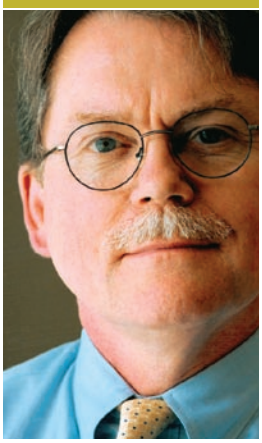
dean's notes



Arthur F. Thurnau Professor, Professor of History, and Dean Terrence J. McDonald

Future Faculty, Immediate Need

ONE OF THE HIGHLIGHTS of my career in the College of LSA has been the chance to work with our outstanding graduate students. We have collaborated on teaching and research, they have been my students in classes, and I have directed about 20 doctoral dissertations. Each year, about 1,800 of the students in the College are here studying for their doctoral (Ph.D.) degrees, many in the hopes of becoming college professors themselves.

Years ago, the College's doctoral students were known as teaching assistants or "TAs." Our undergraduate students today know them by a new title: graduate student instructors or "GSIs." Both then and now, as part of their training, these future professors are required to teach for some period of time—one to three years—under the guidance of a tenure-track faculty member.

Over the years, many of our students have been introduced to their disciplines through lower-division courses taught by our tenure-track faculty, but their experiences have been enriched by the presence of GSIs, who are outstanding young professors-in-training. One of UM's annual highlights is the day we recognize the outstanding graduate student instructors. The testimonials of our undergraduates to these GSIs are deeply moving and strongly motivating.

But teaching is only a part of doctoral students' rigorous training. Most graduate students come with bachelor or master's degrees from elsewhere. Here, they are required to take two to three years of course work, pass rigorous comprehensive examinations in their field, and then make an independent contribution to research under the supervision of a faculty committee, which is their doctoral dissertation.

The path to a doctoral degree is a difficult one. It takes from five to seven years. Some doctoral dissertations are hundreds of pages long. Throughout their training, these students are balancing teaching and research—just as many of them will do as faculty members.

The cost of graduate training is staggering. A six-year package of support for an out-of-state graduate student can cost as much as $258,000[1], and most of our graduate students are from out of state.

Because we believe that we must do our part to produce the next generation of college professors, we try to support as much of this cost as possible through fellowships and opportunities for teaching.

But we must do more. To attract and support the very best graduate students—and thus the best teachers-in-training—we must have more fellowships that carry more funding.

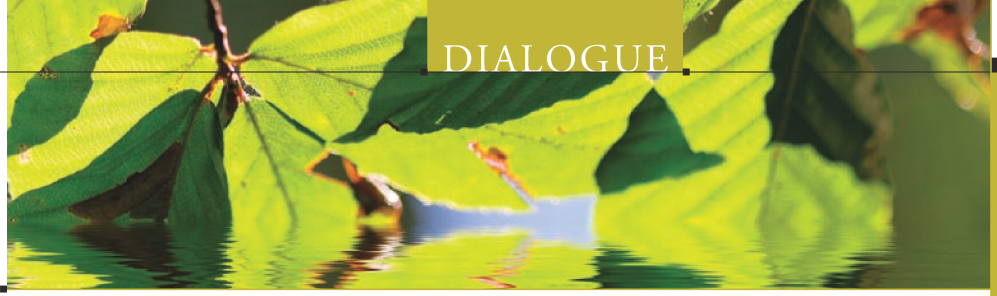
Recently, UM President Mary Sue Coleman gave us an unparalleled chance to raise funds for this great purpose. This year, gifts and pledges up to $1 million will be matched by President Coleman at the rate of $1 for every $2 contributed. In this magazine, you'll find an insert with examples of incredible graduate students doing outstanding work with real-world impact. The training and support we provide to our current graduate students will determine the quality of education we offer our next generation of undergraduate students.

Teaching is not *real* teaching if it does not look to its future. Any dollars raised now will begin benefitting graduate students—our future teachers—immediately. What could be more important?



Philip T. Dattilo

[1] This amount assumes a non-resident student, and includes three years of fall, winter, and summer support at the pre-candidate level (tuition, stipend, and GradCare), plus three years at the candidate level (tuition, stipend, and GradCare). Provost's taxes on the stipend expenditures are not included. For a resident student, the amount is reduced to $210,000 for the six-year program.



Going Green

IN A RECENT *TIME* MAGAZINE ARTICLE, writer John Cloud relayed an interesting dilemma: He stood in the produce section of a grocery store debating whether to buy an apple grown organically that had been shipped to the store from hundreds of miles away, or to buy a non-organic but locally grown apple, which had been sprayed with chemicals but hadn't cost gallons of oil to get to market. In the end he bought both, but his dilemma raises great points about the ways in which calculating environmental costs can be a moving target.

I chased down the "green" moving target early on in the magazine's production process when I began researching options for printing on recycled paper. Two were presented. Paper with 30 percent recycled content was available domestically, and paper with 100 percent recycled content was available from Europe. The 30 percent recycled paper was available at a mill just down the road from where we print our magazine in Wisconsin, but the 100 percent recycled paper would need to be freighted all the way across the ocean. The costs were significant in both cases but, as was expected, the European paper was more expensive.

In the end, we went with the 30 percent recycled option. With a print run of 165,000, that added about $5,000 to our budget, which was a one-time cost we were able to endure. Certainly it would be an environmental improvement if every issue of *LSAmagazine* were printed on recycled paper, but a $5,000 recurring cost just isn't feasible when the State of Michigan has repeatedly slashed UM's funding, and almost everyone is operating on a shoestring.

Featured on the 30 percent recycled pages of this issue are alumni who are well aware that being green isn't always the easiest or cheapest route to take. For example, Gail Danto and her husband, Art Roffey, are building a luxurious yet environmentally responsible home in Bloomfield Township, Michigan (p. 48). While it would have been cheaper for them to go to Home Depot or a similar store for their building materials, they chose the more difficult and more expensive path of buying materials that were local, recycled, and sustainable.

Others in this magazine, like our green business alumni (p. 16) and our "dirty students" (p. 41), are working long hours, sometimes with very little pay, to forge new paths in environmental industries. Still others, like Craig Haney, are sowing seeds of change that show how raising food responsibly is healthy, both for people and the environment (p. 22).

While not all of us are environmental pioneers like these alumni, everyone is capable of doing something on behalf of the planet. That's why, throughout the magazine, you'll see easy tips—like the one below—that can help reduce waste and consumption. And there's always that giving envelope, too, in case the idea of helping us print *LSAmagazine* on recycled paper from now on really does have you seeing green.

LARA ZIELIN, EDITOR



1. RECYCLE YOUR BATTERIES, AND USE RECHARGEABLE BATTERIES WHENEVER POSSIBLE.

According to the Environmental Protection Agency, Americans purchase nearly ***3 billion batteries every year.*** Create less waste by purchasing rechargeable batteries, and recycle all batteries when they can no longer be used. Recycling batteries keeps heavy metals out of landfills and the air, and it saves resources because recovered plastic and metals can be used to make new batteries.

[easy green] TIPS

LSA

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(letters)



As a speech major one year behind James Earl Jones, I was lucky enough to act with him in two Ann Arbor productions: *Much Ado About Nothing* at the Arts Theatre Club, the small professional company that Dana Elcar had started downtown; and Claribel Baird's production of *Deep are the Roots*. So of course I was delighted with your cover story on him (*LSAmagazine*, Fall 2007) and the splendid pictures, especially of him as Epops the King in Aristophanes' *The Birds*, which Claribel also produced.

I wish, however, that you could have identified the charming and gifted actor who played his Queen, who is pictured with him—Gwen Arner ('55, M.A. '56). James Earl Jones wrote briefly but admiringly about Gwen in his autobiography, *Voices and Silences* (Scribner, 1993). She went on to a distinguished career as a television director and professional actor, and married the equally distinguished actor Donald Moffat.

JAMES E. BRODHEAD ('54)

Thank you for the series on UM's China*Now* theme year in the Fall 2007 issue of *LSAmagazine*. While the People's Republic of China (the PRC) offers attractive short-term opportunities for cultural and economic exchanges, I fear that the PRC's long-term future will be bleak. The PRC's one-child policy, widespread female infanticide, rural economic poverty and underdevelopment, underinvestment in education and health care, rife official corruption, and a large and rising population of alienated veterans are sowing the seeds for a political revolution with few, if any, parallels in living memory. China's long history suggests that such a revolution will include a reaction against foreigners, most especially the West, and a renewed repression of the Chinese people. I hope my prediction is wrong, but I have not been swayed by arguments to the contrary.

GILES CAVER ('89)

Many, many thanks to you and your colleagues for the outstanding article about me in the Fall 2007 issue. I just loved it! And so did many others who stopped me on the street, in the supermarket, or at a concert to tell me that they had seen it. I had no idea how many Michigan alums were in my area of New York!

FRANCES ALLEN (M.A. '57)

I was so glad to see the article on the Prison Creative Arts Program in *LSAmagazine*. During my undergraduate tenure, I participated in the Sociology Department's Project Outreach and taught adult basic education at the Washtenaw County Jail. Later I coordinated a student project through UM Hillel at the State Prison of Southern Michigan. The work was so meaningful that I stayed on with the Department of Corrections as a volunteer chaplain assistant and later as a counselor and chaplain for 18 years.

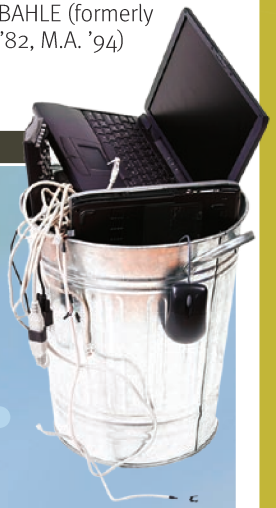
Bravo for your ongoing support of people-to-people programs. They make a difference, change lives, open hearts, and help to heal the world. The ability to humanize those whom society or media label "other" is a singularly powerful tool in creating social justice and transformation.

RABBI CHAVA BAHLE (formerly Stacie Schiff) ('82, M.A. '94)

Let us know what you think!

We welcome your thoughts, opinions, and ideas regarding *LSAmagazine*. Letters may be published in the magazine and/or on our website, but we cannot print or personally respond to all letters received. Letters may be edited for length or clarity. Opinions expressed in "LSA Letters" do not necessarily reflect those of *LSAmagazine*, the College, or the University of Michigan. All correspondence should be sent to: Editor, *LSAmagazine*, Suite 5000, 500 South State Street, Ann Arbor, MI 48109-1382. You can also email us at lsamagazine@umich.edu. Please include your name, address, and graduation year.

2. RECYCLE OLD ELECTRONICS. Did you know many common gadgets like cell phones and printers ***contain hazards like lead and mercury?*** When tossed into the trash and disposed of incorrectly, chemicals from these devices can leak into the ground and this can affect wildlife and ecosystems. Many stores like Best Buy and Staples have electronics recycling programs, and you can use Earth 911 ***(http://earth911.org/electronics/)*** to find an electronics recycler near you.



[easy green] TIPS



COLLEGE

Wilpons' Gift to Students

HE CAME TO UM TO BE AN ATHLETE. But after an arm injury cut short his baseball career, Fred Wilpon ('58) needed financial assistance to continue his studies. With that help, he was able to stay and graduate. "I'll never forget that," he says.

His recent gifts totaling $5 million are evidence that he hasn't.

The gifts, made along with his wife, Judy ('58), from the Judy and Fred Wilpon Family Foundation, will be matched dollar-for-dollar from President Mary Sue Coleman's Donor Challenge, increasing the impact of the $5 million commitment to $10 million.

The funds will go straight to need-based scholarships through the Irene and Morris B. Kessler Presidential Scholars Fund, named in honor of Judy Wilpon's late parents.

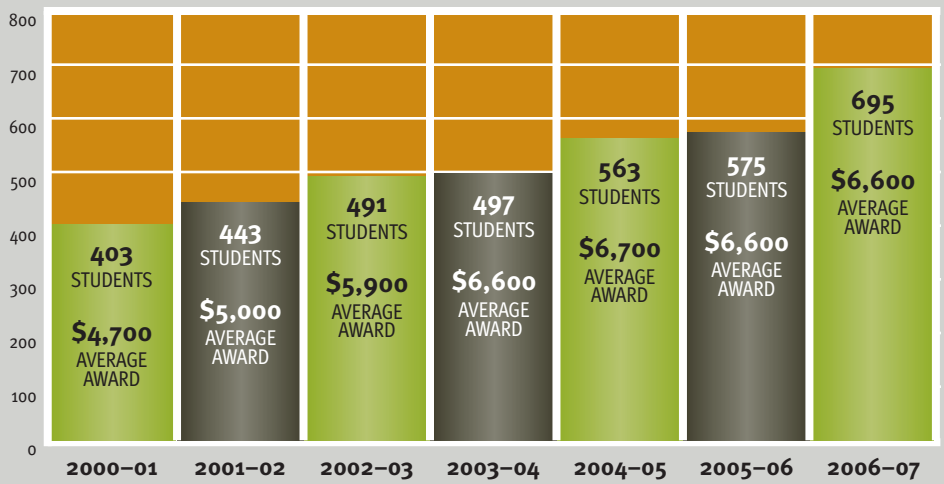
The Wilpons' gift also means the College of Literature, Science, and the Arts has reached its fundraising goal for the Michigan Difference Campaign. The College has raised more than $323 million to date, exceeding its campaign goal by $23 million. More than $91 million — nearly 30 percent of the total — was raised for student scholarships.

Through increased scholarship support from the Wilpons and other alumni, the number of LSA students receiving need-based financial aid has nearly doubled in the past seven years (see graph below). The award amount per student has grown substantially since 2000–01, averaging $6,500 for the past three years, despite the increased number of students receiving aid.

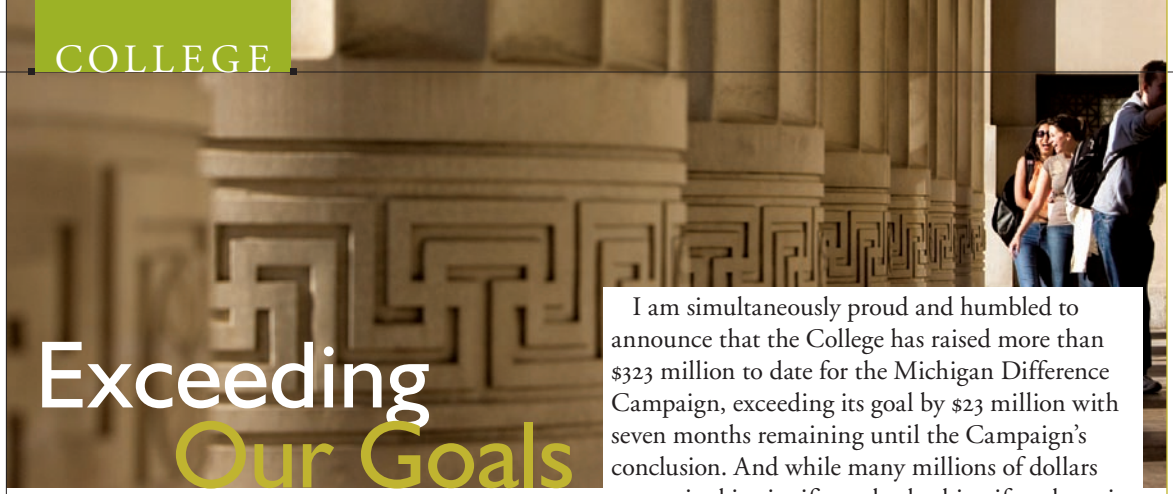
For the Wilpons, it's simply about helping students. "Our goal is to ensure that the kids who need help get it," Wilpon says. "I hope these students will remember their roots and help others one day, too."

Scholar Dollars

The Wilpons' recent gift to need-based scholarships directly impacts the number of students to whom the College is able to offer financial aid. When the Wilpon gift is fully realized, 40 to 50 scholars will be added to the scholarship totals. Gifts from private donors have boosted the number of students receiving scholarships, even amid decreased state funding.



Scott R. Galvin, UM Photo Services



Exceeding Our Goals

by Peggy Burns

THE UNIVERSITY OF MICHIGAN BEGAN MODESTLY in the early 1800s, with professors who made their small handfuls of students recite aloud from textbooks on a smattering of subjects from ancient Greece to theology. It's inspiring and a little overwhelming to think about the vast array of courses offered at UM today by world-renowned faculty, who find creative and innovative ways to inspire students. It's astounding to think of the caliber of alumni who graduate from the University year after year, and who go on to be leaders in every field.

We looked to the leadership and quality of character of our alumni when, in the College of LSA, we were charged to raise $300 million during the Michigan Difference Campaign. Three-hundred million is an enormous number, and we'd never before asked for that kind of commitment from our alumni and friends. Additionally, when the Campaign started, the College had experienced its largest budget cuts in 40 years, resulting in an average of $1,500 less per student and 45 fewer faculty positions. The money we were raising wasn't just helpful—it was critical.

Campaign Candor

The College of LSA's success in the Michigan Difference Campaign will have a terrific impact moving forward. First, it will greatly help the College fulfill its responsibility to individual departments. LSA raised more than $5 million for departments in the College, to spend in areas with the greatest need. The Campaign also funded more than 19 academic chairs, and raised more than $57 million in bequests. The University of Michigan is vast, with many thousands of people teaching, researching, and learning here. Because of these numbers, need will always be great, but recent success in meeting Campaign goals helps the College continue pursuing unparalleled levels of excellence.

I am simultaneously proud and humbled to announce that the College has raised more than $323 million to date for the Michigan Difference Campaign, exceeding its goal by $23 million with seven months remaining until the Campaign's conclusion. And while many millions of dollars were raised in significant leadership gifts, alumni who gave what they could when they could had a profound impact on our success. The $20 and $50 gifts from alumni—those who wanted to ensure that the quality of their alma mater wasn't compromised—added up in significant ways.

These dollars will be put to use immediately in critical areas. More than $91 million will go straight to LSA student support, helping to ensure the brightest undergraduate and graduate students have the financial assistance they need to complete their educational training. Additionally, $64 million will go to recruit, retain, and train top faculty to teach these students, and almost $67 million is allocated to programs, which will fund the courses these faculty teach, will facilitate technology upgrades, and will support new curriculum.

The Campaign has changed the face of LSA forever. Major initiatives and achievements include renovations to the Kelsey Museum, the dramatic increase of scholarship funds for students, and the creation of seven new centers and institutes including the Frankel Center for Judaic Studies, the Newnan Advising Center, the Ronald and Eileen Weiser Center for Europe and Eurasia, the Eisenberg Institute for Historical Studies, the Barger Leadership Institute, and the IDEA Institute.

Despite our many Campaign successes, our work to ensure the College of LSA remains the greatest public liberal arts college in America continues. Experts are now calling Michigan's economy a localized recession, and state funding for the University of Michigan is anything but secure. I believe, however, that our alumni and friends will continue to answer the call to keep the University of Michigan a distinguished center for learning and teaching.

To all of you who have given and supported the Michigan Difference, we in the College extend our most heartfelt thanks. Let's continue on this life- and world-changing course.

Peggy Burns is the Associate Dean for Advancement in the College of LSA.

At press time, the College had raised more than $323 million through the Michigan Difference Campaign, which officially concludes in December 2008.

December 2007
$305,145,166

December 2006
$259,630,851

December 2005
$213,761,321

December 2004,
$159,762,143

MICHIGAN DIFFERENCE CAMPAIGN DOLLARS RAISED BY THE COLLEGE OF LSA

Scott R. Galvin, UM Photo Services

Tandem Expansion

LIKE ARMENIA ITSELF, THE ARMENIAN STUDIES PROGRAM ADVANCES

by Kristy Demas

WHEN KATY PEARCE ('01) FIRST VISITED ARMENIA in 1998, she saw a country in the throes of becoming a new republic. The cold war had ended, Armenia had declared independence in 1991, and a cease-fire had been signed with neighboring Azerbaijan in 1994. Still, life was difficult and many challenges remained.

UM students like Pearce, who studied in the Armenian Studies Program's Summer Language Institute in Yerevan, experienced a few of those challenges firsthand. For example, running water wasn't dependable. "Trying to organize our showers and wash clothes was difficult," Pearce recalls, "but not being able to flush the toilets for the majority of the day was the worst."

Pearce has returned to Armenia several times since 1998, and she recently received a Fulbright to study technology adoption in Armenia. In 10 years, she's seen tremendous changes. Unemployment is still high, but Armenia has been able to reduce poverty, slash inflation, and stabilize its currency. "When I first went to Armenia," Pearce says, "I was able to see the country as a young, post-Soviet republic. It was undergoing so much change, but one thing that was constant was the people of Armenia, who were extremely kind and caring. That hasn't changed, even though so much else about Armenia has."

The improvements and advancements are no small feat, given the years of unrest Armenia experienced, including deportation and massacres during World War I, which most scholars classify as genocide. These actions, engineered by the Young Turk government of the Ottoman Empire, took the lives of over one million Armenians and placed in permanent exile many survivors, now residing in the Middle East, Europe, and the United States. Today, dedicated scholars and Armenians are working to ensure that Armenia's native culture is preserved, and to increase awareness about the transformation Armenia has experienced since.

Michigan's Armenian Studies Program is part of this effort. More than 20 years ago, Alex and Marie Manoogian endowed two faculty positions in LSA's Armenian Studies Program to help preserve the cultural legacy and heritage of Armenians, and since then the Program has grown in tandem with Armenia's transformative events.

The Armenian Studies Program recently received a $1.2 million gift from the Manoogian Simone Foundation to support a wide range of activities designed to foster the long-term productivity of the Armenian Studies Program. The Manoogian Simone Foundation is headed by Louise Manoogian Simone, daughter of Alex and Marie Manoogian and sister of Richard Manoogian, who is Executive Chairman of Alex Manoogian's Fortune 500 company, MASCO Corporation. "Our parents started the Armenian Studies Program at UM," said Simone, "and this gift will expand the program by helping prepare the next generation of young scholars who study Armenian language and history."

"By training students to do research," says Gerard Libaridian, Director of the Armenian Studies Program, "we have a chance to make sure this history, this cultural legacy, is never lost or forgotten—and that it is built upon."

Kristy Demas is a writer with LSA Development, Marketing and Communications.



Guido Cozzi, © Atlantide Phototravel/Corbis

Haghpat Monastery, founded in the 10th century, is a medieval monastery complex overlooking the Pambak River in the Lori region of northern Armenia. The monastery is one of the finest examples of medieval Armenian architecture.



Bizarre *Nigersaurus*

Two UM paleontologists are members of a team that discovered and spent the past decade making sense of a new dinosaur, *Nigersaurus taqueti*, that had a mouth that worked like a vacuum cleaner, hundreds of tiny teeth, and a paper-thin spine. "We now have the first detailed look at one of the most bizarre-looking dinosaurs," says Jeff Wilson, an LSA assistant professor of geological sciences. Barely able to lift its head above its back, *Nigersaurus* grazed more like a cow than a giraffe, mowing down mouthfuls of greenery. Unlike any other plant eater, *Nigersaurus* had more than 50 columns of teeth, all lined up tightly along the front edge of its squared-off jaw, forming, in effect, a foot-long pair of scissors.



A GALACTIC ACHIEVEMENT

His undergraduate work on galaxy clusters has earned recent physics graduate Matthew Becker ('07) the Leroy Apker Award of the American Physical Society. Galaxy clusters are the most massive objects in the Universe, as each contains ten to hundreds of galaxies brighter than the Milky Way. Becker's work probes the connection between the number of galaxies in a cluster and its mass. In addition to a cash award for Becker, the Michigan Physics Department will receive $5,000 to support undergraduate research.

CHILDREN AND violence

Watching media violence significantly increases the risk that a viewer or video game player will behave aggressively in both the short and long term, says a study by L. Rowell Huesmann, LSA professor of communication studies and psychology, and a senior research scientist at the UM Institute for Social Research. It's a public health threat, Huesmann says. "As with many other public health threats, not every child who is exposed to this threat will acquire the affliction of violent behavior. But that does not diminish the need to address the threat—as a society and as parents—by trying to control children's exposure to violent media to the extent that we can."





Touch Screen Voting?

Voters have more confidence in paperless, touch screen systems to record their votes accurately than they do in other systems, including those that use paper ballots, says a new study by UM, the University of Maryland, and the University of Rochester. "Casting a ballot may seem simple, but the interactions between voters and voting system interfaces are complex," says Michael Traugott, an LSA professor of communication studies, who took part in the voting research. "The more effort involved in voting, the less satisfied voters are with the experience."

A NEW UNDERGRADUATE SCIENCE BUILDING

President Mary Sue Coleman called it the "newest jewel in our life sciences efforts" as she and LSA Dean Terrence J. McDonald, along with Provost Teresa Sullivan and Associate Provost Philip Hanlon, dedicated the Undergraduate Science Building last fall. The new $61 million, 140,000-square-foot building offers classes in a variety of scientific disciplines, including chemistry, biology, neuroscience, physics, and communication studies. It is also home to the Undergraduate Research Opportunity Program; Women in Science and Engineering; the Program in the Environment; and the IDEA Institute, which will improve teaching methods in math and science. The building has 30 classrooms and lab spaces, a 125-seat auditorium, and two "dinner theater" classrooms with tiered seating that encourage interactive scientific learning.





(Top) Students in a 1920 Biological Station plant ecology course create a map using a plane table.
(Bottom) Three Biological Station students walk along a Douglas Lake beach in 1914.



THE NATURAL WORLD

For nearly 100 years, students and faculty have been studying environmental change at UM's Biological Station

by James Tobin

PHOTOS COURTESY OF THE BIOLOGICAL STATION

"I am worked to death right now getting that station started," Professor Jacob Reighard confided to a friend. The spring days of 1909 were speeding toward summer. The Regents had approved Reighard's plan for a field station at the tip of Michigan's lower peninsula, where students could study plants and animals in their natural settings. But he had only two weeks and $2,000 to get everything ready.

A stocky, hawk-nosed father of four, Reighard was the world's leading authority on Great Lakes fish. He was both exacting and well-liked — "never effusive," a friend said, yet part of a "loyal and devoted" circle of colleagues "among whom there was genuine and strong affection." Eye problems had forced him to abandon his microscope for study in the field — a turn in his career that actually suited his proclivities as an outdoorsman — but now he was laboring over his typewriter, pounding out orders and requests. He sent for a copy of Charles Bendire's *Life Histories of North American Birds* and monographs on freshwater crustaceans; requested a paper on Michigan's glacial geology and "any maps of the Douglas Lake Region"; ordered tents, nets, four oak tables, two boats with oars, four large aquaria, and a license to shoot birds for scientific purposes. He hired a fisherman to catch samples; sent to Abercrombie & Fitch for four khaki shirts; and ordered a good hand axe with a hickory handle. He was due to catch the train for Pellston on July 2; before running for the depot that afternoon he put 31 letters in the day's mail.

"We have an old log barn for a laboratory and the rest of the work is done in a tent," he told a friend, "but we shall have pretty good equipment. Fourteen girls and four boys are going up with us among the bears and black flies."

From those rushed beginnings, the University of Michigan Biological Station, now approaching its centennial in 2009, grew into one of the great centers for scientific field study in the United States. Twenty miles south of the Straits of Mackinac, its 10,000 acres have hosted nearly 10,000 students. Some have become leading figures in science; many others have applied the Biological Station's lessons in their own science classrooms, passing on the infectious excitement of studying nature in its own realm.

A Wrecked Landscape

The University's new property lay at the end of a long dirt track on the southeastern rim of Douglas Lake, a clear, blue gem in a wrecked landscape. The lumber barons William Pells and his son-in-law, Charles Bogardus, had sent the ancient stands of hemlock and white pine to saw mills in Cheboygan and Pellston. Unregulated hunting had reduced animal populations. The land was too sandy to sell to farmers, so Bogardus and his wife deeded the property to the University as a place where engineering students could learn surveying. The biological field station was Professor Reighard's canny afterthought — a dual use of the new property. But it was a wasteland. Acres of underbrush, unwanted trees, and resinous slash — the lumbermen's leavings — supplied fuel for chronic wildfires. The sand itself was charred black.

Reighard and his small band of instructors and students were undaunted. With their tents pitched in separate settlements (soon dubbed Ladyville and Manville), they found signs of ecosystems already reviving. "The country is beautiful after you get used to the burned and dead trees," Reighard wrote to his wife. "The flora seems to be unusually rich and the fauna reasonably so."

The students started classes each morning at 7:30. They worked until 4:00 P.M. then broke for a swim in the lake, dinner, and a nightly campfire on the beach, with singing. "The weather is fine, the mosquitoes and flies are so few as to be negligible, and the board is very good," Reighard told his wife.



(Bottom) In 1909, before cabins were built at the Biological Station, students were housed in tents on the shore of Douglas Lake with a view of Grapevine Point. (Top right) Researchers in 1917 study botany on Douglas Lake.



"The students are all enthusiastic . . . I think the whole venture is going to be a great success."

Reighard stayed on as director for five more years, long enough to see the station from infancy to a vigorous youth. Slowly, second-growth forest filled in the ruined clearings, and each summer, more students and scientists came north. These were the early decades of ecology — the study of organisms' relationships with their environment and each other — and the site was a good place to watch an entire habitat in the act of recovery from an environmental trauma. Among the young aspens and the conifer bogs, animals reestablished their territories — black bears, whitetail deer, bobcats, porcupines, fox, coyotes, beavers, and scores of bird species — and in the lake, an aquatic world thrived.

Reighard and his colleagues had pictured the station primarily as a place for teaching. But research soon became equally important. "We have here research workers of all kinds," the botanist Henry Gleason wrote in 1917, "from the student who is just beginning his first problem in fear and trembling, half frightened at the very word research, to the chronic investigator whose mind is one immense question mark, who investigates all day and dreams of new species all night."

"Sitting against a laboratory bench oblivious to nature outside, one could devote a lifetime to the antennae of the [honeybee] alone and still make great contributions to science. . . . But that is just a beginning, because when honeybees are examined out of doors, they also provide paradigms of orientation, communication, and adaptation to the environment. Even then the surface is only scratched. The genus Apis has a history of over twenty million years. What we study today is the product of countless interactions with other organisms and episodes of microevolution. Very little at the molecular and cellular level, and nothing particular to the honeybee, makes complete sense until it has been placed inside this broader framework. . . . The only places to pursue biology at this advanced and long-term level are the field stations . . . , where free-living species are secure and data sets cumulative over generations."

—Edward O. Wilson in *BioScience*, 1982

By 1929, trees were plentiful enough to block the surveyors' sightlines, so the engineers decamped to a new place in Wyoming, leaving their quarters to the biologists. Despite the Great Depression, the camp expanded, adding log laboratories and more cabins. By the 1940s, the station averaged 120 students per summer. It was now recognized as a leader among the nation's biological field stations.

Combustible Enthusiasm

The excitement that animated those first students of 1909 has prevailed ever since. People are drawn to biological stations by their fascination with nature, then find themselves working and living with dozens of others who have just the same feeling. The result is a combustible enthusiasm—even a sort of conversion experience—that has ignited countless careers in the sciences. (Two Nobelists are among the most famous alumni of the Douglas Lake station—Thomas Weller, whose discoveries led to the polio vaccine, and James Watson, who co-discovered the structure of DNA.)

Edith MacLennan Hurst (M.A. '49, Ph.D. '56), now 81, spent six summers at the Biological Station in the 1940s. A Detroiter who had become fascinated by the natural world at her grandparents' farm in Ontario, she met students from all over the United States and scientists from as far away as Europe. "That was a very broadening experience—socially and, of course, intellectually," she says. "It certainly was very solid in learning, not just identifying plants and animals but how to think about them, too." The best course she ever took, she says, was Plant Ecology with Professor Frank Gates, whose son, David, would later become Director of the Biological Station. With Gates, she says, students compiled data about sites that researchers had been studying since the founding of the station in 1909. Hurst received a master's from UM in botany and later received a Ph.D. in anatomy, also from UM. She spent many years teaching neuroanatomy, first in Philadelphia, then at Eastern Michigan University. She has taken Biological Station minicourses in northern flora, nature photography, birds, and forest ecology, among others.



Boats filled with students motor across Douglas Lake for a 1942 Systemic Botany class trip.

Continuous Change

Nearly a century after Professor Reighard's arrival, Douglas Lake has been called one of the most studied lakes in the world. Yet the very purpose of the Biological Station becomes clearer when one realizes that Douglas is not the same lake it was in 1909. The lake, indeed the whole property, has undergone continuous change—in animal populations; in vegetation and forestation; in its chemical composition and atmosphere. A critical job of the natural sciences is to understand how and why those changes occur, especially as natural systems undergo the increasing stress of global warming.

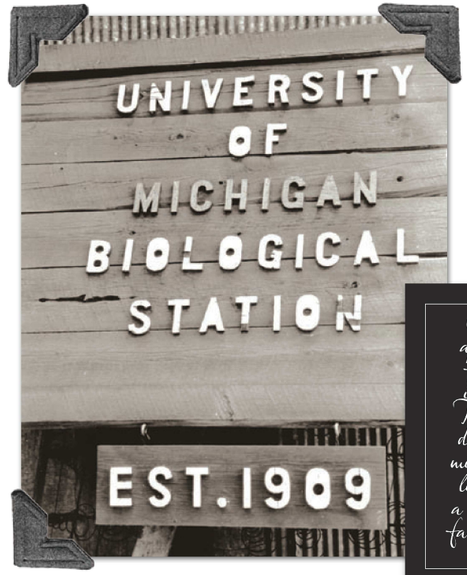
For at least 20 years, the urgent questions posed by climate change have caused the Biological Station's work to become increasingly interdisciplinary. This collaborative approach was encouraged by James A. Teeri, the Biological Station's Director from 1987 to 2002, and is still in place today. A biologist may now work with an atmospheric chemist studying compounds that plants emit into and remove from the atmosphere, or a mathematical modeler predicting patterns of climate change.

"What we can do at the Biological Station," says Knute Nadelhoffer, professor in the Department of Ecology and Evolutionary Biology, who became Director of the Biological Station in 2002, "is create intensive learning situations where students can actually work at the interface of those areas of science. That's what we need to nurture in order to produce students who will have a major influence in studies of the natural world.

"For a very long time, people went out to field sites to study how nature works outside the influence of humans. We now know that humans influence every square meter of the planet. And so the question is no longer how 'natural systems' function in the absence of human influence, but how humans interact with the rest of the natural world."

James Tobin (78) is an associate professor of journalism at Miami University in Oxford, Ohio. He is the author of Ernie Pyle's War *and* To Conquer the Air: The Wright Brothers and the Great Race for Flight.

Sources for this article include the papers of Jacob Reighard and of the Biological Station at the Bentley Historical Library; an unpublished history of the station by Professor David Gates, a former Director; and "Focus on Field Stations: University of Michigan Biological Station," Bulletin of the Ecological Society of America, January 2005.



In 1909, UM Regents approved the first plans for a biological station in Pellston, Michigan. Today, along with student course offerings and mini-courses for the public, the station serves as a resource for student and faculty researchers studying natural habitats.



Celebrating 100 Years

COMMEMORATIVE EVENTS WILL HIGHLIGHT THE BIOLOGICAL STATION'S UNIQUE PAST AND BRIGHT FUTURE

From August 21-23, 2008, alumni and friends will gather to celebrate the 100th anniversary of the UM Biological Station, which is located on the shores of Douglas Lake near Pellston, Michigan.

Highlights will include:

- Faculty-led field trips;
- A centennial ceremony;
- Special speakers, including Linda Greer of the Natural Resources Defense Council, UM faculty, and Biological Station Executive Committee members;
- Opportunities for alumni and friends to meet, celebrate their shared experiences, and contribute ideas for planning the Biological Station's future.

For more information on the centennial events, visit www.lsa.umich.edu/umbs



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THE BUSINESS OF GREEN

As more and more businesses are recycling, using alternative energy, and seeking sustainable solutions, LSA alumni are landing hot careers that help the environment.

by Rebekah K. Murray

DAVID BERDISH
Sustainable Solutions Broker
LSA CLASS OF 1979

BRUCE JAMERSON
Cellulosic Ethanol Pioneer
LSA CLASS OF 1973

EMILY GARLOUGH
Forest Service Maven
LSA CLASS OF 2006

DAVID BACON
Brownfield Redeveloper
LSA CLASS OF 2006

SARAH HAYOSH
Economic and Environmental Expert
LSA CLASS OF 2008

From Wal-Mart's environmental plan to boost energy efficiency and reduce waste, to Office Depot's Tech Recycling Service, more and more companies have decided to put green goals on their business plans.

"It's the greening of the entire mainstream economy," says Kevin Doyle, President of the Boston-based consulting company Green Economy, and the keynote speaker at an environmental career workshop held at UM last fall. Doyle talked to UM undergraduates about current environmental career opportunities in businesses, nonprofits, and the government.

"What's happening now is a transformation of what used to be a niche, called environmental careers, into a mainstream group of jobs and industries," he says. "This transformation means that instead of tens of thousands of jobs, there are millions of jobs."

For example, 20 years ago students looking for a green career might decide to become a park ranger, a forester, or work to eliminate pollution. Now, green jobs include organic farming, green building, carbon offsetting, managing sustainability, and manufacturing clean technologies, to name just a few.

It's part of a sustainable economy movement, according to Doyle, that began in the 1990s. Sustainability — or the "triple bottom line" — integrates concern for the environment and social justice with economic prosperity.

Sustainable Solutions

Sustainability isn't a radical idea, but a practical way to conduct business, says LSA alumnus David Berdish ('79). "It's time companies adapt and be a leader in sustainable practices or they're going to be in trouble."

Berdish would know. He is working towards sustainable solutions from within a global corporation — Ford Motor Company. As the Manager of Sustainable Business Development, Berdish sits down with groups such as Amnesty International and talks about how to make workplaces safer. He has addressed the United Nations to report on Ford's human rights work, and he leads a research team that reports on climate change and researches emerging environmental trends. He is also working on mobility solutions for citizens who live in cities full of congestion, pollution, and poor infrastructure.

While proud of his work, this is not exactly what Berdish thought he'd be doing after graduating from LSA with an economics degree. "I thought I'd be a radical activist working with Amnesty International and writing poetry," he says. "Between my liberal arts education, listening to Bruce Springsteen, and my cool professors, I knew I would be working to improve social equity. But if you had told me I would work for a company like Ford, I would have said, 'No way!'"

But Berdish found out about Ford's interest in environmental and human rights issues and says, "I trusted Ford Motor Company and knew they cared about doing good things, so I had no problem transferring my radical social ideas here."

Since Berdish has been working at Ford, some of the company's notable efforts include the development of a human rights code, partnerships with non-governmental organizations, development of the Escape Hybrid, and construction of Dearborn's Ford Rouge Center — a green manufacturing facility. These efforts are essential, he says, considering the dependence of Ford's product on oil and its impact on greenhouse gases and carbon emissions.



It's his job to help Ford be green: David Berdish researches sustainable business solutions at Ford Motor Company. The company's chief green emblem is the Ford Rouge Center in Dearborn, Michigan. The Rouge Center has the world's largest living roof, a 10.4-acre field of sedum. The four-layer vegetated mat (which doesn't require mowing) helps collect and filter storm water, improving water quality and reducing the runoff flowing into the Rouge River watershed. The roof is just one part of the Rouge Center's extensive natural storm-water management system.

Robert Ramey



Ed Collier

The science to make cellulosic ethanol economically feasible is still evolving, according to a recent *USA Today* article, but CEO Bruce Jamerson believes cars will soon be running on it. And cellulosic ethanol, unlike corn-based ethanol, won't compete with the world's food supply since it is processed from items such as woodchips, straw, paper pulp, and agricultural waste products.

Cleaner Tech

Alumnus Bruce Jamerson ('73) understands U.S. oil dependency all too well, and is working to change it. As the CEO of Mascoma Corporation, a start-up company devoted to low-carbon energy biotechnology, Jamerson leads a team of 80 employees who are seeking to create cellulosic ethanol. A biofuel, cellulosic ethanol is produced out of woodchips, switch grass, and other renewable crops — all non-food items that don't require fertilizer.

Jamerson says in the future low-carbon world, low-carbon fuel will be essential. "Gas just doesn't cut it," he says. "For every gallon of gas, there are about 25 pounds of greenhouse gas emissions. Corn-based ethanol produces 12 pounds, and cellulosic ethanol only produces one pound."

While the world has not yet seen its first commercial cellulosic biofuel plant, Jamerson believes there's "huge, huge opportunity," and so do many investors. Currently, there are tens of billions of dollars being invested in renewable energy, Jamerson estimates, and he is convinced that this investment will eventually pay off. It's this expectation that drives him and his employees to put in the long hours it takes to build a company from the ground up. And while he's proud that his work helps the environment, Jamerson says Mascoma is a profit-seeking entity.

"I'm a business man," says the former Wall Street employee, who has an M.B.A. from Massachusetts Institute of Technology in addition to his LSA General Studies degree. "My goal is to marry what's good for free enterprise with doing what's right for our world."

Green Jobs

The greening of industry is creating new careers and changing established ones. Here is a list of green career areas experiencing growth:

- Wind Power and Solar Energy
- Water Utilities/Wastewater Treatment Works
- Recycling
- Green Building
- Land Trusts
- Urban and Regional Planning
- Brownfield Redevelopment
- Environmental Consulting and Engineering
- Government Environmental Agencies
- Organic Food
- Carbon Management
- Energy Conservation
- Education
- Health
- Community Organization
- Ecotourism

Information courtesy of Kevin Doyle, President of the Boston-based consulting company Green Economy.



David Bacon has been working with developers to convert these three dilapidated buildings, on Second Avenue in Detroit, to a low-income housing development that he hopes will benefit struggling Michigan families. Cleaning up and reinvesting in blighted properties takes development pressures off of undeveloped land and improves and protects the environment, according to the U.S. Environmental Protection Agency.

Green Salaries

Does it pay to work for the environment? Here is a list of median salaries for green professionals:

- Anthropologists and Archaeologists: $47,000
- Biological Scientists: $59,000
- Conservation Scientists/Foresters: $51,000-56,000
- Environmental Engineers: $75,000
- Environmental Lawyers: $103,000
- Environmental Scientists: $55,000
- Geographers: $63,000
- Geoscientists: $74,000
- Historians: $48,000
- Hydrologists: $66,000
- Political Scientists: $91,000
- Sociologists: $62,000
- Urban and Regional Planners: $57,000

These salary figures do not include teachers and college professors.
Source: Information courtesy of Kevin Doyle, President of the Boston-based consulting company Green Economy Inc.

Environmental Consultant

A combination of business sense and environmental expertise has led other alumni into the fast-growing environmental consulting field, like LSA alumnus David Bacon ('06). With his environmental science degree from Program in the Environment (PitE), a joint effort between the College of LSA and the School of Natural Resources and Environment (SNRE), Bacon is working to redevelop brownfields. It's not only helping the environment, he says, but stimulating Michigan's economy.

"Brownfields," Bacon explains, "are contaminated, functionally obsolete, or blighted sites," such as a dilapidated office building. As an environmental consultant for ASTI Environmental in Brighton, Michigan, Bacon encourages developers to clean up and use these sites instead of building on undeveloped land. This, Bacon says, prevents urban sprawl and promotes downtown development.

To make brownfields attractive, Bacon looks for tax breaks, grant money, and other funding incentives from government and private sources. He then coordinates with everyone involved — developers, municipalities, and site owners. His day may consist of walking through a piece of blighted property, or writing up a report in the office. Either way, he says, it's rewarding work.

"Now, when I'm driving and see a rundown gas station, I know that I may be able to work with a developer and in one or two years there may be a commercial building, a restaurant, or even student housing in that spot," he says.

Preservation

Another recent PitE graduate, Emily Garlough ('06), is working with the United States Forest Service to preserve America's landscape. The government has traditionally been a top employer at both the national and state level for environmentally conscious graduates. And the outlook is expected to get better. Doyle recently pointed out to UM students that as baby boomers retire, more jobs are opening in the government environmental sector.

Still, there are not many women signing up for Garlough's line of work. She was one of only two women on her 20-person crew as she battled the California wildfires last fall, fighting to save homes, businesses, and forests. When dispatched to a fire, she'd work 16 hours or more at a stretch, usually at night when the fire was not quite as hot.

"It was totally wild," she says, of the fires, the adrenaline that kept her going, and the thought that she — a young woman from Michigan — could be part of such an enormous task.

When wildfires weren't raging, Garlough and her crew worked on projects to reduce the amount of flammable material on the ground, such as tree branches, saplings, and thick brush. Garlough ran a saw, despite an accident last summer when she fell on her saw and sliced her face. Her crew acted fast, sent her to a hospital by helicopter, and six days later she returned and finished out the season.

"The work is hard but crew life is fun and exciting," she says, mentioning that she was able to travel and see areas of wilderness that most tourists never visit. "It's like camping with your buddies, all summer long."

Garlough says that while her degree set her up for leadership positions within the Forest Service, she is planning to obtain an advanced degree in restoration ecology or silviculture. And, while fighting wildfires on the ground was exciting, it will hardly compare to Garlough's next green job as a smokejumper who will parachute to remote areas to combat wildfires.

The Emerging Green Workforce

As the green marketplace grows, the expectation is for green industries to continue to produce profits and hire workers. "In 2007, green industries generated more than $300 billion and employed more than 1.5 million people," Doyle says, adding that the marketplace is shining a light on the need for workers.

Those who will succeed, Doyle says, are students and alumni who have what green employers want — occupation-specific skills, creativity, innovative thinking, communication skills, broad environmental science understanding, a mastery of information technology, and leadership ability — just like LSA senior Sarah Hayosh.

Hayosh will graduate this year with a bachelor's degree in economics and the environment. Why both majors? "I want to be viewed as not just a hippie concerned about the environment, but as a person who has strong business sense and the ability to take ideals and work them into the business model," she says.

A future trend?

"I think students are getting the idea," says Robert Owen, Director of PitE and a professor of marine geochemistry. "There are not just tree-huggers on one side of an issue and big business on the other. People are realizing that working together is the best approach. I'm impressed with what industry is able to do for the environment."

Rebekah K. Murray is the Assistant Editor of LSAmagazine.

(Top) Robert Ramey; (bottom) courtesy of Emily Garlough



Emily Garlough (left) and Diedre Ader battled the California wildfires in October 2007. Part of a USDA Forest Service crew, the women built "firelines" (strips of land cleared of flammable materials) to control the flames and save lives, homes, and natural resources. Southern California wildfires in late 2007 forced the evacuation of half a million people, according to the U.S. Bureau of Labor Statistics. The hardest-hit county, San Diego County, had 369,000 acres damaged by flames, according to the Bureau report.



(Left) Michael Moran; (right) Ken Kodney



The Reluctant Farmer

Craig Haney ('94) wanted to be a lawyer, but he took root in the agricultural business instead. Now, he's part of a new breed of farmer changing the way food is grown, and consumed, in the United States.

by Lara Zielin

Craig Haney



stands in a wedge of pale sunlight. Behind him is a stone barn, one of several built by John D. Rockefeller Jr. in the 1930s on his estate in Pocantico Hills, New York, just 30 miles north of Manhattan. As Haney turns, birds roosting nearby take flight with a sound like a plastic tarp snapping. Craig hardly notices; this is life as usual for him. It's farm life, to be specific, on 80 acres of rolling land that, in 2001, David Rockefeller, J.D.R. Jr.'s youngest son, gave to the nonprofit Stone Barns Center for Food and Agriculture. The Center is now dedicated to raising environmentally responsible foods as well as educating people about how their food choices affect their health, their communities, and the environment.

Haney oversees much of the land and all of the animals, with the daunting task of continually figuring out how to make this little square of acreage sustainable, both economically and environmentally. Considering Haney stepped carefully—even reluctantly—into farming, it's a challenge he might never have predicted he'd shoulder. But these days, the history major from Cooperstown, New York, wouldn't want to be doing anything else. By working to ensure Stone Barns' success, Haney can provide a model for other farms to follow, helping rethink and reshape the way food is produced—and consumed—in the United States.

Major in the Majors

"I always thought I'd become a lawyer," says Haney, explaining how, as a boy, he'd go to the Cooperstown court house and just sit there, watching the proceedings. Cooperstown is small and, growing up, Haney knew just about everyone: the bus driver, the postman, the people who ran the market. It was knowing such a variety of people that Haney missed most when he came to UM in 1984. "I was surrounded by people my own age and I missed older people, I missed that community of people," he says.

As a remedy, Haney started hanging out at the farmers' market in Ann Arbor, getting to know the vendors. "Afterwards, I'd walk over to Zingerman's," Haney says. "I really liked the atmosphere there, and I liked the people."

After his freshman year, Haney got a summer job at The Farmers' Museum in Cooperstown, a living history museum, where he helped raise crops, milk cows, and smoke meats so visitors could get a firsthand idea of what farming life was like circa the mid-1800s. There, Haney gained more and more respect for what he calls "a whole separate culture of people who were stubborn, tough, and not bogged down in details." Haney's own grandfather, a farmer himself, fit that bill.



"My grandpa had five fingers, total, when he died," says Haney, who saw firsthand the loss of one of his grandfather's fingers with a crosscut saw. He marveled when it happened that it didn't upset his grandfather more. But Haney says his grandfather was a man who "majored in the majors" and wanted Haney to do the same—in other words, to not get upset by "little stuff."

Haney seems to have learned the lesson. As a student, he didn't sweat about not completing his degree in four years. Rather, he chose to take time off and travel, and to obtain his degree in a timeframe that made sense to him. "I wanted to figure out what I wanted to do," Haney says. "I was always a good student but I wasn't sure what I wanted from my education. My goal wasn't just to stay and take out more loans."

During this period of searching, Haney dipped his toe into the farming waters, "working," as he says, "with different aspects of agriculture." This included everything from helping out part-time on a large dairy farm, milking and carrying out chores, to working at a "maple sugar bush," a farm where maple syrup or maple sugar is produced. The line of work just wouldn't stop calling to him.

In 1994, ten years after he first started at UM, Haney officially graduated. By the time he received his diploma, he had a better sense of his direction in life: He had officially decided to become a farmer. And he was going to start his farm with bull calves.

A Better Market

On dairy farms, male calves, called bull calves, aren't usually of much financial value. They can't produce milk and so, unless they're exceptional calves that can eventually be used for breeding, they are usually sold for veal production. Haney says the bull calves are such cast-offs that, depending on the market, farmers sometimes have to pay truckers and auction houses to take the calves away.

New York-based agricultural agencies, such as the Center for Agricultural Development and Entrepreneurship and the Natural Resource Conservation Service, realized farmers were getting the short end of the bull calf stick. As a result, Haney says they "encouraged entrepreneurial farmers to try raising and selling the calves as pastured veal." The idea resonated with Haney. "I was excited about the idea of taking a bull calf that a dairy farm saw as a liability and raising him in a humane manner," he says.

So Haney started Skate Creek Farm just outside of Albany, New York. The calves on his farm would still be slaughtered for meat, but this way Haney could make sure they weren't raised cruelly, cramped in too-small pens and fed poorly, and that their end would be as humane as possible. "We fed them milk twice a day," says Haney, noting that many of the calves became quite social. "It was win-win. A win for an aspiring farmer and a win, at least for six months, for a helpless dairy bull calf."

Dan Barber, executive chef and co-owner of Blue Hill restaurant in New York City, began working with Haney to get the humane veal delivered to, and served at, the restaurant. "Blue Hill was always supportive in utilizing lesser desired primal cuts from the calves," says Haney. "Everybody wants the loins but Dan would call each week and ask about the whole calf. He'd even have questions about what his diet was, where he was harvested, and how old he was."

Barber told Haney of the plans to open up a Blue Hill restaurant at Stone Barns and invited Haney to come look at the then-unfinished Stone Barns campus. "Stone Barns wanted to find a way to raise meat and vegetables, and Blue Hill wanted to serve it," explains Haney. And Stone Barns also wanted to raise its animals in the same way Haney was—humanely and respectfully.

Haney thought that a for-profit restaurant partnering with a non-profit agricultural center was a good idea, but he understood it would be a challenge to raise a large number and variety of animals on Stone Barns' limited acreage: Out of the Center's 80 acres, only 23 would be available for pasture. "Twenty-three acres may seem like a lot," says Haney, "but when you're talking about raising animals, it's really nothing." According to the American Farmland Trust, the average farm in New York is 228 acres—almost ten times the land Haney would have to work with. Even so, Haney decided to go for it. In January 2004, he moved to Pocantico Hills to launch the Center's livestock program. When Stone Barns opened in May 2004, it offered a campus where not only food (both plant and animal) is grown, but where on-site classroom facilities provide spaces for food education, and Blue Hill restaurant gives visitors the chance to taste the farm's "fruits" firsthand. Stone Barns "helps people make farm-to-table connections," says Haney.

All Creatures Great and Small

Haney walks down a sloping hill toward a group of turkeys, one of seven kinds of animals Stone Barns now raises (the other six are rabbits, bees, swine, meat chickens, laying hens, and sheep). Haney points to the movable electric fencing all around the turkeys. "All the animals get moved on a daily basis," he says. "This is how we raise literally tons of animals with limited acreage, while responsibly tending to our pastures and forests."

Haney's job in this sense is a lot like choreographing an elaborate dance between the land and the animals. He has to figure out not only which animals to put where, but at what time. Sheep might graze in one area first, then the chickens move in. Then come the rabbits, and so on. In addition







John Tebeau; (opposite page, middle) courtesy of Stone Barns

(This page left) Craig Haney takes time out to pet Stella, a Maremma dog that lives with Stone Barns' sheep full-time, protecting and herding the flock; (right) Joan Raiselis, a Stone Barns' volunteer, sells produce at the Center's outdoor market. (Opposite page) the scenery, animals, and Blue Hill restaurant at Stone Barns reflect an environment where good food and responsible farming are valued equally.

to the movement of the animals, there's the added element of caring for the pastures, which is largely what the animals feed on. "We're raising grass as much as we're raising animals," Haney says. "We pay attention to it and treat it as an asset. Nutritionally, the right grasses are great for the animals. It keeps them happy and healthy."

So healthy, in fact, that the Stone Barns animals rarely require antibiotics—a novel concept in an era when large farms feed their animals antibiotics regularly. "We stress the harmony between plants and animals and try to build up the animal's own natural immunity," Haney says.

If it sounds like this is a fresh approach to farming, it is. "There's no school you can go to, to learn this stuff," Haney says. "We're learning it through the school of hard knocks."

It's a commentary on U.S. farming practices that a farm like Stone Barns would be considered so innovative. But Haney says he understands it. "I recognize how we got to this point," he says. "As a country we became focused on producing cheap food. That was the goal and we forgot about the other things like ecology, human health, and animal welfare. That doesn't make the large dairy farmer, for example, an evil guy." Rather, it's just that the demand for cheap food is setting the tone for how the food is produced, which isn't necessarily on par with other places in the world.

"For example, Norway, Sweden, the European Union—they all have higher animal welfare standards than the United States," says Haney.

As the guy on site who operates Stone Barns' poultry processing facility, it can be ironic to hear him talk about animal welfare standards. He's killing, after all, about 200 chickens a week—not to mention other animals. But Haney is earnest about animal welfare—even if the goal is that the animal is for human consumption. "I want our animals to have a good life and a good end," he says.

He says it from a wealth of experiences that have taught him how to respect and care about the creatures he works with. He's connected to them. "The sound of the sheep's mouths are like rain when they all stand and chew the grass together," he muses at one point.

The entire farm reflects the care and attention. It doesn't smell like a typical farm—the air is fresh, the animals smell earthy and healthy. It's pleasant. The turkeys aren't frantic, clawing over each other in cramped cages. They're outside, foraging for grass and insects. The pigs live in the forest, rooting around among trees, snuffling happily. The chickens cluck and scratch to their heart's content.

So what does all of it mean?

Haney says Stone Barns is helping to create a market—and a demand for—food that's grown responsibly and humanely, and that Stone Barns is plugging into people who are willing to invest in food that's raised that way. Right now, Stone Barns has more than 600 members who realize the value of what the farm is producing. Membership comes with levels and benefits, just like a museum. In addition, Stone Barns has a large volunteer base.

All this mobilization reflects a group of people willing to support Stone Barns and its food, even if it costs a bit more. According to the Organic Trade Association, organic produce is often priced 20–25 percent higher at retail than conventional produce. However, while Stone Barns' food may cost more, there are savings, too, they just don't come with a standard price tag. For example, no oil is used to freight Stone Barns' produce to market, and the environment is spared from the use of chemicals.

Haney says that ideally it won't just be people in New York who want this kind of food, but that people in cities all over the country will demand it and will help facilitate ways to raise it.

"We'd love to see all people enjoy food more and respect animals more," Haney says. "Hopefully Stone Barns will be a venue to encourage responsible farming."

For his part, Haney's delighted to be part of the whole process and wants to continue farming this way. "Ten years from now I'll be here," he says. "We're just getting started."

Lara Zielin is Editor of LSAmagazine.

(This page, left and middle) John Tebeau; (this page, right) courtesy of Stone Barns; (opposite page, middle) Adrian Wylie

(This page) Stone Barns' crops and animals are carefully selected for their compatibility with the native ecosystem. Stone Barns uses natural pastures instead of antibiotics to keep its animals healthy, and compost instead of chemicals to keep its land fertile. (Opposite page) Ann Arbor offers a variety of organic and local food venues, including the Ann Arbor Farmers' Market where Isabelle Carbonell ('07) checks out produce.







Eat What? Eat **This!**

STUDENTS BLOG ABOUT LOCAL AND ORGANIC FOOD

by Lynne Meredith Schreiber

WHEN JULIE COTTON CAME TO UM for a master's in terrestrial ecology, she was pleased to see the options available for obtaining good-quality, locally grown food. But one thing troubled her.

"I was surprised that more students didn't take advantage of Ann Arbor's options," she says, "like the farmers' market, co-ops, and the restaurants that promote the local food system."

So she helped create the Eat This! blog, a site that offers places and recipes for students to try, along with a discussion of the social and health issues surrounding organic and local food.

Cotton's fellow bloggers are both students in UM's School of Art & Design. Allison Apprill (known as Ally on the site) writes about food and health issues. Earl Carlson, who was just learning to cook when the site was formed, writes about recipes and his cooking experiences. Computer science and engineering student Matt Diephouse designed the site.

"We wanted to write from a lot of different perspectives," Cotton says, "to draw people in, show them what's available, what's affordable, and why it's a good idea to eat local and organic."

What are those reasons? Cotton says that simply put, it's about "a closer connection to our food system." She mentions that food grown locally reduces fossil fuels, supports local farmers, and is healthier. Produce at the supermarket is often coated after harvest with preservatives and pesticides, Cotton says, which can affect people's immune and nervous systems, especially those of growing children.

"Upon reading it, I was really influenced by what the site said," says English major Bethany D. Herrema. "I hadn't known there were so many preservatives in the food we eat, nor did I think about what buying locally would do for the economy."

The posts also highlight campus classes and community events, like the LSA Residential College's Sustainable Food Systems course, which takes students on field trips to local farms and food processors. And Cotton encourages students to attend events put on by the local Slow Foods chapter, a nonprofit educational organization dedicated to supporting local producers. One of the events the blog promoted last winter was a morning walk to the nearby Ann Arbor Farmers' Market to raise awareness about the availability of local food.

Still, getting students to change their habits will be difficult. "It is unlikely that students are going to buy local fruit and veggies when there is 'free' produce in the cafeteria," Herrema says. "Even for those of us without a meal plan, lack of a car can make it difficult to buy fresh local foods."

Cotton says there are off-campus options for students—like the Ann Arbor Farmers' Market and the People's Food Co-op in Kerrytown. There are also restaurants such as Silvio's Organic Pizza and Café Verde, plus the more expensive Eve and Zingerman's restaurants.

What's more, it seems like the issue of eating local and organic food is beginning to resonate with students. "More and more students are excited by the prospect of eating local," says Cotton, who finishes her master's degree this May and wants to eventually own an educational farm, a place for people to take academic courses and also learn about agriculture.

"If I can convince a single person to change buying or eating habits, or help switch the on-campus coffee to only fair trade and organic, or help UM try a farm-to-school buying program," says Cotton, "then it could make a huge impact."

Lynne Meredith Schreiber ('93) is a freelance writer in Southfield, Michigan.







for real?

We almost didn't believe the answers LSA faculty gave when we asked them a handful of "green" questions.



Q: How big is the Gulf of Mexico's "dead zone"?

A: "The size of New Jersey, and it's growing," says Donald Scavia, a professor with Program in the Environment and Director of the Michigan Sea Grant Program. The dead zone forms each spring off the Louisiana and Texas coasts when oxygen levels drop too low to support most life in the bottom and near-bottom waters.

What's causing it? Fertilizer runoff, primarily from the Corn Belt, runs into the Mississippi River and into the Gulf of Mexico. The nutrients fuel explosive algae blooms, which eventually decompose and consume large amounts of oxygen in the process. Last year, the dead zone swelled to roughly 8,000 square miles—the third largest on record—and is a threat to the Gulf Coast fishery business, worth half-a-billion dollars a year.

"We have made no progress in controlling it," says Scavia, "and if we continue to put more land into corn because of the ethanol craze, there'll be more nitrogen and larger dead zones."

Scavia and graduate student Kristina Donnelly in UM's School of Natural Resources and Environment say the best way to shrink the dead zone is to reduce amounts of two key nutrients—nitrogen and phosphorous—that flow into the Gulf. The technology to do this is available, Scavia says, "we just need the political will and funding."

The teal blue area along the Louisiana coastline illustrates the "dead zone," an expanse of oxygen-depleted (hypoxic) waters resulting from nitrogen pollution on Midwest farms, which travels down the Mississippi River. The seasonal hypoxia not only threatens marine ecosystems, but also the industries that rely on those ecosystems, including local oyster, fish, and shrimp industries.

The number of icebergs in the Antarctic Ocean has increased, with ice breaking free from the Antarctic continent more frequently due to global warming. However, because the icebergs are capable of removing carbon from the atmosphere, some scientists think the growing number of bergs may actually slow global warming's progress.



Q: There are huge lakes underneath Antarctica? Seriously?

A: "Seriously," says Samuel Mukasa, Chair of the Department of Geological Sciences, "and some 146 of them have been discovered to date using remote-sensing methods." Mukasa points out that these lakes could spell trouble if the polar ice caps, particularly in Antarctica, were to melt. "The water underneath the polar ice caps isn't static," says Mukasa, "but rather it moves long distances and is in all probability pressurized like a champagne bottle. As an ice cap melts and gets thinner, the water has a greater likelihood of breaking through and rushing into the ocean."

And that's bad because not only can sea levels rise as a result, but currents can change. "At least one of the lakes underneath Antarctica is the size of Lake Ontario," says Mukasa, who explains that a mass of fresh water like that pouring into the salt water of the ocean would create a huge density difference. "A difference like that could halt or alter the circum-polar current that circulates around Antarctica," he says. And that, in turn, could mean that warm air masses from the tropics would no longer be deflected by the polar current, but rather would settle over Antarctica, spurring more melting and warming.

"This has happened before," says Mukasa, who spoke about Antarctica's hidden lakes at the International Symposium on Antarctic Earth Sciences in Santa Barbara this past August. "We can see it in the geological history of the continent. If it's happened before, it can happen again."

© Momatiuk-Eastcott/Corbis

Q: Why aren't more minorities working for the environment?

A: They'd like to, but they're not being hired in mainstream environmental organizations and government environmental agencies, says Dorceta Taylor, an associate professor in LSA's Center for Afroamerican and African Studies and in the School of Natural Resources and Environment.

Despite the fact that minority participation in environmental issues has "skyrocketed over the past couple decades," Taylor says, "we see very little hiring of minorities" by environmental organizations.

Why? Taylor isn't sure, but it concerns her. She knows a couple possibilities that aren't true. Some may argue that there are not enough minorities trained for these types of positions. Taylor disagrees, citing her studies that prove there are minority students trained in these disciplines.

Do minority students not want to work for established environmental organizations? That's not true either, Taylor says, as her studies have found that minority students are just as interested in working for all types of environmental organizations as white students.

Some minority students have turned their attention to working in environmental justice organizations, but Taylor says these organizations tend to be small and often do not have the capacity to hire many staff members.

Taylor is concerned about the entire environmental movement if minorities are excluded. She says, "Demographic trends point in the direction of a population that is increasingly comprised of minorities, so if the environmental sector isn't hiring minorities, how will the m[illegible]ment continue to be effective?"



Smart cars are Mercedes-designed vehicles powered by a three-cylinder engine, which has a top speed of 90 miles per hour. The Smart car has numerous safety features and has been tooling around European streets for almost a decade, but is just now entering the U.S. market.

Q: Are small, eco-friendly cars safe?

A: "If they're well designed," says Marc Ross, LSA professor emeritus of physics, who has been studying vehicle safety for 10 years.

The laws of physics dictate that larger, heavier vehicles have the upper hand, even in a single-vehicle crash. But light, smaller cars have better fuel economy. So is a small car worth the risk?

Ross would argue that unsafe cars aren't necessarily the lightweight cars, but the *cheap* ones. Unfortunately for consumers, the best designed cars (with safety features such as improved seat belts, additional air bags, and stability control) typically cost more money.

"One of the safest vehicles is the Volkswagen (VW) Jetta and it's a relatively small vehicle. VW has designed it carefully—and charges for it," Ross says. But while he notes that Volkswagens in general tend to be safe compared to other small cars, they are a little heavier and get lower fuel economy.

"We can make a safe car that's lighter if we're willing to spend the money and trouble," Ross says.

In the meantime, what does Ross drive? A Honda, he says, a car also known for high safety ratings.

Q: Is Green a Fad?

A: While environmental concerns will continue, public attention to green issues could be fleeting.

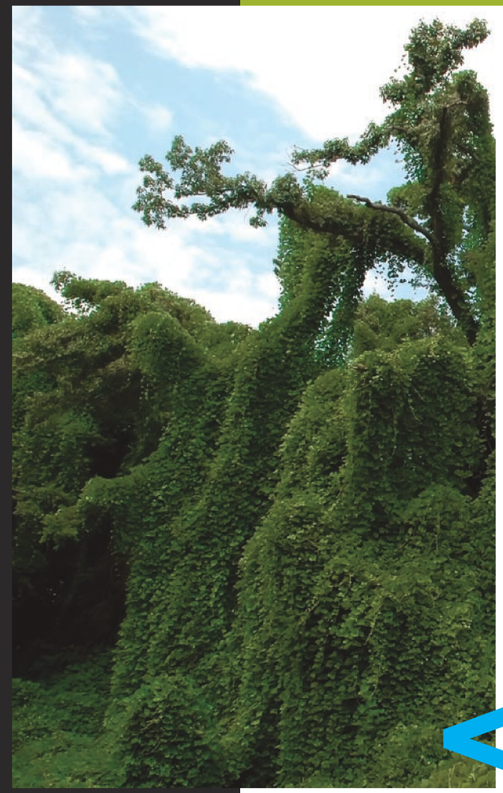
America is in a third wave of heightened corporate attention to environmental issues, says Andrew Hoffman, the Associate Director of UM's Erb Institute, a faculty associate with Program in the Environment, and a professor of sustainable enterprise at the Ross School of Business and School of Natural Resources and Environment.

The first wave occurred in 1970, Hoffman says, with the forming of the Environmental Protection Agency and government regulations. Then about 1990, Hoffman says, companies started looking at environmentalism as a strategic business opportunity rather than just a risk management issue.

"Today, attention to environmental issues is driving deeper into many different sectors," Hoffman says. Climate change is one example. "Climate change has been framed as an issue of national security, economic competitiveness, and religious morality," he says. And while Hoffman says a broad appeal is needed to produce results, he warns that public attention is fickle.

"Things come into vogue and go away," he says. So if the current attention to environmental issues is another wave, as Hoffman believes, the public may soon move on to the next issue. Environmental concern won't disappear, but after being fundamentally altered it will remain latent, according to Hoffman. In the meantime, what should environmentalists do?

"Strike while the iron is hot," Hoffman says.



(Top) Bill Pugliano/Stringer/Getty Images News

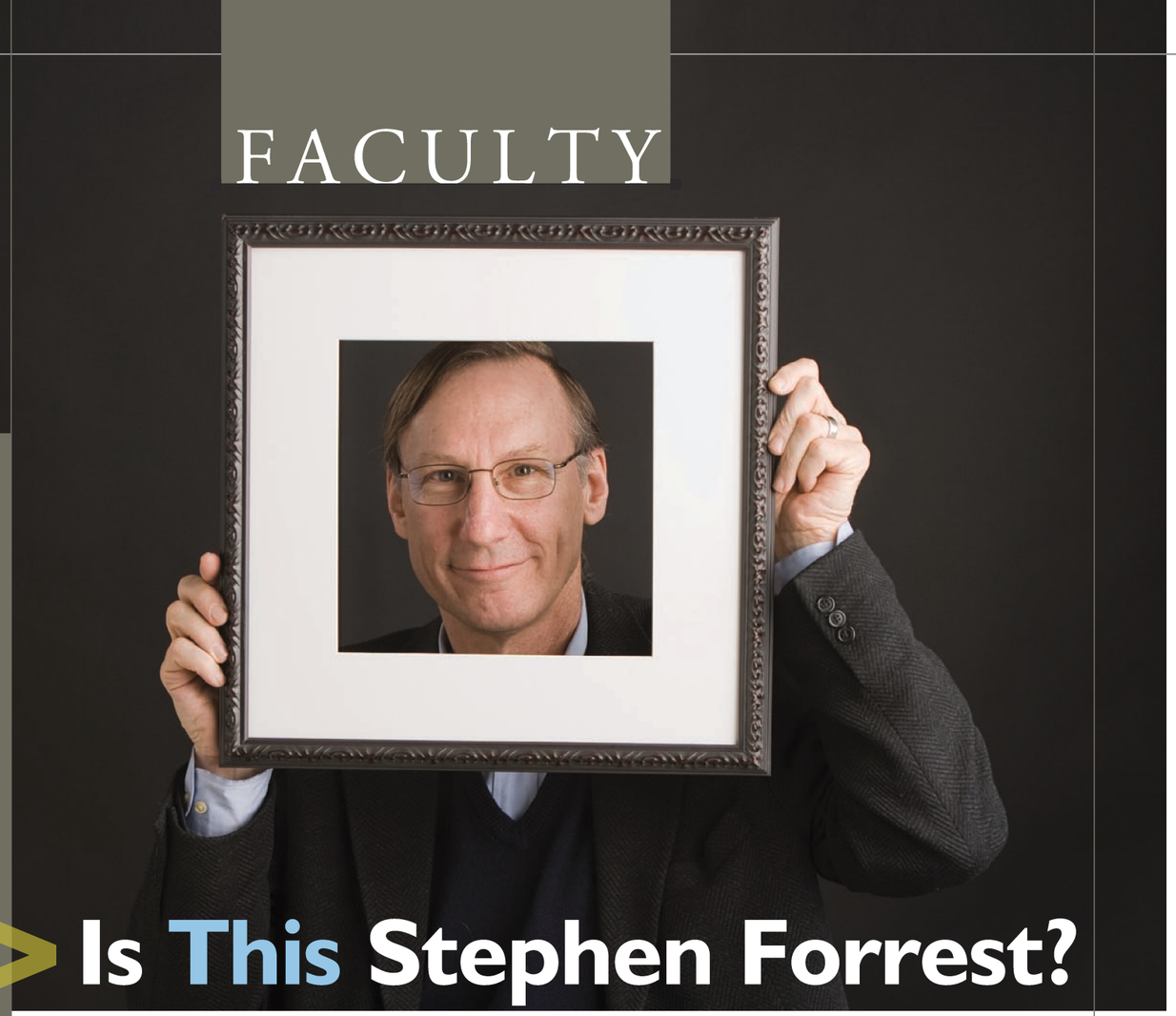
Q: Can scientists predict where and when invasive species will take over?

A: There's a persistent myth that invasive species only inhabit areas that are close to people or areas that have been disturbed by human activity. But Deborah Goldberg, Chair of LSA's Department of Ecology and Evolutionary Biology, thinks there's a good chance invasives can get started without human help, "which means places far from human disturbances may not be risk free," she says.

If this is true, then the mechanisms driving invasions may be different than scientists have thought previously, and Goldberg will have a better understanding of where they'll show up—and why. If her hypothesis pans out, Goldberg will be one step ahead of invasives, such as non-native cattails and canary reed grass, and she'll be able to develop tools to help predict where they'll take root.

"Removing them isn't enough, "Goldberg says. "Early prevention is critical. If our model works, then we'd have a big tool to give to land managers. We'd be able to say, if you do X, here's how it'll change your risk for invasions."

In the late 1800s and early 1900s, the climbing vine kudzu was introduced into the United States from Japan and China. Now an invasive species, kudzu smothers other plants and has taken over much of the southern U.S. landscape.



Is This Stephen Forrest?

This is not Stephen Forrest. This is a picture of a picture of Stephen Forrest.

Scott Soderberg, UM Photo Services

Part physicist, part environmentalist, part philosopher, and part inventor, Stephen Forrest uses his eclectic mix of brains and personality to address the crippling energy crisis in the state of Michigan and beyond.

by Sheryl James

STEPHEN FORREST LOVES TO SHOW his graduate students a framed print of what appears to be an ordinary tobacco pipe by René Magritte, a famous Belgian surrealist. Beneath the painting, in French, is a sentence stating, "This is not a pipe."

"When you show this to people, they say, 'Well, what is it? I don't understand,'" says Forrest, a dedicated, lifelong physicist and Vice President of Research at UM. "Well, it isn't a pipe. It's a picture of a pipe."

A trick question? Not exactly, and certainly not to Forrest. The pipe-picture quiz is at least some indication of the complex yet simple, now-you-see-it-now-you-don't, everything-is-nothing world of physics. "Physics is a bit of an art form," says Forrest. "You're dealing with issues of nature that you can't see, touch, or smell. And we've developed a mathematical construct of what the universe is. It is not the universe, it's our picture, and our picture is never perfect."

Well, why didn't he just say so?

Conversations with Forrest tend to go like this. They are a combination of an existential journey and an intellectual roller coaster. He talks of semiconductors one moment and his long hikes in the Sierra Nevada the next. He sees the wonder in both and the connection, too. And it is this ability to connect, to appreciate the necessity and the power of interdisciplinary cooperation, that makes Forrest the right man for the right time at UM.

> "Physics is a bit of an art form. You're dealing with issues of nature that you can't see, touch, or smell. And we've developed a mathematical construct of what the universe is. It is not the universe, it's our picture, and our picture is never perfect."

Forrest is a key player in UM's quest to address the energy crisis that threatens to cripple Michigan, and beyond. "There is no larger challenge facing humanity," Forrest says, "and it spreads across everything we do. So that is the quintessential interdisciplinary problem: energy—and sustainability, which is its twin."

But as the rest of the developed world moves toward knowledge-based economies, Michigan seems mired in manufacturing, a word that already sounds so . . . *20th century*. Michigan must compete, and its leaders must figure out ways to do that. Physics and Forrest figure into that conversation through more connections.

"This university is the single greatest generator of the knowledge-based workforce in the state and the region," Forrest says. "And my office is deeply involved in figuring out how to more effectively engage the outside world, so that we can help change and make as painless as possible the economic transformation of the state of Michigan."

A primary vehicle for that quest is the establishment in September 2006 of the Michigan Memorial Phoenix Energy Institute. The institute is the fruit of many minds at UM, but Forrest's arrival on campus was a prime catalyst. During his initial conversations with UM President Mary Sue Coleman, he broached the idea of setting up some kind of "energy institute" at UM, which would encourage formerly separate departments and thinkers to work together in a common, crucial mission. Coleman responded that UM already had a committee exploring alternatives to fossil fuels, because the nuclear reactor on North Campus had been decommissioned.

"So the whole faculty group was already empaneled. I just came in and worked with them to come up with a very specific plan of how to do this. I presented it, and they said, 'Go for it.'"

The Institute's name honors the Phoenix Memorial on campus, which was dedicated to UM men and women who died in World War II; and it was also "juxtaposed next to the core nuclear reactor, which was part of the 'Atoms for Peace' program, which has a long and venerable history," Forrest explains. "But it's still about energy."

The Institute, he explains, "is not simply to enable, but also to set the direction of where Michigan can make the largest impact in helping the transformation from a fossil fuel-based economy to an economy based on alternative, non-polluting sources of energy, and the conservation of energy—and then link it also to policy, economics, and social impact."

As if that isn't daunting enough, Forrest adds, "there is a very high level of urgency. We do not have much time."

INNATE, INSATIABLE CURIOSITY

Now would be a good time to follow Forrest's unlikely path from, say, a learning disabled kid or perhaps the class nerd to his current status as a man who holds 170 patents, has taught at

Michigan Memorial Phoenix Energy Institute

The Michigan Memorial Phoenix Energy Institute is dedicated to the research and development of energy policies that promote world peace, the responsible use of the environment, and economic prosperity. The institute stresses research and education that bring together experts from the natural and social sciences, the arts, engineering, medicine, and more. The institute also serves as a unified voice on energy research and education for the University of Michigan in areas that include:

- Batteries/Energy Storage
- Tech and Education
- Fuel Cells
- Fuels
- Hydro and Wind Power
- Hydrogen Production
- Hydrogen Storage
- Lighting
- Nuclear Energy
- Policy, Economics, and Business
- Solar Cells and Thermoelectric Materials
- Sustainability
- Sustainable Living and Design
- Transportation Infrastructure
- Vehicle Propulsion and Power Systems

institutions such as the University of Southern California (USC) and Princeton University, and has cofounded five successful private companies.

But Forrest was always just as much an amalgamation of brains, curiosity, and enterprise as he is now. The fact is, he grew up in a happy, stable family in Los Angeles during the 1950s and '60s. His earliest memories include trips to the Sierra Nevada, and he ranks this place high in the assembling and maintenance of his persona. He returns regularly, with due reverence. "You know, the Sierras were called 'The Range of Light' by John Muir," the naturalist and founder of the Sierra Club. "It's like no other place on earth—the quality of light, the clear views of very high country. It's a kind of paradise."

During his early years, Forrest was into physics, too, but a nerd he was not; he had lots of fun, such as the time he and a friend drove to Wyoming to take a rock climbing course. Another time in high school, he and friend Robert Ziff, now a professor in UM's Department of Chemical Engineering, "came up with this concept of making a computer in a briefcase—you know, sort of like a laptop thing?"

Yes, but this was during the mid-'60s, when computers took up entire rooms and were slower than our presidential election season. "We had to make every printed circuit ourselves," Forrest recalls. "We had to go out and beg from companies to get various components. We put it together with resisters, and so on.

"We never succeeded. My mother was not happy that we did not succeed. She thought I had quit too early on the project."

Forrest credits his innate, insatiable curiosity for his success. He went to UC-Berkeley in the early 1970s, when Berkeley was "Anti-Establishment Central." He got restless and went to study at the University of Birmingham in Great Britain. While there, he met Rosamund, now his wife and mother of the couple's three grown children, and then decided to experience life in Israel. The couple hitchhiked there and worked at a kibbutz on the Sea of Galilee.

Forrest returned to Berkeley and earned his bachelor's in physics in 1972. Still anxious to experience life and school outside of California, he applied to several out-of-state schools, including UM. He went on to earn his master's in physics at UM in 1974, and his Ph.D. in physics at UM in 1979.

From that point, he began a lifelong research/invention/private sector/academia career that centered largely on light. This history is filled with words most of us cannot pronounce or understand.

From that point, he began a lifelong research/invention/private sector/academia career that centered largely on light. This history is filled with words most of us cannot pronounce or understand. Here are some examples of his published papers:

- *Accurate Determination of Heterojunction Band Discontinuities in the Presence of Interface Traps Using Capacitance-Voltage Techniques.*
- *Quasi-Epitaxial Growth of Organic Multiple Quantum Well Structures by Organic Molecular Beam Deposition.*

His inventions have centered on fiber optics and light-emitting devices (LED), and his out-of-the-box thinking has earned him many prestigious awards.

In addition to his 170 patents, Forrest also owns a house in Vermont that is completely "off-grid"—powered by solar energy—along with a 1957 MG sports car and plans for even more inventions. One of them: a camera with the shape and mind-blowing capability of the human eye.

Thus, his work still centers on light, which explains why another of his projects will help produce the post-fluorescent generation of lighting. He is also working on ways to convert solar energy to electricity. Another weapon, Forrest says, in the battle for energy efficiency.

Meanwhile, he will continue to corral the collective mind power at UM toward the greater good—while there is still time. So many people, he believes, fail to see the light, no pun intended. They do not understand that their love affair with carbon-emitting devices, automobiles chief among them, is steering them right off the cliff. Despite the dire warnings from Al Gore and others, Forrest says some just refuse to see what is right in front of them.

Well, that brings it back to physics, right? It's not a pipe. . . .

Sheryl James is a freelance writer and Pulitzer Prize-winning journalist in Brighton, Michigan.

FACULTY**Books**

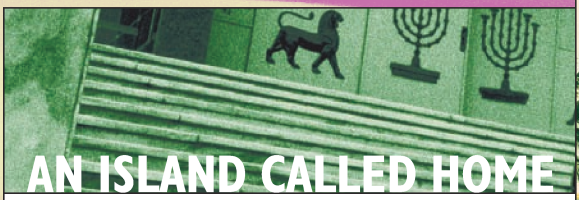
LSA faculty publish some of the most topical, timely, and engaging books on the market today. We invite you to explore some recent titles by these renowned scholars.

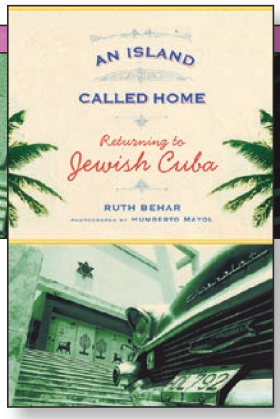
From Harvey River: A Memoir of My Mother and Her Island **(HarperCollins Publishers, 2008)** by Lorna Goodison, associate professor of English and Afroamerican and African studies. When William Harvey discovers a clearing at the end of a path cut by the feet of fleeing slaves, he gives his name to what will become his family's home for generations.

A Tale of Two Cities: Santo Domingo and New York after 1950 **(Princeton University Press, 2007)** by Jesse Hoffnung-Garskof, assistant professor of history, American culture, and Latina/o studies. Garskof chronicles how New York was forever transformed by Dominican settlement, and how Dominicans' lives in New York profoundly affected life in the Dominican Republic.

In the Mouth **(University Press of New England, 2008)** by Eileen Pollack, the Zell Director of the M.F.A. Program in Creative Writing. Through five stories and one novella, Pollack shows readers how secrets that might sunder a family often become its strongest connections.

Embodying Honor: Fertility, Foreignness, and Regeneration in Eastern Sudan **(University of Wisconsin Press, 2007)** by Amal Hassan Fadlalla, assistant professor of Afroamerican and African studies, women's studies, and anthropology. Fadlalla shows how Muslim Hadendowa women manage health and reproductive suffering in their quest to become "responsible" mothers and valued members of their communities.







AN ISLAND CALLED HOME

RETURNING TO JEWISH CUBA

Many Jews living in Cuba in 1959 opposed Fidel Castro's rise to power and left in a mass exodus, including five-year-old Ruth Behar and her family. Growing up in the United States, Behar, now an LSA professor of anthropology, wondered about the people who stayed behind.

excerpt

We've come to Manzanillo to look for Jews. Salvador Behar Mizrahi, I've been told, is one of the registered Jews among the dozen or so who remain in this port city on the southern coast of Cuba. We arrive without warning at his home, and his wife, a gregarious woman in a housecoat, doesn't seem at all concerned that some strangers are asking to speak to her husband.

"What a pity! You just missed him. He took off on one of those horse carts that you see everywhere in this town. He's going to try to find us a leg of pork. It's not easy, I tell you."

We jump back in the car to go in search of Salvador, following his wife's vague directions, but by the time we find the house where he has bought the leg of pork, he's long gone. On our return to his house, Salvador is waiting patiently at the door. A lean man, his untucked shirt hanging loosely over his pants, he peers at us with curious eyes through an ancient pair of aviator glasses.

"Welcome," he says. "Come in. Sorry I missed you. I had to go on a little errand…. How may I help you?" he asks, leading us into the dining room, where a Sacred Heart of Jesus in an oval wood frame hangs on the wall.

I tell him I want to know about the Jews who lived in Manzanillo. I ask if he has any old photographs.

"Let me find my box," he says, and excuses himself. He pulls aside the curtain hanging over the door to his bedroom and returns with a bulging box.

"Would you believe it? This was me," he says, holding up a picture of himself flexing his muscles.

He was a body builder when he was young, and like other Jews in Manzanillo, he owned a store.

"After the Revolution, all the Jews left. I lost my store, but I decided to stay. I was a math teacher until I retired."

He gallantly comes to the door to say goodbye.… He takes hold of my elbow. His grip is still strong. He whispers, "There's something I have to tell you. That was my third wife you met. My three marriages have been with women who aren't Jewish. What choice did I have? There isn't a single Jewish woman my age left here in Manzanillo."

Excerpted from *An Island Called Home: Returning to Jewish Cuba*. Copyright © 2007 by Ruth Behar. Reprinted by permission of Rutgers University Press.

Leaf by Leaf

PAUL BERRY SEEKS TO UNDERSTAND THE TREE OF LIFE — ONE LEAF AT A TIME

by Rebekah K. Murray





Professor Paul Berry and his research team are attempting to identify all 2,000 species in the plant genus *Euphorbia*. The flowering tree pictured above is a *Euphorbia* species native to Jamaica.

WHILE ITS MOST well-known species is the poinsettia plant, there are more than 2,000 species in the plant genus *Euphorbia*. And Paul Berry plans to identify them all.

Berry, whose long list of titles includes professor in the Department of Ecology and Evolutionary Biology, Director of LSA's Herbarium, Associate Director of the Museum of Zoology, and Interim Director of the Matthaei Botanical Gardens and Nichols Arboretum, is leading a 30-member international team on this ambitious five-year project, with a $2.6 million grant awarded by the National Science Foundation.

"We want to be able to identify all species of *Euphorbia* and place them in a truly evolutionary context," Berry says. "How did they reach all corners of the earth? Why are there so many rare species? Why are certain ones poisonous?"

These are all questions Berry is asking while conducting research in his second-floor lab in the Kraus Natural Sciences Building. He is asking these questions in the field, too, as he plans research trips to the American west, to African deserts, and to the island of Madagascar.

His team, consisting of researchers in Russia, China, Korea, Mexico, and Argentina, in addition to the United States, aims to find out how, for example, one particular species of Eurasian *Euphorbia* became a weed in the Montana range land; how some of the cactus-like species in Africa are becoming extinct; and which features are unique to all *Euphorbia* species.

If the research team can effectively catalog and understand biodiversity in such a large plant genus, "we will have covered close to one percent of all flowering plants," Berry says with excitement. "This will make the whole task of inventorying plants much more achievable," and will fill in missing links in the plant family tree.

To accomplish this project, Berry will have to get his hands dirty, but he's used to it. He spent his undergraduate senior year in the Venezuelan countryside studying tropical plants in their native habitats. He graduated from Pennsylvania's Haverford College — after switching his major from French to biology — and continued to work in South America. He came back to the United States to earn a master's and a Ph.D. in biology from Washington University in St. Louis and then returned to Venezuela to work as a botanist for the next 10 years. His field work there took him into the Amazon forest, up in the Andes Mountains, and to coastlines and deserts.

It's a botanist's delight, Berry says, to be able to study plant life in so many diverse natural habitats. It's an enjoyment he shares with his wife, Lois Brako, a former botanist, who occasionally accompanies him on research trips.

Rebekah K. Murray is the Assistant Editor of LSAmagazine.



A Library of Specimens

Just a few miles from campus on Varsity Drive is LSA's Herbarium, a world-renowned research and teaching facility consisting of 1.7 million botanical specimens and specializing in the ecosystem of the Great Lakes region.

"Some of our rarest plants live along the shores of the Great Lakes," says Paul Berry, who has directed the Herbarium since 2006. But that may not be the safest place to grow, as they can be hit by waves or wind. They are also greatly affected by fluctuating water levels, Berry says.

Graduate students and Herbarium staff are studying the effects of "newly arrived immigrants" — invasive plants — and the migration of Michigan plants climatically.

The staff at the Herbarium is also seeking to become a more well-known resource. The public and researchers worldwide will soon be able to access the Herbarium's online databases to identify plants, especially those native to the Great Lakes region. In addition, faculty and staff at the Herbarium are working to produce an updated Michigan flora handbook.



3. TURN DOWN YOUR WATER HEATER THERMOSTAT.

In a typical household, the water heater thermostat is often set to 140 degrees, but 120 degrees will get the job done just as well. According to Power Scorecard, a rating mechanism that assesses the environmental impact of different types of electric generation, ***each 10 degree reduction in heat saves 600 pounds of CO_2 per year for an electric water heater,*** or 440 pounds for a gas heater.

[easy green TIPS]

(Top right) David J. Bay; (left) Paul Berry





Philip T. Dattilo

Death Becomes Her

PROFESSOR LAURA KASISCHKE STEPS UP HER *DANSE MACABRE*

by Lara Zielin

WHEN LAURA KASISCHKE WAS FIVE YEARS OLD, she awoke in the middle of the night and thought she saw the hunched figure of an old hag standing in her bedroom doorway. Her mom, instead of calming her fears or telling her the vision was the result of an overactive imagination, wondered aloud, "Maybe our house is haunted."

Kasischke, who is a Professor of English Language and of the Residential College, says it wasn't until she was older that she realized her mom's reaction might not be typical of most parents. And when Kasischke really looked back on things, she realized her mother and grandparents "were all kind of morbid," she says. They had their fortunes told, they read tea leaves, and then there was the time Kasischke's grandmother walked her down the block to show her a house in the neighborhood where a husband had killed his wife.

All the dark morbidity "gave me this sense that if you scratch the surface, violence can erupt, even in quiet little neighborhoods," Kasischke says. It is dark ideas like these that are often at the core of Kasischke's writing today. Her latest book of poetry, *Lilies Without*, includes tenebrous prose such as:

> *Once, a woman lay her head on a pillow to sleep without noticing that the pillow on which she lay her head was the tumorous, removed, left lung of her mother—*

Her novels, too, are woven together with the same dark threads. "Disturbing fiction," writes one reviewer of Kasischke's 2002 novel, *The Life Before Her Eyes*, "is fast becoming . . . Kasischke's hallmark."

Recently, *The Life Before Her Eyes* was made into a film starring Uma Thurman and Evan Rachel Wood. Thurman and Wood play the same character, Diana, in different stages of life: Thurman plays Diana as a 40-year-old wife and mother; Wood plays a teenage Diana who survives a high school shooting by telling the gunman to kill her best friend instead of her.

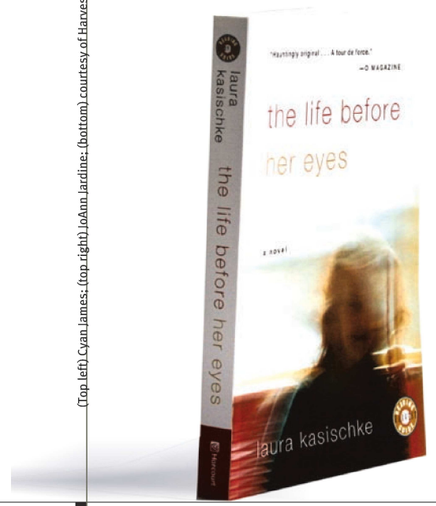
Kasischke began the book before the Columbine shootings in 1999, though she says the media messages after the tragedy helped shape her novel. "I kept hearing all this talk about 'lost potential' and 'lives that will never be.'" That made Kasischke wonder which is more real—the life a person lives, or the life a person dreams they'll live?

Kasischke says much of her fiction starts out that way—with a question she's trying to answer. "I try to answer that question through the process of writing, versus starting out with a big idea I'm trying to prove." With poetry, however, it's different. "I have to have an idea before I start [the poem]," Kasischke says. "Either I tap into the energy of the idea and get a draft down or I never write it."

Already Kasischke has a question she's trying to answer in the novel she's currently writing, which she'll describe using only a few words—"apocalyptic" being one of them.

"I've always been attracted to death and violence, even as a kid," she says. Such a notion might surprise anyone who has seen Kasischke in person. She has bright blue eyes and a personality that makes you want to inch closer—not shrink away. "I don't feel like this depressed, morbid person," Kasischke says. "Maybe I'm happy because I have an outlet for the darker stuff."

Lara Zielin is Editor of LSAmagazine.



(Top, left) Cyan James; (top, right) JoAnn Jardine; (bottom) courtesy of Harvest Press



The scenery and camaraderie of the Bear River Writers' Conference gave Baker (below) the boost she needed to finish and sell her first novel.



Kasischke, Baker, and the Bear River Writers' Conference

In June 2005, author Ellen Baker was hard at work on her novel, *Keeping the House*, when she attended the Bear River Writers' Conference—a University of Michigan-sponsored event in conjunction with LSA's Department of English Language and Literature—and signed up for a workshop with Laura Kasischke.

"Laura's workshop was full of interesting assignments," says Baker. "The assignment I remember the most was writing a bit about something in nature—I chose clouds—then thinking of a recent news story—I chose a wife who had shot her husband and let him bleed to death—and combining those two elements to create a short-short story."

The workshop exercises, coupled with Kasischke's encouragement, helped Baker continue working on and improving her novel, which was subsequently purchased by Random House in a two-book deal and published in 2007. *Keeping the House*, the story of a young Wisconsin housewife in 1950 who becomes obsessed with an abandoned mansion and the family that lived there, went on to become a Midwest Connections pick by the Midwest Booksellers Association, a 2007 Booksense Notable book, and one of the *Chicago Tribune's* picks for the best books of 2007. Baker, who is now writing her second novel, says the Bear River experience was a pivotal one in her writing career. "Bear River's environment was both relaxed and productive. You could hone your craft and at the same time really get to know other writers. It was a supportive learning environment that challenged me to put my work out there, which ultimately made it better."

The dates for the 2008 Bear River Writers' Conference, which is held annually at Camp Michigania in Boyne City, Michigan, will be May 29–June 2. Laura Kasischke will once again be hosting a workshop, along with other UM faculty members, and authors Elizabeth Kostova (M.F.A. '04) and Amy Hempel. Anyone interested in attending the conference or supporting Bear River programming can learn more at **www.lsa.umich.edu/bearriver**.



Facts, Myths, and the Grey Area in Between

by Rebekah K. Murray

TRUE OR FALSE: Birds of a feather flock conjointly?

IT'S A TRUE STATEMENT, but it doesn't have that familiar ring to it. When information is easy to understand and sounds like something we've heard before, we're more likely to believe it, says Norbert Schwarz, LSA's Charles Horton Cooley Collegiate Professor of Psychology.

Schwarz has been studying how people evaluate true and false information, what he calls truth judgments, since the mid-1990s, and the results were not what he expected.

"I did my first study thinking it wouldn't actually work," he says.

But it did. What he found was that he could manipulate the font, text size, and background color of a document and the easier the information was to read and process, the more often readers judged it as true. People even assumed if something was hard to read, it was hard to do. For example, recipes were judged more difficult when they were written in small cursive, discovered Hyunjin Song, a graduate student studying with Schwarz.

Through these studies and more, Schwarz and colleagues discovered a link between familiarity, fluency, and truth. Easy and familiar information is, in our minds, more likely to be true. What our brain often fails to remember is where and why we heard the information.

"There's the vague feeling that 'I heard something like this before,'" Schwarz says, and "once memory for details fades, familiar statements are more likely to be accepted as true rather than rejected as false."

Take the flyer on the left produced by the Centers for Disease Control and Prevention (CDC) for example. It's common for organizations to counter a myth, such as "The flu shot can cause the flu," with the facts. But Schwarz warns that by trying to discredit the false information, the myth is repeated over and over. The repetition causes the information to feel more familiar, so it's more likely to be believed.

After volunteers read the CDC flu vaccination flyer, they were immediately able to tell which statements were true and which were false. But when readers were tested just 30 minutes later, already 15 percent of the myths were mistaken for true statements, according to a study by Schwarz along with Carolyn Yoon, a UM associate professor of business and psychology, and Ian Skurnik from the University of Virginia.

What makes the repetition of myths worse for the CDC is that now the familiar message is not only more likely to be believed as true, but that "true" statement has been linked to a highly credible source—the organization that was trying to discredit it.

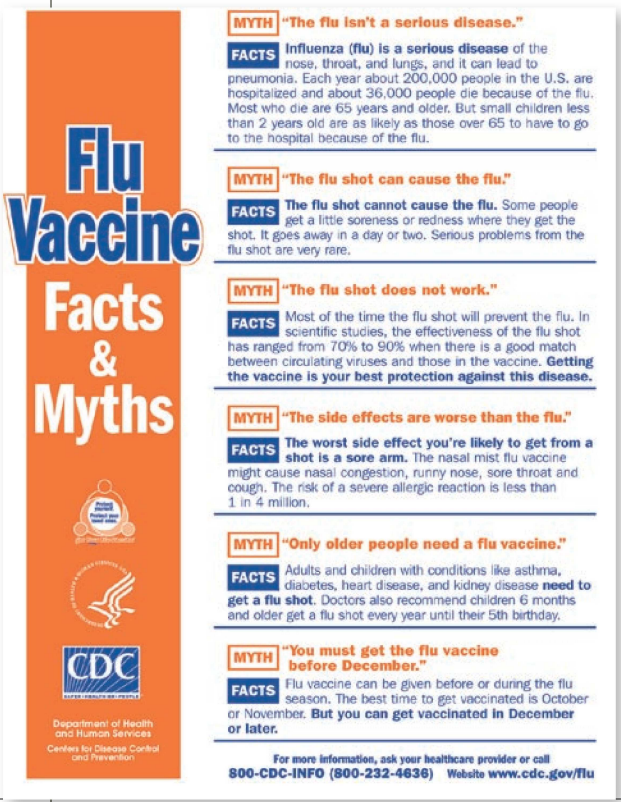
And a dramatic finding, Schwarz says, is that after reading the Facts & Myths flyer, the volunteers surveyed in his study were less inclined to get a flu shot.

So what should the CDC and other well-meaning organizations do?

Stick to the facts. "Always say what is true," Schwarz says. "Frame all things positively, and make things easy to read and pronounce."

Rebekah K. Murray is the Assistant Editor of LSAmagazine.

This CDC flyer attempts to dispel myths using facts, but that's not the best strategy, according to Professor Norbert Schwarz. His studies show that repeating a myth increases its familiarity, and thereby its believability.



Flu Vaccine Facts & Myths

CDC

Department of Health and Human Services
Centers for Disease Control and Prevention

MYTH "The flu isn't a serious disease."

FACTS **Influenza (flu) is a serious disease** of the nose, throat, and lungs, and it can lead to pneumonia. Each year about 200,000 people in the U.S. are hospitalized and about 36,000 people die because of the flu. Most who die are 65 years and older. But small children less than 2 years old are as likely as those over 65 to have to go to the hospital because of the flu.

MYTH "The flu shot can cause the flu."

FACTS **The flu shot cannot cause the flu.** Some people get a little soreness or redness where they get the shot. It goes away in a day or two. Serious problems from the flu shot are very rare.

MYTH "The flu shot does not work."

FACTS Most of the time the flu shot will prevent the flu. In scientific studies, the effectiveness of the flu shot has ranged from 70% to 90% when there is a good match between circulating viruses and those in the vaccine. **Getting the vaccine is your best protection against this disease.**

MYTH "The side effects are worse than the flu."

FACTS **The worst side effect you're likely to get from a shot is a sore arm.** The nasal mist flu vaccine might cause nasal congestion, runny nose, sore throat and cough. The risk of a severe allergic reaction is less than 1 in 4 million.

MYTH "Only older people need a flu vaccine."

FACTS Adults and children with conditions like asthma, diabetes, heart disease, and kidney disease **need to get a flu shot.** Doctors also recommend children 6 months and older get a flu shot every year until their 5th birthday.

MYTH "You must get the flu vaccine before December."

FACTS Flu vaccine can be given before or during the flu season. The best time to get vaccinated is October or November. **But you can get vaccinated in December or later.**

For more information, ask your healthcare provider or call 800-CDC-INFO (800-232-4636) Website www.cdc.gov/flu

Dirty (Green) Jobs

by Rebekah K. Murray

FOR THREE LSA STUDENTS, ENVIRONMENTAL WORK IS DOWNRIGHT FILTHY

THEIR JOBS: TO OVERCOME MUD, STENCH, MONOTONY, and overall ickiness to accomplish an environmental project while earning college credit and on-the-job research experience. From transplanting cattails, spraying herbicide, and searching for fish eggs, LSA students Emily Farrer, Matt Koski, and Dana Rudy routinely dealt with unpleasant tasks to make the Great Lakes region a little bit greener.

AN ITCHY, SMELLY MARSH

"I smelled like cattails," says Emily Farrer, explaining the rotten-egg smell that came from the sulfur and bacteria in a marsh on the coast of Lake Huron. Since 2004, Farrer, a graduate student in Ecology and Evolutionary Biology, has been braving the stench to study how an invasive cattail species is changing the natural habitat and the biodiversity in this marsh.

To do that, Farrer divided a portion of the marsh into 50 one-meter squared plots. She then transplanted live cattails and dead cattail "litter" (plant material that is left over from previous years' growth) to certain plots and left some plots with only natural vegetation in order to compare the environmental effects.

Setting up her experiment and logging the results meant long days in the marsh. She transplanted cattails by digging in the muck with trowels and her fingers to find a portion of the underground stem to cut with clippers. She also counted the stems of cattails and native vegetation by hand, and she took soil samples back to the UM Biological Station in Pellston, Michigan. The samples "made my Honda Civic stink, too," she says, and the odor announced her presence to the other researchers. "Everyone would know when I was back in the lab weighing my soil samples."

She wore gloves and boots while working in the marsh, right? "No, you kind of get used to it," Farrer says, explaining that she wore rubber boots—at least until water got in them. "Eventually, I gave up and just wore sandals and got totally wet." As far as encountering creepy-crawlies, "there are not a lot of insects," she says, "and I only saw one leech."

What she found instead were red-winged blackbirds that tried to dive-bomb her when she was close to their nests, large male carp that swam with frenzy into her legs during mating season, and swimmers' itch (bumps caused by water-borne parasites), which was inevitable after eight long hours a day in a marsh.

Despite all that, her work goes on. Farrer plans to continue her research at the marsh this

summer. "You learn a lot by being in a marsh for two months straight," she says. Her research will help others see how invasive species can alter native habitats, and her findings provide insight on what can be done to stop it. The answer is not always obvious. In the case of invasive cattails, removing the live cattails won't bring the marsh back to its native state when cattail litter has already changed the soil environment.



EMILY **FARRER**

HOMETOWN: Kalamazoo, Michigan

MAJOR: Ph.D. student in Ecology and Evolutionary Biology

RESEARCH: The negative effects of invasive cattails, Lake Huron

DIRTINESS: "I got totally wet and muddy."

MOTIVATION: "The best way to go about studying an ecosystem is to be there."



MATT **KOSKI**

HOMETOWN: Midland, Michigan

MAJOR: Program in the Environment, minor in Ecology and Evolutionary Biology

INTERNSHIP: Invasive species removal, shore of Lake Superior

DIRTINESS: "My hands would be wrinkled, sopping wet, and smelly."

MOTIVATION: "I'd wake up and realize I can be outside, hike, look at plants, and still do something I feel is important."

HOT, ENDLESS DUNES

"I really wanted to work outside; I didn't want a desk job," says Matt Koski of his decision to do a summer internship in 2006 with the nonprofit Student Conservation Association's (SCA) Native Plant Corps.

Koski worked with a team of four students at Pictured Rocks National Lakeshore on Lake Superior in Michigan's Upper Peninsula. Their job: to attempt to gain control over an invasive weed—spotted knapweed. According to the SCA, invasive species like spotted knapweed are ecologically damaging and economically destructive. They threaten native plant populations, can harm fisheries and wildlife habitats, reduce recreational opportunity, and damage agricultural land.

Koski, now a third-year student in Program in the Environment, hiked through the Grand Sable Dunes in the heat to combat these weeds, wearing long sleeves, long pants, rubber gloves, and often a hard hat and goggles. In addition, he wore a backpack that, when full, carried three gallons of herbicide.

"Using a Global Positioning System (GPS) unit, we would mark off an area that we planned to spray with herbicide," Koski says. "Then, we would line up and spray every spotted knapweed plant that we came across."

When their backpacks were empty, Koski and his teammates would walk back a half mile or so through dunes and woods to the truck to refill their packs with herbicide and start the process over, again and again. Besides the heat and chemicals, the team had to deal with the monotony of the task. "We would close our eyes and see spotted knapweed," Koski says.

To keep the mood light, the team would sing and joke around. It wasn't an easy trek through the dunes—especially with a three-gallon backpack. Once, the team had to get help scaling up the backside of a dune by tying a rope on a tree at the top of a hill.

The worst part, Koski says, was feeling herbicide leak down his back. It was dyed purple so the students could see what they were spraying. Koski's free clothes from the SCA were soon stained purple as well.

It was a long, hot, tiring, dirty job and when Koski took his gloves off, "my hands would be wrinkled, sopping wet, and smelly." But was it worth it? "It was awesome," Koski says. "I'd wake up and realize I can be outside, hike, look at plants, and still do something I feel is important."

(Top) Radka Wildova; (bottom) courtesy of Matt Koski

MUCKY, MUSKY-FILLED LAKES

In the lakes of Wisconsin's Northwoods is a fish that spawns legends. The muskellunge, or musky, has teeth, can grow to three feet, and can weigh more than 25 pounds. It takes an average angler more than 50 hours to catch one, and even then the musky is known to crack rods, strip reels, bend hooks, mutilate the bait, and do whatever else they can to escape, according to the Wisconsin Department of Natural Resources.

"Muskies are huge!" Dana Rudy ('07) confirms. She saw them last summer, while assisting a UM graduate student with a research project in northern Wisconsin. "It wasn't too hard to spot a 35-inch fish," she says, as "they are dark, torpedo shaped," and their eyes would reflect the spotlights that she and her teammates used to search for them in the dark.

The researchers were on a mission to identify and protect musky habitats. Their base was the University of Wisconsin's Kemp Biological Station. At night, the team went out with spotlights to look for muskies. When they caught sight of the fish, they recorded the GPS coordinates so they could come back to that site during the day.

In the daylight, they ventured into several northern Wisconsin lakes with waders, trays, and nets to find musky eggs. "We scooped up the sediment with nets, dumped it in a tray, and fingered through it to search for eggs," Rudy says. When they identified the eggs, which Rudy says "look like tapioca balls," the team released them back in the water and wrote down the GPS coordinates of that habitat. Eventually, a model will be produced that will allow researchers to predict musky habitats in order to protect the fish.

It was a long, cold, wet job. "Sometimes we were out searching for fish until two in the morning and then we'd wake up and start searching for eggs," Rudy says. While she didn't mind touching the eggs with her fingers, she says her hands were really cold and once she slipped and fell in the lake.

Despite the muck and vicious-looking fish, Rudy says the project was worth it. She felt good about playing a part in protecting the Wisconsin state fish.

Rebekah K. Murray is the Assistant Editor of LSAmagazine.

DANA **RUDY**

HOMETOWN: Detroit, Michigan

MAJOR: Program in the Environment, graduated December 2007

INTERNSHIP: Habitat conservation, northern Wisconsin

DIRTINESS: "I only fell in the lake once but my hands were really cold."

MOTIVATION: "It's so much fun to get outside and see what you're learning."



Joe Nohner

[easy green] TIPS



4. USE BOTH SIDES OF A SHEET OF PAPER. According to the Environmental Defense Fund, ***Americans use about 700 pounds of paper per year, one sheet every 12 minutes.*** Making the most use of each sheet of paper will consume less energy, will conserve natural resources, and will reduce paper waste.

5. USE COMPACT FLUORESCENT BULBS. Compact fluorescent bulbs use about ***one-quarter of the energy of an incandescent bulb to produce the same amount of light***, according to the Environmental Defense Fund. Their recommendation: Look for Energy Star bulbs, as they are the most energy-efficient and have been rigorously tested.





What's Different About This Class?

GUYS GRASP THAT WOMEN'S STUDIES COURSES ARE FOR THEM, TOO

by Kevin Brown

ONE MALE STUDENT IN THE ENTIRE DEPARTMENT. That's the number Valerie Traub recalls, when she declared women's studies as one of her majors at the University of California, Santa Cruz, in 1979.

Now in her fifth year as Chair of LSA's Women's Studies Department, Traub is observing a growing number of male students in women's studies courses, as well as males choosing to either major or minor in women's studies. Since 2002, 1,124 males have taken women's studies courses at UM.

"The joke in past years was that men took women's studies classes because they were a good place to meet women," says Dr. Timothy Johnson, a professor in UM's Medical School, a professor of women's studies, and one of the teachers of a women's studies course titled Men's Health. "Now men are taking the courses because they are relevant to them. They want to learn about their bodies and the health issues they and their family members may face."

The inclusion of a course focused on men is just one of the many ways in which women's studies as a field has broadened into gender studies, which analyzes how gender is constructed for both men and women.

Johnson recalls a recent anecdote from colleague Carol Boyd, Director of the Institute for Research on Women and Gender and a professor of women's studies: "She lectured last year in our class of 100 students, and afterwards said, 'I kept thinking, what's wrong with this class, what's different about this class? And then I realized half the class was men. I had never seen a women's studies class with so many men before.'"

"A few family members have teased me about it," says Andrew McBride, a junior from Bannister, Michigan, majoring in women's studies. But most friends and family support him.

"The teasing hasn't been anything harsh, nothing mean. Those few relatives have said things concerning how they don't think I'll ever get a job, how I'll never make money, and how they think I'm wasting my time."

On the contrary, McBride says his time spent pursuing women's studies has been a revelation, and he has learned valuable academic skills. "It's almost as if someone gave me a new pair of eyeglasses and the world came into focus for the first time."

He took his first women's studies class as a first-year student. "Over the course of the next year, I slowly realized that my women's studies courses were my favorites. I realized that I was using the critical thinking tools and frames of analysis that I had learned in my women's studies courses in my everyday life."

Founded in 1973 as an interdisciplinary program, LSA's Women's Studies Department is considered one of the strongest in the country. More than 30 faculty represent the humanities, social sciences, medicine, health, and the law, while another 40 faculty appointed outside the department contribute their expertise through advising students and cross-listing courses.

Traub and others in the field say the number of men will continue to grow, as male students, like their female counterparts, pursue joint majors pairing women's studies with medicine, psychology, history, or German literature. She notes there are currently two men pursuing joint doctoral degrees in women's studies (with sociology and English) at UM, the first to be admitted.

"They want to understand women and women's experience, and they believe in equality between the two genders. They want to understand women's history, psychology, reproductive health, and more," Traub says. "They have women in their lives who they want to understand. And they want to learn how to be allies with women in pursuit of social justice."

Kevin Brown is the Associate Editor of the University Record.

A "NUMBER" OF CHANGES

Since 2002, of the 8,724 students taking women's studies courses at UM, 1,124 were male. More broadly, in the last 10 years, 10 out of 514 UM students earning undergraduate degrees in women's studies were male. During that same period, seven out of 111 UM students earning women's studies minors were male.

The Ultimate Nature Hike

ANDREW SCHURR WALKED 2,700 MILES, AT TIMES BARELY SURVIVING

by Mary Jo Frank

LSA SENIOR ANDREW SCHURR LOST 20 POUNDS and wore out three pairs of shoes hiking the 2,700-mile Pacific Crest National Scenic Trail in the summer and early fall of 2007. Tested mentally and physically, he gained something priceless: confidence in his ability to keep calm in tense situations and to survive.

Braving extreme weather conditions along the trail that runs from the U.S.-Mexico border to Canada also stoked Schurr's passion for nature and conservation and helped clarify his future.

"Mankind must learn to live in harmony with nature, not work against it. All of these wonderful places and things I have experienced must be preserved so others can draw their own power and knowledge from them," writes Schurr in a 7,300-word narrative about his five-month journey that began on April 30.

The trip on foot through the southern California desert, with companion Cal Seabaugh, is the craziest thing Schurr says he has ever done. Highlights included hiking above 10,000 feet for 160 miles and celebrating the summer solstice atop Mount Whitney, the highest peak in the Sierra Nevada.

The pair endured 105-degree temperatures in the shade and 130-degree temperatures in the sun. They sought refuge under bushes by day and hiked at night. The desert heat was a sharp contrast to the numbing blizzard Schurr and Seabaugh would experience in northern Washington in late September.

"We saw bears but didn't have any problems. We had bad snow storms and soaking rains, but we made it with all our limbs," says Schurr, a student in Program in the Environment.

Schurr's through-hike was part of an independent study, which culminated with a narrative and presentation about the journey and how he changed.

Schurr was enrolled in David Michener's Built Environment class two years ago when he approached Michener about doing an independent study. In the 2007 fall semester, 2,307 UM undergraduates enrolled in one or more independent study courses, including guided research programs, research seminars, and original research.

Michener, an LSA assistant research scientist and associate curator at the Matthaei Botanical Gardens and Nichols Arboretum, says Schurr was looking for a physical and conceptual challenge. The teacher asked Schurr to write a private journal while on the trail and, ultimately, "an introspective essay about his development as a student and what he had become from an environmental perspective." A travelogue would not be sufficient.

"I put a rather nebulous and frightening demand in front of him," admits Michener, who has done field work in challenging environments, including Mexico and Siberia. "It is hard to understand what you're doing at the time. Yes, you collect specimens and log data. What really happens is it changes you.

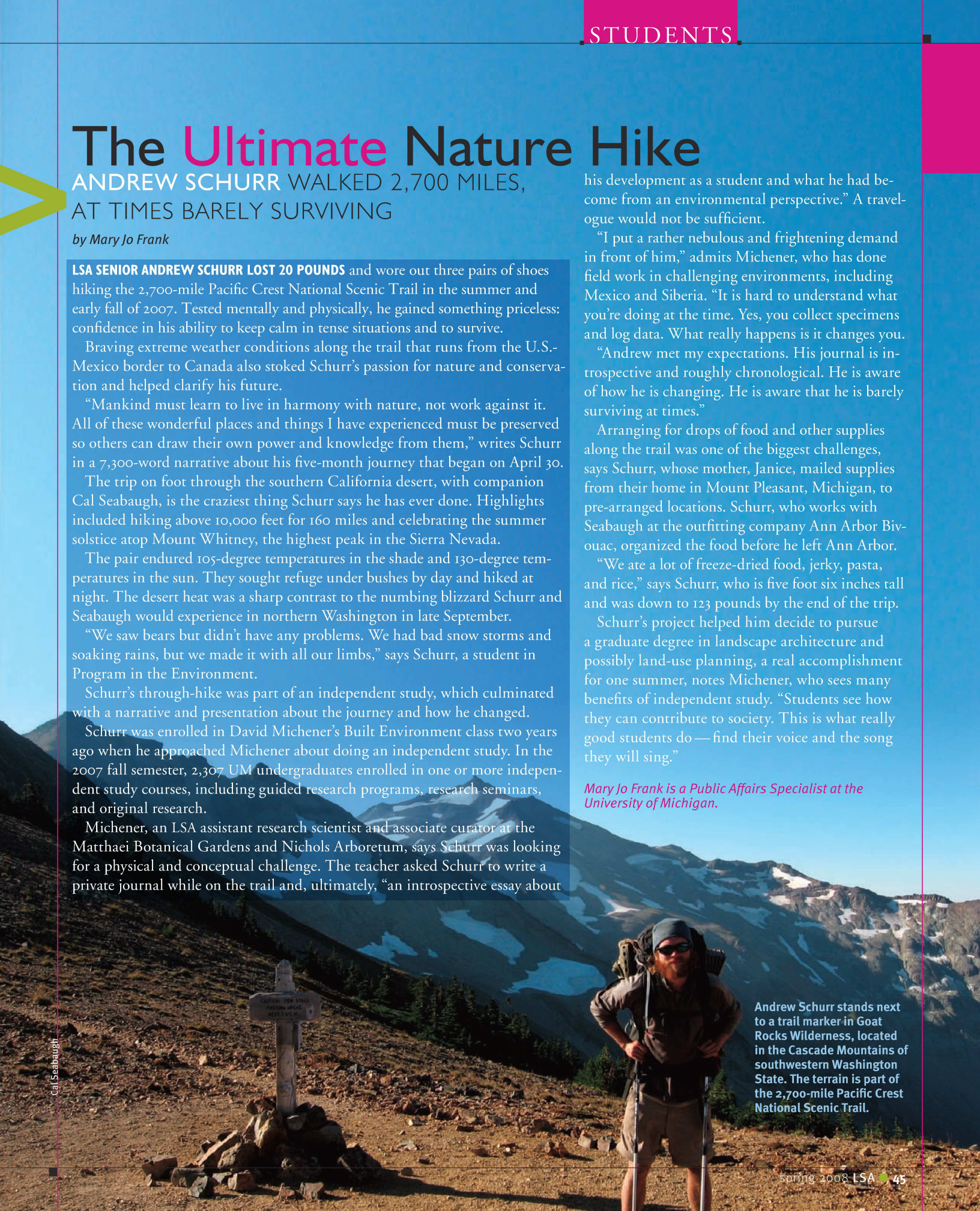
"Andrew met my expectations. His journal is introspective and roughly chronological. He is aware of how he is changing. He is aware that he is barely surviving at times."

Arranging for drops of food and other supplies along the trail was one of the biggest challenges, says Schurr, whose mother, Janice, mailed supplies from their home in Mount Pleasant, Michigan, to pre-arranged locations. Schurr, who works with Seabaugh at the outfitting company Ann Arbor Bivouac, organized the food before he left Ann Arbor.

"We ate a lot of freeze-dried food, jerky, pasta, and rice," says Schurr, who is five foot six inches tall and was down to 123 pounds by the end of the trip.

Schurr's project helped him decide to pursue a graduate degree in landscape architecture and possibly land-use planning, a real accomplishment for one summer, notes Michener, who sees many benefits of independent study. "Students see how they can contribute to society. This is what really good students do — find their voice and the song they will sing."

Mary Jo Frank is a Public Affairs Specialist at the University of Michigan.



Cal Seabaugh

Andrew Schurr stands next to a trail marker in Goat Rocks Wilderness, located in the Cascade Mountains of southwestern Washington State. The terrain is part of the 2,700-mile Pacific Crest National Scenic Trail.



Winds of Change

WIND POWER COULD TRANSFORM MICHIGAN'S ECONOMY

by Maryanne George

WIND POWER COULD REPLACE 20 PERCENT of nonrenewable energy in the United States, says Professor Greg Keoleian ('80), co-director of UM's Center for Sustainable Systems, which studies the deployment of wind systems.

First used in 200 B.C. for grinding and pumping, wind power is environmentally friendly and can dramatically reduce greenhouse gases, 80 percent of which come from fossil fuel combustion in the United States, he says.

But the United States is behind the curve with less than one percent of the nation's total electricity produced by wind. Denmark, comparatively, gets about 21 percent of its electricity from wind. Globally, the United States ranks third in the world behind Germany and Spain for installed wind capacity.

"Wind is very attractive," says Keoleian. "It is cost competitive with other forms of electricity generation, and we have substantial wind resources in the United States."

Sitting in his office at the School of Natural Resources and Environment, Keoleian gives a visitor an energy accounting lesson to illustrate wind's efficiency.

Only 30 percent of the fossil fuel energy going into a power plant is converted into electricity and the rest is lost as waste heat, he says. By comparison, over its 25-year life, a wind turbine gives back 30 times more electricity than the energy used to build it. "A wind turbine's potential to leverage our declining nonrenewable energy resources is tremendous," he says.

While natural gas prices rise and coal-fired electricity plants come under more environmental restrictions, energy from wind will become more economically competitive—increasing efficiency and dropping prices, Keoleian says. Wind power and other renewable energy technologies are an attractive way to address global warming by directly displacing greenhouse gases from fossil fuels. For example, operating a 100-watt light bulb for 10 hours results in about two pounds of carbon dioxide emissions. These emissions can be almost totally eliminated with wind power.

More than 26 states have passed laws known as Renewable Portfolio Standards (RPS) to boost electricity production from renewable sources such as wind. During her State of the State speech in January, Michigan Governor Jennifer Granholm urged the Legislature to pass such a law to produce 10 percent of the state's electrical energy from renewable sources by 2015 and 25 percent by 2025. Much of that power could come from wind.

"Experts have said that we have the second best potential for wind generation and production in the country," Granholm said in her speech. "The wind turbines we'd use to capture that power can be built right here in Michigan, because we have what's needed: manufacturing infrastructure; available factory space; a skilled workforce. And the Great Lakes are one of the best ways to ship these huge turbines."

She also urged lawmakers to pass pending energy bills that would promote up to $6 billion in investments in alternative energy by Consumers Energy and DTE, the state's largest electricity suppliers, and create 17,000 jobs, much of it to build wind turbines and wind farms.

Farmers, who lease land to power companies for turbines, could earn between $2,500 to $4,000 per megawatt annually and still use the land for crops, according to Keoleian. Communities could also see $500,000 to $1 million per 100 megawatts in tax revenue per year.

But turbines can meet resistance from residents, who object to the appearance, size, noise, and potential to kill birds, Keoleian says. "Environmentalists advocate for wind turbines but some community groups resist because they don't like the way they look," he says. "But what's the alternative, carbon dioxide and mercury emissions from coal-fired power plants?"

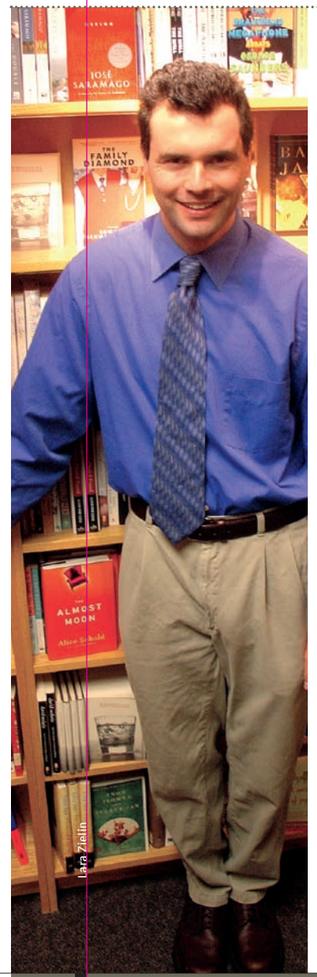
Studies show most turbines generate decibel levels of 40 or less—on par with the noise level of a quiet room, according to a study by the Canadian Centre for Occupational Health and Safety. They kill fewer birds than collisions with buildings, power lines, vehicles, and communication towers. Researchers at the Center for Sustainable Systems are studying "siting issues"—essentially questions about where to place the turbine—and also how to address the challenges faced by the intermittency of wind, he says.

"Michigan has a tremendous amount of wind resource, but wind is intermittent and does not blow all the time. Still, wind has the potential to displace at least 20 percent of the energy from nonrenewable sources without impacting the reliability of the electricity grid."

Maryanne George is the Public Information Specialist for the College of LSA.

WIND POWER

According to the American Wind Power Association, U.S. wind power capacity grew by 45 percent to 16.8 gigawatts in 2007. Texas is now the largest wind energy producing state, surpassing California.



Are Textbooks Contributing to Global Warming?

TODD POLLAK URGES PUBLISHERS TO RECYCLE

by Rebekah K. Murray

IT TAKES NEARLY FOUR MILLION TREES each year to produce the 200,000 tons of paper needed for students' textbooks—and that's only a fraction of the book publishing market.

All that paper impacts the environment, says Todd Pollak ('04), a graduate of Program in the Environment. "Many people don't realize how paper is linked to climate change," he says. "A quarter of all global warming is the result of deforestation. Trees are needed to pull carbon dioxide out of the atmosphere."

But Pollak knows that publishers aren't trying to cut down as many trees as possible, and he has a great respect for the value of books. So what's the compromise?

Recycling, Pollak says.

As a program manager for the nonprofit organization Green Press Initiative, Pollak meets with publishers and printers to encourage them to use recycled paper. Recycled paper will not only save trees, Pollak says, but it prevents paper from emitting greenhouse gases while decomposing in a landfill. The Green Press Initiative also promotes policies for energy efficiency, the reduction of carbon emissions, and encourages the use of paper certified by the Forest Stewardship Council—a nonprofit organization dedicated to the responsible management of forests.

His efforts are paying off. "This last year was pivotal in the book industry," he says. "Random House was the first large multinational publisher to make the shift to eco-friendly policies. They took action without knowing how it would affect their bottom line. For us, it was just getting them to take that first step and realize they had the power to change the market."

Now, more large publishers, like Simon & Schuster, have joined Random House and the many other small and mid-sized environmentally conscious publishers. "With the addition of these large publishers, about 40 percent of books sold in the United States are from publishers with strong environmental policies," Pollak says.

There are not many educational publishers in the ranks though—a fact Pollak hopes will change in the near future with the Green Textbook Initiative, a joint effort by the Green Press Initiative and the National Wildlife Federation.

Rebekah K. Murray is the Assistant Editor of LSAmagazine.



Breaking Ground

AN EARTH-FRIENDLY HOME MODELS A NEW WAY TO BUILD GREEN

by Sheryl James

(This page) Alumna Gail Danto (front row, right) and her husband Art Roffey (back row, left) are building a luxurious eco-friendly home. Their green building team includes consultant Jim Newman (front row), site manager Ron Gressens (back row, middle) and builder Joe Maiorano (back row, right). (Opposite page) An architectural drawing illustrates what the Danto/Roffey home will look like once it's completed.

GAIL DANTO ('73) STEPS CAREFULLY THROUGH SLOPPY mud toward a long plank that will become, one day soon, the bridge to her front door. Right now, that front door is unadorned wood framing, just like the rest of the extraordinary structure slowly taking shape on a small lake in Bloomfield Township, Michigan. Mud notwithstanding, it's a busy site right now. Nearby, masons approach stacks of the limestone mined from Wisconsin—which, Danto emphasizes, is less than 500 miles away—and "the copper people are here, too," she says. She motions first to them and then to the copper-sheathed soffits overhead. "The whole roof is going to be copper," she says. "The copper is 100 percent recycled, and it's from Michigan. So it didn't have to travel far to get here. And any scrap that comes off gets recycled."

Danto sounds as much like a tour guide as a homeowner, and there are two good reasons for that. The first is the home itself—an 8,000-square-foot home that is 100 percent earth-friendly. The second reason is that Danto and her husband, Art Roffey, have enthusiastically embraced the attention focused on this incredible project to teach and preach "green" any time they can.

So when neighbors stop by and gaze up at the house, Roffey and Danto patiently explain how all construction materials come from no farther than 500 miles away—which is why they are using limestone from Wisconsin rather than, say, Italy. This stipulation cuts down on energy used to transport these materials. The couple also describes their recycled teakwood floors; how all their other wood comes from sustainable forests; how their geothermal heating via radiant floors utilizes the earth's natural energy; and their plans for un-landscaping their property with all native plants. Hold the lawnmowers, please. (Of the very word "lawn," Danto utters, "What a waste of chemicals.")

There are few homes like this in Michigan or in the United States, but that is changing as green building becomes more and more popular. The Danto/Roffey home is, admittedly, a spectacular specimen of this new trend, and that, Danto says, is part of the plan.

"Obviously, we're doing this as a statement of our values. We wanted to show everyone that you can build a beautiful, luxurious, high-end home and still honor the environment."

The home is in line to be among several residential buildings in Michigan to be certified by the United States Green Building Council (USGBC), a Washington, D.C.-based nonprofit organization made up of members from the building industry. The USGBC provides education on sustainable building and their Leadership in Energy and Environmental Design (LEED) certification is the gold standard for green buildings. LEED certification is voluntary, but it is the only such certification uniformly offered and as a result carries great weight.

It's no wonder the Danto/Roffey home is LEED prone. It utilizes skylights, solar energy, and a Frank Lloyd Wright architectural emphasis on expansive windows, while still including everything from a mud room to a meditation room, a guest suite, work-out room, screened porch, terrace, and a small barbeque deck off the kitchen. Circular "fireplaces" employ ethanol-burning units that have byproducts of only oxygen and steam.

Admittedly, the sheer size of the home seems counterproductive, but Danto plans to host fundraising soirees there for certain causes, especially green ones. This comes as no surprise to anyone who knows her. Danto is Vice President of the Oakland Land Conservancy and is on the board of the Michigan Coalition for the Environment and Jewish Life (which offers environmental education through synagogues).

Social awareness is nothing new for Danto. When she was a student at Seaholm High School in Birmingham, Michigan, in the 1960s, she traveled regularly to centers in Detroit to tutor students. As a student at UM in the late 1960s and early '70s, she volunteered at Ozone House, working with runaways and their families.

"I loved living in Ann Arbor. I think it's a phenomenal campus. I loved all the activity, the opportunities, the groups. I really appreciated being able to go to a school that drew people from all over the world." And while she spent many volunteer hours at the Ozone House, she also spent a lot of time in the Nichols Arboretum. Danto, who has two grown children, still visits Ann Arbor frequently.

Danto earned a bachelor's degree in sociology in 1973 and was urged by professors to pursue graduate studies in the School of Social Work. But "I was tired of going to school," Danto recalls. She wanted some adventure and ended up living in California for several years. She returned to Michigan in the early 1980s and began working with HIV/AIDS patients for Michigan Hospice. "I loved it," she says. "I was there three days a week."

She and Roffey married in 1991. Roffey, a hypnotherapist and psychologist, had recently become involved in working with indigenous populations in Peru. Danto joined him, and "for the next 13 years," Danto says, "we were sponsoring workshops and taking groups down to South America twice a year. It taught us a whole different view of life. This is a very earth-based culture that honors the earth and would do ceremonies for the full moon and cycles of life and seasons." The couple helped raise funds to save the rainforests during these years.

Eventually, Roffey and Danto decided to put their energy and fundraising to use in their own backyard—hence the house and the involvement with the Oakland Conservancy. "It's a wonderful organization," Danto says. "They do great work with very little overhead, mostly with volunteers. We've conserved almost 1,000 acres in southeastern Michigan."

This seems to go hand in hand with a push in the marketplace for green building. Danto and Roffey's home involves green-centered architects, a green designer, and a green-friendly construction manager. Most of this team, including Roffey and Danto, are learning as they go. They are pioneers, in a sense, and they are breaking ground for others. Right now, the couple is paying about 15 percent more to build green. But as more people do so, the costs should come down.

Danto and Roffey broke ground for their new home in February 2007 and plan to move in this fall. They hope that as they grow old—gazing out their vast windows, watching the egrets and blue herons nest—they will witness the mainstreaming of green building and thus more preservation of planet Earth.

Sheryl James is a freelance writer and Pulitzer Prize-winning journalist in Brighton, Michigan.

WHAT IS A GREEN HOME?

One that is built to exceed the building code's minimum requirements, especially in the areas of indoor environmental quality and resource efficiency—including energy, water, materials, and land.

WHAT ARE THE BENEFITS OF A GREEN HOME?

LEED homes are environmentally friendly, including being more durable and less polluting, as well as making substantially better use of resources such as fossil fuels.

HOW ARE LEED HOMES RATED?

The LEED rating system addresses six major areas:

- Sustainable sites
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor environmental quality
- Innovation and design process

LEED information courtesy of the U.S. Green Building Council



Angie Baan of the *Detroit Jewish News*

Young & Young Architects



Meet Fake Steve

THE SECRET DIARIST OF STEVE JOBS IS FINALLY UNMASKED

by Katie Vloet

DANIEL LYONS USES A LOANER IPHONE, writes business stories on a Mac, and doesn't own a single mock turtleneck.

Until a few months ago, none of those things mattered to the world at large. But then Lyons (M.F.A. '92) was unveiled as the creator of the fake diary blog of Apple honcho Steve Jobs, a secret that Lyons had managed to keep for more than a year. It was long enough that investigative reporters were put on the case of trying to learn the Fake Steve's true identity. A dogged reporter from the *New York Times* beat out others in the race to unmask him.

Why all the hubbub? Because the blog—"The Secret Diary of Steve Jobs" (tagline: Dude, I invented the friggin' iPhone. Have you heard of it?)—is a wise and funny take not only on a mock-turtleneck-wearing leader with a reputation for being egotistical and a fiery boss, but also on the broader culture of excess and vanity in Silicon Valley.

"Apple employees, I know you're thankful for having the incredible opportunity to be working at Apple during its golden era, a.k.a. The Reign of Splendor under Good King Steven," Fake Steve writes in one post. "A few of you have even been blessed by having me speak to you. Then you rushed back to your cubicle and told all your coworkers. Maybe you blogged about it. Or you raced home and wrote it down so you can tell your grandchildren about the day I spoke to you and just like that, cured your polio."

Lyons, a senior editor at *Forbes* magazine, began the blog on a lark in 2006. A longtime print journalist, he wanted to learn about blogging; he wrote in several personas, including Jobs, Google cofounder Sergey Brin, and a hacker from Finland.

Having learned what blogging was all about—Lyons' initial goal—he stopped writing the fake diaries. It was only then that he learned how popular the Fake Steve blog had become throughout Silicon Valley and even around the world.

"People wanted to know what had happened to the blog. They were upset that it was gone," says Lyons. "I had no idea people were even reading it. People in India, Ireland, Russia—how do they get the jokes?"

But they did get the jokes, as did the millions of other people who have read the blog. Not a bad success story for a guy who once felt shunned by his fellow M.F.A. students at UM when he won the Playboy College Fiction Contest. Lyons says the cash and prestige were great, as far as he was concerned, but many of his fellow students looked down on an award associated with a magazine with such a lewd focus—no matter how many people claim they just look at the articles.

Courtesy of Da Capo Press



Dan Lyons, a.k.a. "Fake Steve Jobs."

Recently, Lyons' success story has been further amplified. He has adapted the voice and narrative style of the blog in a book, O*ption$: The Secret Life of Steve Jobs, a Parody* (Da Capo Press, 2007). "In the establishment-skewering tradition of Voltaire, Cervantes, Jonathan Swift, and Laurence Sterne we now have a voice for our own digital age," Newsweek.com says of *Option$*.

Lyons has appeared at numerous book signings and readings around the country, including an invitation he accepted from Apple-rival Microsoft to read at their campus. It is exactly the kind of thing that the real Steve would never do, but that Fake Steve couldn't resist.

For someone who skewers Jobs daily with unblunted barbs, one might assume that Lyons isn't a fan of his alter ego. Not true. Indeed, he began the blog largely out of admiration for Jobs. Lyons himself loves using Macs, and he thought at the time that "it must drive Jobs nuts" that only three percent of the market was using the Mac OS X operating system.

"I admire him, and I think he's a genius, and I don't think anyone else could have turned Apple around like he did," Lyons says. "I'm 47, and almost as old as he is. I'm not as successful as him, and I'm not nearly as cool as he is."

If it sounds like that praise will be followed by a "but . . . "—well, you're right. The more Lyons learns about Jobs, the better he understands the shortcomings of the man he thinks of as a genius.

"I don't think I'd like to work for him, or live next to him, or be related to him," Lyons says.

Now we know what Lyons thinks of Jobs, but what does Jobs think of him? Lyons doesn't ever expect to hear directly from Jobs. It would be beneath him, the Fake Steve thinks. But Jobs was quoted in the *Wall Street Journal* about the blog, and he was kind in his assessment: "I have read a few of the Fake Steve Jobs things recently and I think they're pretty funny."

High praise, indeed, from the guy who invented the friggin' iPhone.

Katie Vloet is a media coordinator with UM Medical School Communications.

(Top left) Jason Grow; (top right) Scott Soderberg, UM Photo Services



Sister to Sister

SORORITY ALUMNAE RAISE MONEY FOR SCHOLARSHIPS

"THERE IS NOTHING LIKE having a group of dynamic women come together to affect the lives of so many people," says LSA senior Dominique Sheffield, the first recipient of a scholarship from the alumnae of the Delta Sigma Theta Sorority, Nu Chapter.

In celebration of the chapter's 85th anniversary, alumnae established an endowment to fund need-based scholarships. The $65,000 they raised was matched dollar-for-dollar by President Mary Sue Coleman's Donor Challenge, bringing the total endowment to $130,000.

"This is a remarkable achievement that demonstrates what individual donors can do by working together," says alumna Kathryn Bryant Harrison ('71). "We are proud to have done so much in a relatively short period of time and are especially pleased to have been able to award two scholarships so quickly."

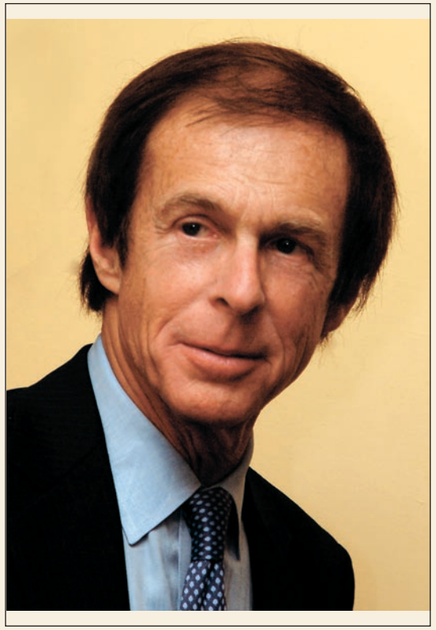
The first two $1,000 scholarships were recently awarded to Nu Chapter sorors Dominique Sheffield of West Bloomfield and Ryan Pearson of Detroit. Sheffield is the sorority's corresponding and recording secretary, fundraising chair, and assistant step master. Her majors are women's studies and pre-nursing. After graduation, she plans to enter a nursing program to eventually become a certified nurse midwife and to establish a birthing education center for women of color.

Pearson is a junior studying theater arts, who plans to become an actor, director, and writer. "It is so refreshing and heartwarming to receive a scholarship from my own sorors," she says. "It makes me reflect on all the wonderful things Delta Sigma Theta does."

Delta Sigma Theta, founded in 1913, has a membership of 200,000 predominately African-American, college-educated women and 900-plus chapters worldwide. It has distinguished itself as a public service organization that addresses the challenges of African Americans and all Americans. Over the years, the sorority has created a wide range of programs addressing education, health, international development, and strengthening of the African American family.

(Left) Ryan Pearson and (right) Dominique Sheffield, the first two winners of Delta Sigma Theta scholarships.

The College has received many generous gifts to the Michigan Difference Campaign. Each gift carries its own story. Here are a few recent ones.



Alan Sinai, Chief Global Economist and President of Decision Economics, Inc.

Beth Fridinger

An **Economical** Gift

"ECONOMIC POLICY IS IMPORTANT for the decisions at the federal and state levels that affect everyone's lives and well-being," says alumnus Allen Sinai ('61), Chief Global Economist and President of Decision Economics, Inc.

To ensure UM students continue to have talented researchers and educators, Sinai and his wife, Lee, decided to endow a professorship in macroeconomics. The couple's $1.5 million gift was matched with $500,000 from the President's Donor Challenge. The professorship, a joint appointment between the College of LSA and the Gerald R. Ford School of Public Policy, will go to a leading scholar in quantitative, policy-oriented macroeconomics.

"I have always been grateful for the outstanding education I received at the University of Michigan," Sinai says. "I majored in economics and was exposed to excellent teachers, researchers, and contributors to macroeconomic policy."

Sinai is now an internationally known and respected macroeconomist and econometric model-builder who has contributed to applied macroeconomics, the public policy arena, and academic literature. His advice has been sought by both political parties, Congressional committees, and the Federal Reserve. In addition to his LSA economics degree, he received a Ph.D. in economics from Northwestern University. He is also a member of UM's Economics Leadership Council.

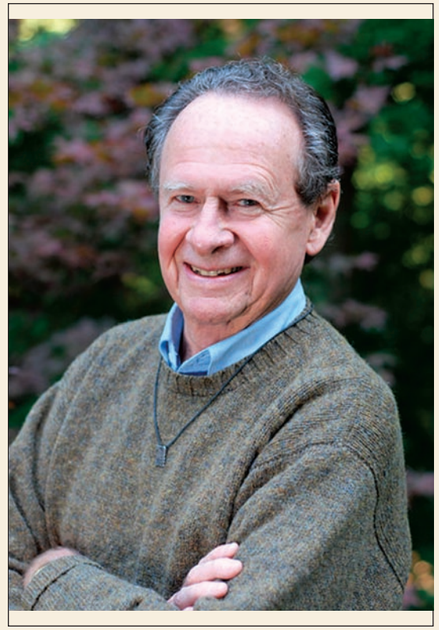
"The Allen Sinai Professorship of Macroeconomics will add additional strength to the College's nationally prominent Economics Department," says LSA Dean Terrence J. McDonald. "The interdisciplinary nature of this joint professorship and the top-notch faculty both schools will be able to attract and retain ensures that students will be trained by leaders in the field."

Portions of this article appear courtesy of *MichEcon News*.

THE PRESIDENT'S CHALLENGE

Raise money and I'll match it, challenged University President Mary Sue Coleman. In 2007, the President's Donor Challenge Fund matched gifts or pledges of up to $1 million for undergraduate need-based scholarship support. The College of LSA was pleased to raise almost $18 million. The challenge also funded 20 professorships, like the one endowed by Allen Sinai ('61) and his wife, Lee.

Recently, President Coleman issued a challenge to support graduate students. This year, gifts and pledges up to $1 million will be matched by the President at the rate of $1 for every $2 contributed. To read more about the challenge and about the remarkable accomplishments of LSA graduate students, please see the insert included in this issue of *LSAmagazine*.



Professor Emeritus Donald Munro.

Robert Ramey

A **Philosophical** Approach

by Nikki Brand

HOW DO YOU MAKE DECISIONS?

"Western philosophy often states that we do and should make decisions based on rational thought," says Donald Munro, LSA professor emeritus of philosophy and Chinese, "whereas Chinese philosophy often reports that people make choices based principally on feelings, along with beliefs influenced by those feelings."

Having students learn these different philosophical approaches—including Confucianism, philosophical Taoism, and modern Chinese thought—is important to Munro, who was Chair of the Department of Asian Languages and Cultures at the time of his retirement in 1995. So important, in fact, that he and his wife, Ann, financed the Tang Junyi Visiting Scholar Fund with the help of select Hong Kong-based donors. The gifts are now valued at more than $96,000. These funds will make it possible for visiting scholars to teach Chinese philosophy in the LSA Departments of Philosophy, Psychology, Asian Languages and Cultures, and the Center for Chinese Studies.

As a graduate student, Munro studied the Confucian and Taoist classics in Taiwan and Kyoto. In 1962, he studied in Hong Kong with Tang Junyi, the fund's namesake. "While I was an undergraduate student, to study philosophy meant studying Western philosophy," says Munro. "It was only later that Confucianism began being taught. I believe it is long past time to treat Chinese thought as equally worthy of study among philosophies."

Munro says one of the reasons he chose to name the fund after Tang is that Tang taught Chinese thought—both traditional and his own original works—instead of merely transporting Western philosophy to China. He also helped develop a liberal arts program at New Asia College, now part of The Chinese University of Hong Kong. It was there that Munro became the 2006 Tang Junyi Visiting Professor in the Department of Philosophy.

"Right now," says Munro, "there is a struggle in China as to whether colleges and universities should promote so-called 'new economy knowledge skills' that will further the economic growth of their country, or whether they should also promote a liberal arts framework to help students become persons who make better decisions for themselves and their society. This means learning to consider the long-term human consequences of choices, not simply the short-term economic ones. An awareness of human consequences can be taught through the study of the humanities in various civilizations and how they record cultural differences and universal experiences."

Nikki Brand is a journalist and freelance writer based in Flint, Michigan.

The College has received many generous gifts to the Michigan Difference Campaign. Each gift carries its own story. Here are a few recent ones.



Donald Brown, an educational pioneer who helped establish LSA's Residential College.

Craig Regester

A Residential College **Scholarship**

by Kristy Demas

"WHEN I STARTED as an assistant professor many years ago, I made $3,600 per year," says Donald Brown, LSA professor emeritus of psychology. "My wife, June, and I were about to have our second child, so I complained and got a raise—to $3,700 per year."

Life for the Browns has changed more than a little. Recently, the Browns gave $100,000 to the Residential College (RC) for need-based undergraduate scholarships. "June and I never imagined we'd have the resources that we do today through careful saving," says Brown. "We are not wealthy, by any means, but we do want others to have the chance to learn and experience what the RC has to offer."

Brown is uniquely qualified to understand exactly what kind of offerings those are, as he was part of the RC's inception. His research in the early 1960s motivated him to consider alternative educational models, which led him to help foster a UM setting where students' interests and educational experiences could be shaped by their environment. The Residential College, a four-year interdisciplinary liberal arts program, was founded in 1967 as a community where students live and learn in the same physical space.

Brown's teaching career is an example of the type of interdisciplinary scholarship the RC stresses. In the 1990s, Brown came out of retirement to teach history. As a soldier and survivor of World War II, Brown made it his mission to educate students so the war and its consequences would never be forgotten. He is uniquely qualified because, on April 29, 1945, his U.S. Army troop took part in the liberation of the death camp at Dachau. The seminar he teaches uses videos, written accounts, and visits from veterans to illustrate this history. Some of Brown's guest speakers are relatives of his students who come to the classroom to "make history come alive."

The Donald and June Brown Scholarship Fund for students in the Residential College will ensure more RC students have the funding they need for an unparalleled UM education. Several RC alumni, faculty, and friends have added to the Brown gift, and their dollars, like the Brown's, have been matched by the President's Donor Challenge for need-based undergraduate support.

Kristy Demas is a writer with LSA Development, Marketing and Communications.

SAVE A STAMP

Give your gift to the LSA Annual Fund online:
www.lsa.umich.edu/lsa/alumni/annual



David and Ilene DeYoe were inspired by their daughter Mary's enthusiasm for art history.

Courtesy of David and Ilene DeYoe

A **World** of Opportunity

by Lara Zielin

IT'S ONE THING for a student to be inspired by a professor, but for that student's parents to get inspired, too, is quite another. Yet that's exactly what happened to Ilene and David ('70) DeYoe, whose daughter Mary ('05) was so impassioned by her history of art classes, especially those taught by Professor Howard Lay, that she stayed at UM an extra year so she could add history of art as a second major.

"Mary worked on her honors thesis with Howard," says Ilene, "and we watched Mary's world open up because of everything she was learning. But she wasn't just discovering more about art history—it was history, economics, politics, everything."

Mary's excitement became David and Ilene's excitement, which increased when they met Lay in person. "We really got to know him," says Ilene, "and we saw how he developed a relationship with his students. Overall, the department felt wonderfully small and personal, and I kept wondering if there was something we could do to raise money for them."

Ilene and David decided to host a luncheon at the Art Institute of Chicago to increase support and awareness for the department. The DeYoes also gave their own gift to the department's Explorations in Art and Visual Culture endowment fund.

The DeYoes' gift was matched by an anonymous donor with a passion to ensure students receive firsthand exposure to original works of art throughout the world. The Explorations in Art and Visual Culture fund will enhance classroom instruction by supporting excursions to major collections locally, domestically, and abroad. Contributions to this fund are still being accepted, and any gift made before December 31, 2008, will be matched by the private donor on a two-to-one basis.

"I always thought you could look at a book of reproductions and that would be good enough," says Ilene, "but I know now it's not the same."

David agrees. "These kinds of experiences are the beginning of what it means to be a better-educated person and a better participant in this world," he says.

The DeYoes say their involvement with the History of Art Department has caused them to rethink what it means to be truly connected to the University of Michigan. "David graduated from UM in 1970, and I studied there in graduate school for a year," says Ilene. "Our oldest son Andy ('03) and our younger daughter Emily ('07) went to UM, our youngest son Peter, a high school senior, will attend UM this fall, and Mary had always wanted to go there. We were like so many families that bleed maize and blue, but there was no real attachment to anything specific, to any department. It sounds cheesy, but through the History of Art Department, a big world opened up to Mary. And now, it's opened to us."

Lara Zielin is Editor of LSAmagazine.



Fueling the Next Century

TOM FEHSENFELD WORKS TO MAKE GAS GREEN AND CLEAN

by Kristy Demas

BEING "GREEN" AND A LEADER in the fuel business doesn't seem to go hand in hand, but for Tom Fehsenfeld ('71, M.B.A. '74), it's a formula for success. As president of Crystal Flash Energy, one of Michigan's largest suppliers of energy-related products and services, he's helping advance fuel and energy technology by experimenting with processes like recycling and reusing motor oil, and developing and distributing soy-based fuels.

The fact that he's on such a green path may surprise some due to the business he's in, but Fehsenfeld grew up recognizing the importance of taking care of the environment.

After graduating from UM with an undergraduate degree in general studies and an M.B.A. from the Ross School of Business, Fehsenfeld returned to Crystal Flash Energy, a gas station and fuel distribution business in Grand Rapids, Michigan, that has been in his family for generations. "I spent 14 years working in various management positions before being appointed president in 1989," he says. "My favorite job during that time was developing our gas station/convenience stores. We did very well with them through the 1970s and '80s."

By the mid-1990s, however, Crystal Flash Energy was struggling to make ends meet against a recent proliferation of large multinational gas station chains. At the same time, expensive regulatory mandates, such as those placed on underground gasoline storage tanks, were making it difficult for smaller gas station chains like Crystal Flash to remain profitable.

Fehsenfeld boldly sold the majority of Crystal Flash's stations in order to concentrate on fuel distribution and sales. He was also searching for a way to anticipate environmental regulations instead of simply reacting to them. "I had an early interest in environmental sustainability, but being in this business also taught me that I'd be ahead of the game if I could head off environmental issues before they escalated," he says.

So Fehsenfeld helped form the West Michigan Sustainable Business Forum, made up of leaders from business, government, consulting, and environmental advocacy organizations. Utilizing peer-to-peer learning strategies, the forum helps organizational leaders identify and implement environmentally progressive and sustainable practices. Fehsenfeld says that by looking beyond current regulations, members are able to pursue strategies that result in financial wins and prevent serious liabilities.

For instance, Crystal Flash now collects used motor oil at recycling stations that are open 24/7. The used oil, which in the past may have been dumped as waste and would have contaminated ground water, is now a profit-generator: The company picks up the oil, cleans it, and distributes it to local businesses for use as an industrial boiler fuel.

Fehsenfeld is also pursuing the creation of soy-blended fuels. According to Fehsenfeld, these fuels are becoming more widely used and accepted — with the bonus that they burn better than traditional fuels, have fewer emissions, can lower maintenance costs, and can increase the number of miles per gallon in older vehicles.

Fehsenfeld emphasizes he is ultimately in business for profit, yet his best-practice approach gets results he can literally take to the bank. "For the customer that is concerned about natural resources, being considered a green business gives you a leg up in the industry," he says.

Fehsenfeld's first exposure to combining business and the environment occurred as a student. He took one of the first classes at the Ross School of Business on business ethics. Taught by Professor Merle Crawford, the course asked students to become more aware of the social issues that arise when running a business. Crawford encouraged students to come up with ways to be better business people, including stewarding the environment.

Fehsenfeld's education still plays a part in his work today.

"If I had just received a business degree, it would have narrowed my focus," he says. "A liberal arts education allows you to approach problems more globally and holistically. There are more sources of information to think through, which helps you make a more balanced decision."

Kristy Demas is a writer with LSA Development, Marketing and Communications.

Patricia Claydon







Bin There, Worm Crap

A UM GROUP HELPS THE COMMUNITY COMPOST WITH WORMS

by Sally Pobojewski

Erin Kelly (top) shows participants who attended a recent build-your-own-worm-bin demonstration how to drill holes in a plastic tub, while Kate Ennis (bottom) uses a modified milk carton to scoop up worms and give them away to the new composters.

Robert Ramey

HEALTHY EATING COMES WITH A LOT OF GARBAGE. It's easy to recycle cardboard pizza boxes and take-out containers, but what do you do with all those vegetable scraps and orange peels? Composting is the best solution for the environment, but creating and maintaining a compost pile is hard work and not feasible for UM students who live in dorms or apartments.

Kate Ennis and Elissa Chasen, graduate students in the UM School of Natural Resources and Environment, say the answer is to let worms do the job for you.

Chasen and Ennis work for Cultivating Community, an educational outreach program affiliated with the Matthaei Botanical Gardens. The program is designed to give students hands-on experience in vermicomposting—a technique that uses worms to digest food waste and quickly turn it into a natural source of concentrated, enriched compost otherwise known as worm castings.

"Given the right living conditions, worms can eat one pound or more of food scraps per square foot [of surface area] every week," says Ennis.

Chasen and Ennis are responsible for the care and feeding of four colonies of red worms, called *Eisenia foetida*, that live in large plastic bins at different locations around campus. They are not the same earthworms found in garden soil; red worms prefer to hang out in piles of decaying compost, manure, or rotting vegetation where they are free to engage in two of their favorite activities: eating and pooping.

All year long, the worms eat potato peels, apple cores, and other fruit and vegetable food preparation scraps from UM dining hall kitchens that otherwise would go to landfills or down garbage disposals, into the municipal wastewater treatment system. In the spring, UM students collect the worm castings and use them to fertilize several organic vegetable garden beds, which are planted and maintained by students. Vegetables grown in the gardens go back to dining hall kitchens to feed UM students or are donated to Food Gatherers, an Ann Arbor food bank.

Part of Ennis' and Chasen's job is to educate the UM community about the advantages and simplicity of vermicomposting. Even students living in small apartments can do it, says Ennis. All you need to get started is a 10-gallon dark plastic container, a power drill, some shredded newspaper for bedding, and a starter supply of worms.

Drawn by the lure of free worms, five people showed up on a cold night in December for a build-your-own-worm-bin demonstration at the Arboretum's Burnham House, where one of the program's large worm composting bins is located.

Among those attending was Toni Guzzardo, a gardener and former UM student who works for the dining service in Stockwell Residence Hall. Guzzardo heard about the event from a friend "who loves her worm bin."

The first step in making a worm bin is drilling lots of holes for drainage and aeration in the bottom and sides of the plastic container, Ennis explains. The worms aren't fussy about living conditions, but maintaining the right amount of moisture is important. "You want the mixture to be fluffy," she says. "If the soil is too wet, they'll suffocate."

Using a garden fork, Ennis gently pulls back a thick layer of dark brown worm castings in the large bin to reveal the mother lode of wriggling red worms.

"They're definitely having babies," Ennis says as she scoops up a handful of newly hatched worms and dumps them into Guzzardo's bin. "It's gross at first, but you get pretty used to touching the worms after awhile."

Maintaining a worm colony is easy, Chasen says. About once a week, you just throw in some fruit and vegetable scraps, make sure there's enough water, and stir the mixture thoroughly with a garden claw. "They'll eat eggshells, lettuce, and vegetables, but no meat or dairy products and no bread," she says. As long as the worms stay healthy and keep eating, there should be no problems with odor or insects.

Two weeks later, Toni Guzzardo confirms that the worms she received at the Cultivating Community demonstration are hard at work in their new home. "The bin is sitting in the basement and the worms are happily munching away on salad scraps," she reports. "They are producing enough organic waste that I'll probably have to take some of it out from time to time and save it to use in the spring."

Sally Pobojewski is a freelance science writer who lives near Chelsea, Michigan.

HOW TO BUILD YOUR OWN WORM BIN

Follow these simple steps to experience the wonders of vermicomposting:

1. Buy a 10-gallon dark plastic container
2. Drill lots of holes in the container's bottom and sides for aeration and drainage
3. Fill the container with shredded newspaper
4. Add the red worms
5. Add eggshells, lettuce, and vegetables but no meat, dairy, or bread
6. Close the bin, but check the moisture levels regularly and make sure the paper is fluffy
7. Feed the worms once a week, stirring the mixture in the bin
8. Use the vermicompost in the spring, but don't add the worms to your garden—they're invasive.



6. USE NATIVE PLANTS IN LANDSCAPING. Studies indicate that the average suburban lawn is deluged with ***10 times as much chemical pesticide per acre as farmland.*** Native plants don't need any chemical fertilizers, and they often require less maintenance, less water, and cost less to implement and care for than a traditional lawn.

7. USE NATURAL CLEANERS. Once cleaning products go down the drain, they can dirty our planet. Buy cleaning products that are non-toxic, biodegradable, and made from renewable resources, or create your own all-purpose cleaner by ***mixing vinegar or baking soda with a little warm water.***

[easy green] TIPS





THEN & NOW

Fuel-Efficient Cars

LSAmagazine continues its series documenting UM in the past and today.

by Breeanna Hare and Rebekah K. Murray

In 1972, when the photo on the left was taken, UM students were building an innovative, safe, fuel-efficient vehicle.

Industrial design students Mitch Walker, Tom Newhouse, and Mark Bonnette are shown here with a full-scale model of UM's Urban Car One-Thousand, which appeared at the North American International Auto Show. After this event, students built the prototype to enter in an Urban Vehicle Design Competition. Bonnette (UM '72) recalls that industrial design students built the body and safety bumpers while automotive engineering students built the chassis, suspension, and drive train. The car had a Wankel engine that engineering students modified to create the fuel-efficient, low-polluting package—a type of engine used by Mazda today.

Courtesy of the Bentley Historical Library

Robert Ramey

Sixty-four North American universities entered the 1972 contest, and although the best-in-show prize went to UCLA's hydrogen-fueled AMC Gremlin, UM students haven't stopped searching for inventive and resourceful ways to improve transportation.

Now, not only do UM students present pioneering concept vehicles, but they compete worldwide to design, develop, finance, and race solar-powered vehicles. In the last 15 years, the UM Solar Car Team built eight cars, won four national championships, and placed third in three world competitions.

This year, the team is again ready to race and win. UM engineering students Brooke Bailey, Tom Carroll (UM '07), and Alex Dowling are shown in the photo on the right at the unveiling of the 2007 solar car. The UM team has been preparing for more than two years to compete against other collegiate, corporate, and private teams. This past October, the team placed seventh in the Panasonic World Solar Challenge—an 1,800-mile trek through the Australian Outback. In July, UM will compete in the North American Solar Challenge and traverse 2,400 miles of urban and rural highway across the United States and Canada.

Breeanna Hare ('07) is a former LSAmagazine *intern and Rebekah K. Murray is the Assistant Editor of* LSAmagazine.



Green Greeks

UM SORORITIES AND FRATERNITIES PLEDGE TO HELP THE ENVIRONMENT

by Breeanna Hare

PICTURE THIS: It's finals week, and coffee cups and aluminum cans are overflowing all the garbage receptacles on campus, and—depending on the exam grade—bluebooks are as well. While recycling is a seemingly small action, it can make an incredible difference, say members of Green Greeks.

The organization began in 2005 to introduce the Greek community to eco-friendly practices. "Now that I live in a fraternity house, I see daily how much waste there is," says fourth-year student and Green Greeks president Matt Raubinger. "People just aren't in the habit of recycling."

Raubinger, who began a recycling program at his fraternity, Chi Psi, before he knew Green Greeks existed, says the mission is to show students that small things make a difference, and to help provide students in off-campus housing the information they need in order to recycle.

For example, "Green Greeks gives students the information they need to set up recycling with the City of Ann Arbor," says third-year Alpha Chi Omega member and Green Greeks executive board member Leslie Zaikis. "We're college students and making the effort to recycle can be hard. Green Greeks tries to make it easier."

While many environmental activists stress the need for solar paneling and driving hybrid vehicles, Green Greeks recognizes the importance of small steps toward sustainable practices. Just getting fraternity brothers to use less water would be an accomplishment, says Raubinger.

The best way to succeed is to make eco-friendly habits fun, Zaikis says. So Green Greeks hosted events at Leopold's on Main Street to support the zero-waste brewery, and held a recycling competition during Greek Week, where part of the money raised was donated to the Ecology Center in Ann Arbor.

Green Greeks hopes that if their organization can make changes, the rest of the campus will catch on.

Breeanna Hare is a former LSAmagazine *intern.*

GREEK POWER

The Green Greeks Recycling Competition in 2006 raised almost $1,500 dollars for Greek Week charities and saved more than 60,000 cans and bottles from the landfill.

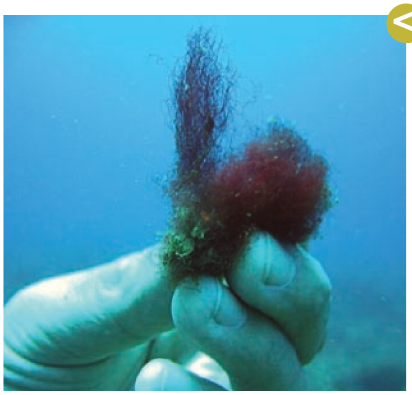


8. DON'T DRIVE WHEN YOU CAN TAKE MASS TRANSIT, SHARE A RIDE, OR CARPOOL. Consider these numbers, says Green Living Ideas: if a bus were traveling at capacity, it would be carrying 50 to 80 passengers. ***That's 40 to 70 cars.*** But a bus only occupies the space of 2 or 3 cars, has a much higher per-person fuel economy, and as a result, emits much less pollution and fewer greenhouse gases.

[easy green] TIPS

(campusnews)

Coral Reefs and Cancer Drugs



University researchers have acquired a new molecular tool that could help them transform a toxin from coral-reef bacteria into a next-generation cancer drug. Life Sciences Institute (LSI) researchers David Sherman and Janet Smith led a cross-disciplinary team that uncovered new functions for an ancient, well-known family of proteins found in many organisms, from microbes to humans. The discovery of the protein's new roles adds weapons to the arsenal of "synthetic biologists" who rearrange the building blocks of natural substances in an effort to make better pharmaceuticals, says Sherman, the Hans W. Vahlteich Professor of Medicinal Chemistry at the College of Pharmacy and Director of LSI's Center for Chemical Genomics.

Student Satisfaction vs. Student Achievement

Parents prefer teachers who make their children happy even more than those who emphasize academic achievement, a recent University of Michigan study shows. When requesting a teacher for their elementary school children, parents are more likely to choose teachers who receive high student satisfaction ratings than teachers with strong achievement ratings, says Brian Jacob, the study's co-author and director of the Center on Local, State and Urban Policy at the UM Gerald R. Ford School of Public Policy.

These findings, however, mask striking differences across schools. Families in higher poverty schools strongly value student achievement and appear indifferent to the principal's report of a teacher's ability to promote student satisfaction. The results are reversed for families in wealthier schools.



REBUILDING MICHIGAN'S ECONOMY

A new partnership, the Michigan Innovation and Entrepreneurship Initiative, is drawing on the state's public universities, philanthropic foundations, and private enterprise to strengthen ties between academia and industry, speed the commercialization of university research, and promote a culture of entrepreneurial risk-taking. After being awarded $2 million in seed money from the C.S. Mott Foundation to plan this initiative, UM is joining with the Council of Michigan Foundations, leading private foundations, and other public universities throughout the state to launch the initiative. "There are many, many details to process, but this should not hinder us from finding ways to jumpstart the Michigan economy," says UM President Mary Sue Coleman.

NEW PEACE CORPS GRADUATE PROGRAM

Peace Corps volunteers across the country can apply to the new UM Peace Corps Fellows/USA program to earn a master's degree at any point following their Peace Corps service. The UM fellows program provides tuition assistance and an opportunity to apply their studies in the community. As part of the program, returned Peace Corps volunteers will have the option of applying to UM's School of Natural Resources and Environment or the Gerald R. Ford School of Public Policy. UM hosted the famous John F. Kennedy speech launching the idea of a Peace Corps in 1960, and today is a top-ranked university for Peace Corps volunteers with 82 graduates currently serving across the globe.

Engineering + Sustainability

Students this fall can enroll in UM's new dual-degree master's program in engineering and sustainability—the first in the nation. The Engineering Sustainable Systems (ESS) degree program will educate engineers on how to integrate the principles of sustainability into their work as professionals resulting in, for example, civil and environmental engineers who can minimize the watershed impacts of a new road, chemical engineers who can adjust biofuel recipes to use less water, and mechanical engineers who could design more fuel efficient vehicles using greener manufacturing processes.



OLDER WORKERS STRESS LESS

Older workers generally report low levels of work-related stress, according to a study by UM's Institute for Social Research (ISR) and funded by the National Institute on Aging. Results from the study also indicated that workers who experience less job stress are more satisfied with their lives and are overall in better physical health compared with those who report higher levels of job stressors.



In this **LSA Perspective, LANA POLLACK** ('65, M.A. '70), President of the Michigan Environmental Council, argues that the academy can be at the forefront of climate change policies, leading the way to a sustainable future.

Turning Up the Heat

Should universities do more for the environment?

by Lana Pollack

MY HUSBAND, PROFESSOR HENRY POLLACK, and I first co-taught our Science and Politics of Global Warming course at UM in January 2000. Henry had been teaching science to UM students for almost four decades; conversely I'd once planned, as a UM first-year, to leave science behind as soon as I could fulfill the requirement. I could never have anticipated that, 40 years later, my profession and that of my scientist husband would be so closely linked by his climate change research and our common environmental concerns that we'd be sharing an entire UM course.

Two decades after we met in 1960, Henry and I were still on very separate professional paths. I was teaching dance and had yet to discover my political career. But by the mid '90s, with my service in the Michigan Senate and my not-quite-successful leap to the U.S. Senate behind me, I found myself looking for another career where I could make a difference. Environmentalism beat out my other passions as I realized environmental concerns can unite diverse populations—and there was a timely opening for the position of President of the Michigan Environmental Council (MEC).

I have been President of MEC for 12 years now, but have admired the organization for much longer. When I faced complex environmental issues in Senate committees or floor votes, this organization, with its small staff and key members who were trustworthy and informed, had offered sound guidance.

MEC, a coalition of environmental groups, was founded in 1980 to provide a voice for the environment in Michigan's capitol. Today, it is respected in Lansing and by Michigan's Congressional delegation in Washington, D.C., for its deep environmental knowledge and political savvy. In both open legislative forums and political backrooms, where important environmental deals are made, MEC is virtually always at the table to advance level-headed policy solutions and stop short-sighted missteps.

The Global Warming course my husband and I taught in 2000 was based on my experience in the Michigan Senate and at MEC—and of course his research into the earth's temperature and climate history. It was also based on what we had learned from each other about the stunning lack of scientific literacy among many elected public officials and the generally low political IQ of the university community.

I knew that precious few politicians understood how science works—how scientists put forward their hypotheses to be tested and challenged by their own data and analysis, and how their peers often tear into the work with a competitive energy of a football game in the Big House. I knew most policy makers didn't appreciate that the scientific ideas surviving these challenges are largely strong and credible—and sometimes very important.

On the other hand, many academics don't understand the world of politics. In 2000, they certainly didn't recognize that the multi-million dollar campaigns waged by oil, coal, electric utilities, and auto interests had long dominated media coverage of climate change, effectively obfuscating and casting doubt on the science that identified anthropogenic causes of global warming.

In the years since we taught that first course, faculty and students—as well as the media and many politicians—have mastered greater understanding of anthropogenic global warming mechanisms. Yet humankind's most pressing issue has caused little more than a ripple on this campus.

While green issues have garnered some attention—UM buildings are greener and transportation is cleaner; students organize forums; research continues; and classes proliferate—I believe UM can do so much more.

For example, UM could follow the lead of the University of Minnesota and become the second university in the Big Ten Conference to join the American College Presidents Climate Commitment (ACPCC). This organization recognizes that universities can exercise leadership by crafting ways to minimize their own emissions. Membership in this elite group of colleges and universities requires a comprehensive institutional greenhouse gas inventory, and then a plan with a specific date to go carbon neutral.

Research and teaching are no longer enough to create a sustainable world. If we believe that higher education has an obligation to lead, not follow, politicians, we must work together to enact change.

If this great public university is really to be the leader and best, it will take all of us. UM regents, administration, students, faculty, staff, and alumni will all have to demonstrate that commitment with measurable, reportable behavioral changes in order to make this a sustainable campus.



Courtesy of Lana Pollack

(Top) Courtesy of the Bentley Historical Library; (bottom) Scott R. Galvin, UM Photo Services

Lana Pollack has served as the Michigan Environmental Council's President since 1996. In 1982, she was elected to the Michigan State Senate where she represented Washtenaw County residents for 12 years. In 2002, Pollack was inducted into the Michigan Women's Hall of Fame. In 2003, Michigan Governor Jennifer Granholm appointed Pollack to the Michigan Land Use Leadership Council, and to the Michigan Climate Action Council in 2008 to help develop a plan for the state to reduce its greenhouse gas emissions. Pollack currently serves on the Michigan Natural Resources Trust Fund Board and as a trustee for the alternative energy organization, NextEnergy. She is married to Henry Pollack, a UM professor emeritus of geophysics.

(Top) In 1970, students at the University of Michigan embraced calls for an environmental revolution by marching on campus, building grassroots support for the first Earth Day. Since then, UM has constructed green buildings, supported more than 185 green initiatives, and in 2007 received a B+ on the Sustainable Endowment Institute's College Sustainability Report Card, one of the highest grades for a large public university. But can more be done? According to one study, cutting UM's utility bills by one percent could save $400,000 to $600,000 per year, and some environmentalists argue that more direct action outside the classroom is required.

(Bottom) Energy Fest, an annual event on UM's Diag, combines information and entertainment to showcase UM's commitment to energy conservation, energy efficiency, and alternative energy technologies.