Spring 2006

Spring 2006

PERSPECTIVES
SPRING 2006
RESEARCH AND CREATIVE ACTIVITIES
SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

BEATING THE ODDS

Pairing Research and Treatment to Help Problem Gamblers

ALSO: CAR TALK ✠ THE ROAD LESS TRAVELED ✠ HORRORS!

This issue of *Perspectives* looks at some topics that touch on how we spend our free time—for better and for worse.

In the past two decades gambling has evolved from a very restricted activity into one that's widely available to U.S. citizens. For some, however, this choice of entertainment becomes a crippling addiction. This issue's cover story explores the combination of research and treatment being undertaken at the University by a faculty member and his graduate students to tackle the problem.

Other feature stories in this issue examine the horror movie genre here and abroad, profile a retired SIUC botanist who took the lead in publicizing the scenic treasures of our national forests, and look at the dangers of cell-phone use while driving. Several of these articles, and three of our Research Survey pieces, feature recent books by our faculty that are of particular public interest—on topics from rock & roll to the effectiveness of police gang units.

High-tech research continues to blossom at SIUC as well. We have nearly 40 patents pending in materials science, biotechnology, environmental and energy applications, and other areas. This past February we celebrated the opening of the first new building of several planned for the Southern Illinois Research Park. More than $2 million in federal support to date has fueled the research park, designed to help bring University innovations out of the laboratory and into the marketplace.

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PERSPECTIVES

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SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

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SMOOTH SAILING

Like the hips and knees they replace, artificial joints won't last forever. But with a little tweaking, they could last at least as long as their owners, an SIUC research team believes.

Peter Filip (right), director of the Center for Advanced Friction Studies, is coordinating the team's efforts to create a biofriendly nanomaterial that could be used as a coating on medical implants to reduce everyday wear and tear.

The coating also would prevent corrosion, which can cause infection and implant rejection.

Joint implants typically last 15 to 20 years, Filip says. With seniors living longer and staying more active, and with more and more younger people getting implants because of athletic injuries or genetic problems, implant failure is of growing concern.

In modular implants (those with two or three parts), failures generally happen because of what Filip calls "micromotion"—the imperceptible movement of even the most perfectly machined and fitted modules as they rub against each other. That motion enlarges the opening in the bone that houses the implant. Replacement implants to fit that larger opening aren't always feasible, especially because micromotion weakens the bone, Filip explains. "If the implant can't be replaced, the person might wind up in a wheelchair."

Filip's research focuses on how the structure of metal and ceramic composite materials affects their properties. He decided to take a closer look at artificial joints after D. Gordon Allan, who heads the SIU medical school's orthopedic surgery division in Springfield, asked him why implants removed from patients had failed.

The research team's solution involves stopping both micromotion and corrosion by applying an infinitesimal layer of "noble metals" (such as gold, silver, and platinum) mixed with salt-like nitrogen compounds.

"These are all known materials, but they are combined in different ways to make totally new materials on a nanoscale (just a few atoms thick)," Filip says. "They are highly resistant to corrosion and have a high degree of friction, and they're very versatile. Different arrangements (of the components) will influence those two properties."

Friction acts like glue—the more there is, the stronger the bond, which reduces micromotion. But joints also have to move, and that's where the versatility comes in.

"We put two coats on an implant," Filip says. "The first coat is slippery to allow the movement. Then we change the chemistry, and we change the current and the voltage we use to deposit the coating on the implant, and we put the second coat on in a different place where it can act like a glue to hold the parts together."

Physicist Samir Aouadi's expertise with coatings allowed the team to develop these new nanocomposite materials with biocompatible ingredients. Early lab tests showed that "the friction can be modified as we wish, and wear resistance and corrosion resistance are as we expected," Filip says.

The researchers are applying for a patent on the materials. They've begun testing to confirm that the formulations aren't toxic to cells, and chemist Punit Kohli is investigating how two key proteins found in blood plasma interact with the coatings.

If all continues to look good, the team will use a hip simulator to assess friction and wear in implants coated with various nanocomposite formulations. These are the first steps toward testing in lab animals and people.

Researchers elsewhere are laboring in the implant field, too, trying things such as polymer coatings and DNA-based nanotubes. But Filip thinks there's room for many approaches.

"A wider spectrum of choice means that someday your physician may be able to look at your shape and your chemistry and design an implant just for you."

Other members of the SIUC team include orthopedic surgeon Per Freitag and postdoctoral fellow Manish Paliwal, and mechanical engineers Kambiz Farhang and Young Kwon.

For more info: Dr. Peter Filip, Center for Advanced Friction Studies, filip@siu.edu.

—K. C. Jaehnig

ANALYZE THIS

Pharmaceutical companies will soon have a new tool to help them develop drugs.

Using technology refined at SIUC, two small Minnesota firms are devising an analytical instrument so sensitive that, in principle, it can detect just a few molecules of virtually any chemical compound.

Such sensitivity would prove useful to the drug industry in everything from pinpointing the components of newly discovered plants to checking the purity of a particular formula to monitoring the length of time a given drug stays in the bloodstream, says John Koropchak, SIUC vice chancellor for research and the chemist whose work underpins the new system.

His collaborators, David Blackford of Fluid Measurement Technologies Inc. and Fred Quant of Quant Technologies, are devising prototypes of the new system. The National Institutes of Health is funding the effort with $1.2 million through the federal Small Business Innovation Research program.

The system pairs two processes that have not previously been used together. It starts with something called high-performance liquid chromatography (HPLC), widely used for chemical analysis.

In HPLC, a liquid sample is injected into a column filled with an appropriate solid. Lipid-based samples, for example, require a column filled with silica gel. Different chemicals migrate down through the column at different rates and exit the column at different times.

A detector of some type is used to analyze those chemicals as they flow out. For example, certain chemicals can be identified by the UV light spectra that they absorb.

But existing detectors all have drawbacks. Some cannot detect small concentrations of substances. Others cannot detect certain classes of substances.

"The pharmaceutical industry, among others, has substantial needs for detection of every sample component," Koropchak says. "And the ability to analyze hard-to-detect substances such as lipids and carbohydrates could provide a powerful tool for drug discovery."

Koropchak's key idea was to realize that a type of instrument used for decades to count atmospheric particles might be adapted to serve as a more-sensitive, nearly universal chemical detector. The technology, called condensation nucleation light scattering, had not been used before for chemical analysis.

Just as tiny dust particles serve as "seeds" for raindrops, this technology condenses vapor on chemical particles from HPLC, creating droplets. The original particles may be just a few nanometers wide, too small for other detectors to pick up. But embedding each one in a droplet is, proportionately, like enlarging a grain of sand to the size of the Statue of Liberty. Light is then bounced off the droplets, allowing them to be detected and the amount of the chemical to be calculated.

With a less-sensitive detector, pharmaceutical chemists might conclude that a given drug hangs around in the bloodstream for eight days, when in fact it's 10. They might not realize that the drug sample they're testing has a trace contaminant. Or they might not be able to identify all the substances that a given drug breaks down into in the body.

In contrast, a condensation nucleation light scattering detector "can give you a response for virtually everything," Koropchak says, "and if it's an unknown substance, you can use other techniques to identify it."

Koropchak and postdoctoral fellows You Jing and Martin Waichigo are now testing second-generation prototypes of the new chemical analysis system on three different classes of compounds with which they have worked extensively.

"We know what their performance should be, so if there's a problem, we can quickly identify it," Koropchak says.

The new instrument should reach the market by 2008 and will probably cost less than current systems, even though it has broader detection capabilities.

For more info: Dr. John Koropchak, Dept. of Chemistry and Biochemistry, koropcha@siu.edu.

—K. C. Jaehnig, Marilyn Davis

BUSTED

When police departments set up special units to deal with gangs, they—and the taxpayers—don't always get what they pay for, say two criminal justice professors.

Vincent Webb, director of SIUC's Center for the Study of Crime, Delinquency, and Corrections, and Charles Katz, of Arizona State University, spent three years studying police gang units in four Western cities.

They found that, for the most part, those units—usually housed in out-of-the-way locations—functioned almost like little gangs of their own with a culture that differed from that of the larger departments. Officers generally had no training or assigned duties and little supervision, and they often had relatively little to do with gang members. What contacts they did have—citing gang members for jaywalking, for example—did not lead to gang "control" and even got in the way of producing useful "street" information.

The two researchers reported their findings in a book titled *Policing Gangs in America,* published earlier this year by Cambridge University Press.

The past 25 years have produced what Webb terms "tremendous growth" in police gang units. "Fifty-six percent of all departments with 100 or more officers have an identifiable gang unit," he says. "They were established rapidly to parallel the perceived growth of gangs in this country, but they've not been studied before in any systematic way."

For their study, underwritten by the National Institute of Justice, Webb and Katz focused on gang units in Albuquerque, Inglewood (a Los Angeles suburb), Las Vegas, and Phoenix. They analyzed police documents and interviewed departmental commanders, gang unit officers, other administrators, players in the criminal justice system, and community members. They also hung out with two gang units as they went about their daily tasks.

With the exception of Inglewood, where the unit was housed within the larger police department, gang units had secret locations several miles away from the regular forces, with special keys and access codes. They didn't have much to do with other officers, and they didn't have to perform regular police duties—they didn't even have to respond to calls that didn't interest them.

"Instead, the gang units that we observed allowed their officers to engage in buffet-style policing, picking and choosing what to do and when to do it," the authors write.

What they chose—again, with the exception of Inglewood—was mostly enforcement, with officers spending two to three hours daily on it during an eight-hour shift. Yet the Las Vegas officers averaged only three "contacts" or "stops" per shift, while Phoenix and Albuquerque averaged little more than one.

"If 'stops' are an important part of dealing with gangs, these units aren't doing very much of it," Webb says. Nor did the stops do much to control crime. In Las Vegas, only 30 percent of the stops resulted in arrest; in Phoenix, only 11 percent.

Although other police officers, prosecutors, and community groups wanted hard information from the units on gang members and their activities, only the Inglewood unit, set up specifically to supply such intelligence, delivered.

In fact, the emphasis on enforcement actually got in the way in the other three cities. Disrespect, bogus stops, and other aggressive behaviors cost the gang units the trust needed to gather solid information. And gang unit officers seemed uninterested in—sometimes almost hostile to—sharing the information they did have with others.

"The picture that emerges is that these units are highly autonomous," Webb says.

"You start to understand some of the problems with gang units (for example, a member of Chicago's gang unit accused of drug trafficking) where they have developed into a culture within a larger culture."

The researchers think that police departments should adopt Inglewood's model: integrate gang units into the department and focus on intelligence and information-sharing. "Inglewood does a good job of that because it's all their officers do: update intelligence," Webb says.

The authors also recommend training in community policing problem-solving approaches.

"Typical [gang] suppression strategies have limited potential," they write. "Gang units, like other police units, need to become 'smarter,' and one way to do this is to emphasize formal problem solving carried out by gang units in collaboration with other core police units, especially patrol."

For more info: Dr. Vincent Webb, Center for the Study of Crime, Delinquency, and Corrections, vwebb@siu.edu.

—K. C. Jaehnig

TAKING WING

With a startled, soft honking and the tips of their snow-white wings slapping the surface of the water, seven trumpeter swans sprinted across the pond and lifted into the Southern Illinois sky.

Dana Varner was watching the action at Burning Star No. 5, a reclaimed strip mine north of Carbondale that's the winter home for about 100 of these birds. A master's student in zoology, Varner observed the swans almost daily from November 2005 until they headed north in early March, recording their location and activities on a minute-by-minute basis.

More than a century ago, the Midwest was home to some 100,000 trumpeter swans. "They were hunted almost out of existence" for their plumage and soft skins, says assistant zoology professor Michael Eichholz.

Thanks to captive breeding and reintroduction to the wild, the species again can be seen in the Midwest. But few groups of the birds have reestablished traditional migratory patterns, perhaps due in part to loss of wetland feeding grounds.

With $117,000 from the Illinois Department of Natural Resources, Eichholz and Varner are working with state biologists in Wisconsin, where the Burning Star swans nest and breed, to determine if migrating swans are as healthy and productive as nonmigrating populations.

One key issue is the extent to which migrating swans have learned to incorporate farm waste grains into their diet in place of the less-available underwater vegetation that is their traditional food.

The goal is to provide good management information to foster a strong, self-sustaining trumpeter swan population in the Midwest.

For more info: Dr. Michael Eichholz, Cooperative Wildlife Research Laboratory, eichholz@siu.edu.

LIFE AND ART

Philandering husband or one of England's greatest poets?

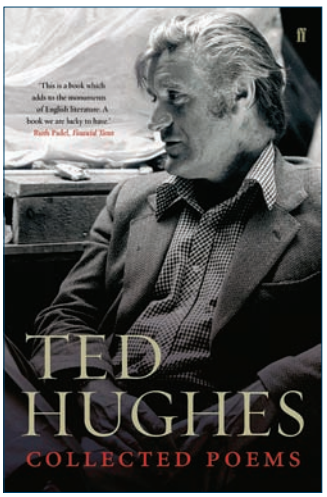
Both, actually. Ted Hughes, England's poet laureate from 1984 until his death in 1998, suffered the same fate as his famous first wife, poet Sylvia Plath. Their personal history often skewed reactions to their work.

Ryan Hibbett considers Hughes's image problem in a recent article in *Twentieth Century Literature,* the premier journal of modern literature. A doctoral student in English, Hibbett is interested in "the way art and artists are categorized," he says, "particularly the distinction between 'high art' and popular culture."

For years Hughes struggled mightily to keep his work separate from his private life—but he couldn't control his own image as a writer, Hibbett says. He had a "torn identity as a creator of poems…and a product of the popular imagination."

On the one hand, popular books and movies have dissected every inch of the Plath/Hughes relationship, usually presenting Hughes as victimizer and Plath as victim. (Hughes has often been blamed for Plath's suicide in 1963, shortly after they separated.)

On the other hand, many literary critics tend to dismiss any pop culture interest in Hughes's life as illegitimate.



As a result, some reacted negatively to *Birthday Letters,* Hughes's last book of verse, which finally addressed his relationship with Plath.

Hibbett looks at how the posthumous publication of Hughes's *Collected Poems* (2003) sought to validate his literary greatness. Ironically, perhaps, this massive volume undid some of the things Hughes did to control the way his work was presented to the public. For example, it left out the drawings and stories he sometimes produced to accompany his poems. And, as a complete collection, it included poems he never chose to publish for a general audience.

Its overall effect, Hibbett says, was a "tidying up of the messier aspects" of Hughes's career. The collection gave a stamp of authenticity to Hughes's work, which allowed reviewers to celebrate his "solitary artistic genius" and to place him within the pantheon of literary giants.

—Marilyn Davis

TIME ON ITS SIDE

Is rock & roll dead? It's a familiar refrain—and a myth dating back five decades, according to English professor Kevin Dettmar.

"It seems as if there is this continual cycle of death and rebirth. And what gets interpreted as the death throes of rock can be seen from another perspective or with hindsight as rock just changing into something else," says Dettmar, author of the recently published book *Is Rock Dead?* (Routledge).

The book isn't primarily about the music itself, Dettmar explains, but "about the way we talk about and write about rock & roll and why we seem to feel this need to keep declaring it dead."

Dettmar's interest in this phenomenon was sparked after reading what he labels a "snotty, smug review" of the Radiohead album "Kid A" by British novelist Nick Hornby in the *New Yorker* several years ago. That review, in which Dettmar says Hornby declared no important new rock & roll would be made and the "rock era was over," triggered his memories of other writers who had previously offered that view.

Dettmar's research, covering 50 years of popular media and scholarly writings, explores the different ways and reasons that each generation declares that rock & roll is on life support—or dead.

The book also examines how rock musicians in varying ways "dance on their own graves" with songs that declare rock & roll is dead.

Dettmar says rock & roll is most often attacked during moments of national crisis. But rock is durable, having survived such cultural anxieties as fears of communism and greater teen independence in the 1950s, the antiwar movement of the late 1960s and early 1970s, and perennial worries over decadent values, which led to the formation of the Parents Music Resource Center in 1985 and the labeling of albums with explicit lyrics. (Those concerns persist today, most notably with rap.)

"If you look carefully at those moments, you'll find that we are not dealing with the real issues," Dettmar says. "We are displacing a lot of nervousness, insecurity, or anxiety onto rock & roll. It becomes a scapegoat for bigger issues and bigger problems."

One of the first declarations of rock & roll's death came in September 1956 with the release of "The Death of Rock and Roll," by Maddox Brothers and Rose, a white rockabilly group that performed at Louisiana Hayride shows with Elvis Presley. (The song is a version of the Ray Charles song "I Got a Woman.") One article of the day predicted that Presley would be the death of rock & roll because he had no talent and couldn't sing.

When writing about rock & roll performances, journalists

of the time also focused on the music's "hysteria" effect on its audiences. The descriptions make it "pretty striking how angry or fearful people really were," Dettmar says.

Fast forward to today's debate about whether rap and hip-hop fit into the rock & roll genre. Dettmar believes that people need to stop making "narrow, fussy distinctions," about what rock is—and isn't.

"To me, that kind of ignores how much the two musics have in common," he says. "There is no hip-hop without rock. They are more similar than they are different."

Dettmar views many rock music critics of the baby boomer generation—those his age or a little older—as "territorial and defensive" concerning the music they grew up with. They bemoan the supposed death of rock, but Dettmar argues that they'd rather see rock embalmed in the past than embrace its continuing evolution.

"It's a sort of mid-life crisis—an inability to deal with their own ceasing to be at the cultural center of what is going on," he says.

The issue isn't that rock music is dying but that it keeps reinventing itself, he maintains.

"Every time a kid discovers a record and it picks him up and makes his day, every time a person gets excited about a new record or an old record gets rediscovered, rock gets reborn. It's not a static thing."

For more info: Dr. Kevin Dettmar, Dept. of English, kdettmar@siu.edu.

—Pete Rosenbery

GETTING SETTLED

How does a pregnant woman's body keep from rejecting a newly implanted embryo, with its share of paternal (and therefore foreign) genes? Part of the reason, an SIUC reproductive physiologist thinks, is that the embryo takes an active role in creating a favorable environment in the uterus.

Assistant professor Brent Bany (below) has received a five-year, $1.1 million grant from the National Institutes of Health to study the biology of early pregnancy. Bany focuses on molecular interactions that take place in the brief time between the implantation of the embryo in the uterine wall and the development of the mature placenta. Researchers suspect that abnormalities at this juncture can cause fertility problems and may trigger later difficulties in pregnancy, such as preeclampsia, a life-threatening form of high blood pressure.

Based on some earlier research, Bany thinks the embryo, perhaps through hormonal signaling, triggers changes in the uterine lining. He will try to determine whether certain embryonic cells put some of the genes in the lining to work building new blood vessels and remodeling existing ones.

Bany also will study a special kind of white blood cell that plays a key role in the immune system. In a newly pregnant woman, large numbers of these cells flock to the embryo implantation site, where they change their appearance and function. Scientists are just beginning to understand their role, which seems to include altering blood vessels in the uterine lining.

Bany's work has shown that the young embryo can control the number of these cells and their development in the uterus—although, he says, "we don't know exactly how it does that." His basic research will point the way for future researchers hoping to better treat problem pregnancies.

For more info: Dr. Brent Bany, Dept. of Physiology, bbany@siumed.edu.

—K. C. Jaehnig

CREATURE FEATURE

America's 56 national parks draw visitors not just for their scenery, but for their wildlife. Millions of people have hoped for a grizzly sighting at Yellowstone or watched the evening bat flight at Carlsbad Caverns, spied dolphins at Channel Islands or visited prairie dog towns in the Badlands.

Now wildlife lovers can learn more about these residents with *Mammals of the National Parks.* SIUC forestry professor John Burde and zoology professor George Feldhamer teamed up to write the book, published recently by Johns Hopkins University Press.

In the first half of the book, Burde profiles the history, geography, and vegetation of each park, along with the kinds of mammals that live there and where and when visitors are most likely to spy them.

In the second half, Feldhamer describes the looks, lifestyle, and ecological status of the types of mammals found on park lands, from manatees to peccaries, lynxes to wild horses. More than 270 mammalian species live in the parks, including 44 different species of bats and around 200 species of rodents.

Yosemite and the Grand Canyon have the most mammalian diversity—about 90 species each, thanks to diverse ecosystems within each park. By contrast, Hawai'i's Haleakala Park has only one native mammal (a bat species), but is threatened with ecological catastrophe from introduced mammals such as rats and feral pigs.

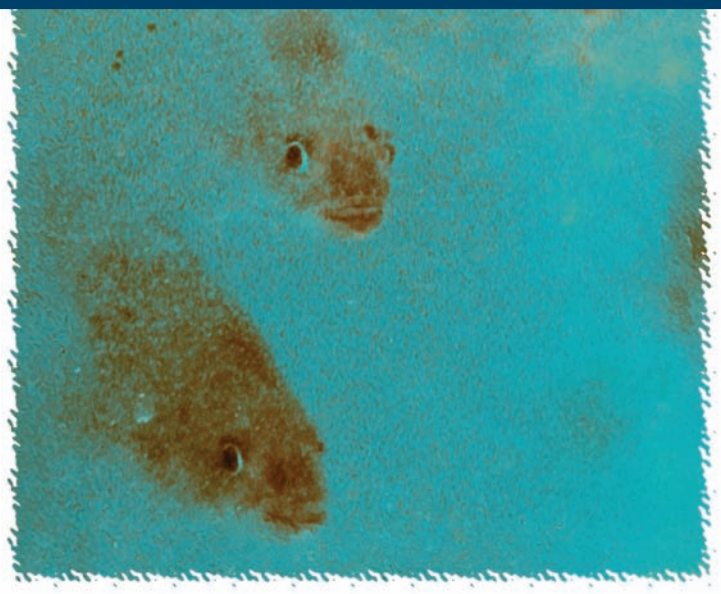
The book is also a call to action. Its subtitle, "Conserving America's Wildlife and Parklands," is backed up by a discussion of conservation concerns for each park and group of mammals.

Burde and Feldhamer did several years of background research for the project, which both of them have called "a labor of love."

For more info: Dr. John Burde, Dept. of Forestry, jburde@siu.edu, or Dr. George Feldhamer, Dept. of Zoology, feldhamer@zoology.siu.edu.

—Marilyn Davis

IN THE SWIM



Fish help keep us healthy. The least we can do is return the favor.

Like any other farmers, fish farmers face challenges in keeping their stock disease-free, because the production environment is more stressful for animals than their natural environment is. Unfortunately, the few antibiotics and chemicals approved for treating sick fish can be pricey, often don't work, and may pose environmental concerns.

Jesse Trushenski, a doctoral student in zoology, and Chris Kohler, zoology professor and director of SIUC's Fisheries and Illinois Aquaculture Center, want to produce naturally healthier fish through nutrition. Their research suggests that augmenting fish feed with a certain form of vitamin E can help fish resist disease.

For their test case they're using hybrid striped bass, a popular aquaculture fish that Kohler's research team has worked with extensively. Compared to more-tolerant species like catfish, these bass are nervous Nellies, easily stressed and therefore more vulnerable to disease.

The research, which began as part of a $600,000 National Science Foundation Partnerships for Innovation grant to develop new fish feeds, has been done in collaboration with Archer Daniels Midland Co. Trushenski also won a two-year, $60,000 fellowship from the National Sea Grant College Program to support the work.

Most vitamin E supplements that we buy at the drugstore contain a synthetic version of a type of vitamin E called d-alpha tocopherol. Trushenski has been studying the nutritional effects of a naturally derived d-alpha that Archer Daniels Midland makes from soy.

Natural d-alpha has a molecular shape perfectly fitted to the protein in the body that grabs vitamin E and ferries it to body tissues. The synthetic form has a mix of molecular shapes, some of which don't fit the protein and are simply excreted.

Trushenski and Kohler were intrigued by studies with other species, including humans, indicating that the natural form of d-alpha can boost the immune system.

Trushenski's first experiments with the hybrid striped bass established their minimum nutritional requirement for vitamin E using the natural form rather than the synthetic form. The natural form was almost three times as potent in the body, she found.

She then raised groups of bass on six different diets: a control diet with no natural vitamin E, and experimental diets with one, two, five, 10, and 100 times the minimum requirement. Within each group, some fish were left at their leisure, while others were subjected to various stress levels (being chased with a net for one minute or confined submerged in a net for an hour). In a second, similar experiment, other groups of fish faced a different stressor: "working out" in a swim tunnel, the fish equivalent of a treadmill.

Blood chemistry analysis indicated that the fish on the enhanced diets held up to the stress better:

- *Macrophages* (immune cells) taken from some of the fish were better able to kill bacteria.
- *Lysozymes* (an enzyme in the blood that breaks up pathogens) taken from the fish were up to 25 percent more effective at killing pathogens in lab cultures.
- The activity of *prostaglandins,* hormones that regulate metabolism and influence immunity, was boosted.

The diet containing five times the nutritional requirement for natural vitamin E had the optimal effect on these markers for improved immune function. Although vitamin E is known for its antioxidant properties, other properties of the vitamin appear to be responsible for the changes, Trushenski says.

But are they biologically significant changes?

To find out, Trushenski is running a "real-world" test with fingerling hybrid striped bass. She's raising fish on four different diets: feeds with one and five times the nutritional requirement for synthetic vitamin E, and feeds with one and five times the requirement for natural vitamin E. After 12 weeks, she'll expose all of the fish to a common fish parasite and compare the rates and severity of infection in the four groups.

If the findings look good, researchers in other areas may be interested too.

"In terms of lipid [fat] metabolism, fish would be a great experimental model for human nutrition studies," says Trushenski.

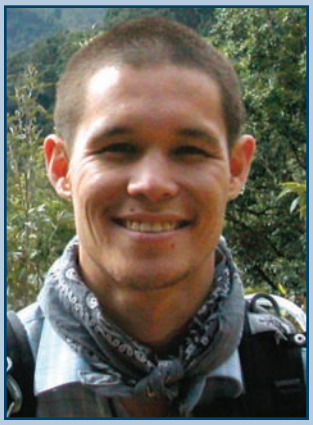
"A lot of what we're doing has implications for human health."

Jesse Trushenski has reported her findings at meetings of the American Fisheries Society, the U.S. Aquaculture Society, and the World Aquaculture Society.

For more info: Jesse Trushenski at saluski@siu.edu, or Dr. Chris Kohler, Fisheries and Illinois Aquaculture Center, at ckohler@siu.edu.

—Marilyn Davis

KUDOS



Plant biologist Joshua Der (left) won the 2005 SIU Alumni Association's Outstanding Thesis Award for his work on the **evolutionary relationships of species** in the sandalwood family, which includes parasitic plants such as mistletoes. Der's work, done in conjunction with his advisor, Daniel Nickrent, used DNA sequence data to revise the classification of the major groups within the family. (See "Freeloaders" in the Fall 2005 issue of *Perspectives,* www.siu.edu/~perspect.) Der also was one of three winners of the 2006 Midwest Association of Graduate Schools Outstanding Thesis competition.

Anthropologist Matthew Tornow was the winner of SIUC's 2005 Outstanding Dissertation Award. Tornow traveled around the world to gather data on the fossils of a group of early primates called omomyids that lived from 55 to 25 million years ago in North America, Europe, Asia, and possibly Africa. He used new measurements, and new types of measurements, of nearly 800 specimens to arrive at a comprehensive assessment of how the various groups of North American omomyids were related to each other and evolved. His study, which includes illustrations that he did himself, is a **"major advance in our understanding of primate evolution,"** says John Fleagle, a distinguished professor of anatomy at Stony Brook Health Sciences Center in New York.

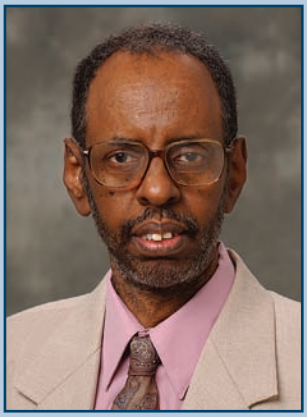
The sixth SIUC winner of a prestigious CAREER award from the National Science Foundation is physicist Shane Stadler, who will receive $483,271 over five years to support his research toward the **synthesis of half-metallic alloys.** Such materials would have important uses in magnetoelectronic devices, in fields from medicine to computing.

Morris Cooper, professor and chair of medical microbiology, immunology, and cell biology, has received a five-year, $975,249 grant from the National Institutes of Health to study HIV transmission rates in individuals who have other sexually transmitted diseases. The research, part of a multi-center project led by the University of California at San Francisco, may lead to the **development of new strategies to treat sexually transmitted diseases.**

Several SIUC faculty were recently named fellows of professional associations for their scholarly contributions:

- physics professor Aldo Migone, **American Physical Society;**
- College of Engineering dean William Osborne, **Institute of Electrical and Electronic Engineers;**
- psychology professors Ann Fischer and Michael Young, **American Psychological Association;**
- College of Education interim dean Patricia Elmore, **American Counseling Association.**

Only a small percentage of each organization's membership is so honored.



SIUC's Outstanding Scholar for 2006 is mathematics professor Salah Mohammed (left), who was featured in the cover story of *Perspectives* in Fall 1997. Mohammed's work, in an area of math called stochastic analysis, allows **better predictions about randomly evolving systems,** from weather to the stock market. The National Science Foundation and NATO have funded Mohammed's research, and he has held several international fellowships.

Car Talk

Any cell-phone use—hands-free or not—endangers the driver, a new study shows

by Tom Woolf

Jacob Rose and James Hunton want to put a bug in somebody's ear about distracted drivers, their cell phones, and hands-free devices.

Rose is an associate professor of accounting at SIUC, and Hunton is an accounting professor at Bentley College in Waltham, Mass. They are the authors of a study that contends it's the actual conversation—regardless of whether you're holding the phone or talking on a hands-free device—that causes driver distraction, and therefore, serious accidents.

The bottom line of their study is this: If you're using a hands-free device with a cell phone, you're four and a half times more likely to be in a serious accident than if you're not talking on the phone at all.

In fact, that "virtual" conversation is considerably more distracting than talking with a passenger, their study shows.

"Cell-phone conversations consume significantly more attention than passenger conversations, resulting in more incidents and crashes during simulated driving," Rose and Hunton concluded. "More working memory is consumed by cell-phone conversations relative to passenger conversations, and fewer resources are available for the driving task."

The two professors specialize in studying the effects of technology on learning and awareness. Their article summarizing their research findings, "Cellular Telephones and Driving Performance: The Effects of Attentional Demands on Motor Vehicle Crash Risk," appeared in the October 2005 issue of the journal *Risk Analysis*. No outside funding was received for the study, they note.

"What we're trying to figure out is if there is a way we can reduce accident rates and deaths through some kind of driver training," Rose says. "The reason we're looking at this is because of the number of countries and cities that have started to ban handheld phones, such as all of Australia, a lot of Europe, and some cities in the

U.S. Our evidence and the evidence of other studies that have come out recently have said those bans won't do any good because it's just as distracting to be on a hands-free device."

The problem, Rose says, is the actual conversation. "If you go back to basic psychology research, you find a few things that suggest conversing is far more demanding than listening, because you have to understand what's being said to you and then prepare for your reply. Having a conversation is very demanding."

In the researchers' experiment, drivers with and without communication training completed a simulated city driving course while engaged in one of three conversation modes: no conversation, conversation with a passenger, and conversation on a hands-free cell phone. Fifty-six airline pilots and 55 non-pilots participated in the study. Trained questioners carried on the same conversations with all the study participants.

Hunton is also a pilot and pilot instructor. He and Rose chose airline pilots as the perfect "trained" study participants, since they safely fly airplanes while talking to crew members and conversing over the radio with air traffic controllers—behavior the researchers believe is similar to talking with a passenger and on a cell phone while driving.

Key findings included these:

• When no conversation was going on, the driving performance of pilots and non-pilots was equivalent.

• When the driver was talking with a passenger, the performance of the pilots was superior to that of the non-pilots.

• When the driver was talking on a cell phone, the performance of the pilots deteriorated slightly, but the performance of the non-pilots dropped sharply.

The study presents the first evidence to dispel what Rose calls the "myth" that talking on a cell phone or hands-free device is no different from speaking to a passenger.

"It is, and it's more dangerous," he says.

"Whatever the topic of conversation is, you're processing it very actively. The cell-phone industry has basically said, 'Look, you talk to passengers all the time, and we can't ban that, so why should we ban phones?' [But] we found the accident rates were more than twice as high when you're on a hands-free phone versus talking to a passenger for the exact same conversation."

Why would that be? "When you lack all of the non-verbal cues of a close-contact conversation, the conversation is that much more demanding," Rose explains. "Some research suggests that 90 percent or more of a conversation is actually non-verbal. It uses a huge amount of your attention to try to deal with the fact that you're missing all those cues."

The researchers looked at what pilots do differently in this regard compared to non-pilots. They found that non-pilots try hard to visualize the person they are speaking to on a cell phone, while pilots do not. Non-pilots also said they try to imagine the gestures and non-verbal cues of the people they are speaking with on a cell phone, while pilots don't.

Some researchers are upset with the study, Rose says, because its findings could be used to advocate a ban on cell-phone use while driving. However, he emphasizes that the study is more comprehensive than other research on the topic.

"This is the only study that has looked at the training issue, the only study that has looked at how we can reduce accidents, the only study that has looked at whether it is different speaking to a passenger versus talking hands-free," he says. "This is one of the few studies actually using lab experiments versus studying accident reports."

Rose and Hunton propose that instead of an outright ban on cell phones and hands-free devices, governments require drivers to complete an endorsed training program. "States or cities would have to say 'you have until this date to come and do the training and get the certification because we know it's going to reduce the chances that you will have an accident,'" Rose explains.

"Most people would say they don't need [training], and our drivers thought that as well. [But] we had people in our simulators hitting two or three cars and pedestrians in one sitting, because we programmed a difficult driving course. We also measured smaller [errors], like running red lights and missing traffic signs, and those rates are even higher than the serious accident rates."

The two professors intend to forge ahead by designing and testing a short-term driver training program as their next research step.

"People tend to believe, especially after hearing about laws banning [handheld] cell-phone use in cars, that they can put their headset on and it has no effect on them," Rose says.

"That's scary." ✪

For more information, contact Dr. Jacob Rose, School of Accountancy, siu48801@siu.edu.

Beating the Odds

Behavioral psychology research is shedding light on why some people become compulsive gamblers—and how to boost the success rate of treatment programs

by Marilyn Davis

Forty years ago, if you wanted to gamble—legally—in the United States, you packed your suitcase, counted your stash, and headed for Vegas or Reno. By the late 1970s, you could have booked a ticket to Atlantic City instead, but that was still your only other choice.

Today, you can gamble online in your pajamas from the comfort of your home computer, pick up lottery tickets 24/7 at your local convenience store, or, in many places, take a short drive to hit the slots at a riverboat or tribal casino. Every state except Utah and Hawai'i permits some form of gambling. Even cable television is profiting greatly from the boom, thanks to the fact that people will now tune in just to watch other people playing Texas Hold 'Em.

"Gambling has shifted from being sort of taboo to being thought of as a sport," says Mark Dixon, a professor of behavior analysis and therapy with SIUC's Rehabilitation Institute.

Not surprisingly, gambling losses have skyrocketed. Every year, American consumers blow more money on gambling than we spend on music, movies, professional sports, theme parks, and cruises *combined,* says Dixon—an estimated $68 billion in 2002, according to one source.

Has that brought social problems as well as economic benefits? You bet.

"The most recent data suggest that we've gone from 1 percent of our population having problems with pathological gambling up to 3 percent in the last 20 years," Dixon says. A 1999 *New York Times* article by Jane Brody noted, "By the time most compulsive gamblers seek help, they are hugely in debt…and their families are in a shambles. About 80 percent seriously consider suicide, and 13 to 20 percent actually attempt it or succeed in killing themselves."

"There's only so much you can learn without controlled experimentation."

Unfortunately, the only study done to date of Gamblers Anonymous, the most common treatment option for the problem, recorded a success rate of only 8 percent after two years of treatment. Therapy can boost the success rate considerably, but many people still don't respond well or simply don't have access to it.

Dixon is an emerging expert in the field of gambling addiction. President of Behaviorists Interested in Gambling, a special interest group of the Association for Behavior Analysis, he has co-edited *Gambling: Behavior Theory, Research, and Application* (Context Press), a new book that sums up the state of the field. He studies environmental and behavioral factors in gambling so that gambling problems can be treated more effectively.

Dixon started down this path as a graduate student at the University of Nevada at Reno. Arriving there from Wisconsin in the mid-1990s, he says, "I was shocked by the amount of gambling you see going on. My first week there, I heard on the news about three different people who had literally walked out of a casino and jumped off a parking structure to kill themselves due to gambling losses.

"With gambling problems growing exponentially across our country, it seemed like a logical thing to start investigating—an area of research that had the potential to help people's lives."

Researchers are, in a sense, scrambling to catch up with the problem: one-third of all gambling studies ever reported have been published in just the last five years, Dixon says. Even as a graduate student, however, he was frustrated that most gambling research was observational or based on self-reports from gamblers. There's only so much you can learn without controlled experimentation, he explains. The problem? "You can't go into a casino and manipulate the machines to give somebody a string of wins or losses." And for ethical and legal reasons you can't run a real-life gambling situation in the laboratory, with study subjects winning and losing money.

Dixon and his graduate student team conduct research surveys in various public places, both gambling-related and non-gambling-related. But to get accurate findings, it's also important to test

▲ **Mark Dixon does behavioral research with the goal of helping compulsive gamblers.**

people's behavior in as realistic a gambling scenario as possible. Dixon has taken two routes to achieve that.

First, he's set up a "casino room" in his lab. This room, equipped with a one-way mirror for observing subjects, has slot machines, a roulette wheel, a craps table, and a poker table. No money is used to play these games, only tokens, but the physical experience of gambling is otherwise the same. (Research subjects do sometimes get extra course credit or gift cards as incentives for participating.)

Dixon's other strategy relied on his computer skills. Using a program called Visual Basic, he has created computer simulations of video poker, slot machines, and roulette. The advantage of these programs is that researchers can control variables such as wins, losses, and "near misses." By manipulating aspects of the gambling situation, Dixon can get a better understanding of what influences people's gambling behavior and beliefs.

His research has looked at many issues:

• ***Impulsivity and the gambling environment.*** Pathological gamblers will act more impulsively on a test administered in a gambling environment (such as an off-track betting parlor) than they will on the same test administered in a neutral setting. "The environment itself stokes the behavior," says Dixon. Gamblers may not appreciate how susceptible they are to this phenomenon.

• ***Immediate gratification.*** Pathological gamblers differ from non-gamblers on something called "delay discounting"—a measure of how often a person will turn down a small, immediate reward in favor of a larger reward at some point in the future. Whether or not someone decides to take the immediate reward varies, depending on the money amounts and the waiting time in question. That creates a curve of responses for each individual.

Pathological gamblers "don't have rational discounting curves," says Dixon. "They would rather have smaller amounts of money immediately than more later."

• ***Irrational beliefs.*** "Near misses"—for example, a slot machine pull that results in two matching symbols on the win line and the third on the line above—make most people feel they're closer to winning and spur them to continue gambling, but Dixon's team found that the effect was strongest for pathological gamblers.

After asking subjects to rate certain results as losses, wins, or near misses, the researchers followed up by pairing the word "loss" or "near miss" with symbol combinations that hadn't been rated that way by the subjects. Afterwards, gamblers changed their assessments of what constituted a near miss and what didn't—seemingly in defiance of what their own eyes were telling them.

Dixon's team also has found that superstitious associations—for example, that one color is "luckier" than another—can be created in gamblers' minds by laboratory exercises and will carry over to their choices about, say, which color slot machine to play.

"We've created a preference for one machine over another without ever changing the outcome of the game," Dixon says. "It shows how insensitive people are to the actual winning or losing.

"It's easy for someone to come under the control of irrational beliefs, and those beliefs are strengthened by occasional wins. That's really, I think, how people end up becoming problem gamblers. It's the interaction of what you're telling yourself and what's going on in the environment—from casino advertising to your own history of winning and losing—that sustains problem gambling, and it's only by looking at both of those that you're going to be able to treat the problem effectively."

• ***Perceptions of winning and losing.*** After a session with the computer games or in the casino room, study participants are asked how many times they won or lost. "Across the board, they overestimate their losses and underestimate their wins," Dixon says.

This seems to be a counterintuitive result for problem gamblers. "You'd think somebody who gambles a lot would overestimate their wins," he says. But perhaps it's a key to addiction: problem gamblers may keep trying to turn their (perceived) luck around, chasing a thrill that never quite satisfies. They can never win enough.

• ***The illusion of control.*** Many subjects in Dixon's experiments will choose to pick their own numbers in a game of roulette or draw their own card in poker rather than

have the researcher do it for them. "Personal choice has no bearing on the outcome of the game, but they believe they will somehow be able to do better than the experimenter," Dixon says.

Perhaps that's not so surprising: after all, lots of us pick our own "lucky" lottery numbers rather than buy a Quick Pick. What did surprise Dixon's team was finding that people would pay for this illusion of control, forfeiting a certain number of their tokens for the privilege.

Also, says Dixon, "These chips were redeemable for *absolutely nothing,* not even course credit—but if we raised the price too high, they'd say, Forget it, it's too expensive. We got the same effect that you would with real money."

Similarly, subjects in the lab get excited at "wins" just like people in an actual casino do—even though the jackpots aren't real. "If we keep 'payoffs' high, people will keep playing for nothing much longer than they are required to" by the experimenter, Dixon says. He feels confident that the lab is simulating the gambling experience well and that their findings are valid.

The fact that money isn't the only motivation for gambling is something that Dixon and his students know from the Gambling Intervention Program, which he began at SIUC in early 2005. This free eight-week program, closely modeled after a program developed by psychologist Nancy Petry at the University of Connecticut School of Medicine, is tailored to the individual.

The program screenings show that problem gamblers gamble for different reasons. For some, it's a form of thrill-seeking. For others, it's an escape from office stress or a bad home life. For still others, it's about socializing. Only for a few is the chance of a big win the main draw.

Trained graduate students use techniques from cognitive/behavioral therapy to help clients explore why they gamble, how their perceptions about gambling may be faulty, what things in their environment trigger their gambling, and what things they can substitute to fill the role that compulsive gambling plays in their life.

"Even the worst problem gambler doesn't gamble all of the time," Dixon says. "When does the person *not* gamble? We try to increase these activities. When did a trigger *not* result in gambling? Gradually they start to see that they're not just a victim—that they have some self-control. We work to help them expand that."

The program explicitly does not label gambling addiction as a disease.

"People weren't born with a gambling addiction; it evolved based on circumstances in their lives," Dixon says. "We teach them to identify those circumstances and navigate around them."

The one-year post-treatment date hasn't been reached yet for everyone in the first group of clients, so Dixon hesitates to cite figures, but he will say that the abstinence rate for those who completed the eight-week program is "fantastic—well over 50 percent" and that the program's dropout rate is lower than the average for treatment interventions.

"I'm proud of what my therapists have done," he says.

For obvious reasons, clients don't take part in any research that simulates gambling. But what Dixon and his students learn from working with them will guide the design of further research studies, and those research findings will be used in turn to improve the treatment program.

Exploring problem gambling from a different dimension, Dixon and assistant professor of psychology Reza Habib have begun using magnetic resonance imaging to identify possible differences in brain activity between these gamblers and other folks. On a computer screen, subjects are shown a series of slot machine displays and are asked to tap a keyboard to identify each as a win, a loss, or a near miss. As they carry out the exercise, their brains are being scanned to see which areas are lighting up.

Early results indicate that there are differences in brain activity between the two groups of subjects—a finding that, if confirmed, could have profound implications for treatment possibilities down the line.

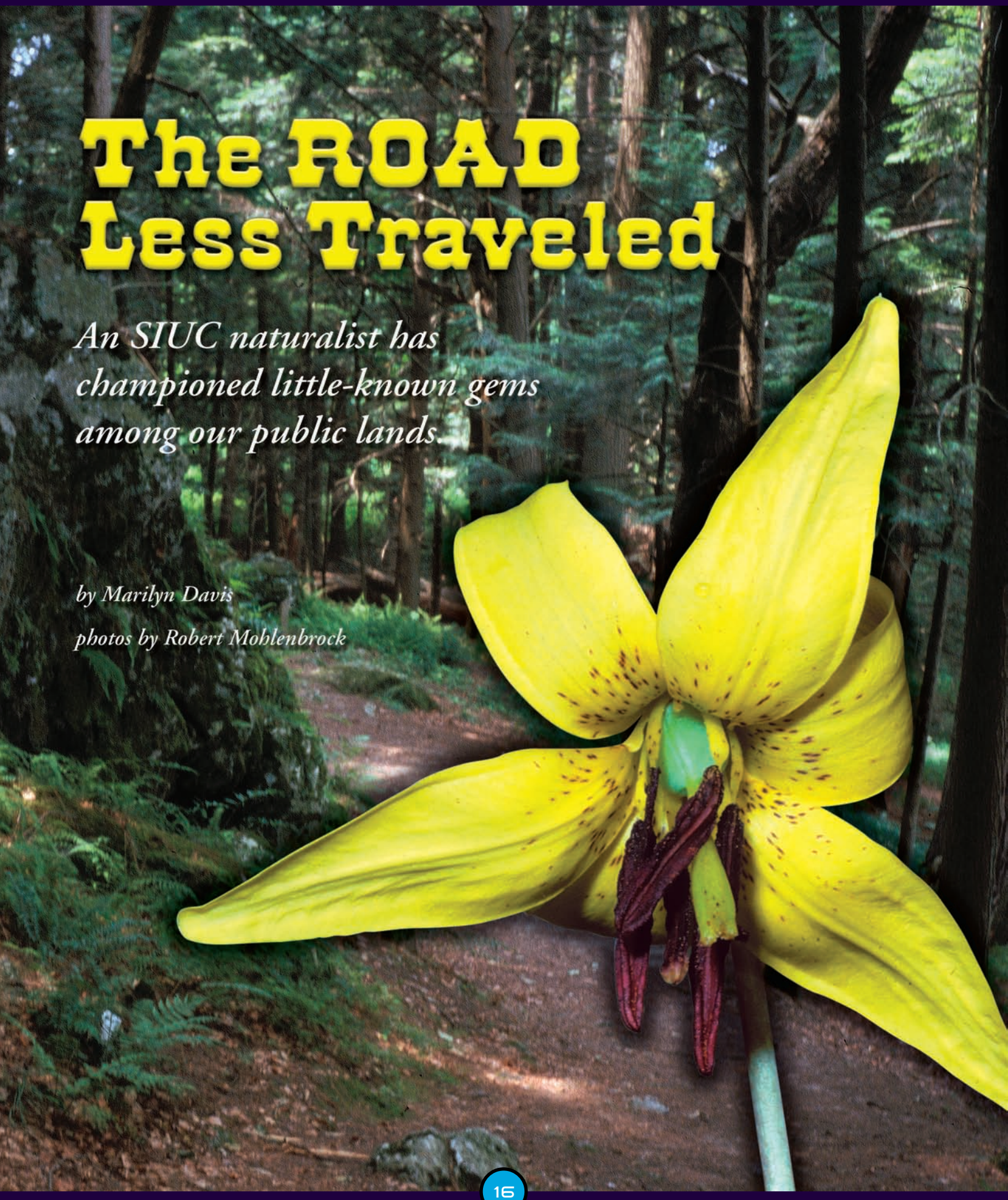
Dixon is unusual among gambling scholars in tackling both research and treatment issues. His motivation is that he believes treatment models often fail because of a lack of connection between the two.

"I want to make sure the bridge is there between treatment and research," he says.

Doing both is intensive work for Dixon and his students. But as he says, "We've changed lives—and that makes all of the work worthwhile." ✚

For more information: Dr. Mark Dixon, Rehabilitation Institute, mdixon@siu.edu.

Graduate students Mairi McAllister and Zachery Sneed demonstrate the lab's casino room.



The ROAD Less Traveled

An SIUC naturalist has championed little-known gems among our public lands.

by Marilyn Davis

photos by Robert Mohlenbrock

Robert Mohlenbrock's back yard runs coast to coast, and he knows its hills and valleys like the back of his hand.

A professor emeritus of botany, Mohlenbrock has made it his life's work to find out everything he can about North American plants and the places they grow—and then to tell the rest of us. At age 74, he is on the road with his wife, Beverly, about six months out of every year, driving their jam-packed red Town & Country van from site to site, scouting out the beautiful, the intriguing, and the rare. Yet even though he's seen the most spectacular scenery and the most unusual vegetation this continent has to offer, one of his favorite sights remains the little blue-eyed Marys that carpet the forest floor of Giant City State Park every April, just a few miles south of his Carbondale home.

An old-fashioned naturalist, Mohlenbrock specializes in systematics (the classification of organisms and how they're related) and floristics (documenting exactly what plants are present in a given area and what species make up plant communities). He's written more than 50 books, including guides to North American wildflowers and trees. He's contributed hundreds of articles to scientific journals and the popular press. Readers of *Natural History* magazine have been treated to his "This Land" columns for more than 20 years and constitute an unofficial nationwide fan club.

Mohlenbrock usually juggles several book projects at once. The University of California Press has just brought out his three-volume set of guides to the national forests of the United States. SIU Press is publishing a four-volume series of his detailing all wetland plants of the Midwest. And he's continuing work on a massive series, also with SIU Press, called *The Illustrated Flora of Illinois*—the first attempt to describe and illustrate every plant species growing wild in a particular state. Since 1960, sixteen volumes have been published of a projected 24, with updated editions already produced for some.

This endeavor is like taking a still shot of a moving target. "We add about 25 species a year in Illinois," Mohlenbrock says—both native and non-native species newly documented in the state. For example, biologists are still finding previously unsuspected plant species in the remote hollows of the Shawnee National Forest. But such finds are outnumbered 4-to-1 by non-native species extending their range.

"Most of the new plants we're finding have come in along roadsides," he says. "Especially around the Chicago area, they're always finding new kinds of weeds popping up."

Mohlenbrock's love of national forests had its impetus in the desire to get up close and personal with a sequoia. In 1960, he and his family traveled to Sequoia National Park for their first opportunity to see the giants of the plant kingdom. But the park was so crowded that tourists had to be bused in to famous Mariposa Grove. "I wanted to go up and hug one of these trees," he recalls, "but before I had the chance, everyone was herded back on the bus."

Irked, he consulted his map of the neighboring Sierra National Forest, which indicated something called Nelder Grove at the end of a 20-mile dirt road. It turned out to be an equally stunning group of sequoias. "It was the most breathtaking thing I'd ever seen," Mohlenbrock says, "and we were the only ones there the whole day."

From then on, family vacations took the roads less traveled by. Mohlenbrock was on a mission not only to find solitude in the uncrowded national forests, but also to seek out natural areas with especially interesting plants, animals, and geological formations. "We found most of these areas ourselves," he says. "The Forest Service themselves didn't know what they had right under their noses."

Mohlenbrock wrote about these places, of course, eventually publishing *Field Guide to U.S. National Forests: Enchanted Lands for Hikers and Campers* (Congdon & Weed, 1984). That book caught the attention of the editor of *Natural History* magazine, who invited Mohlenbrock to write "This Land," a monthly column about some of his favorite forest areas.

"The idea was that each site, besides being pretty, had an interesting biological, geological, or historical story to tell," Mohlenbrock says. By and by he was allowed a broader canvas: any publicly accessible site is fair game for him to spotlight. To date he has contributed more than 200 columns. The saga came full circle when the University of California Press asked him to write a comprehensive set of field guides to the forests that would also reprint many of these popular pieces.

◂ **Trail in Pisgah National Forest, N.C.**
▸ **Robert Mohlenbrock teaching a plant identification course *(photo by Jim Dexheimer).***

Among Bob Mohlenbrock's "Don't-Miss" Spots:

Pine Hills, Shawnee National Forest, Illinois
Why: More diversity of plants and animals for its size than anywhere in the country, with forest, prairie, and swampland habitat.

Bristlecone pine stands, Inyo National Forest, California
Why: The oldest known plants, these gnarled trees have survived for thousands of years atop the White Mountains.

Strawberry Point, Dixie National Forest, Utah
Why: A red-and-pink rock canyon with a waterfall, completely isolated from the crowds that throng Utah's national parks.

Dolly Sods Wilderness, Monongahela National Forest, West Virginia
Why: In the Allegheny Mountains; home to blueberry and huckleberry bushes, hemlock trees, rhododendrons, and mountain laurel.

Alexander Springs, Ocala National Forest, Florida
Why: With palms and other subtropical vegetation, this site has an exotic feel and boasts the largest spring (in volume) on federal land.

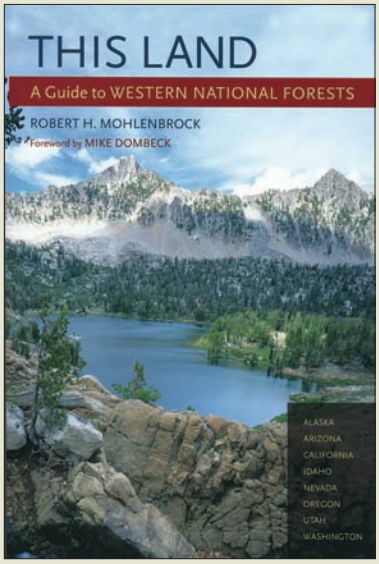
Mount Washington, White Mountains National Forest, New Hampshire
Why: One of the few places in the eastern United States where dwarf alpine plants grow.

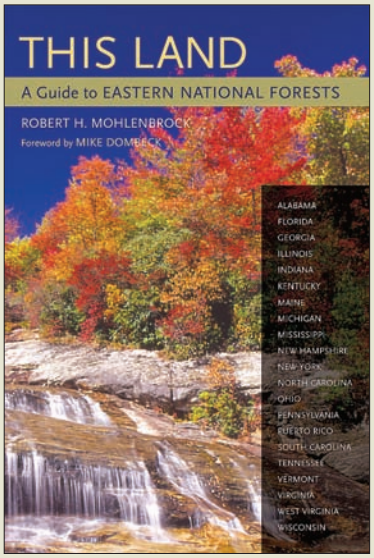
Tom Miner Basin, Gallatin National Forest, Montana
Why: Beautiful mountain scenery—plus the rare opportunity to see petrified trees standing in place.

When Mohlenbrock began exploring the national forests, the U.S. Forest Service's chief emphasis was still timber production. Over the years he saw the growth of the conservation ethic within the Forest Service, with many more areas now set aside as preserves. By drawing attention to special areas within the forests, he says, "I like to think that a lot of what I've done has helped preservation efforts."

Rare and imperiled plants are a particular interest of Mohlenbrock's. From his earliest teaching days, before endangered species were a popular concern, he kept records of the rarest plants in every state. In 1983 he published the first and, thus far, only comprehensive book on endangered plants in the United States. Called *Where Have All the Wildflowers Gone?* (Macmillan), it described 200 "at-risk" species. Some of these may always have been comparatively rare, he says, but at least half had once been more abundant.

The head of the International Union for the Conservation of Nature's Species Survival Commission subsequently asked Mohlenbrock to head up a North American Plant Specialist Group. The group met for more than a decade and issued "red lists" to draw attention to plants in danger of extinction. But the experience was ultimately discouraging, Mohlenbrock says, because it was hard to get other conservation groups to share information.





Still, he maintains, the outlook for plants in the United States is not dire. Most of the species featured in his book "are still hanging on," he says. "I've noticed that some of these are making a comeback."

In part, he says, that's due to the fact that "plants are very resilient." But he also credits the Endangered Species Act, which drove the creation of state commissions to study and protect endangered species, and groups like The Nature Conservancy, which are preserving habitat and carrying out species reintroduction programs.

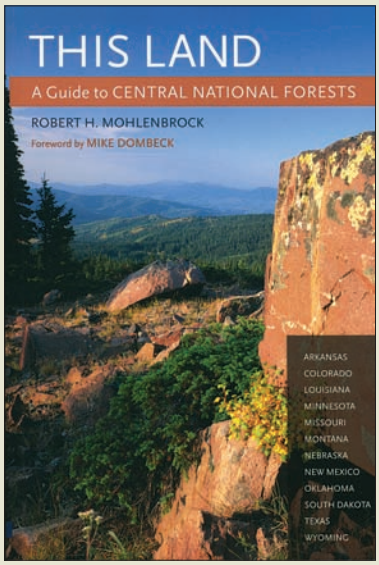
Indeed, Mohlenbrock served for 10 years on the board of directors of the Center for Plant Conservation, a network of U.S. botanical institutions with the common goal of preventing the extinction of native flora. The center, headquartered at the Missouri Botanical Garden (where Mohlenbrock is a research associate), maintains the National Collection of Endangered Plants, which provides material for restoration efforts.

Thanks to a remarkable biology teacher who took students on field trips in her spare time, Mohlenbrock's love of plants took root when he

was a junior at Murphysboro (Ill.) High School. He earned bachelor's and master's degrees in botany from SIU, then his doctorate from Washington University in St. Louis.

He returned to Southern Illinois as an instructor in the Botany Department (now the Plant Biology Department). Within nine years he worked his way up to full professor. He chaired the department for 16 years (1964-79), was made a Distinguished Professor in 1984, and was named SIUC's Outstanding Scholar for 1988. He directed the work of 90 graduate students, who have gone on to hold key agency positions and professorships all across the country. One, in fact, is now the head botanist for the U.S. Forest Service.

In 1990 Mohlenbrock retired from SIUC, but not from teaching. Besides writing books and his *Natural History* column, he leads plant identification courses across the country for the Wetland Training Institute. Environmental regulations require that any time a wetland is destroyed to make room for construction, another wetland must be created or enlarged to compensate. Thus government personnel and private consultants need to be able to determine where wetlands exist; plant identification helps greatly with that.



Great white herons in Crotan National Forest, N.C.; yellow trout lily and jack-in-the-pulpit (bottom), Bankhead National Forest, Ala.; Alexander Springs, Ocala National Forest, Fla.

Talking with Mohlenbrock and browsing through his books, one grows convinced that he's acquainted with every back road in the country. He certainly has driven every back road in Southern Illinois, he says. He hasn't tackled every trail in the nation, but he's hiked hundreds of them, including every trail described at any length in his national forest field guides.

His books are family affairs. Beverly helps with notes and types manuscripts; their son Mark has done illustrations for some of the volumes; their daughter, Wendy, now prepares the extensive indexes; their other son Trent, who owns a nursery, has contributed maps. All have explored the outdoors with him.

Even as a high schooler, Mohlenbrock wrote pieces on botany for local newspapers. At the start of his academic career he made a very deliberate decision to write for both scholars and the general public.

"I didn't want to keep all these finds just within the scientific community—I wanted the whole world to know about them," he says.

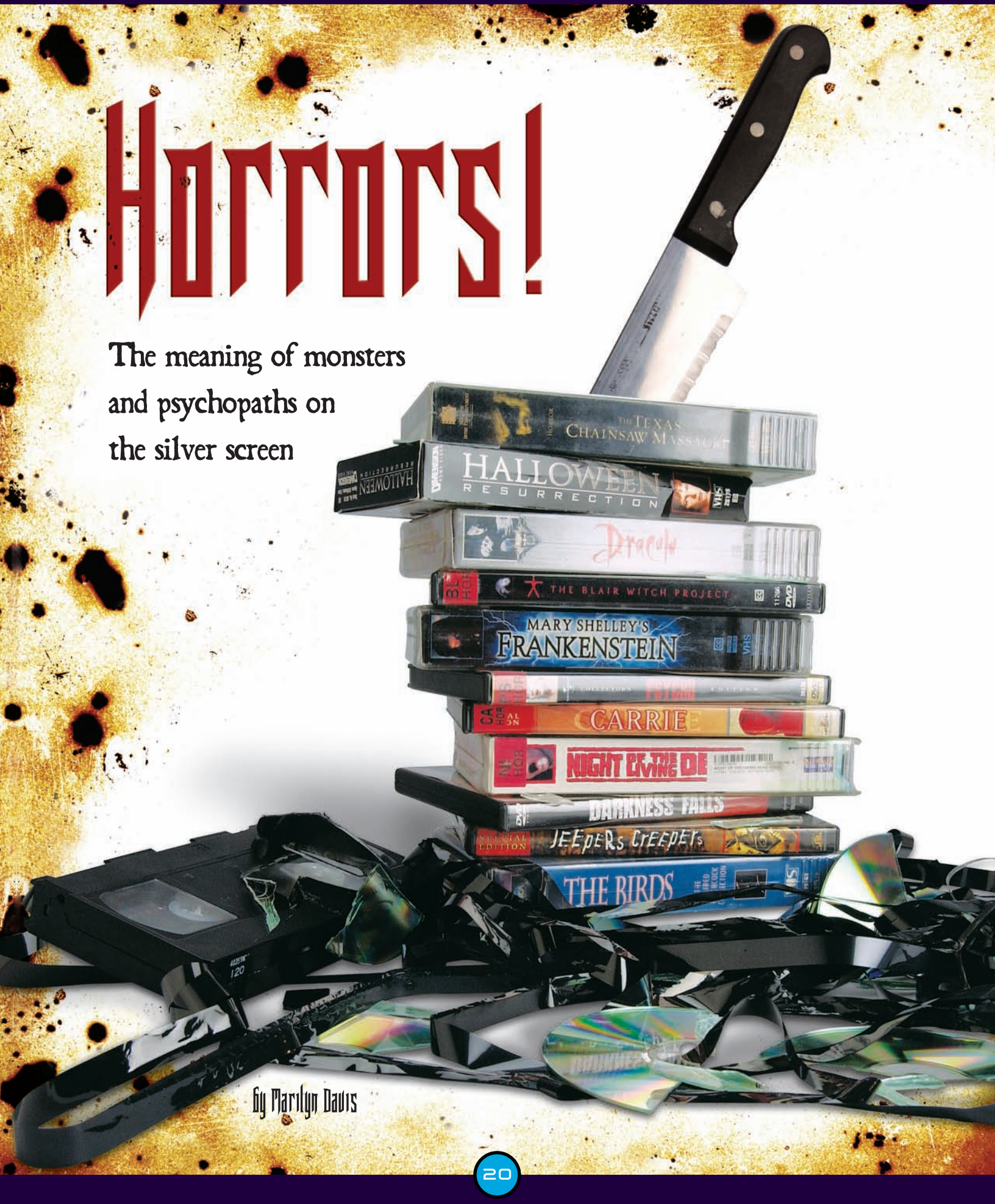
As ambitious as ever, Mohlenbrock gets frustrated that he can no longer stay up writing until midnight. Nonetheless, he plans to keep on packing up the van, hitting the trail, and describing what he sees.

"I still get as excited about doing it now as I did when I first started," he says. ✪

Dr. Robert Mohlenbrock may be contacted at mohl57@earthlink.net.

Horrors!

The meaning of monsters and psychopaths on the silver screen



By Marilyn Davis

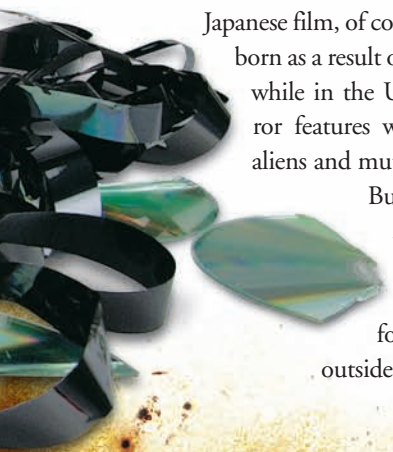
Even if you don't go to see horror films—even if you avoid them like the plague—you can't escape them entirely. Images from the classics and the less-than-classics pervade our cultural landscape.

The shower scene from *Psycho.* The hand of Frankenstein's monster stirring as he comes to life. Jason's mask; Freddy Krueger's metal fingers. Zombies. Giant ants and killer plants. Linda Blair's head spinning in *The Exorcist.* Hannibal Lecter. *"He-e-e-e-re's Johnny!"*

It may be more apropos to say that our culture pervades our horror films. Whether they focus on the supernatural, the psychotic, or a mix of both, these movies play on our repressed fears and social anxieties to give us a good scare—a taste that cuts across cultures, by the way. "Horror has always been a very popular international genre," says Tony Williams, a professor of film studies in the English Department who has written extensively about horror films.

Perhaps the earliest such films that most Americans are familiar with are the famed monster movies made by Universal Pictures in the 1930s and 1940s. Frankenstein's monster, Dracula, the Mummy, the Wolf Man…these creatures were stand-ins for our fear of what was foreign, Williams says, and the films were set in distant locales like Eastern Europe and Egypt. "Bela Lugosi was the archetypal foreigner, with his thick Hungarian accent—a far cry from Norman Perkins in *Psycho*," Williams points out.

During the 1950s, mutant-monster movies and sci-fi thrillers expressed our fear of the nuclear threat and the Cold War. In Japanese film, of course, Godzilla was born as a result of the atom bomb, while in the United States horror features were fraught with aliens and mutant insects.



But in the 1960s, American horror film directors moved from a focus on the threats outside us to the threats within. In *Hearths of Darkness: The Family in the American Horror Film* (Fairleigh Dickinson University Press, 1996), Williams analyzed scores of movies—and reviewed the writings of scores of critics—to make his case that movie horror is usually a reflection or outgrowth of repressive, dysfunctional families. These films, he says, embody the "inevitable psychological tensions of an authoritarian family situation, in which people are molded into certain roles."

To paraphrase Pogo, "We have met the monster, and he is us."

Even in films like the *Frankenstein* series, Williams notes, family motifs come into play. But in 1960, Alfred Hitchcock created the definitive family horror film with the groundbreaking *Psycho,* where derangement and murder result from an unnatural mother/son relationship. Ever since *Psycho,* most American horror films have been set right here at home, and family disturbances are overt. Monstrous mothers, tyrannical fathers, demon-driven children, brutalized children who grow up to be serial killers—we've seen it all.

What intrigues Williams about horror films is how they "reveal aspects of the psyche people prefer to leave concealed" and how they directly or indirectly illuminate the dark side of society. Most of us are powerless to oppose social norms; horror films allow our ambivalence a little vicarious expression in the form of stalkers and monsters, the possessed and the dispossessed.

"It's not all about gore and special effects," Williams says. "In fact, that's what I object to in the *Elm Street* and *Friday the 13th* films, the gratuitous violence. The best horror films are those which have an interesting balance between excess and social commentary."

Those often are low-budget or independent films, he says: "Directors working outside the studio system have much more opportunity to be critical of society," not to mention more freedom of self-expression. These films cut closer to the bone, if you will.

Williams has published books about two directors in this category, George Romero and Larry Cohen. Romero's zombie films, he says, are "metaphors for the decay of society." The first, *Night of the Living Dead* (1968), broke new ground in graphicness, but also "looked at the divided state of America in the Vietnam era. There was an underlying social message: people cannot unite against the zombies because they're already divided, by race and gender and other things." In later films like *Dawn of the Dead, Day of the Dead,* and *Land of the Dead,* Romero satirized consumer consumption and political conservatism.

Most of us are powerless to oppose social norms. Horror films allow our ambivalence a little vicarious expression in the form of stalkers and monsters, the possessed and the dispossessed.

It's Alive!, directed by Larry Cohen, is even more direct in its message. In this movie, a couple's new baby turns out to be a horrifying mutant, leading to efforts by the authorities to kill it. *It's Alive!* "showed the monster in the family as the embodiment of the father's insecurities," Williams says. The baby is not inherently dangerous; its savagery is triggered only in self-defense.

Culture as Crucible

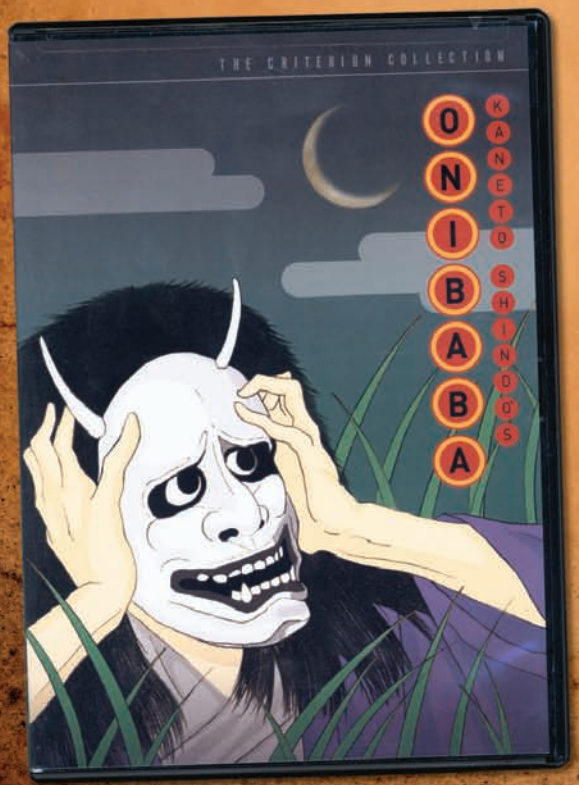
Japanese horror films since World War II have returned repeatedly to Hiroshima and Nagasaki as a theme, says Jyotsna Kapur, an associate professor of cinema and sociology at SIUC. In *Horror International* (see main article) she discusses *Onibaba* (1964), a classic that uses a medieval legend to comment on modern history.

Onibaba might best be translated as "witch." A peasant woman and her daughter-in-law are left to fend for themselves when the woman's son is drafted into war. To live, the women murder lost samurai and sell their armor for food.

One day a war deserter arrives with the news that the son is dead. He seduces the daughter-in-law, threatening the survival of the older woman (there's not enough food for three).

Meanwhile, a samurai disguised by a monstrous mask appears at the older woman's hut. The mask protects his beauty from war wounds, he says. The woman lures him to his death and removes the mask. Shockingly, his face is revealed as the burned, disfigured visage of a *hibakusha*–an atomic bomb victim.

To frighten the daughter-in-law into staying at home, the older woman uses the mask to pose as a demon. But one night the lovers get together anyway, and she finds that she can no longer remove the mask. She begs the daughter-in-law to break it off with an axe–upon which the older woman's face too is revealed as that of a *hibakusha*. The younger woman runs away in horror as her mother-in-law shouts, "I am not a demon; I am a human being!"



Kapur first saw *Onibaba* in 1989. "I couldn't forget it," she says. "It is a visually stunning film. I saw it as a very powerful allegory about the destruction of war, even though the film is set in the supernatural realm."

Onibaba has no cathartic, happy ending. The *hibakusha* face "jolts you back into the present and forces you to think about reality," Kapur says. The horror, of course, was felt most keenly by Japanese audiences, who understood the visual reference.

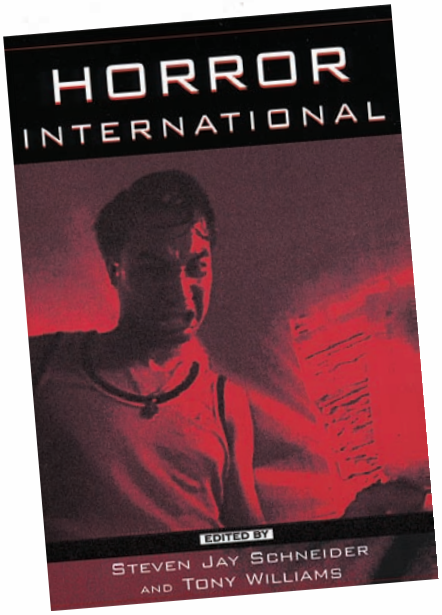
Kapur explains that atomic bomb victims were outcasts in Japan for many years, and that by the 1960s their generation was "being left behind by a younger, more Americanized generation that wanted to let go of that past." Hence the poignancy of the old woman's fate.

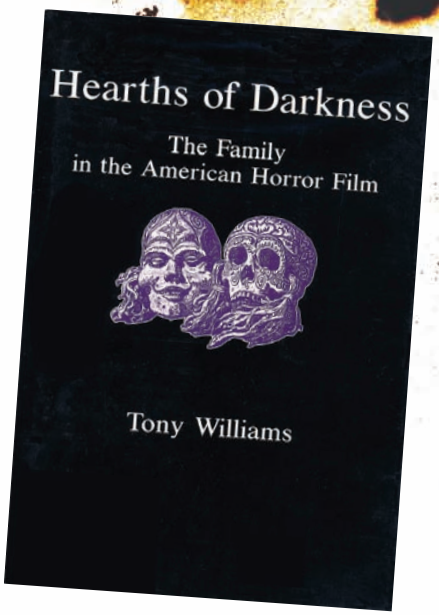
In a very different context, the power struggle between generations also underlies some American horror films. Remember *The Bad Seed, The Omen,* and *The Exorcist*? These movies "gave expression to our repressed anxieties about not being able to control children inside the nuclear, suburban family," Kapur says.

Kapur's recent book *Coining for Capital: Movies, Marketing, and the Transformation of Childhood* (Rutgers University Press) makes the case that the image of American childhood has changed dramatically over the past century. No longer innocents, our children have been "molded" into demanding, knowing consumers with a considerable amount of autonomy. Capitalism inevitably drove this transformation, Kapur says, via corporate marketing, new technologies, and the economic need for dual-income households. The trend really got rolling with TV ads pitched to kids in the 1950s, and has accelerated from there.

Coining for Capital looks at the way children's films such as the *Home Alone* series reflect this change, depicting children as savvy "little adults" whose parents are foolish or absent. Similarly, the heroine of the children's film *Matilda* possesses the kind of supernatural powers we see children wielding in older horror films, but the effect here is comedic. "She does the things she does to empower herself," says Kapur. "The message these films give to children is that you've got to take care of yourself."

Onibaba and *Home Alone* are miles apart in theme, genre, and intended audience, but both illustrate the bedrock principle of Kapur's film criticism: "To fully understand films," she says, "you have to know the culture and history out of which they are born."





Horror films preserve "an indirect relationship to the culture of each society" that produces them, Williams says. Perhaps each culture gets the kind of horror films it deserves.

In what Williams calls "one of the great, poignant moments in horror cinema," the father ultimately accepts his child as it is and tries to shield it from a final attack by the police, but fails.

It's Alive! and the movie's two sequels stand the typical horror film formula on its head. "The need is to protect the monster from society, instead of protecting society from the monster," Williams says. "Accepting differences is what these films by Cohen are about. Cohen is one of the great imaginative talents in American cinema today, and he uses horror or fantasy—he doesn't like the term *horror*—to critique the state of American society."

By no means are social messages part and parcel of all horror films. "You won't find them in average horror films, which are gratuitous by their very nature," says Williams. "Sometimes the director is just feeding the audience's demand for gore."

But even movies devoid of social messages can reveal social anxieties. Williams says that during the Reagan years, with the conservative backlash in full swing, American horror films took a pronounced turn to sadism and misogyny. The grisly but hugely popular slasher films of the 1980s and 1990s are reactionary to the core, he argues. "They show sexually active teenagers being victimized, falling under the knife of Freddy or Michael Myers or Jason. These films are punitive, a reaction against sexual liberation and alternative lifestyles."

Rather than getting "cathartic" endings in these films, movie audiences got endless sequels instead, Williams wrote in *Hearths of Darkness.* "The family is revealed as dark and destructive, but…there is little, if anything, its victims can do about it."

Other cultures deal with other demons in their horror films, as Williams's latest book, *Horror International* (Wayne State University Press, 2005), illustrates. Co-edited with Steven Jay Schneider of New York University, this anthology includes essays on the horror films of Germany, Italy, Mexico, Scandinavia, Romania, Thailand, Canada, Russia, Ireland, Australia, and other countries. Some of these, like Italy, have a long tradition of producing horror films; others, like Thailand, have developed the genre only in the past couple of decades.

Naturally, other countries' horror films have been influenced by, and have influenced, U.S. productions. (One of the more acclaimed American horror films of recent years, *The Ring,* is a remake of the Japanese ghost thriller *Ringu.)* Despite this cross-cultural exchange, however, horror films preserve "an indirect relationship to the culture of each society" that produces them, Williams says. Perhaps each culture gets the kind of horror films it deserves.

For example, one contributor to *Horror International* finds that much Scandinavian horror grows out of a conflict between ancient pagan values and Christian ones. Romanian horror films, now free from Soviet censorship, have been coming to terms with the country's past and its Dracula legend (derived from a real figure, Vlad the Impaler, who is a national hero). And Thai horror, which often features murderous but pitiable female ghosts, reflects concerns about the way sexual mores have changed in that country over the past few decades..

Williams, an expert on the cinema of Hong Kong, contributed an essay about that country's so-called "Category 3" horror films: those rated for graphic sex and

A Career in the Movies

Horror movies are hardly Tony Williams's only interest in film studies. He has written or co-written books about the Italian Western and about British cinema of the mid-1900s. He has co-edited a book of commentary on 600-plus feature films and TV movies about Vietnam, from the origins of French Indochina through the aftermath of the U.S./Vietnam War.

He has published books about the work of directors Larry Cohen and George Romero (see main article) and Robert Aldrich (*The Dirty Dozen, The Longest Yard, Whatever Happened to Baby Jane?*), as well as interviews with other directors. He is an expert on gangster films and martial-arts films, co-moderates an online discussion group about Hitchcock, and writes extensively for both online and traditional scholarly journals.

The intersection of literature and film also interests Williams, who has published a book and numerous articles about writer Jack London and the movies. Next year he will be working on a study of the novels of James Jones (*From Here to Eternity, Some Came Running, The Thin Red Line*), which may include some discussion of their film adaptations.

One of Williams's areas of expertise is Hong Kong cinema. Many films by Hong Kong directors blend genres, such as the adventure-thriller, the martial-arts film, the gangster film, and the horror film. Williams especially champions films by director John Woo (now working in the United States). Woo's movies are well known for their bloodiness, but Williams and other fans value them for their creativity, excitement, and vibrant visual style–and yes, their social commentary.

Many Hong Kong films from the 1980s and 1990s, Williams explains, reflect the colony's fears about reunification with China in 1997. Woo's "masterpiece," *A Bullet in the Head,* is "about three young street kids who end up in the apocalypse of Vietnam in 1968," he says. "It deliberately draws a parallel to 1997." Likewise, in another genre, Hong Kong ghost story films have explored the contrast between a beautiful past and a threatening present.

violence (comparable to the X rating in the United States). In these gory productions, which generally feature serial killers and often throw in cannibalism to boot, brutality seems a natural outgrowth of the crowded conditions borne by the poor in Hong Kong.

These and other Hong Kong films, incidentally, are popular not just in Asia, but also in the United States, thanks partly to *Asian Cult Cinema,* a magazine that introduced Americans to them. With the Internet and DVDs, Americans now have ready access to films made around the world, and scholars of horror films are devoting more attention to those produced outside the United States.

In fact, Tony Williams doesn't see many American horror movies these days. "There have been very few interesting horror films over the past 15 years," he says. "The genre seems to be worn out. With the exception of George Romero, I think it has dissipated into gratuitous violence."

What about *The Blair Witch Project,* the horror film that has garnered more attention than any other in the past few years? Although Williams credits it for "taking horror seriously," he feels that it was "rather inept—a one-trick pony that didn't deserve the attention it got."

In contrast stands Williams's all-time favorite horror film, *The Texas Chain Saw Massacre* (1973), a low-budget classic whose "raw" cinematic style—dark, grainy, realistic—significantly influenced the movie industry. "I like its relevant social commentary on class, which few American films treat seriously," Williams says. *Chain Saw* depicts brutality arising out of rural and social decline, with the poor attacking the affluent.

Horror may be a rather static genre in the United States right now, but Williams will always keep an eye out for the next *Psycho* or *Texas Chain Saw Massacre*—the next horror film that gives us something "significant or new," that tells us something interesting about who we are.

"That's what I really enjoy about them," he says.

For more information, contact Dr. Tony Williams, Department of English, tonyw@siu.edu.

Making Faces

Visitors to the University Museum last fall semester were greeted by this stunning body-sized mask from Papua New Guinea. Used in ceremonial dances by the agricultural Kilenge people, the "Mud Man," as the mask is dubbed, is made of woven bamboo, grass, and wood finished off with mud, paint, and human hair. It was crafted about a century ago.

The Mud Man was just the opening of "Behind the Masks," the museum's largest and most popular exhibit in its history. Michael Hernandez, a doctoral student in cultural anthropology with a particular interest in masks and mask-making, curated the exhibit, which accompanied an international conference at SIUC on the use of masks in art, culture, and history. Hernandez recruited a team of graduate and undergraduate students to assist with research and construction.

The masks, which ranged from the artistic to the practical and the traditional to the contemporary, were made for purposes as varied as cultural rituals, theater performances, art exhibits, psychotherapy, sports, and surgery. They came from the Americas, Asia, Africa, and Europe.

Photo by Russell Bailey, SIUC Media & Communication Resources.

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