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Fall 2009

## Research Frontiers, Fall 2009

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# UNIVERSITY OF ARKANSAS RESEARCH FRONTIERS

FALL 2009

**Organic Orchard  
Research Bears Fruit**



## Dark Matters

The year 2009 has been designated the International Year of Astronomy to celebrate the 400th anniversary of Galileo's first viewing of the heavens with a telescope. He was the first to notice that the Milky Way, the streaky band across the night sky, contains thousands of individual stars and suggested that the stars could be further away than anyone had yet imagined.

By the early 20th century, scientists determined the composition of stars and found how stars produce their energy. They also explored how stars form and die, and are recycled into new stars in the Milky Way galaxy.

The pressing question in early 1920s astronomy, however, was: How big is our galaxy and are there others like it? Once astronomers began using telescopes, they saw small "cloudy" objects dotted around the heavens. They named these objects "nebulae." But were these objects in our own galaxy, or did galaxies outside our own?

In 1920, astronomers debated this. Harlow Shapley argued that our galaxy is large, and any nebulae observed could be contained within it. Heber Curtis argued that the Milky Way is small and the nebulae could lie beyond its boundaries.

Edwin Hubble later ended the debate by determining the distance to the Andromeda nebula using a special class of star that he could resolve in the outer reaches of that galaxy. The distance proved to be far greater than the large size suggested, correctly, by Shapley for our own galaxy. Shapley and Curtis both proved to be correct: the Milky Way galaxy is large, and more galaxies exist beyond it.

While we now know that there are over 100 billion galaxies in the observ-

able universe, we still lack a deep understanding of how galaxies form, evolve with time and end their lives. The situation bears an analogy with the state of astronomy at the beginning of the 20th century. Just as the 20th century saw the birth of a complete and sophisticated science of the star, so the 21st century is shaping up to be the century in which we come to know and understand galaxies.

The first clue that galaxies, like stars, evolve with time came in the 1960s with the discovery of quasars, the energetic centers of some galaxies. Theorists began to study the stages of advanced gravitational collapse, which gave birth to the notion of black holes, now thought to power quasars through matter falling into them. Astronomers have evidence that most well formed galaxies have a black hole in their centers.

Astronomers also have observed correlations between the size of the super-massive black hole and certain features of their host galaxies. One possible link between them is the dark matter halo, which astronomers believe exists in all galaxies and which probably played a role in their evolution.

In the 21st century, astronomy has gone beyond starlight to study another type of mass in the universe – black holes and dark matter. This mass seems more plentiful than the shining mass, and may dominate how galaxies have formed throughout the lifetime of the universe. ■

**Julia Kennefick**  
Assistant Professor,  
Department of Physics

Photo by Russell Cothren

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## From Damascus to Secaucus: Doing the Arab American Feminist Dance

By Barbara Jaquish

Walk into any bookstore today, and you'll see a novel with a familiar figure on the cover. She is veiled. Her dark eyes look out warily or sullenly.

She is not Mohja Kahf, poet, novelist, teacher, scholar, and English professor, born in Damascus and raised in the United States. Nor is she any of the vital, wild, earthy, thoughtful, spiritual Arab and Arab American women Kahf knows and writes about.

She is not Khadra Shamy, the heroine of Kahf's first novel, *The Girl in the Tangerine Scarf*. She is not the rebellious odalisques who say "enough is enough" in a poem from Kahf's collection *E-mails from Scheherazad*.

But the veiled woman is widely recognized. She is the Arab woman as defined by the Harem Stereotype, and, according to Kahf, it is the dominant story told in the modern world about Arab women.

### Victim. Escapee. Pawn.

"Putting it all together," Kahf says, "three faces only are allowed to the Arab woman under the regime of the stereotype: victim, escapee and pawn."

As victim, the Arab woman is "a mute marionette" with no ability to act for herself. She stands alone, and the women who shaped her – the grandmothers, sisters, aunts and "the vibrant multi-layered culture that belongs to Arab women" – are all invisible.

Then, there are the cold Arab men who oppress her, "the forbidding father and the brutal brothers." According to the stereotype, she comes from a cruel culture that stifles sexuality. In contrast, Kahf, who wrote a popular and sometimes controversial online column "Sex and the Umma" (*Umma* is the community),

sees the approach to female sexuality within Arab cultures as "layered and complicated," not monolithic oppression.

Within the stereotype, each woman "appears a lonely crusader facing her entire culture," either as a victim or a lone escapee, and the 100-year-old Arab feminist movement vanishes, Kahf says. The pawn, the woman who assists in the oppression of other women, is depicted less often in Western media.

### Dodging and Feinting

Given the ubiquity of the stereotype, what to do? Kahf prescribes a good dose of critical thinking combined with opening the mind to a dual critique of the Muslim community and Western societies.

"We actually need time away from the Harem Stereotype," Kahf says, "to tackle the real shapes of our sexism, to pinpoint the sexist practices we have not even begun to analyze because we only look at issues on the agenda of the stereotype."

Some writers embrace the stereotype, Kahf says. Others tackle it head-on or go the other direction and deny anything critical of Arab culture. Another approach is to work without referring to the stereotype at all. Or there is the ironically playful tactic – "thumb your nose at it."

It is not necessary to pick one perfect response to the Harem Stereotype, Kahf says.

"How about a multi-tactical approach, dodging and feinting, doing the Arab American feminist dance, sometimes playing, sometimes fighting clean, sometimes fighting dirty, sometimes deny deny deny, sometimes utilizing the stereotype for one's own purpose?"

Visit <http://researchfrontiers.uark.edu> to read an expanded version of this article that includes several of Kahf's poems and a story excerpt. ■



8

## Departments

2 On the Web

3 Research Briefs

6 Student Research

30 Book Reviews

32 UA Q & A

33 Arts & Letters



14

## Features

### 8 Copyright Conundrum

A law professor argues that current copyright law inhibits free speech on the Internet by putting the burden of proof on the user.

### 14 Virtual Pompeii

What do gaming and Bernini have in common? What is a classicist doing at a gaming conference? Researchers from computers to classics have teamed up to get a better look at what life was like in an ancient Roman city.

### 20 Transportation Twist

Professors and students create a vision for the future of light rail in Northwest Arkansas and show how it fits into a greener future.

### 26 Organic Orchards

Researchers use chafing dishes, leaf blowers and hawk perches to show commercial farmers how to successfully grow organic and sustainable fruit.



20



26



▼ **A Tour of the Villa:**

Classicists and computer scientists take us back in time with futuristic technology that allows a peek at what antiquity might have looked like.



Image submitted by David Fredrick

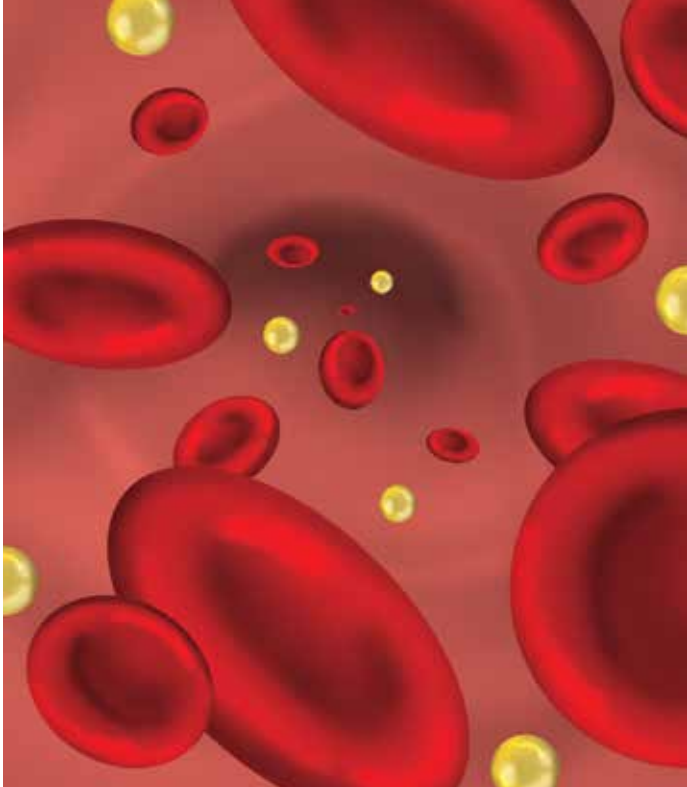


Illustration by EP UREL

▲ **What Numbers are Important When Looking at Cholesterol?**

See the reply to this and other questions at <http://researchfrontiers.uark.edu>, and submit a question of your own.



Photos by Russell Cobrien

▲ **Research on the Farm:**

Follow researchers as they experiment with organic and sustainable orchard growth. By trying different techniques and discovering what works and what doesn't, the researchers create longer growing seasons and more robust fruit, making it easier for consumers to get apples for their pies and blackberries for their cobblers.

**Researchers Study Cave's 'Breathing' for Better Climate Clues**

Researchers studying the way caves “breathe” are providing new insights into the process by which scientists study paleoclimates. Graduate student Katherine Knierim, Phil Hays of the geosciences department and the U.S. Geological Survey and Erik Pollock of the Stable Isotope Laboratory are conducting close examinations of carbon cycling in an Ozark cave. Caves “breathe” in the sense that air flows in and out as air pressure changes. The researchers have found that carbon dioxide pressures vary with external temperatures and ground cover, indicating a possible link between the carbon found in rock formations in the caves and seasonal changes. The movement of carbon in cave systems is controlled by the concentration of carbon dioxide. When conditions are right, this carbon can be deposited as layers in stalagmites, stalactites and soda straws. These layers resemble the rings found in trees, except that they can date back millions of year, and hold information about cave conditions.

“People have been using these formations as paleoclimate records,” Hays said. However, researchers make an assumption when they do so. “The problem is that you have to assume you are getting even carbon and oxygen isotope exchange,” Knierim said. Isotopes, or atoms of the same type but with slightly different weights, are found in plants, animals, organic matter and rocks. Different types



Erik Pollock of the Stable Isotope Laboratory climbs into tight spaces to study carbon dioxide cycling in caves. Seasonal differences can provide clues to paleoclimates.

of material have unique “signatures,” or proportions of a particular atom at a particular atomic weight. By looking at carbon isotope ratios in cave topsoils, the cave atmosphere and the stream within the cave, Knierim and her colleagues will be able to determine the different contributions of carbon sources to the formations. This will help scientists develop more accurate paleoclimate conditions from cave formations. ■

**What's Good for Big Business Not Necessarily Good for National Economy**



Kathy Fogel

In 1953, during a Senate Armed Services Committee hearing to determine whether he would become U.S. secretary of defense, Charles E. Wilson stated that keeping his job as head of General Motors would not constitute a conflict of interest because “what was good for our country was good for General Motors, and vice versa.” New research by a business researcher suggests the opposite – that a stable group of large corporations is associated with slower economic growth, particularly in high-income countries. “Our findings raise the possibility that big business in some

economies might be excessively stable, and that this is inimical to economic growth,” said Kathy Fogel, assistant professor of finance. “Our results, especially those linking economic growth to the demise of old, big businesses and not merely the rise of new ones, support the notion that sustained economic growth entails new corporate giants arising and undermining the old leviathans.” Fogel and her colleagues compared rosters of 44 countries’ top-ten businesses in 1975 and 1996. The researchers found that economies whose big businesses changed less exhibited slower real per-capita gross domestic product growth, slower capital accumulation growth and slower total factor productivity growth from 1990 to 2000. The researchers’ main finding supports Austrian economist Joseph Schumpeter’s notion of “creative destruction,” stating that growth occurs in capitalist economies because upstart, innovative firms arise and ruin oversized and stagnant corporations. “Our results persisted after numerous robustness checks,” Fogel said. “Big business stability retained a negative relation to all three growth measures, consistent with Schumpeter’s view of upstart firms undermining inefficient and doddering behemoths.” ■



# A Short Treatise on Hindu Law

By Herbert Cowell

*The Lawbook Exchange, Ltd.*



Steve Sheppard, William Enfield Professor of Law, provides an introduction to this reprint of the sole edition of a classic of the British Raj

era. As the remarkable architecture of Calcutta is the physical embodiment of the synthesis of India and colonial Britain, so *A Short Treatise* exemplifies the synthesis of their legal traditions.

Herbert Cowell was an English lawyer who practiced in colonial India in the early 1860s and became a professor of local laws. His *Short Treatise* grew out of his Tagore Law Lectures of 1870 and 1871 and from a series of lectures delivered to the students of the Inns of Court in 1893.

The work details laws observed by members of the Hindu community in India that were recognized under British rule and incorporated into the colonial legal system. These dealt principally with family organization, land tenure and succession. It dates from a time when Anglo-Hindu law was a mature system at its highest level of sophistication.

Cowell's work offers the reader a sense of history and a glimpse into how modern Indian law came into being. As Sheppard writes, *A Short Treatise* bridges "the earliest consolidations of British power in India...to the robust recognition and standardization of religious laws in a secular system that has persisted into the modern Indian state." ■

# Extreme Amp for the Space Environment

Space missions require "warm" boxes to protect electronic circuitry from extreme temperatures and exposure to radiation. Electrical engineering researchers have designed and successfully tested an electronic micro-amplifier that can operate in space without protection from a warm box.

Capable of functioning with consistency and stability at extreme temperatures, the new amplifier saves power and space required for electronics circuitry and will also contribute to the development and commercial production of electronics and computer systems that do not require protection in extreme conditions and environments.

"This and several other designs focus on wide-temperature operational characteristics of sensor-based, signal-processing circuits," said Alan Mantooth, professor of electrical engineering and holder of the Twenty-First Century Endowed Chair in Mixed-Signal IC Design and CAD. "But our device is the first fully differential amplifier circuit designed specifically for extreme temperatures, including temperatures in the cryogenic region. Some of our designs have been tested as fully operational down to 2 Kelvin, or -271 degrees Celsius."

In electronics and computer systems, amplifiers increase the amplitude of a signal, usually voltage or current. Differential amplifiers multiply differences in voltage or current between two inputs by a constant factor. This factor – called differential gain – is the measure of the circuit's ability to increase the power or amplitude of a signal.

Fully differential amplifiers are used in various electronic systems, including analog-to-digital conversion applications. They are considered building blocks in the development of integrated electronic circuits and chips. ■

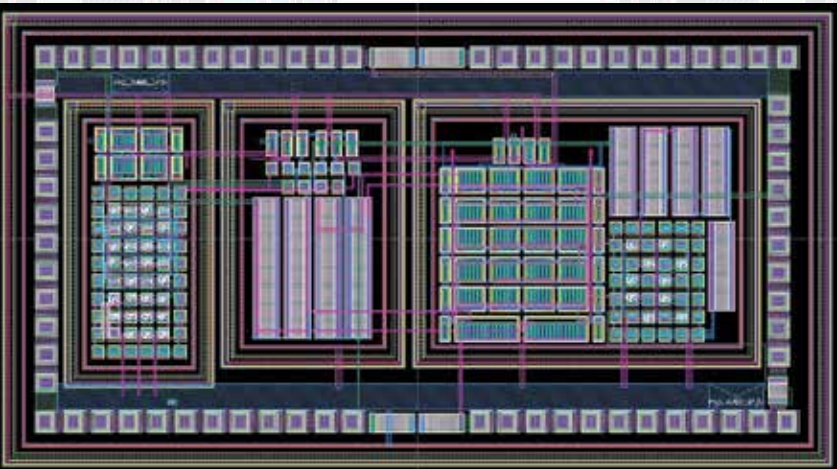


Image submitted

# Incentive to Snitch Produces False Information

The secondary confession – also known as snitching – is widely accepted as valid evidence in criminal prosecution. Yet, the first behavioral study to investigate whether people will provide false secondary confessions has raised concerns about the use of such evidence when informants are offered incentives, said psychology researchers Jessica K. Swanner and Denise R. Beike.

"The results of our study were interesting but discouraging," Beike said. "With the use of incentives, we should have seen an increase in true secondary confessions. But an incentive actually did the opposite. It brought forward not the reluctant informant, but the opportunistic."

In the psychology lab, 129 participants paired with confederates of the researchers engaged in a computer exercise that ended in a simulated computer crash and a purported loss of data. After the crash, confederates either denied or "admitted" that they had caused the crash.

Some participants were given an incentive to tell whether the confederate had admitted to causing the problem. They were told a faculty adviser would be informed and that the person who had caused the problem would be required to return for a second session.



Photo by Russell Cothren

Participants were asked to sign a statement affirming that the other person – the confederate – had admitted crashing the computer. Not surprisingly, participants were more likely to sign when the confederate had admitted to causing the crash. But with an incentive, the rate of signing increased only when the confederate had denied causing the crash. The incentive increased the rate of false rather than true secondary confessions.

"It is essential for jurors, prosecutors and judges to be informed about the potentially biasing nature of incentives to confess," they concluded. "Snitches may indeed lie or come to believe a falsehood about another to be the truth. Jurors must be able to consider this possibility as they make their verdicts." ■

# To Teach About Social Justice, Understand Injustice

An initial examination of how teachers understand and teach about social justice confirmed that "it is critical that teachers understand social injustice before teaching about social justice," according to educator Sung Choon Park.

Park examined how teachers understand social injustice and how it is related to their pedagogical practices.

He asked 35 educational professionals to nominate teachers who incorporated social justice in their classroom both as subject matter and as a process. From the pool of nominees, eight teachers, including five women and three men, from eight schools in five

districts volunteered to take part in an extensive study of their backgrounds, attitudes and teaching practices.

Of the eight participants, five taught social studies, English or art in different high schools, one taught social studies and English in a middle school, and two taught kindergarteners and 5th graders in different elementary schools. Three identified themselves as "white but" with a distinct racial or ethnic origin.

The data collected from each teacher included five interviews, 10 classroom observations and one or two observations of the teacher working with others in the school or community.

Among the teachers studied, a mix of experience and empathy influenced how they understood social justice and injustice and how that understanding influenced their teaching practices.

When individuals came from bicultural backgrounds, they showed greater understanding of social injustice.

"Different experiences bring different perspectives on social justice issues," Park said, noting that when he interviewed teachers from bicultural backgrounds, they had a heightened awareness of others.

"They were always looking at themselves through the eyes of others. They have double consciousness," he said. ■



By Melissa Lutz Blouin

# The Shape of Greens

Honors College math major Jeff Gwaltney looked no further than his adviser's lunch for a senior thesis project. "I went to talk to him about the possibilities. He knew that I was interested in art and photography as well as non-Euclidean geometry," Gwaltney said, referring to Chaim Goodman-Strauss, professor and chair of mathematical sciences department. "He had a bag of lettuce in his lunch and it went from there."

Gwaltney began exploring the geometry of lettuce using the camera and mathematics. The Russellville native bought green leaf lettuce and cabbage at the grocery store, took it home and started shooting. At the same time, he began exploring the field of differential geometry, which combines aspects of geometry with calculus, to study the shape of both vegetables.

Green leaf lettuce and cabbage sport distinctively different shapes. Cabbage leaves fold firmly one over another, forming a tightly layered ball. Green leaf lettuce has wrinkled, undulating edges that when photographed close up form a landscape.

"To us the wrinkles indicate that the lettuce will hold the salad dressing well. But there's a lot more to it than that," Gwaltney said.

Many plant leaves do not fold or tear when pressed on paper. But cabbage and green leaf lettuce leaves behave differently. Cabbage leaves bend in with a positive curvature similar to a dome or bowl, while green leaf lettuce leaves sprawl out in waves with negative curvature.

The meaning of the differences in shape becomes clearer when trying to flatten the leaves on a sheet of paper. The curved-in

cabbage leaf must be cut to fit flat, because there is not enough surface area at the edge of the leaf for it to lie flat. The wrinkled edges of the green leaf lettuce, however, bunch up and spill out everywhere.

"There's too much leaf to conform to flat space," Gwaltney said.

Gwaltney looked at ways to mathematically calculate the curvature of the leaves. He started with the Gauss-Bonnet theorem, which relates curvature to the topology of an object. Then he looked at ways to characterize the curvature of the leaf using only edge of the leaf.

"An analogy would be how far you have to turn the steering wheel when driving on a curve," Gwaltney said.

To characterize the curvature, he cut a thin strip along the boundary of the leaves – no thicker than a few millimeters to a centimeter. Then he forced it to lie on a flat surface by pressing it between two sheets of glass.

When the strip is cut and laid flat, it forms circles, partial circles or multiple circles. A flat leaf forms one whole circle. The cabbage leaf forms a partial circle, because the surface area of the boundary is less when curved than when flat. And the curvy leaf of the green leaf lettuce forms multiple circles

because the wrinkles allow for more boundary than would normally fit in that amount of space.

While examining the geometry, Gwaltney found a mathematical limitation on how green leaf lettuce forms its distinctive shape.

"The curvature has to be introduced along the boundary of the leaf," he said.

The story with cabbage leaves remains less clear, but it seems that these leaves may start with the curvature they stay with, forming at the molecular level with a set curvature engrained, and that this curvature may govern the size of the cabbage head.

"The leaves serve a structural role," he said. In the cabbage, that means the leaves form a tight ball. In the green leaf lettuce, the wrinkled structure keeps leaves open, allowing for more sunlight and water to get in. Geometry plays a role in both cases. "What brings the form to the leaf is the curvature," he said.

Gwaltney's study has provided a greater understanding of the mathematics behind the structure of leaves and how they grow. The images help people understand the mathematical concepts, and the paper serves as an artist's statement.

"I used math in a different way to study this beautiful thing," he said. ■





By Matt McGowan

# Creative License or Illegal Use?



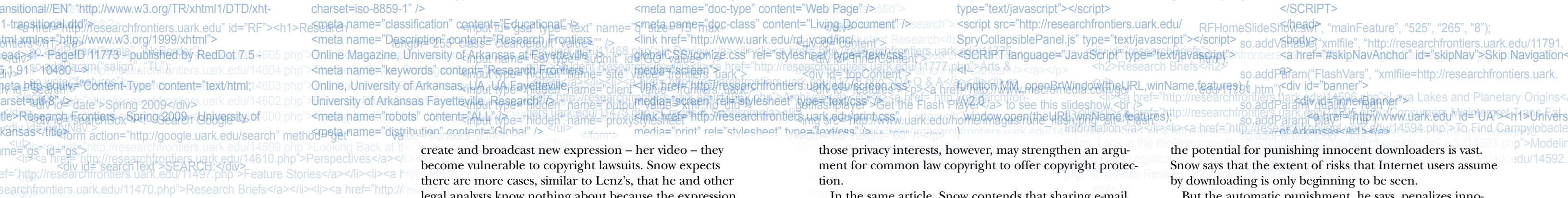
## A LAW PROFESSOR DECONSTRUCTS

If you haven't seen it already, go to YouTube, type "prince lenz" in the search box and watch "Let's Go Crazy" #1, a 29-second video of a cute toddler pushing a toy cart and dancing to a poorly transmitted Prince song. After viewing, try to imagine what could be so controversial about this charming and seemingly innocuous home movie.



1





# “Essentially, everything on the Internet is copied or a copy”



create and broadcast new expression – her video – they become vulnerable to copyright lawsuits. Snow expects there are more cases, similar to Lenz’s, that he and other legal analysts know nothing about because the expression was silenced due to threat of suit.

The threat of a suit creates the chilling effect. Saddled with a burden of proof that is difficult and expensive to pursue, fair users back down. The mere threat of suit by copyright holders, regardless of how original the new expression may be, quickly silences users who otherwise would face a costly battle to prove their speech was fair.

“Given the vague standard of proving fair use, along with the cost of a copyright attorney, it is all too common that fair users do not go to court to find out whether their use was fair,” Snow says. “It is much less costly to be silent, so they self-censor.”

As Snow mentioned, U.S. society has not experienced anything like the Internet and its bag of fuzzy social and legal issues. Since its invasion of American homes, businesses and schools less than 20 years ago, both courts and lawmaking bodies, not to mention parents, psychologists and law enforcement, have struggled to keep up with a variety of complex issues, including obscenity, privacy, trespassing and piracy.

But it is copyright, Snow says, that dominates courts and legal scholarship. It has also helped him build a career. Since graduating from Harvard Law School in 2003, his research has focused on various copyright-vs.-free-speech tensions created by or because of the Internet.

The titles of his other articles – “Copytraps,” “A Copyright Conundrum: Protecting Email Privacy” and “The TiVo Question: Does Skipping Commercials Violate Copyright Law” – reflect a commitment to take on complex issues and shed new light on actual and potential conflicts.

Snow’s legal arguments, including those in the burden-of-proof article, have been controversial. For example, in the e-mail-privacy article, in which he examines the strength of legal arguments to protect private e-mail expression, Snow concludes that the Federal Copyright Act does not protect the privacy interests of an original e-mail sender in precluding its recipient from forwarding the e-mail. He argues that

those privacy interests, however, may strengthen an argument for common law copyright to offer copyright protection.

In the same article, Snow contends that sharing e-mail with a third party inhibits free expression, because senders feel they cannot be candid when faced with the possibility that their communication may be sent to a third party without permission. Snow further examines the extent to which an original e-mail sender may enforce property rights to e-mail and determines that electronic communication is subject to the same common-law principles as conventional mail.

“Common law recognizes that authors of personal correspondence hold absolute property rights in their private expression,” Snow says. “Although the Copyright Act has been construed to preempt common law rights of expression and thereby deprive authors of privacy, there is no such preemption. Under the Constitution, private expression falls outside the scope of expression that is subject to federal regulation. So it is arguable that the routine practice of e-mail forwarding could be construed to violate principles of common-law copyright, regardless of what the Federal Copyright Act says.”

In “Copytraps,” Snow looks at downloading music from the Internet. He focuses specifically on the scenario in which end-users encounter Web sites that falsely represent downloading as legal. With no way of knowing whether the representation is true – thus, the trap – users are likely to be deceived and mistakenly think it is legal to download. They face harsh penalties for doing so. If a copyright holder has not authorized downloading, regardless of a Web site’s representations or appearance, the downloader is liable and can be subject to a significant fine.

This phenomenon occurs frequently, and record labels are aggressively pursuing lawsuits over music piracy. Snow emphasizes that the automatic punishment of copyright law applies to whatever expression may be downloaded. Stories, pictures and videos are all subject to strict punishment under copyright law. Given that the very structure of the Internet is predicated on users’ ability to copy or download,

the potential for punishing innocent downloaders is vast. Snow says that the extent of risks that Internet users assume by downloading is only beginning to be seen.

But the automatic punishment, he says, penalizes innocent Internet users who have no means of knowing whether or not the material offered on a Web site infringes copyright. At this point, Snow backs up and reminds readers that legal downloading – copying files with permission from the copyright holder – is a receipt of expression, and the act of receiving expression is protected by the Free Speech Clause of the Constitution. Therefore, Snow contends, the First Amendment protects the act of legal downloading.

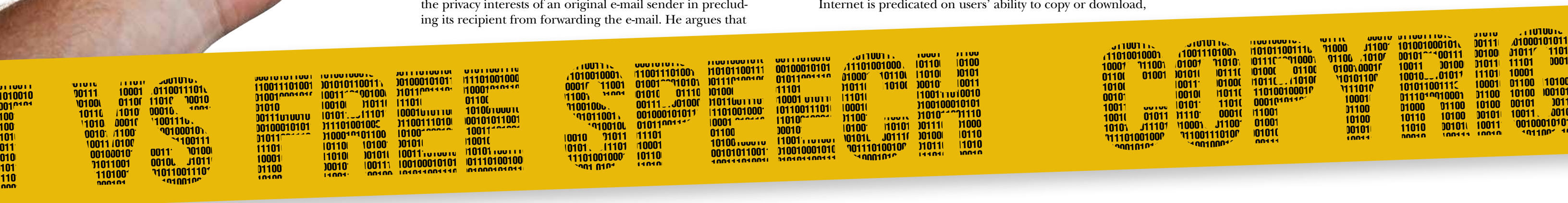
However, the potential for copytraps chills legal downloading. The automatic and severe punishment of innocent downloaders makes Internet users reluctant to download material that seems legal. This reluctance, Snow argues, represents a restraint on free speech. For these reasons, Snow contends that copyright law’s automatic punishment of illegal downloading violates the First Amendment.

“The very potential for copytraps, with automatic penalties assessed against the innocent downloader, raises First Amendment concern,” he says. “Internet users who are aware of the law or who have fallen victim to a copytrap are much more wary of sites purporting to offer legal downloads.”

Most Internet users trust Web sites to determine the legality of downloading, Snow says, and users continue to download without inhibition. So far, there have not been significant decreases in legal downloading.

“But that fact doesn’t matter,” Snow says. “First Amendment law makes it clear that the possibility of inhibition of the speech process, including the receipt of speech, is sufficient to create a constitutional tension. And that possibility is glaringly evident in the download context.”

To learn more about Snow’s research, including studies on cybersquatting and trespassing in virtual reality, visit his Web site at [http://law.uark.edu/ned\\_snow.php](http://law.uark.edu/ned_snow.php). ■







Digital image of a shrine to the ancestors



Photograph of a shrine to the ancestors

## What was life like in an ancient Roman city?

To answer that question, a classicist might refer to Pliny's histories or Vitruvius' handbook for Roman architects. An archeologist might pull out field notes documenting the length and breadth of foundations of this apartment block or that villa. With luck, the archeologist may even have been able to recover some pottery not disturbed by looters or brush dust from a fresco not yet faded by the sun. Historians might refer to census and tax records or the laws and proceedings of the Roman senate. And a tourist might offer photos of worn paving stones or the arches of the Coliseum.

Interesting information, but taken bit by bit, all that data does not add up to a sense of what it was like to live in Rome two thousand years ago.

Fred Limp, director of the Center for Advanced Spatial Technologies – better known as CAST – knows the importance both of accurate measurement and of its interpretation. CAST employs advanced technologies and methods to support researchers from a variety of disciplines, including archeology.

"There are all kinds of evidence we can use to learn about the past," Limp said. "When we just use physical evidence, we can claim accuracy but fall short of authenticity. We may be accurate but have no sense of what life was like for people living there."

In the past couple of years, CAST has worked with faculty from archeology, architecture and classical studies to create a three-dimensional visualization of Ostia, the ancient port city of Rome, as an interdisciplinary class for undergraduates. Students had information from scans created by CAST using an advanced imaging system that offers direct-to-digital 3-D models of any scene. The students integrated the scans, as well as historical data, to create a 3-D model of an individual residential or commercial structure in Ostia.

David Fredrick, a classical studies professor, was part of the team that taught the Ostia visualization class. Another important site that offers priceless details about life in ancient Roman cities is Pompeii. Fredrick is using 3-D gaming technology to virtually reconstruct entire apartment blocks from the city of Pompeii. And undergraduate students are doing much of the reconstruction in an Honors College class called "Digital Pompeii."

"I don't know of anyone else working with gaming and measurement technologies in this way," Limp said. "Dave is using these advanced technological tools to intellectually understand a place, to perceive how people experienced and understood their lives in their city."

Some years ago, Fredrick started with the goal of getting students

Dave Fredrick was probably the only classicist at the game developers conference.

# Visit POMPEII

By Barbara Jaquish

All images submitted by David Fredrick



# HIGH-TECH HISTORY

The scientists at the Center for Advanced Spatial Technologies bring something especially useful to measurement of archeological sites.

Since 2003, CAST staff has been using an Optech ILRIS-3-D long-range scanner, one of the few in use anywhere in the world, funded by a grant from the National Science Foundation. With it, researchers can travel to sites such as the ancient Roman port city of Ostia and scan a typical scene in 10-15 minutes, capturing 1.2 to 1.8 million points. In 2006, they added a Minolta VIVID-9i camera for close-range, 3-D work.

CAST can produce three-dimensional scans with a combination of computer and manual resolution to match survey photogrammetry. In another year they expect to have written an algorithm that will enable the computer to make its own matches reliably.

Jackson Cothren, a geoscientist with CAST, explained that in the past, archeologists recorded measurements in field books but didn't necessarily get everything they would need later.

"New technology offers ways of getting a lot more without more effort," Cothren said. "Therefore, archeologists can ask questions throughout the year."

The reconstruction of Nodena is an example of how 3-D visualizations can stimulate research. Nodena, a pre-Columbian village located in northeast Arkansas, was occupied between A.D. 1400-1600. CAST researcher Angelia Payne explained that the team started with a map drawn during the site's original excavation.

"We also did quite a bit of historical and scientific research, looking at archeological excavation reports as well as historic accounts to back up the material that is being presented in the 3-D visualizations," Payne said.

The visualizations are a research tool, not simply a best-guess, static picture. CAST's computer application allows users to click on a structure for a record of the data and thinking that went into each reconstruction and to consider alternative decisions.

In addition to the work at Ostia, CAST researchers will be taking their advanced equipment – and expertise – to archeological sites in Bolivia, Peru and Egypt. CAST is partnering with the University of California, Los Angeles, to offer technical training at UCLA's archeological field schools in summer 2009.



Atrium, digital rendering



Atrium, digital view



Apartment complex, digital view



Photograph of atrium



Atrium, digital view



Photographed atrium

more actively thinking about Roman texts and art. He incorporated archeological reconstruction into language classes, beginning with an assignment in a Latin class to build a room based on the writings of Ovid. Then there was the interdisciplinary Ostia class. Applying gaming technology to Pompeii was a logical progression. In addition to meeting pedagogical goals, the Digital Pompeii project also advanced Fredrick's research interest in the thematics of Roman wall painting.

Research on Pompeii is increasingly difficult. Excavation of the city dates back to the 1600s, but today most of the city is closed under a state of emergency called by the Italian government. Only a few showpiece houses are available for viewing. For the rest of the city, sun, rain and blowing volcanic dust have degraded the painted buildings to the point that many of the famous frescoes have nearly faded away.

While there is a map of Pompeii with a unique designation for every building and apartment, there is no accurate 3-D database of the city; only a handful of the 400 houses have 3-D plans. As Fredrick's students reconstruct apartment blocks, they are not only fulfilling a class assignment, they are also making an important contribution to research about the city.

Although the decorative wall paintings of Pompeian homes

and the graffiti sketched outside may no longer be clearly visible, Fredrick and his students have a rich source of visuals for their reconstruction. An encyclopedia of art from Pompeii known as the PPM – shorthand for *Pompeii: pitture e mosaici* – collects representative depictions of art and decorative elements from Pompeii, including high quality reproductions of 400 years of drawings, etchings, paintings and photographs, in 10 volumes. The university library holds nine out of the 10 volumes of the PPM, a rare resource.

Headquarters for the class is a small but powerful computer lab down the hall from the CAST labs. The students, who are majors in anthropology, English, history, classical studies and pre-med,

each adopted an apartment block and scanned the reproductions for each wall of each room in their block. Using a scriptable, codeable game database, the students put the relatively fresh, vivid artwork into place on the walls and attached the text.

Students made decisions, based on research, about lighting and texture of the walls and floors. They could reconstruct gardens based

on evidence from writings and even root castings. In addition to wall paintings and mosaics, the rich environment of the gaming application offers the opportunity to map graffiti, something it has been difficult to do up to now.

Gaming development is at the nexus of visual art and narrative.

All images submitted by David Fredrick





Digital Pompeii



Present Day Pompeii

“In this class, the students are really primary researchers,” Fredrick said. “Students find all the time that published plans are not accurate. Researchers know this may happen, but it is dramatic when a student finds it.”

Fredrick has been using 3-D software since 2003 but only recently developed an efficient workflow for the Pompeii project. He searched for a game application that would have a short learning curve and would offer technical support for his unusual needs. He found it in a company called Unity that was interested in the technical problems that Fredrick’s concept presented.

“I was probably the only classicist at the game developers conference,” Fredrick said. “Gaming development is at the nexus of visual art and narrative. Since the developers have light at their command within the game, they spend a lot of effort working with light and texture to create a mood. If Bernini were alive today, he’d be a game designer.”

Navigating a house via a game engine makes it possible to see the space in a new way. Rather than swooping around in the typical 3-D fly-over mode, a gamer – or in this case, a scholar or student researching art in Pompeii – sees the rooms from the height of the average adult gaze, around four feet high. Moving through the rooms, the gamer can see how art on a wall relates to sculpture in the garden that may be visible through a doorway or how the art within a room interrelates. Because the game can be searched, a gamer could find every instance of Apollo appearing on Roman walls, for instance, and see who or what is on the oppo-

If Bernini were alive today, he’d be a game designer.

site wall. Who is Apollo looking at and who is looking back?

Fredrick is interested in understanding the décor of various spaces in the Pompeian houses. The atrium is a space that people are expected to pass through; thus, it has fewer mythological scenes, which could slow people down. Of particular interest to Fredrick is the tablinum, the main

room used by the owner for business and the room in which he receives clients. Often the décor of the tablinum has erotic themes, and Fredrick is looking at that unexpected content in relation to social status and power.

Digital Pompeii “makes it vivid what is lost in our understanding of Pompeii, including the commercial structures,” Fredrick said. As the game develops, he sees potential to fill in some of the lost social history.

Digital Pompeii will offer several modes of navigating through the game space. The social mode will guide movement based on the social class chosen, challenging entrance into some rooms based on status.

“This will be tricky but interesting, since slaves were themselves sorted into high and low status jobs. And this mode presumes something that’s almost always missing from Pompeii: the doors,” Fredrick said.

The scholar mode will offer unrestricted movement, including flying. It will allow searching and teleporting to a requested

location to get the most out of the links with the database. At this time, the database is focused on the wall paintings and mosaics found in the encyclopedia of art from Pompeii. Later, it will be expanded with information about artifact finds and graffiti.

The engineering mode will turn on access to Roman construction techniques, water control and fresco and mosaic techniques.

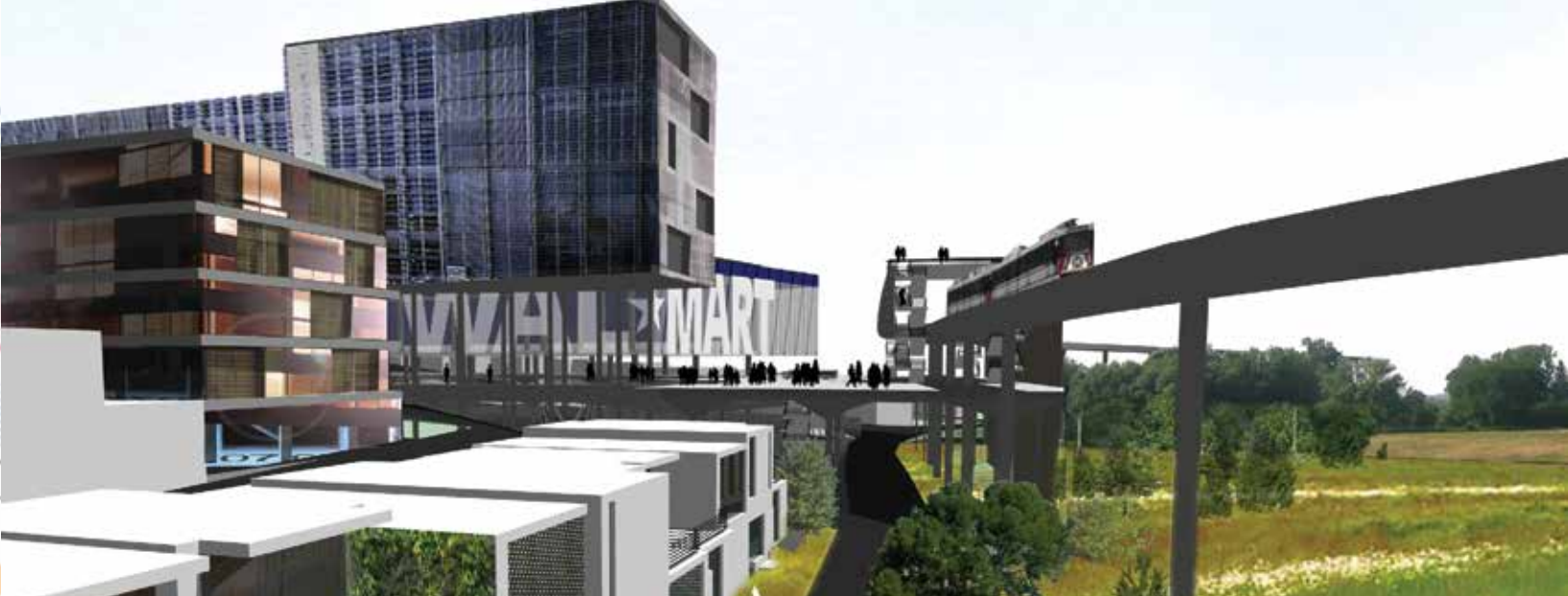
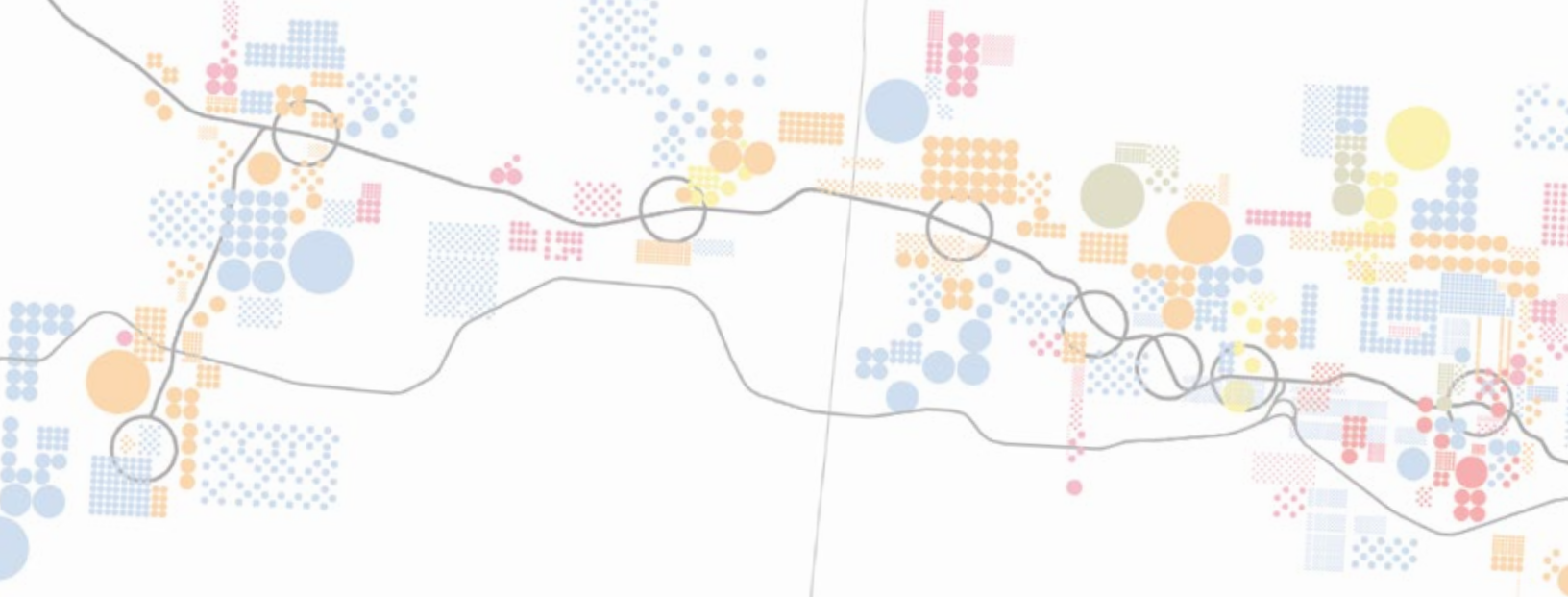
“Once we get to the stage of inserting Roman characters that the user can interact with, the experience will become that much richer,” Fredrick said. “Certainly we have action and educational games in mind, as well as scholarly and informational use. All these can be combined in interesting ways.” ■



All images submitted by David Fredrick

There is no accurate 3-D database of Pompeii. As Fredrick’s students reconstruct apartment blocks, they are not only fulfilling a class assignment, they are also making an important contribution to research about the city.





# back TO THE FUTURE



The University of

Arkansas Community Design Center makes the case for

## LIGHT RAIL

by Kendall Curlee



*Frank, a senior analyst for Proctor and Gamble, is late for the second time this week thanks to a fender bender that brought morning rush hour traffic to a crawl on Interstate 540. He'll have to work late again to get his report ready for the meeting tomorrow. With light rail transit in place, Frank could use his 27-mile commute from Fayetteville to Bentonville to work on his report, catch up on his e-mail or read the newspaper. One less car payment would free up some extra dollars for groceries, gas and a summer trip to Disney World that the kids are counting on . . .*





Springdale now vs. Springdale w/light rail

Sure, rail transit gives people options, but that's not what fuels the light rail initiative led by the University of Arkansas Community Design Center. According to Stephen Luoni, director of the Community Design Center, which is part of the Fay Jones School of Architecture, the most compelling argument for light rail is the urban revitalization that can come with it: "We can use transportation planning to reinvent places that are just languishing," he said. Sitting in the design center's work room, surrounded by bass wood models and scribbled plans on a chalkboard wall, Luoni flips open his latest salvo in the campaign for light rail, a glossy new book titled *Visioning Rail Transit in Northwest Arkansas: Lifestyles and Ecologies*. A kind of graphic novel for grown ups, *Visioning Rail Transit* uses diagrams, maps and

before-and-after images to explore how light rail and related development could ease traffic congestion, revitalize the downtown core and preserve the rolling green hills and crumbling barns that embody Arkansas' agricultural past.

"Could downtown Springdale be cool again? You bet," Luoni said, pointing to a series of images that show the transformation of Springdale's historic main street to a tree-shaded nexus of cafes, thriving small businesses and housing bustling with people. Planners like Luoni can look beyond the decay of struggling working class towns like Springdale to see the bones of a good downtown – and increasingly, they view light rail as the backbone for smart growth, an antidote to the suburban sprawl and highway gridlock fueled by the almighty automobile.

### Money Matters

The figures back them up. According to *Visioning Rail Transit*, every dollar invested in rail transit generates \$6 or more in high quality development. To take just one example, it cost \$1.8 billion to build DART, the light rail system based in Dallas, Texas, to its current state of 45 miles on the ground. DART has generated more than \$7 billion in existing and planned mixed-use, high-quality development in the past 10 years, according to DART spokesman Morgan Lyons. Light rail also moves four times more traffic, faster, than the interstate can, and lightens fuel emissions in an era when global warming is shifting from threat to reality.

Rail transit makes sense for north-west Arkansas, in particular, because the area's six cities developed along what is now the the Arkansas and Missouri Railroad.

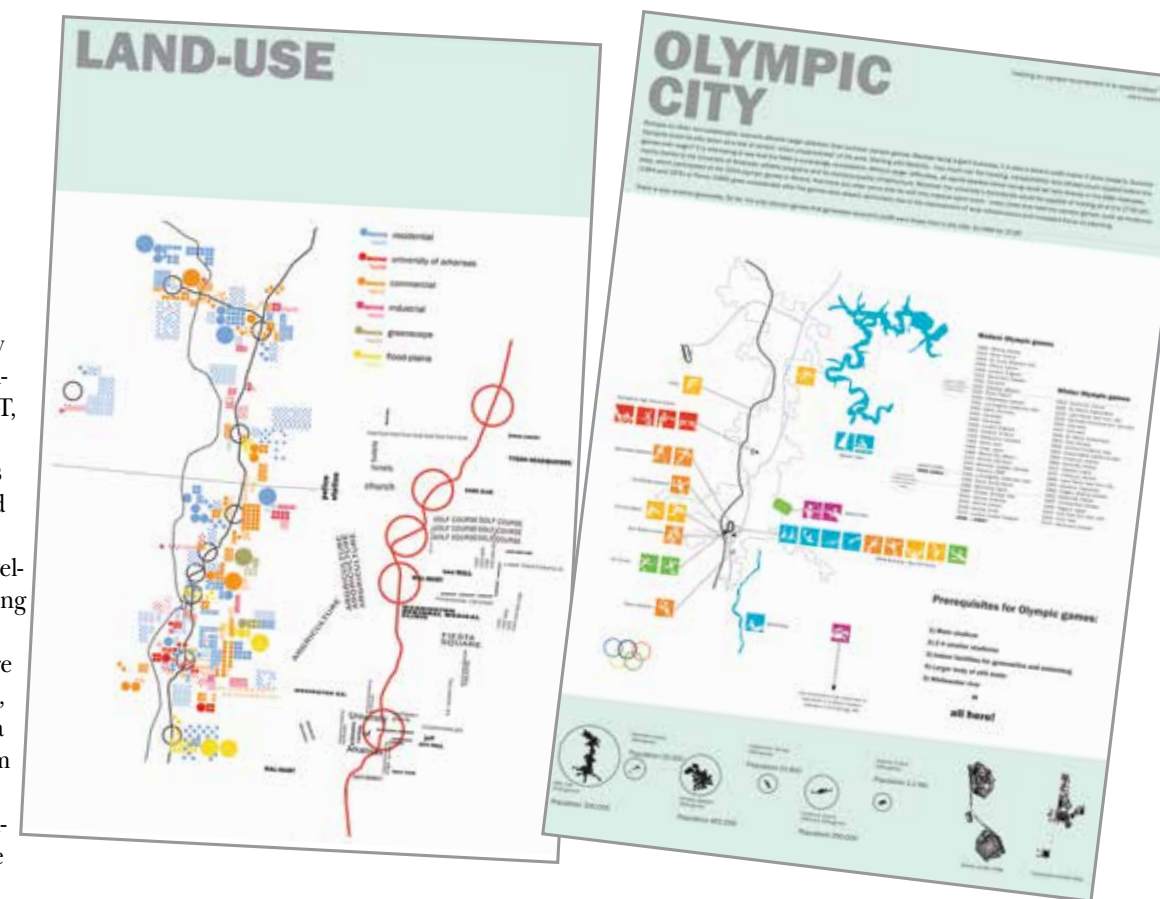
"More than two-thirds of the region's population lives within one mile of the rail right-of-way, and five of the region's top six employers are located along the rail corridor," Luoni said. "There's enormous potential to be tapped."

Though some might argue that rail transit makes sense only in big cities with robust multi-modal transportation systems, in reality two-thirds of the 60 regions that have sought federal funding for rail transit development through the federal "New Start" program are mid-sized cities adopting a "build it and they will come" approach. Would-be players such as Charlotte, N.C., and Nashville, Tenn., both less densely populated than north-west Arkansas, "have flipped the whole game – they're building the transportation system to get the urbanism they want," Luoni said.

What's not to love? Light rail's estimated \$32 million per square mile price tag, for starters. That kind of capital outlay requires a realignment of resources; someone's going to get a smaller piece of the pie. To justify change at that scale requires big-picture thinking. That's where Luoni, his staff and students at the Community Design Center come in.

### Scenario Planning

The University of Arkansas' light rail initiative launched in 2006 with three studios involving 40 students, Luoni



and three other architecture professors and two visiting consultants: William Conway, a Minneapolis-based architect and planner well-known for his efforts to redefine the public realm, and Eric Kahn, a principal with the Los Angeles firm Central Office of Architecture who has also developed award-winning built works and theoretical planning projects.

The professors mapped the 32-mile path for light rail, which would connect Fayetteville, a thriving college town, to Bentonville, home to retailing giant Wal-Mart, with a spur to the region's airport. The architecture students did not develop designs for a light rail system per se; instead, the professors challenged them to imagine development that would support light rail.

"We wanted to engage students in a conceptual chess game using the world, and bring back a set of possibilities to the studio," said Eric Kahn. The students traveled to Dallas, Minneapolis and Los Angeles to study mass transit-related development and then dug into research and visualization. They used analytical mapping, graphic analysis and modeling to create 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. Graduate students at the Washington University School of Architecture in St. Louis, where Luoni was a visiting professor, helped visualize how the rail system stations and neighborhood development might take shape.

"More than two-thirds of the region's population lives within one mile of the rail right-of-way, and five of the region's top six employers are located along the rail corridor."



# Think the car is the cheapest???... — Think again.

With baby boomers aging, the need for light rail and the walkable neighborhoods it engenders will continue to grow.

## Why Now?

Marie, an 82-year-old who taught history at Springdale High School for 35 years, handed over her car keys to her daughter a year ago. My mind is sharp, my reflexes less so, she jokes, but today she's frustrated: she'd like to attend a noon-time talk on painter Marsden Hartley at Crystal Bridges Museum of American Art, located 20 miles north in Bentonville, but doesn't want to bother her daughter, who's already taken several hours from work this month to drive her to medical appointments. She'll settle for another hour of Oprah.

In the car-oriented culture of the United States, the loss of driving privileges leaves many seniors stranded in the suburbs. With baby boomers aging, the need for light rail and the walkable neighborhoods it engenders will continue to grow.

"It is projected that by 2050 the number of people 60 and older worldwide will increase by nearly 2 billion," said Korydon Smith, an associate professor of architecture and author of the forthcoming book *Just Below the Line: Disability, Housing, and Equity in the South*. "For Arkansas, the 65-plus population will double in the next two decades. With these aging trends, housing and public transportation will be vital to Arkansas' future."

There are other reasons why light rail makes sense now, including, somewhat counterintuitively, the recession currently gripping the nation. In April of 2009, President Barack Obama announced more than \$16 billion in new funding for high speed rail, praising rail transit as a "smart transportation system equal to the needs of the 21st century" that would reduce dependence on foreign oil, decrease congestion and emissions, boost productivity and create new jobs (30,000 jobs are created for every billion invested in light rail, according to an April 2009 report from the American Public Transportation Association).

Even for those who are gainfully employed, Obama's support could translate into more dollars to pocket. According to Visioning Rail Transit the average national household spends 18 percent of its annual income on transportation (in Arkansas, the average is 20.5 percent), while the average household in communities with well-established rail transit systems spends 16 percent of its annual income on transportation. A light rail system in northwest Arkansas could generate a 4.5 percent bump in annual income for area households. At the national level, savings are even more significant – Americans living in transit-intensive areas save \$22 billion each year by using public transportation, according to Visioning Rail Transit.

## What's Next

Ramay Junior High students Eli, Nile and Charlie are bored. They're out of school for the summer and Wilson Park pool is closed due to intermittent rain. The boys want to go to the indoor skate park in Springdale, but their parents are at work. So they plug in the XBOX 360 for a round of virtual skateboarding, helping themselves to a family-sized bag of Doritos and sugary soft drinks laced with extra caffeine. If light rail were available, the boys could walk two blocks to the Dickson Street station, ride three stops up the line and spend the afternoon perfecting new moves.

Lenore Skenazy made national news in 2008 with her *New York Sun* article about letting her nine-year-old son ride the New York City subway alone. Debate continues between parents who want to nurture "free-range kids" and "helicopter parents" who take pains to protect their children from any possible harm, but teenagers' desire to go places with their friends remains a constant. Light rail and the walkable neighborhoods depicted in Visioning Rail Transit could help parents raise kids who are prepared to explore the world on their own.

Dense downtowns, intact natural areas, cleaner air, a healthier population and transportation options that bring greater freedom to people of all ages, abilities and incomes: the arguments for light rail are compelling, and the Community Design Center has won three national awards for making the case for it in northwest Arkansas, the most recent being a 2008 Honor Award for Regional and Urban Design from the American Institute of Architects. Thanks in part to a \$25,000 grant from the National Endowment for the Arts, a \$4,500 grant from the University of Arkansas Women's Giving Circle and \$16,000 in discretionary funding from the university provost's office, 2,000 copies of Visioning Rail Transit will be distributed for free to business leaders, government officials and anyone else in the area who is interested in sustainable development.

With its images of sunflower-studded floodplains, futuristic train stations and tree-shaded, people-packed downtowns, Visioning Rail Transit radiates an optimism that is nevertheless grounded in facts and common sense. The book considers, and answers, the cost of light rail relative to automobiles and buses (Think the car is cheapest? Think again – see graphic). But Americans love

their cars, and change at this scale takes imagination and strong leadership. Steve Luoni admits, albeit reluctantly, that light rail may never come to northwest Arkansas:

"The bottom line is that we need to give the region urban options; that's what we had 80 years ago, when we were a classic transit-oriented development. If we could direct some of the expected growth to urban settings, then this book will have served its purpose," he said.

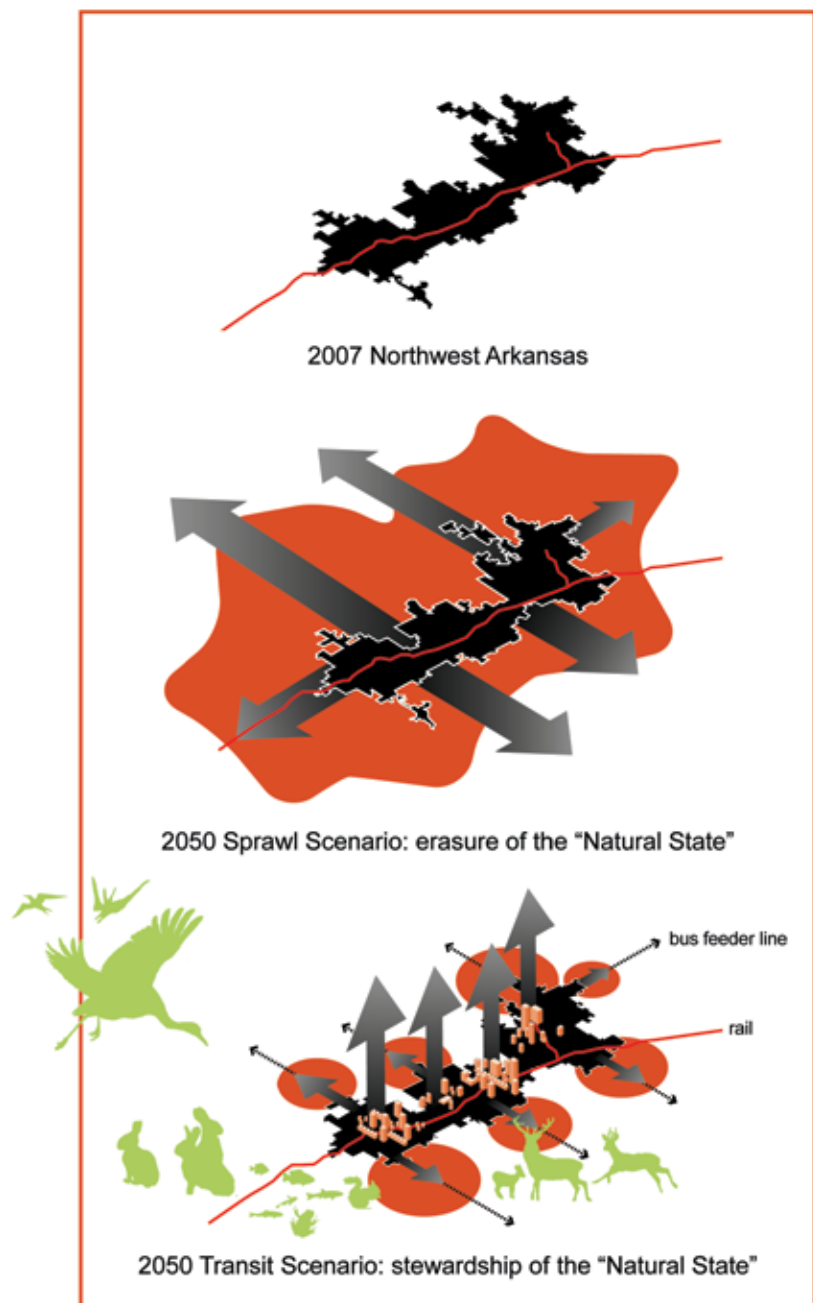
The Community Design Center's big-picture vision to take northwest Arkansas back to its past – a series of urban areas anchored by rail – to create a more sustainable future may be the project's most enduring legacy. But for the sake of the hypothetical Frank and Marie and the skateboarders, and the real commuters and aging folks and kids that they represent, let's hope that light rail does happen in northwest Arkansas.



Vehicle-miles in millions	54	7,077	1,628,332
Passenger-miles in millions	1,437	150,042	2,556,481
Expenses to Passenger per Mile	14¢	20¢	51¢
Percentage of Return from user fees	30%	8%	18%

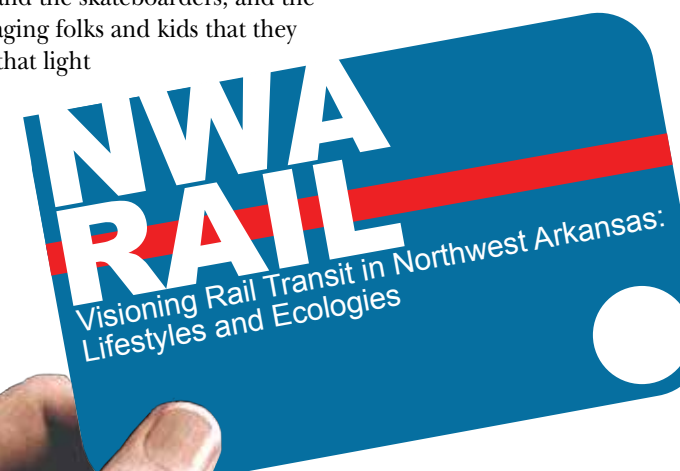
U.S. Department of Transportation, Bureau of Transportation Statistics (2001)

Light rail... could help parents raise kids who are prepared to explore the world on their own.



Images provided by UADC

80 percent of the built environment projected to exist by 2050 has not yet been constructed . . . now is our opportunity to shape the region.





*Researcher Studies*

# Organic Fruit Production

*By Melissa Lutz Blouin*

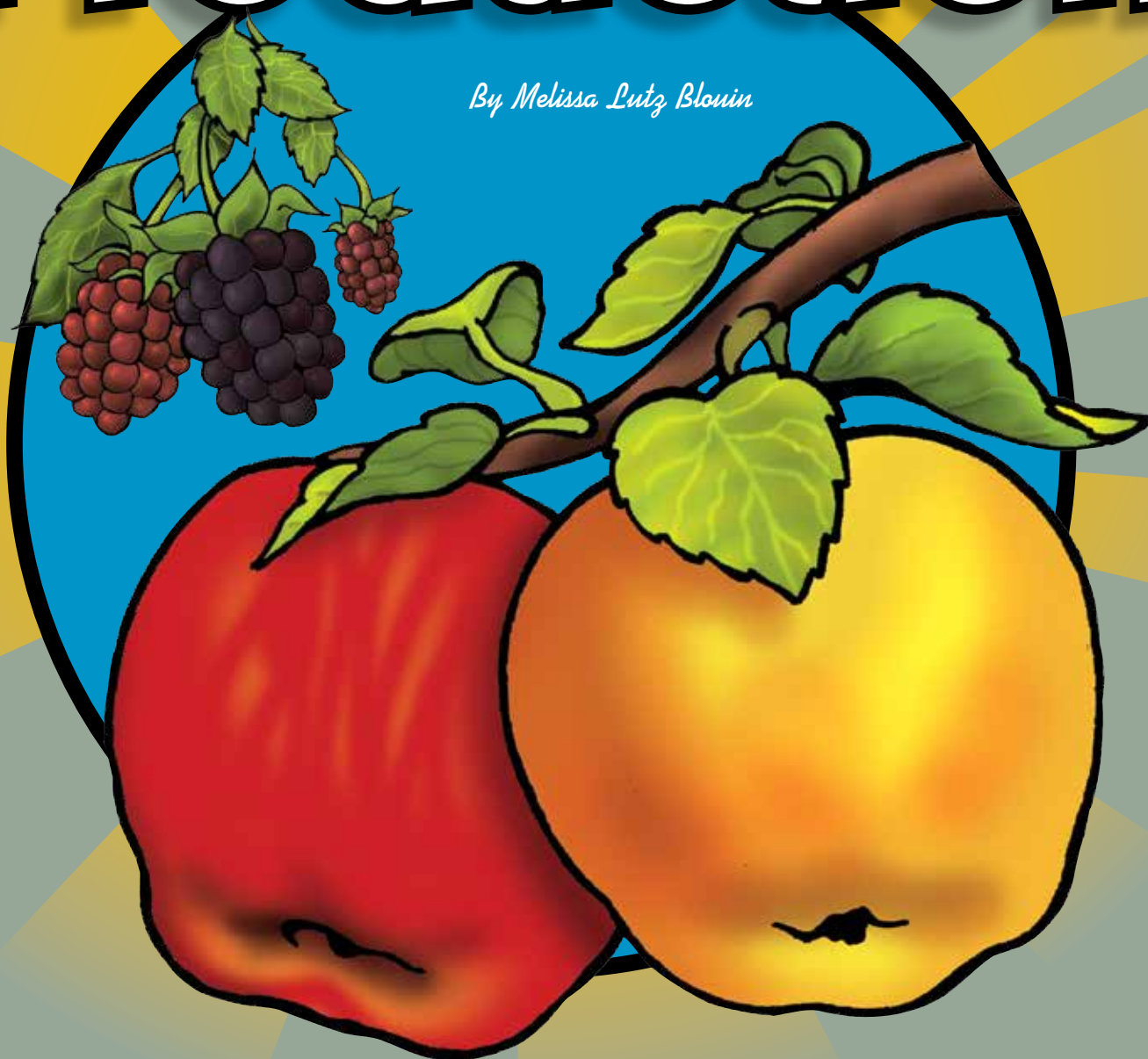


Illustration by Eric Pipkin



Curt Rom

**T**he next time you bite into a crisp, tart, pesticide-free apple or savor

locally grown, organic blackberries, spare a moment to think of horticulture professor Curt Rom.

Rom has studied fruit physiology at the University of Arkansas for 20 years. He started out as a product of the 1970s green revolution – “feed the world, save the world,” he says. But soon after he migrated into industrial fruit production.

When large grocery chains began gobbling up business, and food production became more industrialized and centralized in the 1990s, Rom watched many small orchards go out of business. But recently, concern about sustainability and the price of transporting foods long distances has launched a movement towards sustainable and organic agriculture. Organic orchards have sprouted, but producers lack the knowledge to create and nurture organic and sustainable growth. Rom and his colleagues hope to give farmers scientifically proven methods that will help their farms flourish.

“This combines my love of agricultural science and the environment,” Rom said. However, he emphasizes that he is not an organic evangelist.

“I’m not pro-organic or anti-organic,” Rom said. “I’m an agricultural scientist.” He wants to study this relatively unexplored field.

“In organic fruit production, there are a lot of questions to be answered,” he said. “There’s an opportunity to do research in an area where there is no research.”

Rom has traveled across the United States, Europe and Australia to study sustainable and organic practices implemented by fruit growers. He also has surveyed organic and sustainable fruit tree growers to determine challenges they face. He and colleagues formed the Southeast Organic Fruit Initiative Working Group, consisting of scientists, educators and extension workers, and they have conducted focus groups in five states in the southeast.

“Our goal is to have science-based technologies for growers who want to grow fruit organically,” he said.

Today, Rom and his colleagues have two organic and sustainable fruit production projects, each with its own challenges and emerging questions. The first one involves growing apples organically, and the second involves extending the growing season for organic blackberries and raspberries.

## A New Philosophy

In a conventional orchard, growers eliminate the “competition” – ground cover or weeds – by using herbicides. But in an organic orchard, growers manage the interaction between the plants and apple trees.

In addition, growers need to provide sufficient nutrients to the plants. In conventional orchards, growers use water-soluble nutrients that feed the plant directly. But in organic orchards, growers



Municipal Green Compost



Wood Chips



Shredded White Paper



Mowed and Blown Vegetation

Photos by Russell Cothren





Don Johnson in entomology; Elena Garcia, an extension horticulturist; Jennie Popp, an agricultural economist; Mary Savin in crop, soil and environmental sciences; Terry Kirkpatrick in plant pathology; and soil chemist David Miller.

Even with all of this expertise, the scientists did not anticipate an unforeseen issue that cropped up in the orchard: Mice began eating the bark on trees. A conventional orchard has hard ground with no groundcover and thus has few problems with rodents. But in the organic orchard, mice found a haven where vegetation was mowed between rows of apple trees then blown beneath them for mulch.

To address this problem, researchers put up perch poles for red-tailed hawks, tilled the ground under the ground cover to destroy tunnels and nesting sites, and used box traps to capture the animals.

Other issues that have cropped up include managing weeds and other pests, both of which require daily involvement from the grower. The researchers measure the probability of insect infestations by looking at weather conditions and other factors, and if the probability gets high, they will use organic pesticides to address the problem.

"We only spray when we absolutely have to and when we have evidence that it is needed," Rom said. They also use weather models to help predict the possibility of disease. Irrigation is based on readings of soil moisture from instruments in the ground. When the soil moisture is sufficient, irrigation stops.

All of this adds up to vigilance on the part of the grower.

"You have to be much more nimble in an organic orchard to respond to changes in the system," he said.

Another issue that crops up is knowing how and when to augment fertilization.

"For conventional systems we have very precise techniques," Rom said. Effective timing of fertilization remains unclear in organic systems. Rom and his colleagues hope to optimize the timing of fertilization.

They have USDA funding for four years to address these and other challenges. The researchers also are working with a grower in Berryville to replicate the techniques they are using here. The funds also will support an apprenticeship, with the hope that the apprentice will become a local fruit producer.

## Shifting Seasons

The second project involves beloved fruit with a short season: blackberries and raspberries. Working with horticulture professor and blackberry breeder John Clark, Rom wants to extend the growing season.

"We're talking about doubling the season of cash flow for a farmer," Rom said.

To accomplish this, the researchers built 12 "tunnels" with rows of raspberries and blackberries inside. They hope to protect the plants from frost in winter and excessive heat in summer, allowing the fruit-bearing season to begin in May and extend through Thanksgiving. The usual season for these berries lasts from mid-June through early July.

They can do this in several ways: selecting the right blackberry breed, selective pruning, and building tunnels, which protect the flowers from frost, heat, thunderstorms and hail.

"This idea is suited to organic farming, because we are modifying the environment," Rom said. "If we can shift production times, we change the relationship of insects to plants, providing more protection from pests."

Two local growers have joined university researchers on the project. With help from Rom and his colleagues, they have built tunnels and planted blackberries and raspberries.

"It's one thing to do it at a research facility. It's another thing to do it on a working farm," Rom said. "Growers come up with questions that we hadn't thought of."

Rom and his colleagues have made progress, but still have some distance to go to achieve their goals. Using the tunnels, they have shifted the spring berry-producing season by two weeks. Mild, cold springs in Northwest Arkansas have not produced enough heat energy in the tunnels to produce fruit earlier.

In the fall of 2007, berries grew continuously in the tunnels until Thanksgiving, whereas field production ended October 15th. But in 2008, a hard frost on October 24th caused significant damage to the fall crop.

While heat built up in the tunnels during the day, at night the temperature inside the tunnels hovered 1-2 degrees above the outside temperature. When the outside temperature plunged to 20 degrees, the plants suffered damage.

Rom finally found that polyester "frost curtains" combined with chafing dish burners raised the temperature in the tunnels about 10-15 degrees. Thus a 24-degree night would be close to 40 degrees in the tunnels.

"If the plants are kept above 32 degrees, they will be fine," Rom said. Sub-freezing temperatures occur three to four times during March and April and three to four times between mid-October and Thanksgiving.

In addition to an extended harvesting season, the plants in the tunnels differ from those in the outdoor fields – they are taller, sport more flowers and produce bigger berries.

"Just the environment of the tunnel is changing the physiology and growth of the plant," Rom said. Food science professor Luke Howard will examine the berries to determine if there are nutritional differences between the tunnel berries and the field berries, and Rom will focus on why those differences occur.

Regardless of what the studies find, citizens of Northwest Arkansas can enjoy the fruits of the researchers' labor. Students from the student organic farming association help harvest the fruit and sell it at the Fayetteville Farmer's Market.

"I had fresh blackberry cobbler last Thanksgiving," Rom said. And that may happen for all of us one day soon, thanks to his research.

The researchers featured are all professors in the Dale Bumpers College of Agricultural, Food and Life Sciences with joint appointments in the University of Arkansas System's Division of Agriculture. ■



Photos by Russell Cohnen

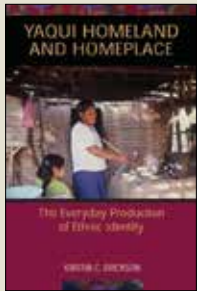


## A Team Approach

"In organic, sustainable farming, everything is related to everything else," Rom said. "In conventional orchards, people typically look at the short term. In a sustainable orchard, you are looking at a system that will last 10-20 years or longer."

Examining what makes a sustainable orchard requires an army of researchers with various fields of expertise. Rom works with





**Yaqui Homeland and Homeplace: The Everyday Production of Ethnic Identity**

Kristin C. Erickson  
University of Arizona Press

Anthropologist Kirstin C. Erickson examines the ways in which Yaqui women's social and sacred use of the home space is "integral to Yaquiness," the sense of ethnic identity and connection with the past.

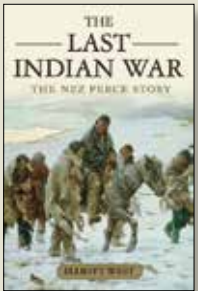
Erickson conducted ethnographic research in several Yaqui pueblos, including living with a Yaqui family. She made contacts with their extended families, circles of friends and ritual kin. She participated in the daily lives of women.

First, Erickson presents an overview of Yaqui history and the importance of place to their identity.

In conveying what it is to be Yaqui, interviewees emphasized the endurance of their people during exile and slavery. Erickson heard many stories of hardship and their struggle to return to their homeland.

Next, Erickson discovered that she could not separate gender from place and ethnicity. Yaqui women described themselves first as Yaquis. For example, in their birthing stories, Yaqui women emphasized an ability to endure pain that they believe distinguishes them from non-Yaqui women.

As a people, the Yaqui have endured for more than 500 years, and the women Erickson met felt an obligation to themselves and to their people to maintain this identity. ■



**The Last Indian War: The Nez Perce Story**

Elliott West  
Oxford University Press

In his latest book, historian Elliott West offers a revealing analysis of a time in which the American nation was transformed.

When Lewis and Clark met them in September 1805, the Nez Perces lived in villages in what are now the states of Idaho, Washington and Oregon. They were protected by mountain ranges and sustained by abundant salmon, game and plant life.

Fur traders followed, and 30 years later, the first Christian missionaries arrived. Despite treaties that delineated the Nez Perce reservation, the discovery of gold in 1860 brought a flood of white immigrants into Nez Perce lands.

The war of 1877 ended in the defeat of the Nez Perces. For nearly four months in 1877, the Nez Perces fled their homeland on a journey of 1,500 miles. Their warriors held off the American military, besting them in every encounter until the last battle. The Nez Perces were less than two days' ride from Canada when they were defeated at the battle and siege of Bear's Paw Mountains in Montana. The Nez Perces were relocated to Indian Territory in Oklahoma. It was nearly a decade before most Nez Perces were permitted to return to their home area in Idaho or to a reservation in Washington State. ■



**Showdown in Desire: The Black Panthers Take a Stand in New Orleans**

Orissa Arend  
University of Arkansas Press

The Black Panther Party existed from 1966 to 1982, but in that relatively short existence, the party gained national prominence and international stature.

In *Showdown in Desire*, journalist Orissa Arend chronicles the rise of the New Orleans Black Panther Party and the chronology of events that occurred in the streets of the Crescent City. Arend made extensive use of oral histories, which she refused to abbreviate, censor or interpret. She recorded interviews about the shootout between the police and the Black Panthers on Piety Street, a street on the outside of the largest, poorest housing developments in New Orleans: Desire.

Arend archived the interviews that she had with key public officials, such as the mayor and police chief at the time of the Black Panthers. She also included interviews with two black undercover police officers, who infiltrated the New Orleans chapter by posing as party members.

The Party was accepted by residents partly due to the chapter's methods of community activism through liberation schools, free health services, free breakfast programs and political education classes.

Arend has published a pamphlet of some of the oral histories she recorded in *Showdown in Desire*. ■



**Jim Crow America: A Documentary History**

Edited by Catherine M. Lewis  
and J. Richard Lewis  
University of Arkansas Press

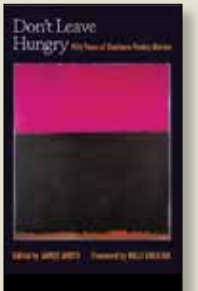
*Jim Crow America* is a chronologically organized book that provides history from primary source materials from 1828 to 1980.

"Jim Crow" was first used in the early 19th century. After the Civil War, Jim Crow referred to the legal, customary and often extralegal system that segregated and isolated African Americans from mainstream American life.

The book tells of the different historical periods of Jim Crow: inventing, building, living, resisting and dismantling. There are excerpts of quotes from historical figures such as Abraham Lincoln, Marcus Garvey, Booker T. Washington, Richard Wright, Paul Robeson, Langston Hughes, Adam Clayton Powell Jr. and Marian Anderson.

Catherine M. Lewis is associate professor of history and coordinator of the Public History Program at Kennesaw State University. She is the author of a number of books, including, with J. Richard Lewis, *Race, Politics, and Memory: A Documentary History of the Little Rock School Crisis* (University of Arkansas Press).

J. Richard Lewis is a desegregation consultant and former educator and academic administrator and president of JRL Educational Consulting. ■



**Don't Leave Hungry: Fifty Years of Southern Poetry Review**

Edited by James Smith  
University of Arkansas Press

*Don't Leave Hungry* is a collection of 183 poems dating from 1958 to current-day publications of the *Southern Poetry Review* in Savannah, Ga.

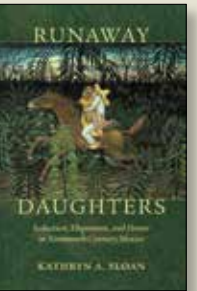
The collection provides a generous overview of the various shapes American poetry has taken over the past half-century. The review is "one of the nation's pre-eminent literary magazines and, by American standards, a veteran publication," said Billy Collins, two-time U.S. Poet Laureate from 2001 to 2003 in the book's foreword.

The first poem was written by Guy Owen, the creator of the review. He was the editor of the journal from 1958 to 1977 and the current editors still think of the *Southern Poetry Review* as "Guy Owen's journal."

Owen envisioned an exceptional journal that was "openly, proudly IN the South, but not only ABOUT the South," said poet Betty Adcock, a co-worker on the editorial staff who worked with Owens for 11 years.

Other poets included are James Dickey, Charles Wright, Albert Goldbarth, X.J. Kennedy, William Matthews, A.R. Ammons, Claudia Emerson and Sharon Olds.

James Smith is associate professor of English at Armstrong Atlantic State University and associate editor of *Southern Poetry Review*. ■



**Runaway Daughters: Seduction, Elopement, and Honor in Nineteenth-Century Mexico**

Kathryn A. Sloan  
University of New Mexico Press

A new book by historian Kathryn A. Sloan examines a pivotal era in the history of Mexico. She mined 19th century court records to reveal both the role that the working class played in liberalizing social codes of conduct and honor, and the state's expanded role in family life.

The book examines courtship practices and the negotiation of honor among young working-class couples and their families in post-colonial Mexico. In the late 19th century, the state increasingly assumed the parental role and sided with minors over parents.

Sloan examined 212 rapto trials from the court records of the state of Oaxaca for the years 1841 through 1919. Rapto involved abduction and seduction of a young woman. In most cases examined, the woman was a willing participant in essentially an elopement without parental approval.

Most Oaxacans were Zapotec and Mixtec, and indigenous women played significant social and economic roles in village life. Indigenous women appeared frequently in courts to exercise their rights as citizens or to testify as witnesses.

Through the judicial system, young women hoped to break free of parental control and marry the men of their choice. ■



## What is the difference between oral history and traditional written history?

***Jeannie Whayne, professor of history, replies:***

Perhaps the most important difference between oral history and traditional history is the personal nature of the former. Oral history typically involves interviews with individuals who either tell their life stories or focus on a certain aspect of their history. In the latter case, they might focus on their involvement in a particularly important historical event, such as their association with the decision to drop the atomic bomb on Hiroshima, or on a specific period time, such as their experiences on the home front during World War II. Oral history is often one person's point of view, unless someone gathers a series of interviews on the same issue together in a volume. As a source of information, oral histories, since they rely on the memories of individuals, have to be used selectively and their facts checked carefully.

A traditional written history, by contrast, uses a variety of sources, which may include oral interviews, government reports, newspaper articles, letters, diaries and personal papers. It is generally written from the third person, adopting a scholarly voice and an analytical approach. Historians writing traditional history cite their sources, which establishes both authority and credibility. Although not meant to appeal to a general audience, some traditional histories, particularly biographies of important political figures like George Washington and Abraham Lincoln, are widely read.

Oral history is an important component of traditional history and can provide a personal angle to a more general narrative.

***David A. Jolliffe, professor of English and Brown Chair in English Literacy, replies:***

Given that the University of Arkansas has a department full of outstanding historians in Old Main, one might wonder why a person like me, with three degrees in English

and 33 years of experience teaching students about reading and writing, is being asked to distinguish "traditional" history from "oral history." The reason is this: While I have the

love of an amateur for traditional history, as captured in such primary documents as letters, journals, and maps, as well as in well-written scholarship, I have found in oral history a superb vehicle for fostering literacy, for getting people in all walks of life to understand how reading and writing enrich their lives and communities.



Courtesy of Special Collections, University of Arkansas Libraries, Fayetteville.

Mary Parler, founder of the University of Arkansas Folklore Research Project, and her assistants interviewed hundreds of Arkansans in the 1950s and early 1960s, collecting ballads, tales and other cultural information. They recorded 442 reels of audiotape, all fully transcribed, an invaluable resource for historians and linguists.



Photo by Russell Cothren

Simply put, oral history is a method: a way of gathering information from people who come into contact with history, who have lived through events or periods and are willing to reflect on not only what happened but also how they experienced what happened. In the Arkansas Delta Oral History Project, which the Brown Chair in English Literacy Initiative has conducted for the past three years, university students will work with Delta high school students to capture the legend and lore of Delta communities using oral history. In the Augusta Community Literacy Advocacy Project, citizens of that small Woodruff County town have used oral history to write a book of stories about military veterans, and members of several churches are using oral history to honor the contributions of long-time members, the pillars of the church. For these Arkansans, oral history brings reading and writing to life. ■