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Fall 2006

## Research Frontiers, Fall 2006

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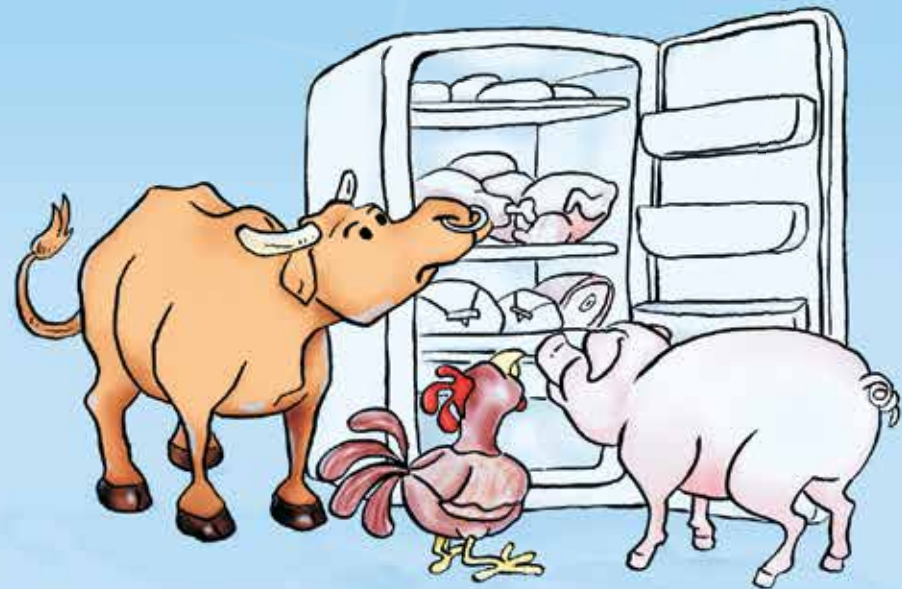
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# UNIVERSITY OF ARKANSAS RESEARCH FRONTIERS

FALL 2006

**Preserving Arkansas' Past**

**Clarifying Cheating**

**Finding Flora**

**Greening of Education**

Internet: [www.uark.edu](http://www.uark.edu)







Fayetteville, Arkansas 72701

Office of the Chancellor  
http://chancellor.uark.edu



### A Message from the Chancellor:

One of the primary missions of the University of Arkansas is to prepare our students for success after graduation. What is the recipe for a successful college experience? Certainly, well-rounded, well-prepared college students ought to pursue a rigorous course of study – one that expands their minds and captures their imaginations. They should learn from top-notch faculty, learn to work on diverse teams and have the opportunity to conduct leading-edge research. And, without question, they should participate in a wealth of civic and social activities. Ideally, each of these college experiences will build upon the others to help prepare students for whatever life holds for them.

We're committed to presenting all these experiences to our students. Very few universities combine the variety and quality of course offerings, world-class faculty, research opportunities and engaging extracurricular activities that the University of Arkansas does.

However, there are other, more intangible ingredients in the "recipe for success." One of the most important, and often overlooked, aspects of a successful college experience is the opportunity to forge a more developed system of values. Our diverse campus community – students, faculty and staff – hold a broad range of viewpoints, opinions and beliefs. The exposure our students receive to all these different ideas challenges them to think more critically and develop a deeper understanding of right and wrong.

Last spring, the University hosted David Callahan, author of the bestselling book, *The Cheating Culture: Why More Americans Are Doing Wrong to Get Ahead*. Callahan argues that cheating and acceptance of cheating have become so widespread that our nation faces a moral crisis. This issue of *Research Frontiers* features a fascinating story on the groundbreaking research conducted by our own Tim West, associate professor in accounting in the Sam M. Walton College of Business and holder of the BKD Lectureship, on cheating among college students. I don't want to spoil your read, but suffice it to say that his findings are eye-opening.

We've all had to make choices between doing "the easy thing" and "the right thing." At times like these, we've drawn on our life experiences – many of them from our own college years – to make our decisions. At the University of Arkansas, we are committed to preparing our students to be successful in life and doing so "the right way" – through intellect, hard work and a commitment to the greater good.

Happy reading,

John A. White  
Chancellor

The University of Arkansas is an equal opportunity/affirmative action institution.



## Novaria: Nova Aria: New Song



By Barbara Jaquish

For 200 years, composers and musicians have combined flute and guitar, two very different voices, to create a sound both liquid and resonant. As Novaria, University of Arkansas music professors Ronda Mains on flute and James Greeson on guitar draw on that rich history while extending the tradition into new territory.

"Sonically, the flute does things the guitar can't," Greeson observes. "With the guitar, as soon as you play a note, it decays. No note on the guitar can last very long.

Whereas, the flute does almost the opposite. It's very lyrical."

The instruments blend well, Mains says, with the guitar adding rhythm and "a lot of character."

She adjusts her playing style to work with the guitar: "I would just bury the guitar if I played full bore. Guitars can be pretty soft. My articulation has to be more distinct and clearer on most pieces to match the plucking of the strings."

Beyond the joy of playing together,

both musicians appreciate the challenge.

"I completely trust Jim as a musician – he's really wonderful," Mains says. "I can throw him curves, and he never looks up."

"I'm more worried accompanying Ronda playing the flute than if I'm playing my own solo piece," Greeson says. "Ronda's a very sensitive player, and if I make a little mistake, then in a few beats, she'll make a mistake. It's not that I made her do it, but it throws her a little bit."

Mains and Greeson released their first CD as Novaria in 1996. The introductory section, titled "Seven Songs for Sundays," is what Greeson calls "recompositions" of some familiar hymns. Initially, J. William Fulbright's widow requested Novaria play at Fulbright's memorial service. His favorite hymn had been "Amazing Grace," but no arrangement was available for flute and guitar. Greeson quickly created "a very different treatment" of the old standard and followed it with new visions of six other favorites.

Since release of the CD, Mains and Greeson have focused on expanding the literature from its European roots to adapting and learning a more multicultural repertoire. Ronda found a challenging piece by Ravi Shankar for the duo to learn, and they've played tangos by Argentine composer Astor Piazzola.

In contrast to the notion that time spent teaching detracts from creative time, Greeson believes that teaching motivates him to compose. Even when he is teaching a subject as "old school" as 18th century counterpoint, he wants to go home after class and do something.

"If I'm not teaching," he says, "I find it harder to be inspired."

"I like to think that I am modeling chamber music for my students," Mains says. "I love chamber music. I would rather do chamber music than be a flute soloist any day, because the challenge is so great."

To listen to the music of Novaria, visit the Research Frontiers Web site at <http://researchfrontiers.uark.edu>. ■

Photos by Russell Cothren

# RESEARCH FRONTIERS



## 2 Research Briefs

Trucking turnover, lovely footsteps, light rail, lunch buddies, speed differentials and safety, agritourism, chickens and hops, edible oils.



## 6 Student Research

Journalism graduate student RaeGina Covington studies the migration of African Americans from the South to the North in the middle of the 20th century.



## 30 In Review

Books from the University of Arkansas Press and by professors in art, education and history.



## 32 UA Q&A

What causes a mirage? Why do plants have thorns?



## 33 Arts and Letters

Flute and guitar duo Novaria talk about the creative process of performing music together.



## Cover

Echoes of the past line the walls of the University of Arkansas Collections Facility. Sam Dellinger, a longtime university professor, spent much of his life trying to ensure the preservation of Arkansas' pre-Columbian history by keeping artifacts in Arkansas. Photo by Russell Cothren.



**8 Empty ethics** When accounting professor Tim West found out that more than two-thirds of his students had cheated on a take-home exam, he decided to turn the experience into an investigation of why people cheat.



**14 Found flora** Invaders, toxins, anti-cancer compounds – the quest to categorize all of the vascular plants of Arkansas has led to the discovery of all of these and more. A team of scientists from all over Arkansas is creating a book to document the rich diversity.



**18 Past preservation** Zoology professor Sam Dellinger spent decades building collections of pre-Columbian artifacts to keep them in Arkansas and out of the hands of treasure hunters and out-of-state museums. He left behind a collection that is studied by researchers from around the world.



**24 Education efforts** As the head of the department of education reform, Jay Greene discusses his views on education today and his hopes for the future of public schools.





### On the Road No More

Recruitment and retention of good drivers is a chronic problem in the trucking industry. With turnover rates near 30 percent on average, trucking firms have instituted measures to address recruitment and retention of good drivers. But problems persist. Management researchers at the University of Arkansas say that both poor working conditions and pay issues may explain why many truckers put the brakes on for good.

“It’s no surprise that the amount of time drivers spend on the road away from their homes and families is a major concern in the trucking industry,” said John Delery, professor of management in the Sam M. Walton College of Business. “Some long-haul drivers make it home only once a month and consider their rig to be a home away from home.”

Delery and Nina Gupta, also a professor of management, collected personnel information from top managers of 326 large U.S. trucking companies and found that in addition to time away from home and family, many truckers are not satisfied with the way they are paid. The category “not enough driving hours/runs scheduled” was cited by drivers at more than three-fourths of the companies, which, the researchers said, indicates that drivers are not scheduled for enough miles to make an acceptable rate of pay.

“It’s not that drivers are not paid enough per mile,”

Gupta said. “It’s the total number of miles that’s a problem. Many drivers are frustrated because they don’t have control over the number of miles they drive.”

The researchers obtained information from “truck-load” carriers, which are major trucking firms such as Schneider International, “less-than-truckload” carriers – general freight companies that carry items from more than one client in each shipment – and “special commodity” carriers, which are companies that deliver special products such as household items, petroleum and refrigerated goods. In many cases, the researchers found differences depending on company category.

However, drivers at companies in all three categories faced most of the same reasons for turnover, which averaged 28 percent among all companies. In addition to pay and benefits and working conditions, contributing factors included problems with supervisors, whether or not the company offered a pension plan, and whether or not the company had annual performance appraisals, especially if the appraisals were subjective evaluations. Factors related to specific equipment and physical working conditions were less likely to influence drivers’ decisions to quit.

Gupta holds the Raymond F. Orr Chair in Management. ■

### Lovely Footsteps and Erotic Puns

What do you call a comedian whose repertoire relies on sexual puns about feet? Answer: an ancient Athenian.

In the theaters of that cosmopolitan city in the fifth and fourth centuries B.C., Greek comic actors could always get a laugh with the popular pun that related feet to male genitals. For centuries, whether male or female, feet were associated with eros in ancient Greece, and evidence of their role abounds in literature and art.

“The foot left its imprint on Greek erotic thought from Homer to the rise of Christianity,” said Daniel Levine, professor of classical studies.

In “ERATON BAMA (‘Her Lovely Footstep’): The Erotics of Feet in Ancient Greece,” Levine draws on archeological and literary sources to extend recent scholarship on the erotic aspects of feet and shoes to a consideration of ancient Greek culture. His work is a chapter in “Body Language in the Greek and Roman Worlds,” edited by Douglas Cairns of University of Edinburgh.

The fondness of Athenian comedians for crude puns about feet reflects a rich tradition of associating feet with love, desire and fertility. In Greek epics, Levine observes, female beauty often resides in fine ankles and lovely feet.

“In addition to beautiful female ankles symbolizing the erotic ideal, the Greeks also linked men’s feet to eros in poetry, arts and myth. ...When men and women join in matrimony, feet and shoes play important ritual and artistic roles,” Levine writes.

The morning after the consummation of the marriage, gifts were presented to the newlyweds, traditionally including footwear.

For centuries, passages from Greek literature praised the beauty not just of feet, but of the mark they left on the earth. The title of Levine’s chapter comes from Sappho’s longing for her lover’s lovely footstep. In poems and letters, lovers long to kiss footsteps or to step in their beloveds’ bare footprints.

While Levine notes that “most of the time a foot is just a foot,” the impact of the Greek appreciation for the erotic aspect of feet, ankles, sandals and footprints had a broad and diverse effect on their culture and world view. ■



Photo by Russell Cothren



### Light Rail, Linked Cities

Fly into Northwest Arkansas, and you will gaze upon acres of raw red earth bristling with bulldozers and bare frames of new subdivisions, office parks and strip malls. Cities in Northwest Arkansas may triple, possibly even quadruple their footprints by 2050. The question is, where will this growth occur – and how?

Last spring, three architecture studios explored how a single technology – light rail – could ease traffic gridlock, revitalize the urban core, and preserve the rolling green hills and crumbling barns that embody Arkansas’ agricultural heritage.

“Eighty years ago, Northwest Arkansas was a classic transit-related development,” said Steve Luoni, director of the UA Community Design Center and coordinator of the School of Architecture’s transit study. A remnant of this era, the Arkansas-Missouri railroad, presents an opportunity to link the four major cities in the region in a thirty-mile chain, with a loop to Northwest Arkansas Regional Airport added to facilitate travel. The location of two-thirds of the population and three of the top four employment centers within one mile of the rail system supports the case for light rail.

“Our goal is to envision new possibilities and show the community what could easily happen.” Luoni said.

The students did not develop designs for a light rail system per se; instead, professors challenged them to imagine development schemes that would support light rail. The students used analytical mapping, graphic analysis and modeling to synthesize proposals that would promote walkable, dense downtowns that support mass transit. At the final critique, student teams presented regional development scenarios that ranged from a financial valley with Wal-Mart, Tyson Foods, and J.B. Hunt as anchors to a summer Olympic City that utilized University of Arkansas sports facilities and nearby rivers as venues. ■

Image submitted

### Mentoring Aggressive Children: Lunch Buddies Make a Difference

A second-grader who shoves other children on the playground and talks back to a teacher could be headed for serious problems in school and in life. But after aggressive children met for three semesters with different mentors, teachers reported to researchers that they could see changes.

Formerly disruptive children began to raise their hands in class or laugh with friends on the playground. This was not the result the researchers had expected.

Timothy A. Cavell, professor of psychology, Jan N. Hughes of Texas A&M University and graduate students studied the effect of school environment on mentoring programs. They published their findings in the *Journal of Consulting and Clinical Psychology*.

Much has been written about the mentoring relationship as the mechanism by which mentoring benefits children, so Cavell and colleagues did not expect close mentoring relationships to form from a program set in a noisy school cafeteria with three different mentors.

“If the mentoring visits take place only in the lunchroom, and we bring in a new mentor every semester, how can strong relationships form? We had envisioned the lunch buddies to have little or no effect on our sample of highly aggressive children,” Cavell said. “We

were wrong – either about there not being meaningful relationships or about the role of the relationship in mentoring.”

Cavell believes that the latter is true.

“I believe that we helped these high-risk children because the consistent visits by a valued college student helped to improve how these children were viewed by their peers,” he said. “Now, it may also be that the mentor supervised the children’s behavior during lunch or modeled positive peer interactions, but I suspect those were helpful only in the context of changing peers’ perceptions of a child that had been causing trouble because of his or her behavior.”

Cavell emphasizes that many questions remain unanswered in the field of child mentoring. Little research has been done to understand which problems are best addressed by mentoring and how to design mentoring programs that help rather than harm. In fact, in “Mentoring Children,” a chapter in the *Handbook of Youth Mentoring*, co-written with Anne-Marie Smith, Cavell calls for greater attention to the potential harm that can come from mentoring that is inconsistent or that ends prematurely. ■





Photo by Eric Pipkin

## Speed Safety

A transportation study by engineering researchers reveals that different speed limits for cars and large trucks on rural, interstate highways can compromise safety.

"We found that speed variation and vehicle interactions have a direct impact on highway safety," said Steven Johnson, professor of industrial engineering with the Mack Blackwell Transportation Center. "Data from previous studies and simple logic say that a higher number of interactions among vehicles increases the chances that accidents will occur."

Johnson reported this finding in Cost-Benefit Evaluation of Heavy Truck-Automobile Speed Differentials on Rural Interstate Highways, a study of speed limits and car-versus-large-truck speed differentials on rural, interstate highways. Sponsored by the U.S. Department of Transportation, commercial trucking companies and private fleets, the study will help regulatory agencies and trucking-company decision-makers establish policies regarding speed limits and differentials for both heavy trucks and automobiles.

After examining existing literature on

speed limits, Johnson and graduate student Naveen Pawar measured the speeds of heavy trucks and automobiles in five states. Speed-limit configurations ranged from a uniform 75 mph for cars and heavy trucks to 65 mph for automobiles and 55 mph for trucks. The researchers also analyzed speed, accident and maintenance data and interviewed truck drivers, safety and maintenance managers of commercial trucking companies and original equipment manufacturers of trucks, tires and engines.

There is a caveat to their findings: vehicle dynamics, such as braking and maneuvering, improve on slower-moving trucks.

"People argue that heavy trucks require longer braking distances for any given speed, and lower truck speeds help equalize the stopping distance," Johnson said. "On the other hand, opponents of lower truck speed limits have suggested that the differential speeds increase speed variance and therefore have a negative impact on highway safety. Our research demonstrates that it is likely that both of these arguments are correct."

See Johnson's report at [www.mackblackwell.org/web/research/final-reports.htm](http://www.mackblackwell.org/web/research/final-reports.htm). ■

## Hopped-up Chickens

Poultry scientists have found that an herb used in brewing beer might work as a substitute for growth promoting antibiotics in broiler chicken diets.

Scientists Susan Watkins and Park Waldroup, along with graduate students Jana Cornelison and Frances Yan, in the poultry science department in the Dale Bumpers College of Agricultural, Food and Life Sciences, published their findings in the *International Journal of Poultry Science*.

The addition of ground hops to poultry feed improved early growth rate of broiler chicks and reduced the overall feed needed to produce a pound of gain.

Working with Lloyd Rigby, a hops chemist from Yakima, Wash., and John Segal, a leading grower of hops in Grandview, Wash., the team fed broiler chickens diets containing either hops or a growth promoting antibiotic and compared them to broilers on a control diet with neither treatment.

Although the response from the addition of hops was smaller than that obtained from the antibiotic treatment, it was significantly greater than that of birds fed the control diet.



Photo submitted

"Over the past several years we have been exploring a number of alternative products for replacing antibiotics in broiler diets, including many herbs, spices, organic acids and other similar products. This is the first product that we have found that resulted in performance improvement of this magnitude," Waldroup said.

Additional work is needed to determine how consistent the response to hops might be under more stringent growth conditions and any effects on the broiler meat, Waldroup said. ■

## Hay Rides, Dude Ranches and Corn Mazes

Although Arkansas has many agritourism operations – Christmas tree farms, "you-pick" vegetable and berry farms, and at least one corn maze – the state does not have a formal program to support agritourism as a viable industry. Harrison Pittman, assistant research professor and staff attorney for the National Agricultural Law Center at the School of Law, examined such programs in other states and determined that Arkansas possesses the important elements to develop the growing industry within its borders.

"Arkansas has all the human, land, government and academic resources needed to create a viable, statewide agritourism industry," said Pittman. "If there are 100 operations now – and we have no idea how many there are – maybe we could have 1,000, and the ones already established could do better if there were some kind of program to support and promote agritourism."

Pittman found that agritourism exists in every state. Many states have established formal efforts to promote or enhance it, although the nature and scope of these efforts vary. Some states provide a Web site where producers can register their operations so visitors can learn about various agritourism enterprises. Other states have established governmental departments and enacted legislation that aggressively promotes agritourism. Five states – Tennessee, Kentucky, Indiana, Kansas and Vermont – recognize agritourism as its own industry that can provide economic benefits to producers, communities and the entire state.

Pittman said Arkansas has the human and physical resources to pursue a similar effort because, like those states that have undertaken comprehensive efforts to support and promote agritourism, agriculture is central to the state's economy.

## What's in an Oil?

If you are what you eat, researchers have found a rapid way to determine what you're eating, if it contains fat. They have reduced the time it takes to characterize edible oils from several days to five minutes. This will help industrial food chemists and importers increase efficiency and reduce costs, which may one day lead to savings for consumers.

Jackson O. Lay Jr., director, and Rohana Liyanage of the Mass Spectrometry Facility and Bill Durham, professor of chemistry, reported their findings in *Rapid Communications in Mass Spectrometry*.

"It's important to characterize fats so that people know what they're eating," Lay said.

Traditional methods of measuring the components of edible oils involve breaking down the fats – diglycerides and triglycerides into glycerol and free fatty acids – a process called saponification, which is also used to make soap. This process is time-consuming and transforms the original oil into a different product, one in which the diglycerides and triglycerides can't be distinguished.

"For years, people assumed that it didn't matter, but it turns out that it matters a great deal," Lay said. The two types of fat are metabolized differently, and diglycerides may be beneficial to human health. So the ratio of diglycerides to triglycerides may interest nutrition researchers.

The scientists used matrix-assisted laser desorption/ionization mass spectrometry, or MALDI-MS, as a direct method of characterizing oils. They measured the spectra of the oils to determine the mass of the different components of the oil and sorted out fatty acids of different weights.

The researchers purchased soybean oil, sunflower oil, corn oil, canola oil, olive oil, peanut oil, hydrogenated vegetable oil, shortening, butter and lard. When they compared the results of MALDI-MS to other characterization methods, they found agreement within 4 percent of research literature values and within 7 percent of values on package labels, which could be due to rounding in nutritional labels. ■



Photo by Russell Cochran







In her own words:

"I've been taking these photos as a way of acculturation...to understand the sights, sounds, people and taste of the Arkansas Delta."

Above, Motorcycle Festival, Helena, Arkansas (May 2006)

# The Great Migration

By Darrah Blackshaw

Right, Little Girl on Porch, West Helena, Ark. (spring 2006)



Above, Winter Cotton - I woke up at 5 a.m. in Forrest City and I realized it was snowing. I shot this on a farm between Lee and St. Francis Counties. (Feb 2006)

RaeGina Covington, a University of Arkansas journalism graduate student, has been researching the migration of African Americans from Arkansas to other states in the early 1900s. In addition to working on her thesis, she has also taken part in the production of several films.

Covington, a native of Cincinnati, came to the university in the spring of 2005 to begin her graduate program. She is researching her family's participation in The Great Migration from Arkansas to East St. Louis during the 1910s. Her interest in the subject developed through working on the genealogy of her family for more than five years.

"I realized that subject matter could make an interesting thesis," after she spoke to Patsy Watkins, chair of the journalism department, she said. Covington uncovered some unexpected facts about her family, such as a U.S. Census record containing information about one of her maternal great-grandfathers, which indicated that he didn't speak English. Now Covington is trying to gather facts about his origins.

Covington hopes to take her current findings and create a hypothesis about how her family came to the North, what they may have endured to achieve this, what their goals were and what they left behind. She also hopes to use what she knows now to acquire more information about her Southern heritage.

Covington's thesis relates to the world at large. During the time period she is researching, war, revolution and independence were spreading around the world. When African American soldiers were asked to give their lives to protect the United States during World War I, they believed they would return home as respected men. Instead, "Jim Crow" laws and resentful industrial workers, who were replaced by African Americans during the war, created additional animosity.

Covington's research will analyze and describe how external forces around the United States and the world and internal forces within the African American

community led to an "exodus" from the South. Migration and exodus are not themes exclusive to African Americans, Covington said. Many people can relate to or have experienced both in one form or another.

In addition to her thesis, Covington continues to explore another interest: film. Covington was one of three students who created the documentary *If These Halls Could Talk*, which tells the story of one of Fayetteville's local public schools, Jefferson Elementary. This film chronicles the oral history of the 75-year-old Jefferson Elementary School, which closed at the end of the 2006 school year.

Covington was a teacher for more than 11 years, and when she first came to Arkansas, she taught as a substitute teacher in Fayetteville Public Schools, including Jefferson Elementary. She also taught in and lived near neighborhood schools in Ohio and has seen how important they are to communities. Because of her experiences, Covington wanted to work on a documentary that related somehow to education.

"When this opportunity arose, I didn't hesitate to be a part of the production," she said. Covington and her team interviewed staff, teachers, students, parents and principals – past and present – so that they could allow people to express how they feel or felt about Jefferson during their time spent there. Their goal was to use the film as a tribute to one of Fayetteville's oldest schools.

Right now Covington is finishing up two other films: *Growing Delta Dreams*, a film about two African American farmers in the Delta who receive help from Heifer International to carry on a long-standing family tradition. Covington was the principal photographer on this film. She is also completing *Traveler: The first 100 years of the student-run newspaper*. The producer plans to show this film during the centennial celebration of *The Traveler* scheduled later this fall.

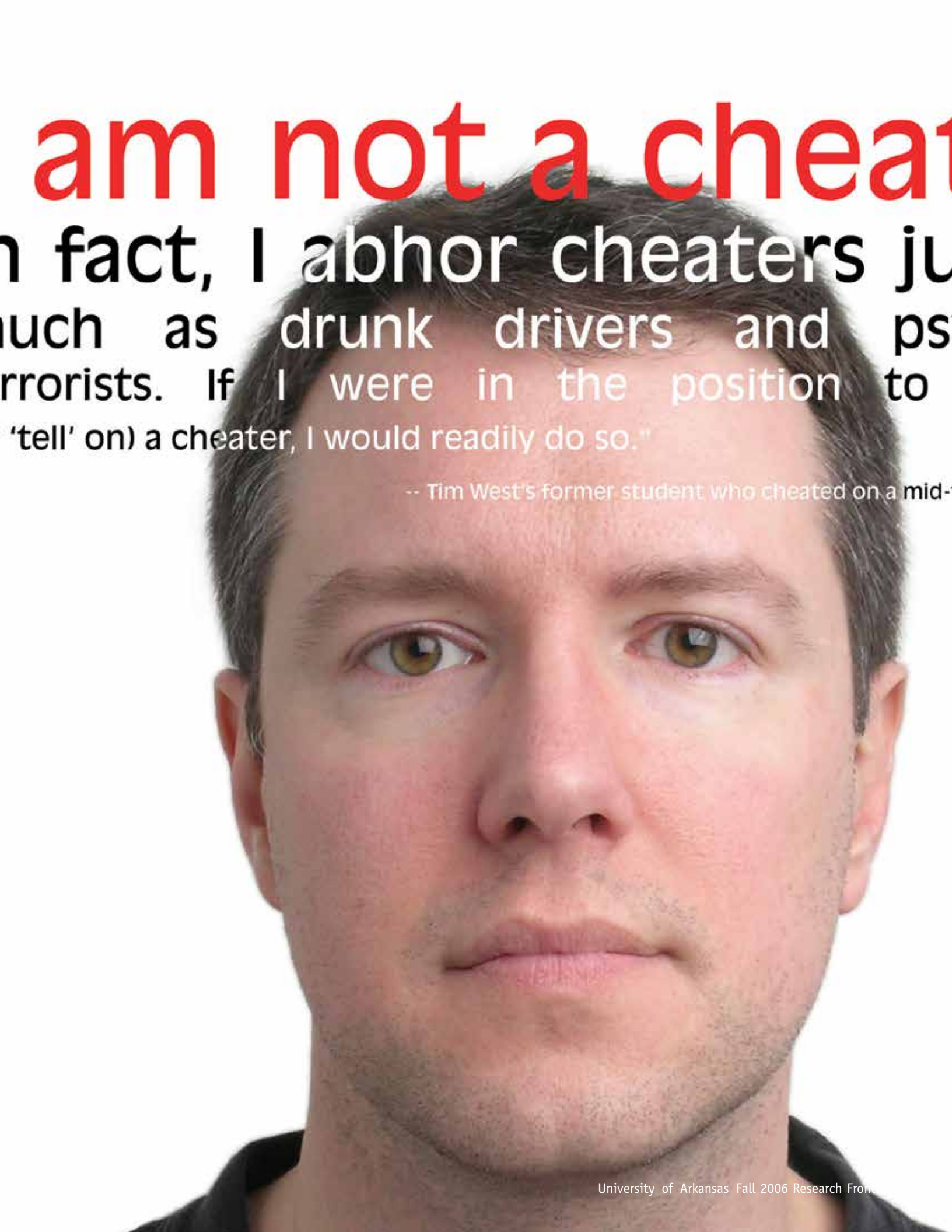
In between her work in film, Covington continues to work on her thesis and hopes to complete it in December 2007. ■



Covington

Photos submitted





am not a cheater  
In fact, I abhor cheaters just  
much as drunk drivers and terrorists. If I were in the position to  
'tell' on a cheater, I would readily do so."

-- Tim West's former student who cheated on a mid-

# Making Sense of Cheating

Accounting professor turns ugly incident into learning opportunity.

by Matt McGowan

## « The Problem »

In *The Cheating Culture: Why More Americans Are Doing Wrong to Get Ahead*, author David Callahan argues that cheating has become so common and culturally pervasive that ordinary citizens, people who do not think of themselves as cheaters, will inflate here or exaggerate there to achieve a beneficial outcome. Callahan says there are clear and powerful reasons for this behavior.

The U.S. economic climate has become so ruthlessly competitive that many people feel they have to cheat not only to get ahead but to simply survive. The obsessive focus on results and rewards has created an ethos in which people ignore or forgive those who have behaved unethically to obtain coveted results. The ends justify any means.

Most importantly, though, people cheat because, as the title of the first chapter of Callahan's book states, "everybody does it." Cheating has become socially acceptable.

"Cheaters never win." Not so, Callahan says. People also cheat because, in modern American society, cheaters do win. Perhaps because cheating has become so pervasive and acceptable, chances of being caught are decreasing. And people know that even if they do get caught, punishment won't be too severe.

Callahan posits that cheating has become a national moral crisis, and it's hard to argue with him. Almost daily, newspapers contain stories about corporate executives ripping off shareholders, scientists manufacturing data to create desired results and professional baseball players lying about whether they took illegal, performance-enhancing drugs.

Of course, secondary and higher education is not immune to the problem. In fact, many professors argue that colleges and universities are at the center of the crisis not only because academic cheating is prevalent, but also because today's students are tomorrow's professionals. If students are cheating in the classroom today, professors argue, chances are good that they'll participate in unethical behavior in the workplace after they graduate.



## « The Incident »

Five years ago, a distraught student called Tim West at home on a Sunday night. At the time, West, an associate professor of accounting in the Sam M. Walton College of Business, was teaching at a private, prestigious Midwestern university. Two days before the student called, he had assigned a take-home problem as part of a mid-term examination in an introductory course in managerial accounting. The student called in tears not because terrorists had attacked the United States, although this had to have been on her mind. She was crying because her conscience was under attack, and she felt compelled to do the right thing even though it would negatively affect her and her classmates. She informed West that students were cheating on the take-home portion of the exam.

The professor asked the student how she knew this. She told him that students were working together on the assignment, and they had found the answer to the problem on the Internet. West was angry. During class on Friday, he had been explicit about the rules: Collaboration was prohibited, and students were not allowed to use the Web or other computer sources to obtain help in solving the problem. He did not know that another accounting professor at the university had posted the instructor's manual for the course on the Web. This manual included the suggested answer for the problem West had assigned, and the student who called West on Sunday night said it was this site that students were consulting.

On Monday, West collected the exams and said nothing to indicate he knew the students may have cheated. He

**73 percent had cheated on the take-home portion of their mid-term exam**

wanted to look at their answers and search for evidence that would corroborate or refute the information he received on Sunday. West started grading papers Monday night and finished grading on Tuesday. Through the grading process, he realized that the information given to him by the student was accurate.

"Clearly, they were using formats that were consistent with each other, but were not consistent with anything we had covered in class," West said.

He stewed about it. It would not be too difficult to prove that the students had flouted the rules, which were carefully and clearly explained. Also, the university's honor code, which was well-known by all students, mandated that students refrain from cheating and specifically addressed many situations that constituted academic dishonesty. Relevant to West's problem, the code stated that students taking an examination may use only materials authorized by faculty, and students may not collaborate on graded assignments unless the instructor explicitly stated otherwise. These facts provided West with plenty of ammunition

to punish the students if he chose to. Failing them was one option, and the offenses were severe enough to pursue more extreme measures.

"I was angry, but then I thought the better idea was to treat this as a learning opportunity," West said. "College is about experimentation. My job as a professor is to facilitate learning, and part of that process is learning how to make decisions. Here, a bunch of people made a bad decision, but once you show them why it's bad and try to get them to understand it, it will be a learning opportunity they will remember."

West decided that he would help them learn how to make good decisions and try to understand what motivates students to cheat. So on Wednesday, he told his students what he knew: He had suspicions that they had cheated. He announced that the take-home part of the mid-term exam would be thrown out, and he asked the students to fill out a questionnaire, which he developed on Tuesday night, about their behaviors and attitudes regarding the situation. The professor told them that their participation was voluntary, and they were guaranteed absolute anonymity in any subsequent discussion about the incident. Furthermore, West told the students that no disciplinary charges would be brought against them.

Every student agreed to participate and completed the questionnaire. Their responses, combined with primary documents – answers to the take-home problem – and the university's computer system, which was able to reveal which students had gone to the other professor's Web site, confirmed that 47 out of 64 students, or 73 percent, had cheated on the take-home portion of their mid-term exam.

## « The Project »

"You won't believe some of these responses," West said. "Obviously, they were deeply troubled by their decision and behavior. They were carrying a real burden."

Students admitted that they had received inappropriate assistance, and they wrote prolifically about things such as the ethical reasoning behind their decision, their feelings about working with students who cheat, honor codes, what may or may not constitute cheating, and situations in which they think cheating is okay. With tiny words and sentences, they crammed many thoughts into a limited space. The responses were candid, thorough and prodigious. In some cases, they read like a diary full of embarrassing admissions. Other responses were defensive, like a guilty man trying to convince a jury that he is innocent.

The responses moved West. He was impressed by the honesty and the extent to which students had thought about their behavior, but he was also disturbed that all students failed to consider the impact of their behavior on others. There was a lot of explication about how cheating affected them, but no discussion about how their cheating might affect others. There was also too much attention given to outcomes. The process by which students reached those outcomes seemed to have little value. Overall, West realized the questionnaires contained meaningful infor-

mation about moral reasoning and the psychological processes connected to unethical behavior.

The responses were consequential, but West also recognized that he had stumbled upon a unique research opportunity. It is difficult for researchers to study academic cheating because they cannot entrap or trick students into participation in unethical behavior. It is unethical to induce unethical behavior, and therefore, it is nearly impossible to replicate the kind of natural environment that could produce credible data.

But West didn't have to trick anyone. He had caught students cheating without trying to catch them, and in this sense, an investigation of cheating and ethics found him rather than him looking for it.

West enlisted help from three colleagues – Sue Ravenscroft, Brad Shrader and Jeffrey Kaufmann – in the College of Business at Iowa State University, and the four researchers analyzed data from questionnaire responses and an additional test given to students to measure ethical judgment. Using a few theoretical arguments about ethical reasoning, each researcher independently read through all responses and identified common statements. They then worked together to come up with a complete list of statements, which they refined into four basic categories that explained why students cheated.

**I really didn't consider working with another person that unethical.**

## « The Findings »

The student who abhorred cheaters as much as drunk drivers and psychotic terrorists was one of 15 students who rationalized the decision to cheat by separating oneself from the action. Here, the basic concept is that the student committed the action but is not responsible for committing the action. They did this in two ways. The first had to do with character. Four students, including the student who abhorred cheaters, claimed they were not the type of person who would cheat, even though they acknowledged they had cheated. As West stated, the argument is "while I have cheated, I am not a cheater." Confusion was the second method in which students separated themselves from the action. Eleven students argued that they were less culpable because they were unsure about whether they were allowed to use the Web or work in groups.

"He made me do it." This response to the question of why a child uprooted a neighbor's flowers or picked on another child is a simple way of explaining how 34 of West's students rationalized the decision to cheat. The researchers dubbed this category third-party interference.



Photo by Russell Cothren



## If they can cheat, then why can't I?

These students focused on the actions of third parties that influenced their decision to cheat. Like the first category, students blamed others for their behavior in more ways than one, and, unlike the child's response, they were more sophisticated about how they did it.

Similar to the confusion argument in the first category, professor clarity was one method in which students said they were not fully responsible for their actions. Fourteen students said they would not have cheated had West been clearer in stating instructions and rules. However, none of these students claimed that West did not tell them what they could or couldn't do, only that they did not hear the instructions.

The researchers invoked a legal concept – attractive nuisance – to explain another method in which students point to the influence of third party as an explanation for their behavior. More complex intellectually and psychologically, this argument illustrates how far people will go to justify unethical behavior. Eight students blamed West for their behavior because, as they said, he had created a situation in which they could cheat by assigning a take-home problem with the answer accessible on the Internet. Essentially, they claimed West had induced them into cheating even though the professor did not know that his colleague had posted the instructor's manual on the Web.

"As far as the take-home part of the exam was concerned," West said, "I did that for the benefit of students who don't perform well on traditional tests."

The final argument within third-party-interference category resonates with Callahan's explanations for why so many people cheat. Twelve students said other students had influenced their decision. "A lot of people in the school do cheat or find the easy way out," said one student. "Unfortunately, this did reinforce my decision to cheat because I thought, 'well if they can, then why can't I?'"

A minority of students re-defined the action, a category of rationalizations that focus on arguments about what constitutes cheating and the acceptance of certain kinds of cheating. Five students thought that helping someone with an assignment was acceptable, but receiving help was not. Three students used an argument similar to the "everybody's doing it" justification. They argued that while their actions constituted cheating, they considered the wrongful behavior socially acceptable.

Most cheaters, 33 to be exact, focused their rationalizations on an alternative outcome, which helped them minimize the seriousness of their behavior by comparing it to worse behavior or by emphasizing positive consequences while downplaying negative ones. By

comparing their cheating, which they framed as somewhat unethical, to more serious forms of cheating, which they emphatically stated they did not do, students somehow came off sounding not too bad. For example: "I don't really consider working with another person that unethical," said one student. "Taking and copying answers from the key was highly unethical."

There are more than a few baseball fans – and players, obviously – who think steroid use must be okay if it helps players hit more home runs. Likewise, many of West's students figured that if the ends – home runs – were positive, then the means – steroid use – must be too. This echoes Callahan's statements about the American obsession with results.

"These students rationalized that if learning is the point of the class, and collaborating helps them learn, then collaborating, even on a test, must be good," West said.

Before discussing the meaning and implications of West's research, it is important to mention that more than half of the students offered multiple reasons as to why they decided to cheat. Thus the total number of student rationalizations is more than the total number of cheaters.

### « The Meaning »

West and his colleagues at Iowa State considered the above findings within the context of recent research on moral reasoning that centers on the psychological connectedness of actors to the outcome of their actions. Through concepts identified as "moral imagination" and "moral intensity," these studies argue that strengthening this connectedness will logically result in an increase in moral behavior.

For example, because an organization establishes rules according to its mission, members of the organization sometimes do not consider the impact of their actions outside of the organization. If a member of an organization can exercise moral imagination by identifying ethical issues outside of the narrowly defined rules of the organization, then that person may have the ability to behave with a higher degree of morality.

To justify unethical decisions, actors manipulate factors associated with moral imagination and moral intensity. In West's study, students manipulated factors through many rationalizations. He and the Iowa researchers concluded that students used these rationalizations to put space between themselves and the wrongfulness of their actions. The researchers called this process ethical distancing. The rationalizations were strategies to help students increase the distance between themselves and the outcome of their actions. By blaming a third party, by making moral distinctions between themselves and the action, by focusing on something good while ignoring the bad and by saying it was socially acceptable, students tried to shift wrongfulness away from their behavior.

### « The Implications »

To simplify grossly, the Enron scandal boiled down to cooked books, a complex manipulation of financial statements. When they cheated, the students in West's managerial accounting class were working with formats, or accounting formulas, for financial statements.

Without check, without an incident similar to the one that sparked West's study, is it reasonable to expect people to behave ethically as professionals if they cheated as students? West sees a connection, or perhaps continuum, between collegial and professional behavior. He thinks the experience of getting caught positively influenced most of his students, and he hopes the study will provide insight for teachers and managers searching for guidelines to encourage ethical behavior in the classroom or workplace.

## The strategies students used to rationalize cheating are an important warning about the future professional behavior of today's students.

"The strategies students used to rationalize cheating are an important warning about the future professional behavior of today's students," West said. "If tomorrow's managers are going to be able to prevent unethical behavior, then the processes by which these strategies emerge need to be clearly understood."

### « The End »

And what about the student who called West at home on a Sunday night five years ago? Her name is Jill Larson. She graduated with a degree in business and worked for a year as an executive-compensation consultant. She then entered a post-baccalaureate premedical program at Johns Hopkins University in Baltimore, and she will begin medical school in the fall of 2007.

"The experience helped shape my definition of what it means to be ethical," Larson said. "Now, some of my moral decisions are more black and white because the experience gave me a benchmark from which I could compare other situations. It made me realize that even though a significant part of the population won't make every ethical decision, I must still be true to what I believe and follow the right path. Peer pressure is difficult to overcome in college and it doesn't get any easier in professional life. My experience with Professor West gave me courage and confidence to stand up for what I believe to be true or ethical in controversial situations."

West holds the BKD Lectureship, an endowed lectureship established by the Baird, Kurtz & Dobson accounting firm for an outstanding accounting faculty member. ■







# Raiders of the Lost Arkansas

by Melissa Lutz Blouin

He wore a wide-brimmed hat and traveled far and wide looking for precious antiquities, but his name has been lost to time – until a professor of anthropology who works with the Arkansas Archeological Survey dug up his past to preserve it for the future.

His name was Sam Dellinger, and he was largely responsible for seeking out, documenting and preserving the pre-Columbian artifacts of Arkansas at a time when many outsiders were digging up Arkansas' history for northern museums and private collections.

Bob Mainfort, professor of anthropology, specializes in pre-Columbian societies, and has been working with artifacts found during Dellinger's tenure for more than 20 years.

When the Old State House Museum decided to develop an exhibit on Dellinger, they invited Mainfort to curate the exhibit and select relevant artifacts to be put on display. The resulting exhibit, "Sam Dellinger: Raiders of the Lost Arkansas, One Man's Quest to Save Arkansas's Past," is at the Old State House Museum until 2007.

Looters, treasure hunters and private collectors may sound like something out of the movies, but in 1920s Arkansas, they represented reality. When Dellinger arrived in Arkansas, he noted that places like Harvard, Columbia University in New York and other institutions had ongoing excavations in Arkansas that took historic, precious artifacts out of state. Also, poor tenant farmers and sharecroppers, driven into debt by collapsing cotton prices and devastating floods, discovered that selling American Indian pottery vessels could bring them more money than they could make on the farm in a month.

## Long History

American Indians inhabited what is now

Arkansas as early as 10,000 B.C. up until the early 1800s. Some lived in bluff shelters along rivers on the Ozark Plateau, leaving behind not only rock shelter art, but some of the best-preserved artifacts in North America. Woven sandals and baskets, even ears of corn, remained well preserved in the arid, protected conditions found under bluffs.



The J. William Fulbright College of Arts and Sciences is responsible for the prehistoric collections, most of which were amassed by zoologist Sam Dellinger. The collection contains more than 7,500 whole vessels from the Mississippi period. The entire collection consists of more than seven million specimens, ranging from pottery shards, beads, arrow points, shells and bones to grass mats and funerary items from Arkansas and surrounding states. Courtesy of the Quapaw Tribe of Oklahoma.

Photos by Russell Cochran





Photo by Russell Coulren

In addition to the rock shelters, culture flourished along the deltas and river valleys. Early farmers settled in communities and built nearby burial mounds, evidence of which is still visible in eastern Arkansas and northeast Oklahoma.

By the mid-1800s, few American Indians remained in Arkansas. Exposure to European diseases, Spanish demands for food and labor, and severe drought drove the population down. By that time, the people who had lived in bluff shelters and built the mounds had been gone for hundreds of years.

What they left behind has a rich cultural context that tells an important story of how the original people of the Americas lived and died.

Mainfort is particularly interested in how they died – or, rather, in how people were buried.

“In a broad sense, a person’s social position in life is reflected in their burial treatment,” Mainfort said. “Plus the way in which a society treats their dead is broadly consistent with the organizing principles of the society.”

Looking at funeral and burial customs gives anthropologists and archeologists a snapshot of societal principles as a whole, and differences among burials serve as a reflection of differences in society, Mainfort said.

## The legacy of the dead

In Mainfort’s research, he often finds himself examining objects that Dellinger had a hand in excavating. Most of these objects were found in the graves of pre-Columbian American Indians. While such practices were common in archeology in the 1930s, there has grown since then an acknowledgement of the rights of American Indians to have interests in the buried and exacerbated remains of their ancestors. The Native American Graves Protection and Repatriation Act of 1990 requires that researchers consult

with American Indian tribes prior to excavating graves located on federal lands. It also provides a process for museums and federal agencies to return certain cultural items to lineal descendants or culturally affiliated tribes.

While working to protect what he saw as the cultural heritage of Arkansas, Dellinger amassed almost 8,000 prehistoric artifacts. They include an effigy pipe elaborately carved in the shape of a seated man, pieces of cold-hammered copper and giant carved conch shells the size of a human head. While

each object has its own inherent beauty, it also has a deeper story to tell.

“These are expressions of the ways these people saw themselves in relationship to the world,” Mainfort said.



Photo submitted

Dellinger displaying the fruits of his labor – vessels collected from across the state.



Photo submitted

This photograph of the entrance to Cob Cave was taken around 1931. Cob Cave and other caves along the Buffalo River were found to contain well-preserved baskets, bags and cultivated plants, as well as pictographs and petroglyphs on the walls.

The vessels display a variety of creative motifs, including effigy pots in the image of humans, mythological creatures or animals, and elaborately painted vessels with swirls, stripes and other geometric patterns. Courtesy of the Quapaw Tribe of Oklahoma.





Photos by Russell Colgren

## Preserving Arkansas' past

Dellinger was an archeological pioneer in a day when almost no professional standards existed in the fledgling field. Most excavations were result-oriented and put little to no emphasis on the placement or preservation of the location of artifacts.

But although Dellinger had no formal archeological training, he kept careful notes on his own excavations, which occurred in the Ozarks, northeast Arkansas, the Arkansas River Valley and along the Ouachita River. However, he often wasn't able to be present, so many excavations were supervised by Dellinger's students with help from local laborers who were not trained in how to preserve and document archeological sites.

"The vast majority of what we see in the collections is a result of Dellinger's efforts," Mainfort said.

## Dellinger's Legacy

During Dellinger's tenure at the University of Arkansas from the 1920s to the 1960s, he built up an incredible collection of pre-Columbian artifacts from the Mississippi River Valley and the Ozark Plateau, which remains today one of the premier collections of its kind in the country, Mainfort said.

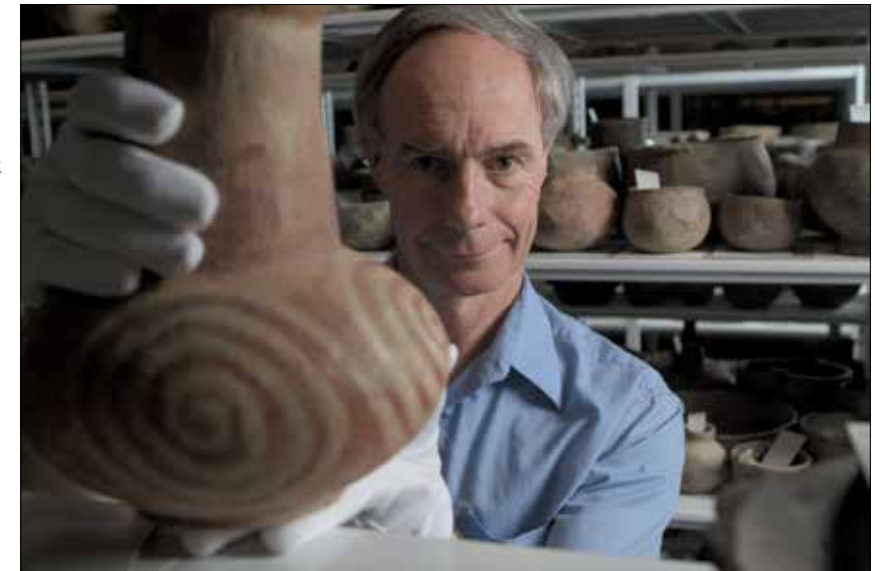
In addition to excavations, Dellinger also acquired artifacts by purchasing them from others, and he actively discouraged the removal of objects from Arkansas by out-of-state institutions.

"Imagine my chagrin...when I visited such museums as Peabody at Harvard, the National Museum at Washington, D.C., the one at the University of Michigan, the Heye Museum of the American Indian at New York and found...

that their finest and most valuable Indian displays had been sent from Arkansas," Dellinger said. "They are not like a crop of cotton or corn that can be grown again...when these go out of the state they are lost forever."

For this exhibit, Mainfort dug into Dellinger's past, thumbing through old museum files, yearbooks, alumni magazines and even old class schedules. He pored over newspaper articles written about excavations in the 1920s and 1930s. And he examined Dellinger's unpublished correspondence, which now resides in Special Collections in the University Libraries.

"Dellinger was a remarkable man,"



Mainfort said. In addition to his passion for artifact preservation, he was interested in the environment. He was involved in the formation of the Buffalo National River: Some of the original plans for its preservation were drawn up on his kitchen table. And he helped get 1,000 dogwood trees planted in Fayetteville.

Dellinger passed away in 1973 in relative obscurity, and Mainfort spent an hour looking for his grave site in Fairview Cemetery in Fayetteville. A plain, modest stone marks the resting place for this man. The collections he left behind mark his legacy in history, but the man Mainfort learned about had even broader interests beyond archeology.

As a zoology professor, he taught thousands of students. He traveled around the state for public speaking engagements during a time when a trip to Fort Smith was a major undertaking. And he became well known for growing ornamental gourds.

"I really wish I would have had a chance to meet him," Mainfort said. "There's so much I would have liked to talk to him about."

While Dellinger's methods did not reach the high standards of today, his legacy still stands: He kept many valuable artifacts out of the hands of private collectors and faraway museums so the history of Arkansas could be preserved in Arkansas. Above: "The vast majority of what we see in the collections is a result of Dellinger's efforts," said Robert Mainfort, professor of anthropology and curator for an exhibit about Dellinger, which is currently at the Old State House Museum in Little Rock. Courtesy of the Quapaw Tribe of Oklahoma.





Ozark Spiderwort

# FLORA PROJECT BLOSSOMS

BY LYNN FISHER

**Researchers cataloging the plant wealth of Arkansas find plants with anti-cancer compounds and cattle toxins as well as invasive species.**

Seven years ago, Johnnie Gentry, director of the University of Arkansas herbarium and professor of biological sciences in the J. William Fulbright College of Arts and Sciences, got in his old blue and brown Ford van with 95,000 miles on it and drove to universities and colleges throughout Arkansas on a quest to enlist help for an ambitious project he envisioned: to catalog every plant in the state.

He succeeded.

The project was built on sweat equity, as the collectors worked in teams of two, collecting the plants in two-gallon plastic Ziploc bags, writing field notes, and pressing plants. They drove up to six hours to reach a site, and then often worked 12 to 15 hours a day for four days at a time. Before starting at daylight, they studied relief maps, noting the location of ravines, wetlands, glades and woodlands. During the hot Arkansas summers, they would be wringing wet by 10 a.m. For aquatic specimens, they sometimes had to wade through stagnant, swampy water up to their armpits to collect the plants.





Jack-in-the-Pulpit



Dwarf Larkspur



Goldenseal



Columbine



Bloodroot



Butterfly Weed



Yellow Trout Lily

Photos submitted

To Gentry and his fellow scientists, this was fun.

The final count: Arkansas is host to 191 families, 924 genera, and 2,704 species of plants. Of those species, 621, or around 21 percent, have been introduced from other states or countries. Some are introduced by people who plant seeds bought elsewhere, by bird droppings or by gardeners planting new hybrids.

The Japanese honeysuckle is such a plant. Aggressive and invasive, it has become the most widespread, common plant in the Southeastern United States. The beef-steak plant from Asia has invaded two-thirds of Arkansas counties. The leaves can be eaten, while the seeds produce oil used for cooking and medicine. However, the mature plants are extremely toxic to cattle, and if they get into baled hay, become a real threat to farmers. For years, many were baffled by their dying cattle until they found out about the toxicity of the beef-steak plant.

The Arkansas Flora Project is widely supported throughout the state, with funding or research assistance from nine universities as well as the Arkansas Natural Heritage Commission, the Ouachita National Forest, the Arkansas Game and Fish Commission, and the Arkansas Native Plant Society. Gentry, who worked closely with George Johnson at Arkansas Tech University during the project, will oversee production of a fully illustrated manual, probably from 800 to 1,000 pages, describing all the plants.

"This will be the definitive treatment of all vascular plants in Arkansas," Gentry said. "Every class in plant taxonomy will use it, as well as anyone with an interest in Arkansas plants. We'll include information on geology, soils, climate, natural divisions, ecoregions and botanical history."

He expects the manual to be published in 2014.

Gentry and UA students Sarah Nunn, Sarah Jacobs, and Marisa Williams also have identified Arkansas flora that are either antibacterial or anticancer agents. Since 1959, scientists in the U.S. have examined more than 180,000 plants in their search for extracts that elicit anti-tumor activity. Patented treatments such as Taxol and Taxotere are derived from the Pacific and English yew, while Velban, Oncovin, and Fildesin come from compounds found in Madagascar periwinkle, a commonly cultivated plant.

"Because of their diversity, Arkansas flora are certain to contain excellent candidates for anti-cancer drugs," says Gentry. He explains that the diversity is in part driven by the unique location of the state, its proximity to the Mississippi river placing Arkansas in the ecozone between Eastern and Western species.

The researchers produced a set of county distribution maps and fact sheets for each species of cancer fighting plants. The process involved bringing together the records of all the state herbariums at the UA Herbarium. They then documented each plant, recording the date and location where it was collected, and reviewed existing ethno-botanical literature as well.

Arkansas has six natural geologic divisions, each containing distinct plant communities: the Ozark plateau, the Arkansas River Valley, the Ouachita Mountains, the West Gulf Coastal Plain, the Mississippi Alluvial Plain, and Crowley's Ridge.

The researchers discovered that of the 248 anti-cancer plants found in Arkansas, several had exceptional cancer fighting potential. For example, the mayapple is a common plant in the state, flowering in the spring and forming umbrellas over waxy white single flowers. Its fruit is edible and can be made into jams and jellies. For centuries, American Indians used it as a purgative and de-wormer, and a resin from the plant was used to treat venereal warts.

The mayapple, commonly found in Arkansas, may have chemotherapeutic properties that could be used in treating cancer.

Another promising candidate is the pawpaw tree, whose creamy fruit is a highly sought after delicacy. The trees contain the compound acetogenin, which has proven an important anti-tumor agent. Common sneezeweed, extremely toxic to



cattle and fish, contains a chemical that the National Cancer Institute has found to produce significant anti-tumor activity.

Gentry found that 249 species from Arkansas' 75 counties could be listed as cancer fighting plants. He became interested in identifying these plants when he found that no easily accessible information existed on them at all.

"We've provided a base for Arkansas researchers as well as a resource for laboratories around the country that are doing this research," says Gentry. "Overall, both projects have created a wealth of educational value. When we complete the manual, we'll have identified every invasive, poisonous, rare, medicinal and endemic plant in the state."

The members of the Arkansas Flora Project have just completed a Checklist of the Vascular Plants of Arkansas. Copies of the checklist are available for purchase at <http://www.uark.edu/~arkflora/#completedpublications>. ■



### BLACKBERRIES BECOME SPECIAL PROJECT

In addition to his work on the flora project, Gentry has taken on another passion – blackberries.

Gentry has spent hours in the prickly bramble patches, taking clippings of flowers, fruit and canes to characterize different varieties of these plants.

It all started for Gentry with a virus, brought to his attention by plant pathologist Rose Gergerich in the Dale Bumpers College of Agricultural, Food and Life Sciences. Gergerich studies a recent problem that has developed in cultivated blackberries – the culprit appears to be virus that is transmitted from wild blackberry varieties, and it is killing the cultivated plants. Gergerich consulted with Gentry to see if they could determine the origins of the virus.

"They need to know which blackberry species harbors the virus," Gentry said.

But as Gentry began looking at blackberry taxonomy, the only thing that became clear was that nothing was clear. Published literature contains contradictory statements about blackberry species in North America.

"There's really a need here" to characterize wild blackberry varieties, Gentry said. The project has expanded from its origins to become part of the flora project. "It's like a magnet: You want to know the answers, so you keep going."

The six-county area in Northwest Arkansas alone is home to 14 species of blackberries, Gentry said.

Despite the fact that blackberries grow statewide, they have been sparsely and incompletely collected.

"People don't collect them because they're difficult," Gentry said. He has the scratches on his arms and the chigger bites on his legs to prove it. And besides the scrapes and bugs, collectors must collect both flowering and non-flowering stems of blackberries to make an accurate examination of the species, because different species of blackberries reproduce in several distinct ways. ■



Johnnie Gentry

Photos submitted



Dwarf Crested Iris



Mayapple



Invasive Water Hyacinth



Fragrant Water Lily



Fire Pink



Bird's-Foot Violet



# The Greening of Education

By Barbara Jaquish

Right now, somewhere in the United States a newspaper or television show is talking about Jay Greene's education research. And, what he would consider even more important, it's safe to say that right now somewhere a researcher is replicating, criticizing or citing Greene's research. His goal – and passion – is to remake public education into an effective system, able to meet the needs of each individual child. As the first head of the university's department of education reform, he is in an enviable position: he has the resources – starting with a \$20 million endowment – to assemble a band of colleagues who share his goal and bring their own energy and vision to achieving it.

Greene came to the University of Arkansas in 2005 with experience both in academia and as a fellow with the Manhattan Institute, a position he retains while leading the department of education reform. His research has been wide-ranging, including, but not limited to, issues in choice, accountability, graduation rates and social promotion. The department hosts its first conference in October 2006, featuring the best ideas for improving public schools, submitted by members of the department's Technical Advisory Board, which is made up of some of the leading education researchers nationwide. An edited book will follow.

After ten busy months of department formation and continuing research, Greene sat down to discuss his views on education today and his hopes for the future. Excerpts from the interview are available here. To read and hear a fuller version, visit the Research Frontiers Web site at <http://researchfrontiers.uark.edu/>.

Photo by Russell Cochren





Photos by Russell Cothren

**Q** : What do you think are the most important questions facing public education?

**A** : I think the most important question facing public education is how we can improve productivity, that is, how we can get better results for the dollars we spend. We've doubled per-pupil spending nationwide over the last three decades. And yet results have been basically flat.

At the heart of the problem is that we don't connect resources to outcomes. Schools receive resources regardless of how well they do or how wise the decisions they make are. And only when there are consequences will people have incentives to start making wiser decisions and avoiding foolish decisions.

In the past, what we relied on was goodwill, and luckily we have a lot of goodwill in public education. We have a lot of good people who care a lot about kids, who care a lot about improving the quality of education, and we've relied on that goodwill to produce a quality outcome. The problem is that goodwill is not enough. There also have to be proper incentives for people to make good choices so that results are improved.

A typical teacher, unfortunately, will do the same thing for the rest of his or her career that he or she did the first year of teaching. It works for them as they see it. But the goal is not to have it work for them; it's to work for students.

At a general level there are two broad reform strategies for improving productivity. They are what we call accountability, which consists of centrally determining goals and attaching rewards or sanctions to the achievement of those centrally determined goals. Another strategy is choice. Choice allows consumers of education, children and their families, to move from one school to another and bring their resources with them. We have tried both of these kinds of reforms on modest scales with encouraging results.

Another large category of questions that I think is very interesting and important is the civic consequences for education. We don't just have a system of public education to produce high

achievement, which then we hope leads to economically useful skills. We also have a system of public education to produce engaged citizens, who will hold the values necessary for our democratic system to function properly. This topic receives significantly less attention than the achievement question, but I think it's also quite important.

The juxtaposition of achievement and civics is making real the equal opportunity for a quality education. Equity as a goal in education is a very important topic as well. Here we mean that all groups would have access to the quality education that would allow them to gain the economic skills to be economically successful but also would open the doors to political and social power.

**Q** : You have a rare and exciting opportunity to form a new department with exceptional support for a cohort of endowed faculty chairs. You have already filled several of these chairs. Gary Ritter holds the chair in education policy and directs the Office for Education Policy. Robert Costrell has recently assumed the accountability chair and Patrick Wolf the chair in choice. The chairs in teacher quality and leadership remain to be filled. What mix of expertise and interests do you look for in the faculty who join the department of education reform?

**A** : We're looking for extremely bright, hardworking people, and I think we've found people like that. But also we're looking for people whose work is both academically rigorous and easily accessible. We want people doing the best, cutting-edge work on these questions who have an interest and ability in communicating their results to policymakers, educators and the general public. After all, finding interesting answers to questions is not very helpful unless you tell people about it, and you have to tell people about it in a way they can understand.

Arguably, the whole college of education is in one way or

another engaged in education reform. Everyone's trying to make schools better in a very direct way, the training of future educators, and that's very important. But it's also important to step back and look at the systems that shape the behavior of the educators that we're training. There is something to be said in this department in emphasizing these systemic forces and putting somewhat less emphasis on direct experience in the schools. Similarly in an army you need very well trained soldiers and you need people to train those soldiers, but then you also need strategists who think about how you use the soldiers for the right effect. I think we need to be doing both in the college of education, and I think this is part of why this new department was created.

**Q** : Tell us about what research the department has already undertaken and what's on the horizon.

**A** : One thing that we've done already as a department is develop the School Performance Index. It's an attempt to measure the quality of schools in what we think is a more precise way using current accountability testing. The difficulty with current accountability testing is that it often tells us more about the demographic characteristics of the students in the school than about the quality of the school itself. So schools with advantaged students are said to be good schools when they may not be good at all. They may be mediocre but with very advantaged kids. And other schools with low test scores are said to be bad schools, but they might actually be good schools, bringing up students with severe disadvantages to higher levels of achievement.

So we attempted to disentangle these demographic characteristics from school quality characteristics with the School Performance Index. We received a fairly big reaction to it and a fair amount of criticism, but I thought it started a very good conversation about how it is that we really measure school quality.

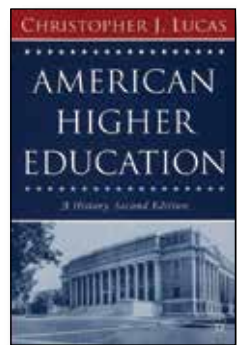
Gary Ritter and I have done a study on integration in public and private schools, which is an area of research which we each have done separately before joining this new department. In fact, I did a study, and Gary replicated it and found the opposite result. We wanted to do a project together to see if we could resolve the question. And we've done that. The sneak preview is that we partially confirm his earlier results and partially confirm my earlier results. We find that private schools are somewhat less well integrated than public schools, as Gary had earlier found, but that the financial barrier of tuition seems to explain the difference in integration. So that if we control for that tuition, then public and private schools are equally well integrated.

I do have a new book project under way to follow up on *Education Myths*. The tentative title is *The Carrot and the Stick*. If *Education Myths* was primarily about how we misunderstand the nature of the problem in education, the new book is largely about the promise of incentive-based reforms.

**Q** : When your children grow up and walk into a public school as parents, educators or researchers, what would you like them to experience?

**A** : Many years from now when my children enter a school as a parent or educator, I expect that they'll see very different things in different circumstances, if we do it right. The notion of best practices, which has been imported to some extent from the business world, can be misapplied in education. I'm not convinced that there is a best practice. What we end up with if we pursue that too far is a system that's "one size fits none," and that's a real danger in education. I know that children have very different needs, and what they need is a school that will be effective for them. It's not always easy to achieve – it's certainly not easy to achieve – but that's our goal. ■



**American Higher Education**

By Christopher Lucas

*Palgrave*

Christopher Lucas takes a closer look at teacher education in the second edition of his book.

Lucas, a professor of higher education and educational foundations, revised his 1994 text on the history of American higher education, which traces its beginning to the dawn of recorded history in general.

Lucas tells this story in fewer than 400 pages, keeping it concise and topical.

Lucas' revision added pages to the second edition that offer perspective and updated information on debates over higher education's access, cost, academic quality, social impact and curricula.

The first edition of Lucas' history of American higher education made an impact on the education community's perception of higher education when it was published. It is used in graduate programs around the country in courses to prepare people for positions in administration, student services and higher education. Several reviewers commented on the first edition's readability for a general audience.

The second edition covers the infusion of market values into academia, as well.

Lucas is the author of several other books, including *Teacher Education in America*, *Crisis in the Academy* and *New Faculty*.

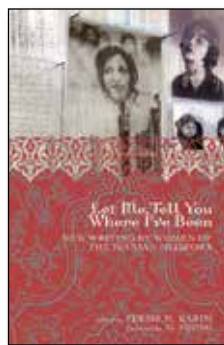
**The First Inhabitants of Arcadia**

By Christopher Bursk

*University of Arkansas Press*

Christopher Bursk's *The First Inhabitants of Arcadia* is a fascinating collection that investigates the magic of the alphabet and language. Herman Melville, Dusty Rhodes, and Hoyt Wilhelm skinny-dip and pick up gondoliers and cut figure eights into the ice in this collection. Here too are poems about a boy's first investigations into the nature of language as he studies the backs of baseball cards, and a young man's infatuation with the "F-word." The titles sing their lettered songs: "An Ode to j," "M-m-m Good!" and "O in Trouble." And over the whole book broods the great lexicographer, Samuel Johnson, that deeply troubled caretaker of the mother tongue. More than an ABC book, this collection asks questions at the very heart of how we understand the world and shows us the glory and silliness at the heart of human life.

Bursk, recipient of fellowships from the National Endowment for the Arts, Guggenheim and Pew, is professor of English at Bucks County Community College in Pennsylvania. He is the author of a number of collections, including *The Improbable Swervings of Atoms*, winner of the 2004 Donald Hall Prize in Poetry. He has been recognized for his work with prisoners, the homeless, food banks and women's shelters.

**Let Me Tell You Where I've Been: New Writing by Women of the Iranian Diaspora**

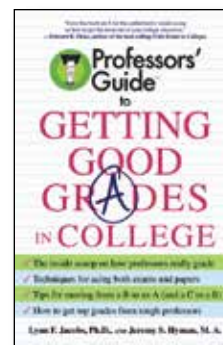
Edited by Persis M. Karim

*University of Arkansas Press*

By educating a people who, due to the complicated U.S.-Iran relationship, have misjudged the Iranian woman as complacently veiled in her role in society, this book proves the basic and universal human need for acceptance, expression, and love. In a world where the West and Middle East seem constantly in conflict, *Let Me, Tell You Where I've Been* tips the scales towards acceptance and connects two disparate cultures.

Persis Karim provides an outlet for a voice long silenced and desperate to be heard. Through stories, memoirs, poems, prose poems, and essays, women of the Iranian diaspora tell of their displacement and the struggle to save their identity. Uprooted and misunderstood, these immigrants relate their experiences in the United States.

The tales of the people fleeing to the land of opportunity only to find a land of prejudice are heartbreaking. However, the tone of the book remains optimistic. It gives the reader hope that, in a world where power is the driving force and wars determine existence, life continues and cultures survive, even thrive.

**Professor's Guide to Getting Good Grades in College**By Lynn F. Jacobs and  
Jeremy S. Hyman*Harper-Collins*

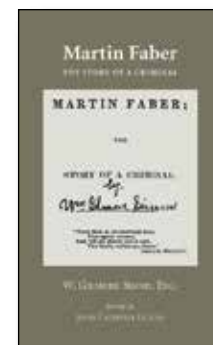
For parents and students who are making a significant investment in time and tuition, the *Professors' Guide to Getting Good Grades in College* can be a valuable insurance policy. The book is designed to clue new college students into how the system works and how to get the most out of classes.

Lynn F. Jacobs, head of the art department, and co-author Jeremy S. Hyman, a philosophy professor, explore and explode the myths about grading that students bring to college. They offer students the kind of inside information that, if followed, can turn a novice into a scholar who earns grades to be proud of.

They offer guidance on working effectively with professors throughout the semester, from the first day of class to the day after final grades come out.

The authors steer students toward developing relationships with their instructor and teaching assistants.

Jacobs and Hyman stress looking at the big picture and discovering passion in knowledge. They advise students to work towards understanding the structure, context and relationships of the information and ideas they encounter in class. They also caution students about focusing only on a diploma.

**Martin Faber: The Story of a Criminal**By William Gilmore Simms  
Edited by John Caldwell Guilds*University of Arkansas Press*

William Gilmore Simms (1806-1870) is one of the nation's great Southern writers. His work includes short stories, novels, poetry and historical pieces. The publication of *Martin Faber* was the beginning of Simms' journey to become "the best novelist which this country has, on the whole, produced," to quote Edgar Allan Poe.

In the gothic tale *Martin Faber: The Story of a Criminal*, Simms takes his readers through the dark and twisted mind of an unstable psychopath who from an early age has been living with an inner demon inside himself. Martin Faber unleashed his dark side when he murdered his young girlfriend Emily, in order to marry another woman. Martin later revealed his horrific crime to his best friend, who in the end turned him in by uncovering Emily's buried body for the whole town to see. Martin Faber was executed shortly after he attempted to stab his wife Constance while he was in jail. This short novel, which was published in 1833, is considered an examination of criminal psychology and caused Simms to become known to a national audience. This edition of *Martin Faber: The Story of a Criminal* was edited by professor emeritus John Caldwell Guilds.

**LBJ: Architect of American Ambition**

By Randall B. Woods

*Free Press, a division of  
Simon and Schuster*

In the first biography of Lyndon Baines Johnson to come out since the release of his presidential tapes, Randall B. Woods, the John A. Cooper Distinguished Professor of History, argues that the same idealism that drove the Civil Rights Movement and the Great Society also drove the war in Vietnam. Woods portrays LBJ as a complex man whose passionate commitment to advancing civil rights and alleviating poverty seemed in contradiction to his leadership in the Vietnam War. Woods conducted in-depth interviews with many who had worked closely with Johnson, including his long-time secretary and dozens of his aides, and studied newly released White House recordings and declassified documents.

Woods called the tapes "a biographer's dream" and an "unbelievable" resource that revealed "all the shades of Johnson's personality and the complexities of the legislative process." Midway through the biography, a chapter titled "Camelot Meets Mr. Cornpone" marks Johnson's reluctant passage from Texas congressman to vice president and to the leadership role that allowed him to fulfill his ideals.

To hear Woods read the book's prologue, go to <http://www.researchfrontiers.uark.edu>.







Photo by Russell Colgren

## What causes a mirage?

*Reeta Vyas, professor of physics in the J. William Fulbright College of Arts and Sciences, replies:*

Mirage is an optical phenomenon, which can be explained in terms of refraction of light and variation of air density with height in the atmosphere. A light ray entering a thinner medium from a denser medium is refracted or deflected toward the interface between the media. On a hot sunny day, the warmer air near the earth's surface is less dense than the cooler layers above it. The density of air thus increases with height. Under these conditions, a ray from an object, say a tree, traveling towards the earth, keeps bending toward the interface as it passes through different layers and is eventually reflected back in the upward direction. To

a person seeing this reflected ray, it appears to come from a point below the ground. Thus the person sees an inverted image of the tree below the tree creating the illusion of reflection in water. This is called inferior mirage because the image is formed below the object. In cooler climates, the air near the earth's surface is denser than the layers of air above it causing the density of air to decrease with height. A ray traveling upward from an object, say, a ship, is refracted towards the ground creating an inverted image of the ship in the sky. Since the image is formed above the object it is called superior mirage. More complex variation of air density can lead to more intricate image patterns known as Fata Morgana, or Fairy Morgan, after the legendary shape-changing half-sister of King Arthur. ■



Photos submitted

## Why do plants have thorns?

*Michael R. Evans, associate professor of horticulture in the Dale Bumpers College of Agriculture, Food and Life Sciences, replies:*

Since plants are typically anchored in place by their root system, they are not able to run away from predators. Therefore, plants have developed various defense mechanisms against common predators such as insects and other animals that might want to eat them. Plants deploy a number of chemical and physical defenses to protect themselves from predators. Some plants produce chemicals that are poisonous or might taste bad to insects and animals. A good example of such a plant is the milkweed, which produces cardiac glycosides – although Monarch butterfly larvae specifically feed on milkweed. Other plants develop modified leaves, stems or epidermal cells that change shape and become hardened and sharp.

Officially, modified leaves are referred to as spines, modified branches are thorns and modified epidermal cells are prickles. In most cases, people simply refer to them as thorns or spines. Examples of plants that deploy these types of defenses include roses, barberry, flowering quince and raspberries and blackberries – unless horticulturists have bred them to be thornless. Regardless of what we call them, structures such as thorns make it difficult for animals to come along and take a bite without a painful lesson! ■