar from the Stevens Institute of Technology, illustrates the problems that hinder success. More importantly, they introduce the "Diamond Approach". This new model is the first of its kind for managing projects for business results, rather than just meeting time and budget goals. The four bases of the "Diamond Approach" provide a new framework and a common language to talk about project management. With these tools in hand, one can present a case in a simple, smarter way, ask the right questions and select the right management approach before committing to a new project or program.

New Media and Innovative Technologies

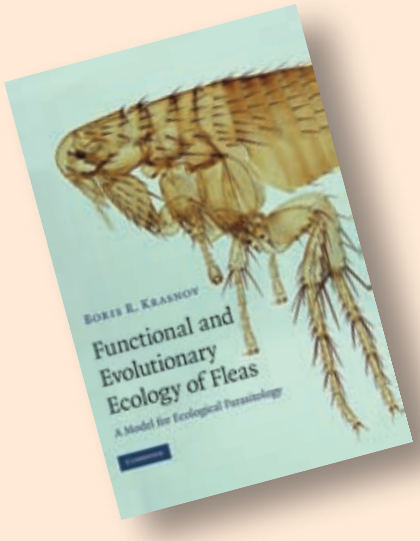
Tal Samuel-Azran and Dan Caspi
Ben-Gurion University Press, 2008

The need to optimize new forms of communication in the information society underscores the centrality of media research, training and education. This book, compiled by Dr. Samuel-Azran of the Department of Communication Studies and Strategic Manager of the Burda Center for Innovative Communications and Prof. Caspi, Chairman of both the same department and the Burda Center, presents cutting-edge studies on the interaction of emerging technologies with economic, political, legal, social and cultural systems. Advances in new media technologies have allowed users unprecedented control of the media platforms to which they are exposed and the content they consume. Indeed, media users have never been spread so thin across platforms. As demassification increases, the practices of media users change. Toffler's vision of the roles of content producers and consumers blurring and merging as "prosumers" has become a reality in the age of social networks, virtual worlds and virtual communities. Users are creating their own communities and even their own knowledge sources, and these grassroots activities affect the strategy of big corporations that cannot ignore such trends. The authors examine recent trends in innovative communications and their influence on society in an attempt to improve the construction of new media projects.

The Heart is a Mirror: The Sephardic Folktale

Tamar Alexander-Frizer
Wayne State University Press, 2007

Since their expulsion from Spain in 1492, Sephardic Jews have managed to maintain their Jewish faith and have developed a uniquely Judeo-Spanish culture wherever they settled. Among the important cultural ties within these Sephardic groups are Judeo-Spanish folktales, stories that have been passed down from generation to generation, either in the distinct language of the group (Ladino), or in other languages, such as Hebrew. Based on a corpus of over four thousand stories told by the descendants of the Spanish Diaspora, Prof. Alexander-Frizer of the Department of Hebrew Literature, incumbent of the Estelle S. Frankfurter Chair in Sephardic Studies and Chairperson of the Moshe David Gaon Center for Ladino Culture, examines the folk narratives of Sephardic Jews to view them both in relation to universal narrative traditions and the traditions of Jewish culture. She investigates the relationship between folk literature and group identity via the stories' connection to Hebrew canonical sources, their historical connection to the land of origin, their treatment of prominent family members and historical events, and their connection to the surrounding culture in the land of the Spanish Diaspora.



Functional and Evolutionary Ecology of Fleas: A Model for Ecological Parasitology

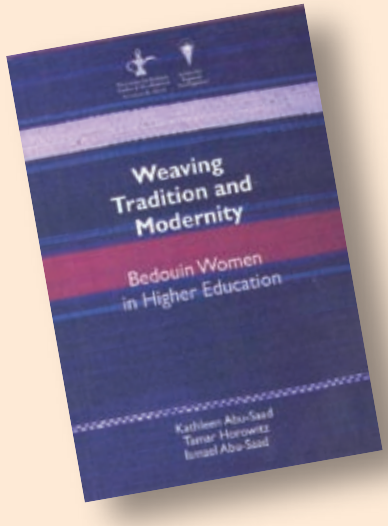
Boris R. Krasnov
Cambridge University Press, 2008

Fleas are one of the most interesting and fascinating taxa of ectoparasites. All species in this relatively small order are obligatory haematophagous (blood-feeding) parasites of higher vertebrates. This book examines how functional, ecological and evolutionary patterns and processes of host-parasite relationships are realized in this particular system. As such it provides an in-depth case study of a host-parasite system, demonstrating how fleas can be used as a model taxon for testing ecological and evolutionary hypotheses. The book moves from basic descriptive aspects, to functional issues and finally to evolutionary explanations. It extracts several general principles that apply equally well to other host-parasite systems, so it appeals not only to flea biologists but also to "mainstream" parasitologists and ecologists. This is the first book to deal with the functional and evolutionary ecology rather than the descriptive ecology of fleas. It not only provides an up-to-date review of flea bionomics, but also includes references to a variety of Russian and Chinese sources, making little-known, valuable research available to the Western scientific community.

Animal Imagery in the Book of Proverbs

Tova L. Forti
Brill, 2008

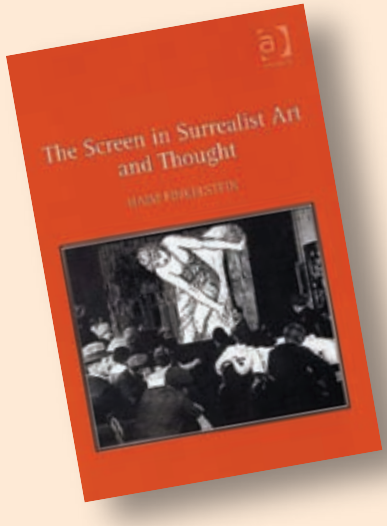
Any treatment of the figurative and symbolic function of animal imagery in biblical literature requires special attention to its contextual meaning and cultural evaluation. This book aims to demonstrate how this is particularly true of the Book of Proverbs, in which faunal imageries serve as a didactic means for delving into the more obvious truths of human behavior. The book focuses on the zoological, literary and conceptual aspects of animal imageries in Proverbs. Discussions of each animal's characteristics introduce analyses of the accompanying imageries' relationship to their literary setting and their rhetorical function within the worldview of Proverbs. In her book, Dr. Forti, a member of the Department of Bible, Archaeology and Ancient Near Eastern Studies, makes a methodological contribution toward understanding the didactic function of Proverb's animal imageries by offering an ongoing three-pronged analysis: Zoological identification and literary perception of the animal in the Bible; Hermeneutic dynamics between the specific animal simile and its literary adaptation; and rhetorical function of the animal imagery within the conceptual framework of the Book of Proverbs.



Weaving Tradition and Modernity: Bedouin Women in Higher Education

Kathleen Abu-Saad, Tamar Horowitz and Ismael Abu-Saad
Robert H. Arnow Center for Bedouin Studies and Development Research Unit
Negev Center for Regional Development, 2007

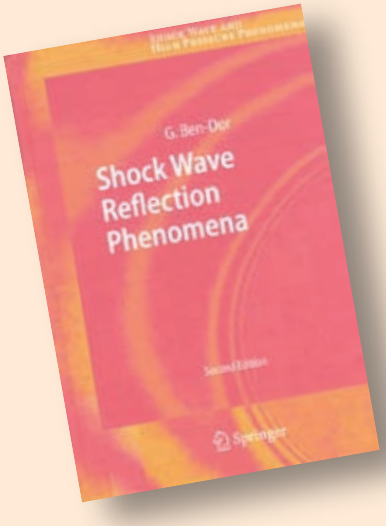
Since the late 1960s, the Bedouin in the Negev have undergone a rapid urbanization process. Given the Bedouin's family-centered cultural, social and economic traditions, it has been easier for Bedouin men than women to make the transition into the modern Israeli labor market. Bedouin Arab women in higher education are exposed to many differing, yet intersecting worlds. This book, by doctoral candidate Kathleen Abu-Saad, together with Prof. Emerita Tamar Horowitz and Prof. Ismael Abu-Saad of the Department of Education, provides insight into the complex personal, academic, political and social worlds of these young women – primarily through their own words and voices. The authors examine educational and political practices and cultural beliefs confronted by young Bedouin, including dealing with the problems of identity amongst the students at Ben-Gurion University. Arab/Muslim women are characterized as silent and silenced by an oppressive culture and religion. But are they really silent? This volume provides an opportunity to listen to the voices and see the strategies of these path-breaking women. It provides a foundation for understanding the impact of higher education on their lives and society.



The Screen in Surrealist Art and Thought

Haim Finkelstein
Ashgate Publishing, 2007

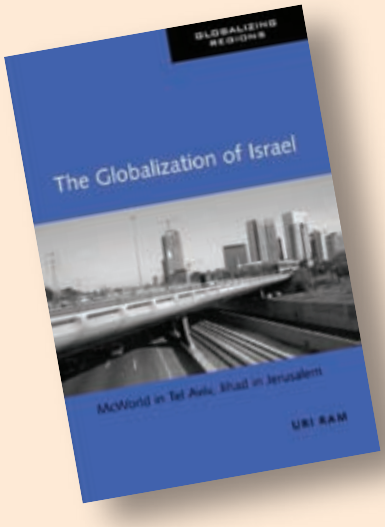
This book by Prof. Haim Finkelstein of the Department of Arts studies the manifestation of space in Surrealist theory and philosophy, and in the paintings and writings done in the framework of the Surrealist Movement. It introduces the "screen" as an important spatial paradigm that clarifies and extends the understanding of Surrealism as it unfolds in the 1920s. Extending the discussion of the concepts at stake for Surrealist visual art into the context of film, literature and criticism, this study sheds new light on the way "film thinking" permeates Surrealist thought and aesthetics. Finkelstein examines the concept of the screen as emblematic of a strand of spatial apprehension that informs the work of young writers in the 1920s, such as Robert Desnos and Louis Aragon, and the way the spatial character of the serial films of Louis Feuillade intimated to the Surrealists a related mode of vision. The dialectics informing Surrealist thought with regard to the surfaces of the real (with walls, doors and windows as controlling images), are shown to be at the basis of André Breton's notion of the picture as a window. The main aesthetic and conceptual issues that come up in the consideration of Breton's window metaphor lay the groundwork for an analysis of the work of Giorgio de Chirico, René Magritte, Max Ernst, André Masson, and Joan Miró.



Shock Wave Reflection Phenomena

Gabi Ben-Dor
Springer, 2007

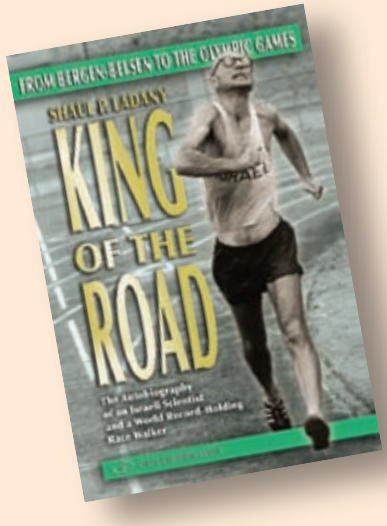
This book provides a comprehensive state-of-the-knowledge description of shock wave reflection phenomena from a phenomenological point of view. Prof. Ben-Dor, incumbent of the Dr. Morton and Toby Mower Chair in Shock-Wave Studies and Dean of the Faculty of Engineering Sciences, gives an introduction to oblique shock wave reflections, presenting the two major well-known reflection wave configurations, namely, regular (RR) and Mach (MR) reflections, the corresponding two- and three-shock theories, their analytical and graphical solution and the proposed transition boundaries between these two reflection-wave configurations. The book also gives a description of the reflection phenomena in steady, pseudo-steady and unsteady flows. Here, the possible specific types of reflection wave configurations are described, criteria for their formation and termination are presented and their governing equations are solved analytically and graphically and compared with experimental results. The resolution of the well-known von Neumann paradox and a detailed description of two new reflection-wave configurations – the Guderely reflection (GR) and Vasilev reflection (VR) – are also given. The book concludes with a detailed listing of the most relevant scientific papers and research reports that have been published so far in the field of shock wave reflection phenomena.



The Globalization of Israel: McWorld in Tel Aviv, Jihad in Jerusalem

Uri Ram
Routledge, 2007

Awarded the Yonathan Shapiro Prize for the best book in Israel Studies for the year 2008, this book focuses on the impact of globalization on contemporary Israel. As well as presenting a concise and originally argued introduction to Israel, Dr. Ram, of the Department of Sociology and Anthropology, frames his analysis in a broader discussion of Israeli history and social currents, focusing in particular on two defining – and conflicting – contemporary trends; one toward advanced liberal democracy with a cosmopolitan edge, and the other toward ethno-religious traditionalism and rejection of the secularism associated with market driven globalization. The cosmopolitan, hi-tech driven city of Tel Aviv represents the former trend, and Jerusalem – a city increasingly dominated by orthodox Jews – represents the latter. The book is one in a series that looks at how nations and regions across the world are navigating the tumultuous currents of globalization. Ram applies Benjamin Barber's "Jihad versus McWorld" thesis to contemporary Israel and its place in the world.



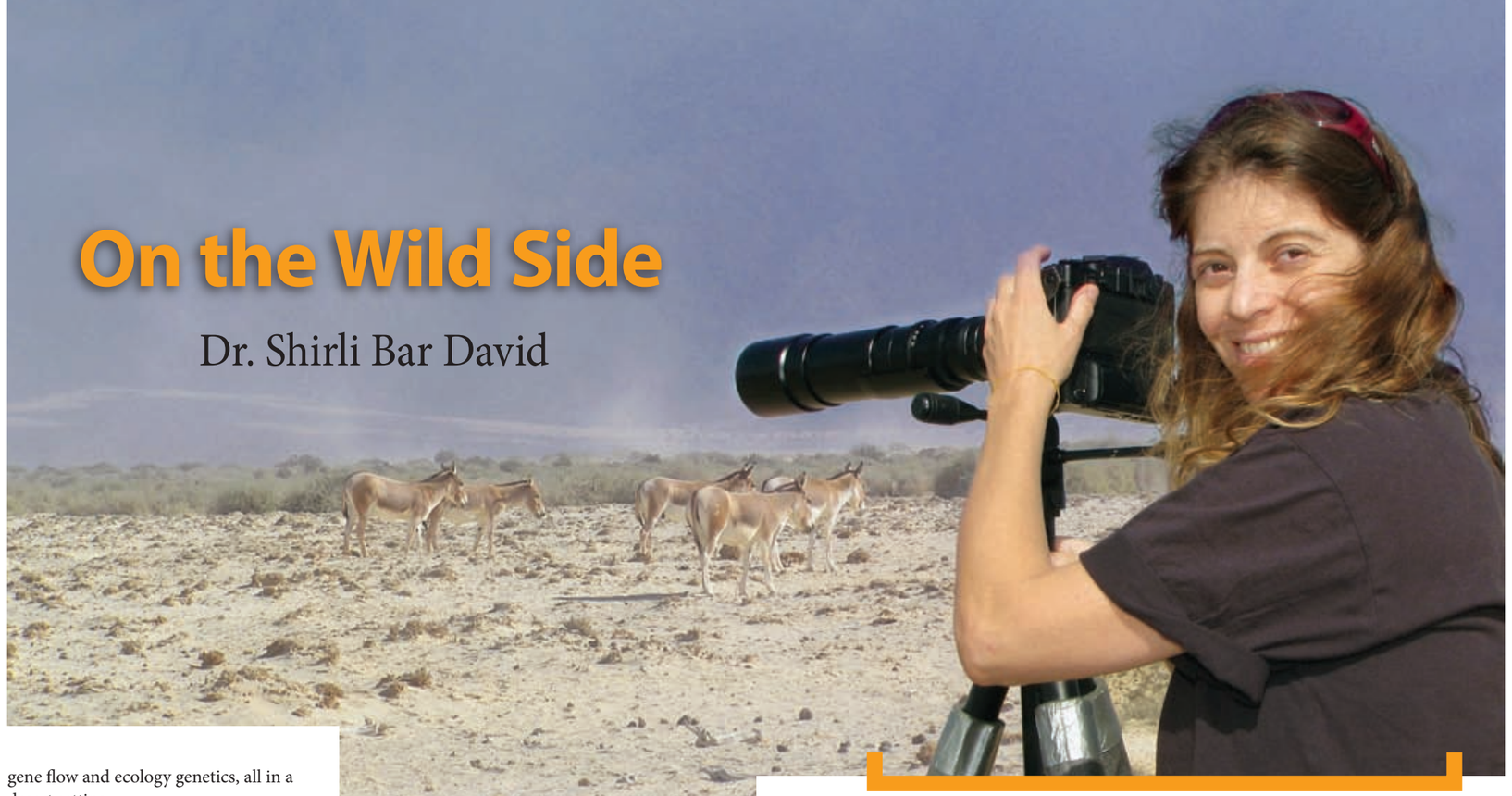
King of the Road: From Bergen-Belsen to the Olympic Games

Shaul P. Ladany
Gefen Publishing House, 2008

Originally published in Hebrew, *King of the Road* is the autobiography of Shaul Ladany, Prof. Emeritus of the Department of Industrial Engineering and Management and a world record-holding race walker. The Belgrade-born survivor of the Holocaust and the Black September attack on the Israeli team at the 1972 Munich Olympic Games, Ladany has pursued his dual career interests with remarkable intensity, devoting his life both to the sport of race walking and to the field of industrial engineering. One of the greatest race-walkers in history, Ladany still holds the world record in the 50 mile walk and the Israeli national record in the 50 km walk. He began his athletic career as a marathon runner, but turned to walking in the early 1960s. In 2007, he was awarded the International Olympic Committee's prestigious Coubertin medal, and in 2008, the Israeli Industrial Engineering Association honored him with its Life Achievement Award. Ladany's autobiography is packed with insider information on the life of a long-distance athlete and fascinating anecdotes from the author's life.

On the Wild Side

Dr. Shirli Bar David



The wild ass, mentioned in the Biblical books of Job, Jeremiah and Psalms, and depicted as wagon-pullers and chariot-drawers in the arts of ancient Sumer and Ur, has lived in the near east for as long as recorded history. This rich legacy nearly came to an end in recent times, when hunting and habitat destruction threatened the animal nearly to extinction.

Twenty years ago, in a highly successful project, conservationists began reintroducing the *Equus hemionus* or the Asiatic wild ass, also known as the onager, to the Negev region.

Dr. Shirli Bar David, a researcher at the Jacob Blaustein Institutes for Desert Research at Sede Boqer, is taking part in a follow-up project with onagers, checking the status of the current wild ass population, who are the descendents of the re-introduced "founder" animals.

They were the first animals to be reintroduced to the region as part of a comprehensive plan to return the native wildlife. Having quickly adapted to their surroundings, the wild asses can now be spotted during the summer months congregating around water sources in the Ramon Crater and Nahal Paran. In the winter, they disperse over a very large area.

Onagers are slightly larger than donkeys and more horse-like. Despite the fact that their legs are shorter than horses', they run faster than any other horse or ass, reaching and maintaining speeds of up to 70 km (45 miles) per hour.

A conservation biologist who arrived at the Institutes in 2003 as a post-doctoral student, Bar David has received the financial backing and technical infrastructure needed to establish the Conservation Genetics Laboratory. There, she will explore questions of spatial ecology, population structure, gene flow and ecology genetics, all in a desert setting.

Bar David is approaching this project from several angles. The onagers, re-introduced to nature at two Negev locations since 1982, were closely monitored for more than a decade. Since 1995, the population has continued to increase naturally: the animals move around the Negev and their foals are born in the wild. Current herds, however, have not been officially tracked. Aside from rangers' random observations, the animals' goings-on are largely unknown.

Bar David is determined to uncover what's happening with the roughly 150 animals that now comprise the herd. She and her colleagues have been developing what's known as a "habitat selection model" or "species distribution model" to understand the species' status in connection with natural elements such as water sources and landscape parameters, as well as human-induced factors including roads, settlements and military zones. Primarily, the model will examine how these factors affect movement patterns and choice of habitat.

Along with biological data, Bar David, in collaboration with Prof. Yohay Carmel of the Technion and students, will employ the Geographical Information System (GIS), a tool that connects computer systems to geographical maps in order to capture, manage, analyze and display all forms of location-linked information.

Bar David will also try to shed light on the evolutionary processes at play in re-introducing populations. She and her team have DNA – the "genetic fingerprint" – from blood samples of founder animals introduced 20 years ago. Now they will collect data on the current population and compare them to the founders' profile. From this, says Bar David, "We will be able to determine the genetic processes taking place, and can establish the current population's structure."

Turning the public's eye to a specific ecosystem – and the species contained within – helps engender support for conservation

Wild asses live in herds of a few individuals in a "fission-fusion" population structure, meaning that members are not always in the same herds, and group size and structure may change.

Bar David is working on this project in collaboration with the well-known population geneticist, Prof. Alan Templeton of Washington University in St. Louis. "My questions are similar to his," says Bar David. "They are ecological, evolutionary questions concerning the genetic processes occurring in the reintroduced population."

According to Bar David, the wild ass can serve as a flagship species, one that attracts public awareness to conservation issues due to their vulnerability, attractiveness or distinctiveness, like the giant panda of China, the Indian tiger or the leatherback sea turtle. Turning the public's eye to a specific ecosystem – and the species contained within – helps engender support for conservation.

In previous projects, Bar David concentrated on the delicately beautiful Persian Fallow Deer, the subject of her Ph.D. dissertation. Eventually, she played a key role in the deer's reintroduction into the northern Galilee region of Israel. In addition, Bar David studied buffalo movement in South Africa's Kruger National Park and explored the effects of shrinking habitat on salamanders in Israel's Carmel Forest.

"My goal is to develop scientific methods based on my own and others' experience, data and quantitative methods. I understand the importance of scientific tools – without them we just base our management on intuition. That's not enough," she explains.

Likewise, Bar David sees research as a tool for change. "We want to share our information and conclusions, not to leave them within the walls of academia as some kind of theoretical exercise. Part of my responsibility is to deliver my findings to the decision-makers," she says. "The Ministry of Environmental Protection supported the Persian Fallow Deer project and received our summaries. Appropriate government bodies also received our conclusions from the salamander research.

Asked whether a conservation biologist can be optimistic these days, Bar David sits back and thinks. "We have to believe we can do something," she replies. "For my doctoral studies, I developed a model predicting the future of the Persian Fallow Deer, based on the Galilee's current landscape and development plans." She submitted the projections to the Ministry of Environmental Protection, which is now re-considering the original plan.

"Firm findings," continues Bar David, "can provide the basis for constructive opposition." ■

It's All About Speed

Prof. Dan Sadot

] Our universities are no longer ivory towers. They now see the great importance in establishing cooperative efforts with industry

Prof. Dan Sadot has a passion for speed. Chairman of the Department of Electrical and Computer Engineering, Sadot's research focuses on the next generation of high-speed optical networks – for industry as well as the home.

He examines optical tunability – that is, the plausibility of new methods of optical communications. Looking at the current state-of-the-art technology, Sadot and his colleagues try to adapt innovative methods of communications to classical means, using advanced modulation formats rather than "just turning the laser light on and off."

He served until recently as Vice-Dean of Research and Development at the Faculty of Engineering Sciences. This reinforced for him the importance of fast-tracking the academia-industry connection. Now he has turned his sights on the commercial side of optical communications and optical networks.

To bring his findings to market, together with B.G. Negev Technologies, the University technology transfer company, Sadot created the start-up company, MultiPON. Comprised of eight people who conduct research in the University's Optical Communications Laboratory, the company is mandated to deliver high speed data over a low speed (and low cost) infrastructure. This means transmitting, say, 10 gigabits of data over a 2.5 gigabit infrastructure.

The company has already raised $1.5 million in seed money and has a prototype in hand. According to Sadot, several prospective customers are anxiously awaiting the demo, adding, "This is a win-win arrangement between industry and academia."

Establishing ties to industry represents a change in approach that is taking place throughout Israeli academia, comments Sadot. "Our universities are no longer ivory towers. They now see the great importance of establishing cooperative efforts with industry."

This shift, he continues, has brought about "a new perspective on real needs that will help solve real technological problems. This will yield not only theoretical solutions, but practical strategies using readily accessible, though loosely applicable, information to solve problems.

"In other words," he clarifies, "we must suit research to the actual demands of different industries." For example, Sadot and his colleagues work with the Israel Defense Forces, whose specific needs include tunnel identification, remote explosives and optical encryption of high speed data.

For the army, optical network experts also work toward solutions for next-generation intelligence, like the concept in which sensors are dispersed like dust particles into the atmosphere. Sadot explains that such a futuristic-sounding project would involve managing a huge network, delivering micron-sized units that would yield a picture. "This is an entirely new type of information," he summarizes, "a whole new world."

Sadot is also engaged in research projects related to the more prosaic world of home communications. He focuses on overcoming the cost barrier of new optical technologies. The lab's *raison d'être* is to introduce low cost "passive optical networks" into the home.

"Eventually, every home will be equipped with this method," forecasts Sadot, adding that in Japan, 20 million homes use it already. Due to their high costs, passive optical networks have not yet caught on in Israel or Europe, though Sadot is convinced that its adoption is just a matter of time.

"This is a breakthrough, which offers the great advantage of real time image and video applications that demand a great amount of bandwidth." He believes that the present high cost of the network will eventually be overcome by mass production and more sophisticated data transmission methods, as has already been done in the cellular world.

Having earned his undergraduate and advanced degrees at BGU in electrical engineering, Sadot went on to complete two years of post-doctoral study at Stanford University, returning to BGU in 1995 to establish the Optical Communications Laboratory.

The connections between the University and industry are vital for both, he says. By underwriting research, industry both prevents a brain drain from the University, and reaps its own rewards. "One of BGU's main resources is its human brain power. We have excellent people who are often attracted by industry. It can be hard to hold them," says Sadot. "One way to solve this is by cooperating with industry. Much of our research demands heavy funding. Companies can offset these costs by supporting our equipment, labs and students, while the students can work with them on cooperative projects. This arrangement benefits all involved."

Incidentally, according to Sadot, industry prefers BGU graduates to those of any other Israeli university. As the University requires that even undergraduate students submit hands-on engineering projects, alumni bring practical know-how to the marketplace. "We get excellent feedback about our graduates from industry," he says.

With a passion for speed, Sadot loves to ski, windsurf and above all, ride fast motorcycles. Not by chance, he served in the Air Force, about which he quips, "The speed of light is the fastest thing, after all." In light of the speed of it, the parallel between Sadot's work and hobbies is obvious. Whether racing motorcycles or unraveling the mysteries of advanced communications, it's all about speed. ■

Food for Thought

Dr. Nir Avieli

at the Beer-Sheva market

Anthropologist Dr. Nir Avieli is interested in food. Not only in its nutritional value, preparation or taste, but what it says about people. To explore the development of societies and cultures, anthropologists commonly study religion, language or social structures. These are important aspects of life, holds Avieli, but certainly no less important to who we are than what we eat.

The only anthropologist in Israeli academia to research food, Avieli became interested in the field while he was a student at the Hebrew University of Jerusalem. As a final project for a course on Israeli society, he interviewed top Israeli chefs (who, he notes, "weren't the superstars they are today"), and asked what was specifically Israeli about their cooking. Not one of them answered the question in gastronomical terms, but rather responded in the language of sociology. The chefs' answers related to class, gender, religion and social tensions, not the ingredients of their recipes. This fascinated Avieli, and made him think about the wide-reaching consequences of cuisine.

Today, Avieli's particular sphere of research is the role of food in Vietnamese culture. Arriving in Vietnam in 1992 as a tourist, he fell in love with the place, explaining, "Vietnam is lush, beautiful and blessed with lots of nice people." The war came to an end in 1975, and now, he believes, the country is looking ahead and moving toward greater prosperity. "As a result of peace, more resources have been freed up for growing crops and raising livestock," he says. "Food is feeding the country's optimism, both symbolically and physically."

Avieli spent 1999-2000 doing fieldwork in Vietnam, and since then has returned every year for several months to the small town of Hoi An located in Central Vietnam. Nowadays, his wife and children accompany him on these field trips.

The Vietnamese people make political statements through their food, states Avieli. "Because of the Vietnamese regime, you can't openly criticize the government," he explains, adding, "At all levels – on the street, in the home, at a festival – people are able to express their political opinions through what they serve and eat."

Food is not only used to express political views, but to make distinct social statements. Elements like prestige, hierarchy and social competition play a central role in the festive meals of Hoi An. For example, a show of excessive food, mostly in the form of animal protein, is a manifestation of the wealth and power of those offering the feast. Likewise, guests may restrain themselves from heartily eating to save face and make a culinary statement about themselves: I am well fed, satiated, and hence, well-to-do.

Avieli has contacts with the Vietnamese community in Israel. Comprised of some 100-150 people, this diminutive population arrived in three groups as refugees between 1977 and 1979. The first group of 66 people was picked up by an Israeli ship after their SOS signals had been disregarded by ships from East Germany, Norway, Japan and Panama. Not only given a safe haven, the refugees were ultimately granted full citizenship. Many found their livelihoods as cooks in Chinese restaurants in Israel. "They became 'Chinese cooks' because the only asset they had was their oriental look, and in Israel, it turned out to be more profitable to be Chinese. Paradoxically, while many Chinese restaurants in Israel are owned by Vietnamese, there is not a single Vietnamese restaurant in the country. For most Israelis, Vietnam means 'war' and not one of the world's best cuisines."

Closer to home, Avieli examines Israel's country-wide Independence Day barbeque, questioning why the barbeque ("mangal" in Israeli slang) has become the preferred national choice of celebration.

According to the anthropological theory of food, "meat represents power, and eating animal flesh is an act in which people consume and incorporate the animal's strength. But in Israel, this is done as a mass act on Independence Day," says Avieli. He concludes that the holiday's apparently traditional BBQ reveals cultural narratives that characterize the current Israeli-Jewish-Zionist identity: the tension between power and weakness and between the desire to control a space and the reality of the ongoing struggle over this area."

Avieli intends to investigate aspects of food and power in Israel, such as food in relation to the military or to foreign workers. For example, he cites what he calls the "widespread myth" that Thai migrant workers, who do agricultural work throughout the country, eat dogs. Avieli argues that this myth evolved during the mid-1990s as a way to ease the tension created by the friction between the Zionist ethos of working the land and the contemporary reality of cheap foreign labor. "The truth is that Thais do not eat dogs. Indeed, with time, the myth has dissipated, after serving its purpose."

Laden with significance – personal, national and religious – food has far-reaching meaning in our daily routines and our holidays. For example, he emphasizes that the Passover *Hagada*, which all Jews read at their Seders, lends symbolism and significance in every bite.

> **The chefs' answers related to class, gender, religion and social tensions, not the ingredients of their recipes**

Says the anthropologist, "Eating is natural, we all do it, but we don't think enough about its implications." Avieli is adamant that in addition to examining food under a natural science microscope, the time has come to look at it through the looking glass of the social sciences. ■

In the Path of God

Dr. Yaniv Belhassen

Since the early days of Christianity, the Holy Land has attracted Christians who seek to follow in the footsteps of Jesus. In recent times, pilgrimages have also become attractive to conservative evangelicals in America who see tourism as a means for celebrating and supporting the State of Israel, economically and morally.

Dr. Yaniv Belhassen of the Department of Hotel and Tourism Management of the Guilford Glazer School of Business and Management focuses his research on the ideological, political and cultural features of pilgrimages. For evangelical Christians, he says, the religious journey to the Holy Land is an essential element of their culture. "Pilgrimages to Israel can be seen as social and cultural forces that maintain the evangelical subculture," he explains.

It was a chance encounter on a bus in Illinois that ignited Belhassen's fascination with evangelical Christians and with the significance pilgrimages hold for them. Upon his arrival at the University of Illinois at Urbana-Champaign for his post-doctoral studies, he and his wife were overheard speaking Hebrew by the bus driver, an evangelical Christian who had just returned from what he called a "humanitarian pilgrimage" to Israel. Through the driver, Belhassen met the Midwestern couple who organize pilgrimages to the Holy Land from East-Central Illinois and who became the prime subject of his examination of the phenomenon of evangelical tours to Israel.

Belhassen refers to the Illinois groups he studied as "Christian Zionists," predominantly evangelical Christians who are driven by a commitment to Israel. Christian Zionists believe that the return of the Jews to the Holy Land – the establishment of the State of Israel in 1948 – constitutes the fulfillment of biblical prophecies, a signifier of the second advent of Christ. "Their affinity with the State of Israel, and with the Jewish people more generally, flows from this particular interpretation of the Scriptures and of history," he explains, adding that their support takes many forms, one of which is tourism. "This type of tourism has become a central platform through which this ideology is manifested, reinforced, consumed and shaped," says Belhassen, who lecturers in the Hotel and Tourism Management Program at the University's Eilat Campus.

"For evangelical Christians," he says, "the religious journey to the Holy Land has become a cohesive cultural force in their community and in the American interdenominational fundamentalist sub-culture. Evangelicals, like their secular neighbors, enjoy disposable income and leisure time, which are both prerequisites for the development of tourism. As churchgoers, it is natural that they seek to incorporate elements in their travel experiences related to their religious belief," states Belhassen. Many scholars who study the relationship between conservative evangelicals and the State of Israel stress the theological aspects, particularly regarding their vision of the end-of-time. Belhassen has broadened this analysis by considering cultural, social and political forces at work as well.

The Christian Zionist commitment to Israel makes pilgrimages a powerful leisure activity, laden with symbolism. "Therefore," argues Belhassen, "understanding evangelical tours to Israel requires a systematic understanding of the theo-political principles that guide the organizers and the participants in these tours."

These pilgrimages often have a strong humanitarian component, he says, "which is linked to their religious worldview. For example, evangelicals volunteer in absorption centers because they believe they are seeing the hand of God in the gathering of Jews from throughout the world."

Not surprisingly, the Israeli Ministry of Tourism actively encourages these pilgrimages, which constitute a significant factor in Israel's tourist revenues. In 2004, the Knesset established the Christian Allies Caucus to cultivate grassroots evangelical trips to Israel.

In a forthcoming journal article, Belhassen points out that pilgrimages to Israel have become the arena for competition between rival ideologies within the evangelical movement. "Those who disagree with the Christian Zionist ideology also understand the political ramifications – potential and actual – of tourism in the Holy Land, and are working to counteract the itineraries and the ideologies developed by Christian Zionists."

One such group is the Palestinian organization Sabeel, which defines itself as an "ecumenical grassroots liberation theology movement among Palestinian Christians."

Although Eilat is not a natural draw for Christian pilgrims, he says, "They do come to see the Red Sea, which is associated with the biblical Exodus, and stop in Eilat on their way to Petra, in Jordan. According to one version of end-of-times theology, after the second coming of Jesus, some of the Jewish people will flee to Petra to escape the coming events."

Belhassen lives in Eilat and sees a natural fit in teaching tourism in a tourist city. He considers himself as being on the "ground floor" in the development of the Eilat campus, where there are currently 600 students. "The campus has just completed its 6th year of operation. There is an atmosphere of pioneering in teaching in a young, intimate, campus," he states.

"Hotel and Tourism Management is one of the campus' focal programs, as can be expected from its location. Students choose the campus because they know that in Eilat, they can actually start their career in tourism while studying," he explains.

"The best part of living here is seeing the beauty of the desert and the Red Sea on a regular basis," he adds. ■

at Abraham's Well

Pilgrimages to Israel can be seen as social and cultural forces that maintain the evangelical subculture

Cell Divisions and Inhibitions

Dr. Leah Gheber

What do human beings and the single cell fungus known as baker's yeast (*S. cerevisiae*) have in common? No, this is not a joke, but a scientific riddle that may hold the secrets of a cure for cancer.

Human cells use the same molecular events to divide their chromosomes (DNA) during mitosis (cell division) as yeast cells. According to researcher Dr. Leah Gheber, a lecturer in the Departments of Clinical Biochemistry and Chemistry, this fact has been of great help in studying the mechanisms and regulation of cell division.

Gheber, who has several highly competitive Israel Science Foundation and Bi-National Science Foundation grants to her credit, came to Israel with her family during the very first wave of aliyah from the former Soviet Union in 1974. Ten years old at the time, Larisa, as she was called then, already knew that she would be a scientist when she grew up. "My mother had worked as a biochemist in a lab, but never had the opportunity to get her doctorate degree. I knew that I, too, wanted to wear a white coat like her in a lab, but I was determined to be a 'real' scientist," Gheber recalls today.

But although she knew she wanted to be a biologist when she began her undergraduate studies at BGU, veteran Prof. Yossi Levi advised her to study chemistry first, which she did. She then went on to earn her advanced degrees in biophysical chemistry.

"I've never regretted that decision, Gheber says, "because chemistry is a broader field that gives you excellent tools that can be applied towards biochemistry and cellular and molecular biology – tools you don't acquire if you only study the life sciences." She would find her background in chemistry to be invaluable in later years of research.

Gheber has the unusual distinction of being a member of two departments that are in separate Faculties: the Faculty of Health Sciences, where she teaches in the Joyce and Irving Goldman Medical School, and the Faculty of Natural Sciences, where she teaches in the Department of Chemistry.

"It's true that being a member of two Faculties means that I work harder, but I love it," she exclaims. "Overall, I find it beneficial: I interact with a broad variety of scientists and I am able to recruit students for my research with different perspectives and different skills. The chemistry students are more quantitative, while those from the health sciences are more descriptive and also have more experience in biological approaches. It creates a very nice synergistic mix."

Gheber's basic science research interest focuses on understanding the process of mitosis, by which a cell divides its chromosomes into two identical groups, to be later transferred to two progeny cells. This process happens when the chromosomes interact with filaments (called microtubules) that are organized into a structure known as the mitotic spindle, that pulls the chromosomes apart at the right time.

But, she explains, chromosomes cannot move along the microtubules on their own; they are moved by molecular motor proteins (enzymes) from the kinesin family. "Like microscopic car engines, these motor proteins attach to the chromosomes and drag them along. I study these motors in order to understand how they function and how their activity is regulated during mitosis."

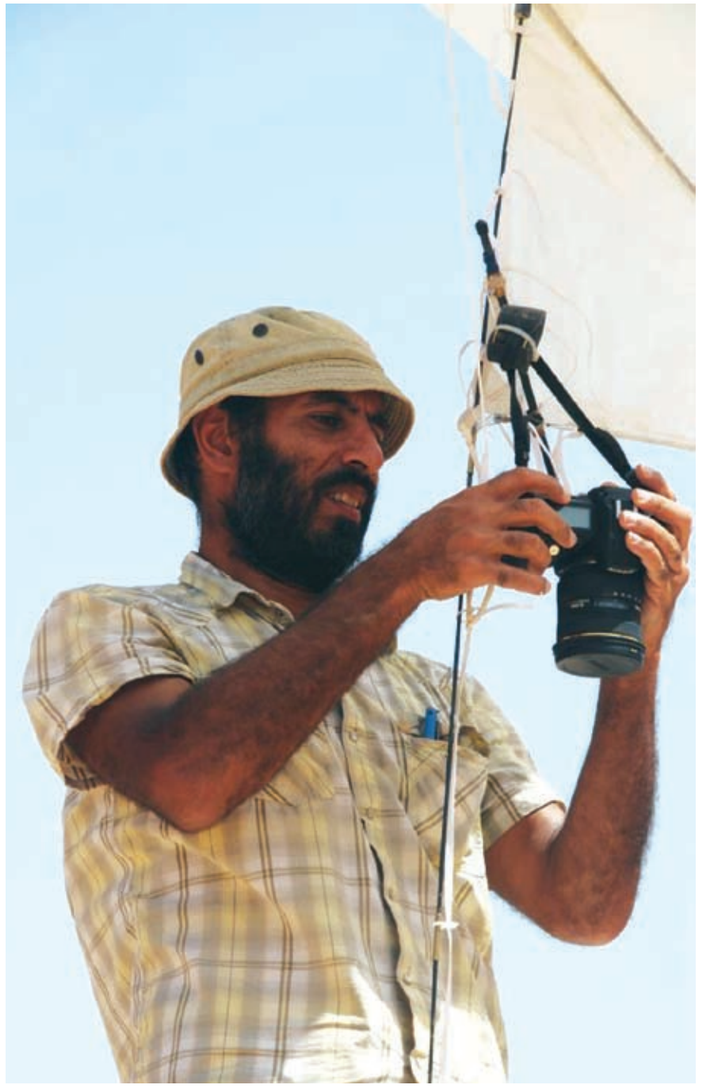
Kinesin-5 motor proteins, which are the primary subject of her research, are a very important group of molecular motors in mitosis, particularly in humans. In cancer cells – that is, cells which continue to multiply endlessly – the level of Kinesin-5 motor proteins is too high. Thus a potential anti-cancer drug was discovered in a Kinesin-5 inhibitor. "If we can inhibit the abnormal level of Kinesin-5 motor proteins, then we can halt the abnormal cell proliferation," Gheber explains. "The problem is that not all cell types are sensitive to the Kinesin-5 inhibitor, so I am researching why there is differential sensitivity to the drug and how we can make cancerous cells more sensitive to this inhibitor."

We also know how to manipulate yeast genetically to induce mutations and even to delete a whole gene

And here's where our yeast cells with their two-hour life cycles are so helpful. "It is much, much easier to perform basic research on simple yeast cells than on human cells. Yeast have fewer genes, so it's easier to uncover which genes control mitosis. We also know how to manipulate yeast genetically to induce mutations and even to delete a whole gene. We can then apply biophysical tools to the yeast cell and study mitosis and mitotic Kinesin-5 motor proteins in a comprehensive and interdisciplinary manner, which would have been impossible in any other cell type," she explains.

Gheber grew up in Beer-Sheva where she and her husband Levi and their three children live today. Dr. Levi Gheber is a researcher at the Department of Biotechnology Engineering and BGU's National Institute for Biotechnology in the Negev (NIBN).

"Of all the universities in Israel, I think that BGU is the most accommodating, placing both spouses in academic positions. This is something that Levi and I truly appreciate," she says. ■



From Hot to Cold

Dr. Yossi Ashkenazy

Climate expert Dr. Yossi Ashkenazy doesn't advocate abandoning strategies for countering global warming – like driving less or limiting the use of electric appliances. He does, however, regard doomsday scenarios with great caution.

"We must be responsible and acknowledge the limitations of our existing models," says Ashkenazy, a physicist who simulates climate systems through mathematical modeling in order to understand their dynamics. "There is a gap in perception between scientists and the general population, who sometimes take vague findings at face value."

While Ashkenazy acknowledges that climate models have proven successful in explaining phenomena like El Niño, the Gulf Stream and deep ocean circulation, he adamantly declares that "We are still not able to predict the climatic future, and such predictions might even be impossible."

"The models now used are still not developed enough to predict what will happen in another hundred years," says Ashkenazy. "There are models that are designed to reproduce the current state of the climate system. These models assimilate measured data and provide uniform coverage of continuous climate variables. However, even these 're-analysis' models exhibit large differences in important variables such as precipitation and winds and thus are not reliable predictions for the future," he explains.

Having completed his Ph.D. in quantum mechanics at Bar-Ilan University and post-doctoral research in climate studies at the Weizmann Institute of Science and the Massachusetts Institute of Technology, Ashkenazy has now been a member of BGU's Department of Solar Energy and Environmental Physics at the Jacob Blaustein Institutes for Desert Research for four years.

In one of his many diverse research projects, Ashkenazy addresses questions concerning the ice ages and what can be learned from them. "Glacial-interglacial oscillations, more commonly known as ice ages, have been the most drastic climate changes in the past million years or so. By studying them, we can learn what factors can cause the climate system to reach such extreme states and we can try to isolate the anthropogenic, or man-made, factors, from the natural variability factors," Ashkenazy explains.

There is no one accepted theory that explains the phenomenon of ice ages. One says that they are related to "insolation," meaning solar radiation received on the earth's surface, he continues. "While we know that the earth's orbit is elliptical, this ellipse is not constant, as the angle of the earth's main axis of rotation is always changing. This change affects the sunlight falling on the earth, and ultimately, the climate."

According to the other approach, the glacial-interglacial oscillations can exist even without variation in insolation. Ashkenazy, who is collaborating with Prof. Eli Tsiperman of Harvard University and Dr. Zezi Gildor of the Weizmann Institute on the ice age research project, uses state-of-the-art general circulation models to resolve this debated question.

Moving from the freezing to the sizzling, Ashkenazy also focuses on the dynamics of sand dunes. His research is in collaboration with Prof. Haim Tsoar from the Department of Geography and Regional Development, Dr. Hezi Yizhaq of the Department of Solar Energy and Environmental Physics at the Blaustein Institutes and Dr. Eli Zaady from the Volcani Institute. Their study, which includes both experimental and theoretical aspects, explores the role of vegetation and the thin biogenic crust covering on the sand in preventing dunes from shifting. Desert dunes cover some five percent of global land surface and a substantial part of Africa and Australia.

Active – or shifting – sands can present a great danger to human settlement in certain areas where the dunes can advance several meters a year. "This is what has happened in parts of Africa and the Arabian Desert, where dunes have buried houses and roads," says Ashkenazy. "In the Kalahari Desert, stable dunes are covered with crust and vegetation."

He points to the clear difference between dunes in Egypt and Israel to illustrate this process. On the Egyptian side, Bedouin goat and sheep herds eat the vegetation and trample the biogenic crust, exposing the sand and allowing it to move. In contrast, no herds wander the southern dunes of the Nitzana area, and the half centimeter-thick crust there prevents the sand from moving.

Ashkenazy has devised a simple model to check how vegetation cover on dunes affects movement. "You need a critical cover of vegetation to hold the sand in place," he explains. "Sufficient vegetation cover prevents wind from reaching the ground and moving the sand. If the vegetation is sparse, the wind will still reach the ground."

In this project, Ashkenazy and his colleagues take one climate variable and alter it. They have found that weak winds will not suppress vegetation. Increased wind power, however, will produce more stress on the vegetation. In strong winds, the vegetation is destroyed.

"If the damage is already done, even if the wind weakens, the dune will remain bare," says Ashkenazy. "This is an almost irreversible process; the dune cannot recover naturally even if the wind returns to its original strength. We have devised a mathematical model and will try to create other scenarios and answer more questions about this phenomenon," he says.

In other projects, Ashkenazy, who has several highly competitive Israel Science Foundation and Bi-National Science Foundation grants to his credit, has been studying mechanisms underlying the formation of sea ice, as well as the seasonal cycles at the equator. "As in other fields, this is an interdisciplinary approach. I'm interested in interdisciplinary science," he says. "In my post-doctoral research, I collaborated with physicians from Beth Israel Hospital in Boston. We made models about mortality in connection with heart disease. As a physicist, I can apply the techniques of statistical physics and modeling to other natural sciences."

Looking ahead, Ashkenazy plans to continue probing climatic processes in collaboration with specialists from a diversity of disciplines. "Ben-Gurion University in general and the Blaustein Institutes in particular are a good place to do this," he declares. "Here, there are experts in ecology, water and many other fields working right next door to one another. The Institutes' flexibility allows us to pursue those subjects that interest us the most."

The setting of the Sede Boqer campus provides fertile ground for this – and other scientists' – fresh, innovative research. ■

A Chemical Reaction

Dr. Lital Alfonta & Dr. Michael Meijler

No one disputes the importance of the chemistry that can make or break a marital relationship. All the more so when both the husband and wife are chemists by profession. For Drs. Lital Alfonta of the Department of Biotechnology Engineering and Michael Meijler of the Department of Chemistry, sharing daily laboratory experiences strengthens their bonds at home. And indeed, at first glance they prove the maxim that opposites attract: a native of Dimona, in southern Israel, Alfonta is a bundle of energy who has always sought out new challenges, while Meijler, a Dutch immigrant to Israel, is the competitive long-distance runner, pursuing his goals with enthusiastic determination.

With an array of advanced degrees in chemistry between them, Alfonta and Meijler have been drawn to very different – but compatible – aspects of the vast field that is chemistry: Michael to bioorganic chemistry, Lital to biotechnology engineering, an inter-disciplinary area connecting electrochemistry and molecular biology in completely novel ways. They are now both members of the Safra Center for the Design and Engineering of Functional Biopolymers that specializes in examining pure "biomimetic" approaches and tools for the design of functional materials.

Lital's love of chemistry started when she was eight years old and attended after-school science clubs in Dimona. But the local high school did not offer classes in the field. "Even though we were happy in Dimona, my parents picked up and moved the entire family to Rehovot just so that I could study chemistry," she recalls.

While in the army, Lital served as a lieutenant in the Nuclear, Chemical, Biological and Radiological Defense Unit. "I was in charge of training special units in such tasks as detecting and decontaminating chemical and biological warfare agents," Lital explains. "This coincided with the Gulf War period, making my work even more interesting." After her service, Lital spent the next ten years at the Hebrew University of Jerusalem studying chemistry.

Michael was born in Holland. His parents spent the war years in hiding with farming families in the Dutch countryside. Although they remained in Holland after the war, most of their children, including Michael, eventually moved to Israel. After high school, Michael spent a year in Jerusalem, but returned to Holland to complete undergraduate and graduate studies in chemistry at the University of Amsterdam, returning to Israel for his doctoral studies at the Weizmann Institute of Science.

It was during this period that he and Lital met, at a conference for doctoral students. The chemistry was immediate. They married a year and a half later.

They were both able to find post-doc fellowships in chemistry at the Scripps Research Institute in La Jolla, California. They arrived in California with three-month-old baby Danielle. By the time they returned home to Israel, she was four and had a baby sister, Eden.

"It was a difficult transition, coming to San Diego with a three-month-old baby in tow, without family or friends. We had to figure most things out on our own," says Michael. "But although it was hard at the time, it became a kind of benchmark for us, which made all later transitions easier in comparison."

In addition to his scientific research, Michael, who had been a long-distance runner in Israel, took up a new sport – surfing. "I love the ocean," he says wistfully, pointing to the surfboard hanging on the wall of his BGU office as a reminder of those days.

After four years in the States, they wanted to move home and bring up their children in Israel. "We were overjoyed," Lital says, "when we both found positions at BGU."

Michael's research is in bioorganic chemistry, which he explains, "is one of the few areas with the potential to synthesize completely new bioactive molecules." He has been able to realize this potential in the field of quorum sensing, which is the mechanism that bacteria use to communicate chemically to coordinate their behavior. They achieve this by exchanging small signaling molecules.

In general, bacteria act independently of one another, and it is only when a certain bacterial population threshold is exceeded that this kind of group behavior is "activated."

"One example of the relevance of quorum sensing is the issue of so-called 'super bugs' in hospitals that ▸

The ability to create something totally new, with the potential for changing the lives of large populations, gives me a lot of satisfaction

To combat bioterrorism, we'd want to have a sensor that could detect extremely low levels of pathogens and toxic proteins – even before people get sick

are resistant to antibiotics," explains Michael. "Modern medicine fights disease-producing bacteria with antibiotics, but resistant strains keep popping up. My team works on a different strategy: not to kill the bacteria but to prevent them from being harmful; that is, to convert 'bad' (pathogenic) bacteria to 'harmless' (non-pathogenic) ones by using quorum-sensing inhibitors to jam the bacterial signals."

Some quorum-sensing regulated processes that Michael and his team would like to disrupt include biofilm formation, which is the gluey substance formed by bacteria on medical instruments or even

in human beings. These biofilms often cause infection. "At Scripps, we have had success in scrambling quorum sensing-signals to inhibit *Staphylococcus aureus* in mice, which is becoming increasingly antibiotic resistant, and *Pseudomonas aeruginosa,* which causes infections of wounds, especially burn wounds," says Michael.

"The ability to create something totally new, with the potential for changing the lives of large populations, gives me a lot of satisfaction," he declares.

Lital first became interested in her research subjects of biosensors and biofuels when she did her doctoral studies on the subject of bioelectronic sensors.

These are small devices that give an electronic or optic signal in response to a specific recognition event. One familiar example is the common glucose sensor for diabetics; the sensor "recognizes" the glucose molecule, thus enabling diabetics to monitor their blood glucose levels.

Other sensors can detect agents in the bloodstream, such as antibodies, or toxins and other contaminants in water sources. Lital's research focuses on improving the sensitivity of biosensors. "To combat bioterrorism, for example, we'd want to have a sensor that could detect extremely low levels of pathogens and toxic proteins – even before people get sick," Lital says.

A biofuel cell, on the other hand, is a device in which biological molecules are used as a catalyst for the production of energy.

In other words, bacteria can be used for producing energy!

Such devices would be especially useful in remote areas far from conventional electrical power, such as the bottom of the ocean, outer space or even heavily contaminated areas. "Today we have small devices that harness energy using biological molecules or microorganisms, but they only produce very small amounts of energy – enough for a small light bulb or fan," explains Lital. "If we improve our strategy, we may be able to produce biofuel cells that can transmit pictures or even operate small robots from the bottom of the ocean or outer space."

And sensors can be combined with biofuel cells in a "self-fueled biosensor." "Suppose we could combine a biosensor that 'recognizes' the glucose molecule in a diabetic's blood, with a biofuel cell that produces its own energy?" she continues. "Another example would be a self-fueled biosensor for purifying waste water. The device would 'recognize' impurities and also generate the energy needed to purify them."

Lital decided to combine her two fields of expertise: sensors/biofuel cells and engineering of proteins and bacteria. Her research aims to modify the biological components of bacteria so that they will be better sensors/biofuel cells. "In order to make them work more efficiently, we are trying to tinker with the genetic makeup of proteins and bacteria. For example, we are trying to dictate the path we want the bacteria's electrons to go, so that the sensor or biocell device will function efficiently."

Lital and Michael are working together on a project funded by the Israel Science Foundation called "Plugging into Bacteria," which involves converging technologies. It perfectly fits their common interest, which is to be able to manipulate bacterial behavior in a controlled fashion.

In engineering devices such as sensors/biofuel cells, Lital faces the challenge of "connecting" between biological components (proteins and bacteria) and the inorganic component such as an electrode. "The interface between organic and inorganic material is problematic, because the enzymes, being proteins, have insulating properties," she explains. "That's why I collaborate with Michael, an organic chemist. While I attempt to dictate the path of the bacterial electrons, Michael works on synthesizing appropriate 'linkers' to connect the bacteria to the inorganic electrode."

Together, they are creating an organic connection that is much more than the sum of its individual parts. ■

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BEN GURIÓN DEL NEGUEV
Suipacha 531 piso 9
C-1008 AAM Ciudad Autónoma
de Buenos Aires

BELGIUM
FRIENDS OF BGU IN BELGIUM
P.B. 26, Ixelles Louise
Lange Leemstraat 12
B-1050 Brussels-Ixelles

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Av. Albert Einstein, 627 / 701, 3er andar
05651-901 Morumbi Sao Paulo SP

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16, rue de la Pierre Levée
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ISRAELI FRIENDS OF BGU
Ben-Gurion University of the Negev
P.O. Box, 653 Beer-Sheva 84105

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Koji Akatsuka, President

FRIENDS OF BGU JAPAN CHAPTER
75-1, Otobe, Tsu
514-0016 MIE

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ASOCIACIÓN MEXICANA DE AMIGOS
DE LA UNIVERSIDAD BEN GURIÓN
EN EL NEGUEV (AMAUBG)
Río Tiber 78
Colonia Cuauhtémoc
C.P. 06500 México, D.F.

THE NETHERLANDS
Willem Deetman, President

DUTCH ASSOCIATES BGU
Postbus 488
2501 CL The Hague

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Moises A. Mizrachi, President
Apartado 7347
Panama 5

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NATIONAL & JOHANNESBURG
OFFICE
P.O. Box 895
Saxonwold 2132

WESTERN CAPE CHAPTER
P.O. Box 2350
Cape Town 8000

KWAZULU / NATAL CHAPTER
P.O. Box 74050
Rochdale Park
Durban 4034

SWITZERLAND
Michel Halpérin, Président

AMIS DE SUISSE DE L'UNIVERSITE
BEN-GOURION DU NEGUEV
5, avenue Léon-Gaud
CH-1206 Geneva

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