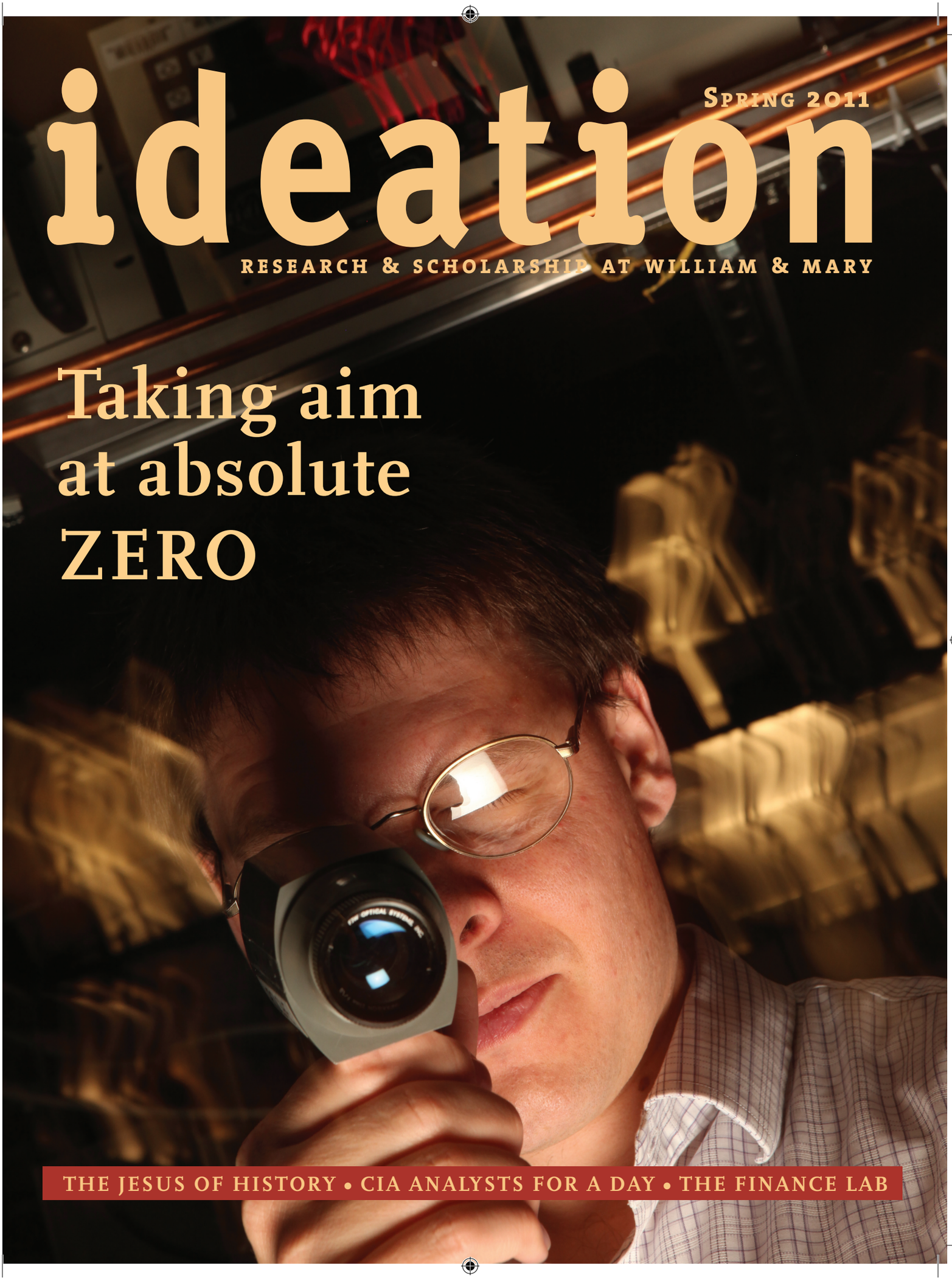
ideation

Spring 2011

RESEARCH & SCHOLARSHIP AT WILLIAM & MARY

Taking aim at absolute ZERO



THE JESUS OF HISTORY • CIA ANALYSTS FOR A DAY • THE FINANCE LAB

ideation
RESEARCH & SCHOLARSHIP AT WILLIAM & MARY

New discoveries in new labs

The cover story in this issue is about some interesting research work going on in a lab in the laser wing of our newly renovated physics building, named for William Small, Thomas Jefferson's Professor of Natural Science and his favorite teacher at the College. By the time you read this, our remaining physicists will have rejoined their atomic, molecular and optical colleagues to pursue a very wide range of research and teaching in a beautiful new facility. The improvements and additions to Small are the latest in a series of brick-and-mortar initiatives to create what we are calling the "science precinct" on our Williamsburg campus.

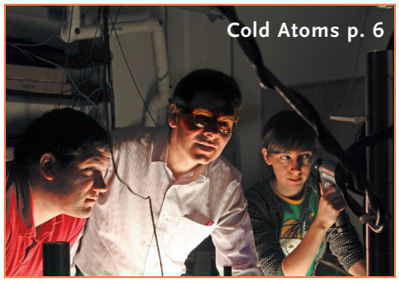
The research in the cover story involves making a large number of atoms so cold that they enter into a strange state of matter where all of the atoms behave as one. This bizarre state was predicted in the 1920s by Einstein and Bose, but it took over 70 years of technical advances in lasers, optics, detectors and solid-state electronics—the sort of hardware you will see in the new Small Hall—to observe it. It's great basic research and we expect it to produce great things.

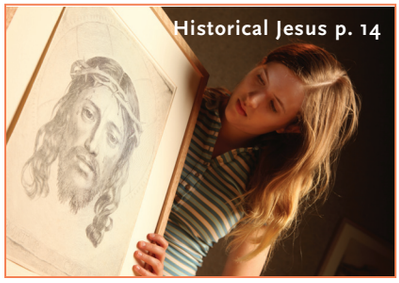
Scientific research is something we do well at William & Mary but, as you'll see from the other stories, it's not the only thing we do well. You can read about examination of French and Francophone culture through its films and a continuing historical exploration of Jesus.

We also have stories about compelling work from two of our professional schools and a roundup of some particularly high-reaching work by our remarkable undergraduates. I hope you will enjoy this issue of *Ideation*. If you have any questions, don't hesitate to call or write to us. You can also browse our webpages to find answers.

Dennis M. Manos

Dennis Manos
Vice Provost for Research, Graduate and Professional Education





The College of William & Mary in Virginia

Chartered February 8, 1693, by King William III and Queen Mary II of Great Britain. Phi Beta Kappa, the nation's premier academic honor society, and the honor code system of conduct both were founded at William & Mary.

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Ideation is the crystallization and conceptualization of ideas. It is part of the process through which thought ultimately becomes deed.

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Stephen Salpukas

Martin Sheen and Emilio Estevez discuss the pilgrimage with George Greenia.

Thousand-year-old Spanish pilgrimage upstages Hollywood stars at academic colloquium

An academic colloquium is not usually where one would expect to see Hollywood stars, but the Camino de Santiago is said to have caused greater miracles to happen.

The thousand-year-old Spanish pilgrimage is the setting for *The Way*, a new film written and directed by Emilio Estevez and starring Martin Sheen. Thanks to the efforts of William & Mary Professor George Greenia, the two Hollywood stars screened their film in February at Georgetown University, kicking off the Workshop on Pilgrimage Studies, co-hosted by William & Mary and Georgetown's department of Spanish and Portuguese.

"The historic trek to that World Heritage Site is a unique example of a universal urge to leave home to find yourself," said Greenia, a professor of Hispanic studies. "From the Ganges to Ground Zero to Graceland, we are all pilgrims on the way."

Greenia, who has travelled the 500-mile Camino every year since 2005, said that plans for the pilgrimage workshop were almost complete when organizers learned of the Estevez's film, which had premiered at the Toronto Film Festival and in Spain.

With the assistance of *The Washington Post*'s Ann Hornaday, Greenia connected with Estevez and asked whether the actors would be interested in screening the film at the workshop.

"He graciously said yes," said Greenia, "and a studious academic affair immediately turned into a Washington event."

President Taylor Reveley noted that William & Mary faculty have been teaching on the Camino for nearly two decades and that Greenia has led students on the journey for each of the past six summers.

"Their research projects conducted on the 500-mile trek have spanned a host of disciplines," said Reveley. "As George has described in the brochure tonight, the rhythms of the walking offer a stark contrast to the immediacy of modern travel. Though an individual person takes each step along the Camino, there are many partners in the journey."

—Erin Zagursky

William & Mary plays a large role in Historic Triangle's economic diversification report

William & Mary played a significant role in the Historic Triangle Collaborative's Economic Diversity Task Force, which released a report of its recommendations in September after a year of research and discussion.

The report seeks to find mutually beneficial ways in which James City County, Williamsburg, York County and other major institutions can work together to diversify the Historic Triangle's regional economy while also strengthening the tourism industry. Much of the report emphasizes the importance of supporting entrepreneurs, small businesses and young professionals and creating an environment that is conducive to opening new businesses or expanding current ones.

The task force was led by Jim Golden, vice president for strategic initiatives at William & Mary and immediate past chairman of the Greater Williamsburg Chamber & Tourism Alliance. Leonard Sledge, the College's director of economic development, also served on the task force. Golden explained that although the tourism and hospitality sector of the regional economy has been growing over the past two decades, the sector was hit hard when the national economy took a downturn beginning in 2007.

"There's a general interest in what we can do to diversify the economy and make it less vulnerable to downturns in any one sector. We certainly want to have a strong tourism and hospitality sector, but it would be good to expand in other areas as well where we have strengths and where we can attract and grow businesses," he said. "We think William & Mary can play a strong role in helping the region do that."

The task force report lists six major goals, including: leveraging the location of Williamsburg between Richmond and Hampton Roads, engaging in collaborative economic development planning, providing a support system for entrepreneurs, using major institutions to support economic initiatives, creating a regional business brand and diversifying the tourism industry's offerings.

Sledge said the College is particularly interested in three aspects of the goals: entrepreneurial assistance, joint business marketing and tourism.

"William & Mary is a major economic driver in the Historic Triangle," Sledge said, noting that the College accounts for about half a billion dollars in economic activity in the state and approximately 7,000 jobs. "We have research facilities, we have other types of venues. We are very much a part of the fabric of the regional economy. So we need to continue identifying things we can do to help grow the region from an economic development standpoint outside of just having students come and be part of our campus."

—Erin Zagursky

Joseph McClain

Elizabeth Harbron (center) checks on an undergraduate research group she mentors. Desmarie Sherwood '13 (left) and Clare LeGuyader '11 are working on a photochemical sensor to detect the presence of mercury in water.

Chemist Elizabeth Harbron is recognized for excellence in faculty-student research

William & Mary's Elizabeth Harbron was one of six U.S. chemists to be named Henry Dreyfus Teacher-Scholars. The award recognizes chemistry faculty who not only are accomplished researchers themselves, but who also incorporate undergraduate students into their research.

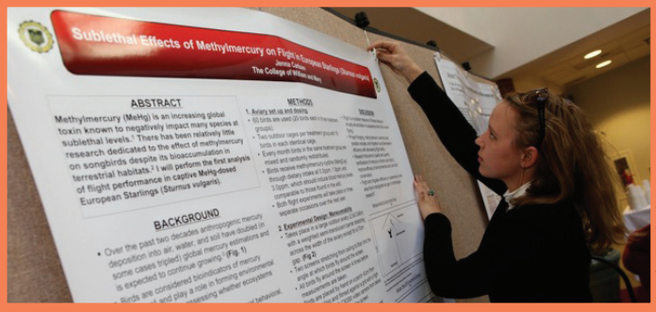
Harbron, associate professor of chemistry, also is the 2011 winner of William & Mary's Thomas Jefferson Teaching Award, an honor bestowed each Charter Day to a younger faculty member at the College.

"Research support at undergraduate institutions is very important," stated Mark J. Cardillo, executive director of The Camille and Henry Dreyfus Foundation. "Nearly half the chemists who earn a doctorate degree receive their bachelor's degree from an undergraduate institution. And research is a fundamental part of chemistry education."

The Henry Dreyfus Teacher-Scholar Award carries a $60,000 unrestricted research grant for each recipient. Harbron, associate professor in William & Mary's Department of Chemistry, will use the grant to pursue research into a number of rhodamine spirolactam dyes, molecules that show promise in applications as fluorescent sensors. The projects involve a number of William & Mary students.

The Dreyfus award will allow Harbron and her lab to investigate two different aqueous sensor projects. "Any time you have something colorless until it meets something else, you have the potential for a sensor," she says. One project is focusing on spirolactams that could be used, in concert with some polymer nanoparticles, to detect the presence of mercury in water. The second program centers on developing a sensor system to determine pH, or the relative acidity/alkalinity of water, through a change of color.

—Joseph McClain



Stephen Salpukas

GRADUATE RESEARCH SYMPOSIUM

Jenna Carlson gets ready to exhibit her work at the 10th annual Graduate Research Symposium. Carlson, a first-year M.S. student working with biologists John Swaddle and Dan Cristol, was one of more than 150 grad students showcasing their work at the event this year.

Economists' book explains what has been driving the increasing cost of higher education

For the majority of Americans, higher education is more affordable today than it was a decade ago, according to Robert Archibald and David Feldman, professors of economics at William & Mary.

Their assertion is based on the long-term economic analysis of similar service-based industries, the professors explain. The argument is central to their book, *Why Does College Cost So Much*? The book considers higher-education costs in light of "the entire industrial structure of the country and economic history of the past 100 years."

Stephen Salpukas

Archibald (left) and Feldman

"We wrote the book partly because we thought we had something to say and partly because we felt that others who were writing on this topic did not have the right things to say," Archibald said.

Archibald and Feldman assert that a fundamental driver of the cost of higher education result from the reliance on a highly-educated workforce. Although some "artisan" industries have been able to replace such workers by utilizing appropriate technologies, universities are limited in their abilities to do so, as are other "personal-services industries," they said.

"For much of the 20th century, the supply of highly-educated workers was soaring," said Feldman. "Since the late 1970s and early 1980s, the supply of highly-educated workers as a percentage of the labor force has begun to flatten off. The result is an increase in wages for highly-educated people."

Archibald and Feldman started working together more than 10 years ago writing articles concerning higher-education finance. As they collaborated, they watched the change in the relationship between their own public university, the College of William & Mary, and its historic benefactor, the Commonwealth of Virginia.

"Essentially we saw state support decline in an interesting roller-coaster fashion," Feldman said. Investigation revealed that the same broad economic factors that led to loss of state income for public universities similarly affected income streams of private institutions. Their effort to understand the factors contributing to rises in tuition for both types of institutions ultimately led to publication of their book.

—David Williard

One has gone north, another went south, so VIMS oceanographers became literal 'polar opposites'

They share a first name and a passion for oceanography, but beginning in late January, professors Deborah Bronk and Deborah Steinberg of the Virginia Institute of Marine Science became polar opposites—literally.

Bronk, an international expert in ocean nitrogen, headed to Barrow, Alaska, to lead a team of VIMS graduate students and technicians studying the Arctic coastal ecosystem.

Steinberg, internationally recognized for her work on ocean carbon and zooplankton, will be leading her own team of graduate students and technicians into their fourth week of shipboard research in the waters off the Antarctic Peninsula.

Bronk's research team, the self-styled "nitrogen snow ninjas," will be working at 71 degrees north latitude in nearly continuous darkness during the depth of the Arctic winter. Steinberg's zooplankton crew will be working between 65 and 70 degrees south latitude in nearly continuous daylight during the height of the Antarctic summer. The distance between the two research sites, as the arctic tern flies, is 10,289 miles.

VIMS photo

Bronk (left) and Steinberg

What the two research teams share is their focus on better understanding how climate change is affecting polar ecosystems. Polar regions are warming faster than anywhere else on Earth, with a rise in average winter temperatures during the last 50 years of more than 7°F in the Arctic and more than 11°F along the Antarctic Peninsula.

—David Malmquist, VIMS

William & Mary begins collaborative 'sister university' research initiative with UESTC of China

William & Mary has entered into a "sister university" arrangement with the University of Electronic Science and Technology of China (UESTC), a relationship that both sides hope will generate a wide range of mutually beneficial educational and research initiatives.

William & Mary President Taylor Reveley and UESTC Vice President of International Affairs Wang Houjun signed a memorandum of understanding at a December ceremony in the Great Hall of the Wren Building.

"UESTC is one of the most distinguished universities in China," said Reveley. "We look forward to an exchange of faculty and students in academic programs and cultural exchanges between Chengdu and Williamsburg."

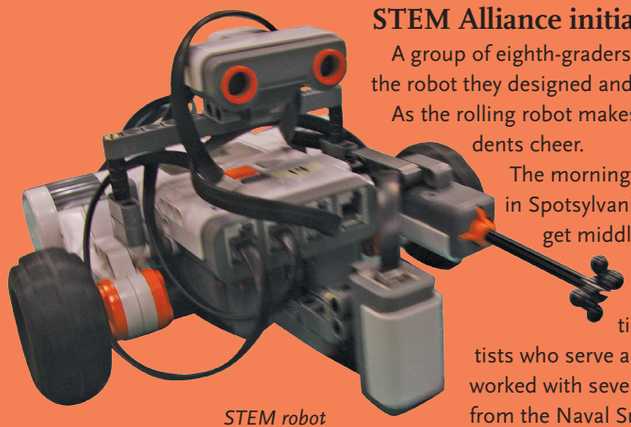
The signing ceremony was the high point in a three-day visit to William & Mary by a UESTC delegation. The Chinese visitors had an agenda filled with tours of College facilities and meetings with scholars, researchers and administrators from William & Mary.

"The meetings are to talk about what both sides want from this relationship," said Dennis Manos, William & Mary's vice provost for research. The meetings were organized by topic. There was a science and environmental group, led by Manos and VIMS Professor Emeritus Dennis Taylor; a business group, led by Mason School of Business Dean Larry Pulley; and a sister school relations group led by Ron St. Onge, interim director of the Reves Center for International Studies.

Manos said inter-university collaborations would likely grow from a number of collaborative projects among individual faculty at both institutions. For example, he noted that he worked with former UESTC President Liu Shenggang on a defense-funded microwave tube project at William & Mary's Applied Research Center. Also, C.K. Li, Ferguson Professor of Mathematics at William & Mary, is preparing to work with UESTC scientists on applications of his matrix theory.

—Joseph McClain

STEM Alliance initiative shows middle schoolers that science is cool



STEM robot

"I LIKE TO SEE WHAT'S POPULAR WITH THE KIDS, WHAT'S PIQUING THEIR INTEREST, BASED ON THE THINGS THAT THEY ARE CARRYING."

A group of eighth-graders huddles around a rectangular box on the floor of their classroom and watch the robot they designed and programmed navigate its way around the perimeter.

As the rolling robot makes its final turn and heads back to the section labeled "home base," the students cheer.

The morning of building, programming and testing robots at Ni River Middle School in Spotsylvania, Va., is just one component of a William & Mary initiative that seeks to get middle-school students interested in science, technology, engineering and math (STEM) careers.

The STEM Education Alliance, based in William & Mary's School of Education, matches teachers with volunteers—professional engineers and scientists who serve as co-teachers in the classroom. Since its inception in 2004, the alliance has worked with seven school districts in the Northern Virginia area and scientists and engineers from the Naval Surface Warfare Center Dahlgren Division in Dahlgren, Va.

Funded by the National Defense Education Program (NDEP), the alliance provides training, instructional materials, professional development opportunities and school counselor training, as well as summer academies for students. Staff members from the alliance annually visit classrooms to see the program in action.

Jessica Taylor, the STEM Education Alliance project specialist at the William & Mary School of Education, was on hand for the Ni River event. She says the program constantly evolves based on what they see working—or not working—in the classrooms.

"I like to see what's popular with the kids, what's piquing their interest, based on the things that they are carrying," she said. "This is the group we're trying to reach," she said. Research shows that students lose interest in the sciences during middle school, so the alliance focuses on that age range, Taylor noted.

—Erin Zagursky

Economist details Federal Reserve's historic trend toward 'policy inertia' and how it will affect us all

Amid what is considered by many economists to be one of the worst financial crises since the Great Depression, Assistant Professor of Economics Olivier Coibion is shedding some light on the next big questions: How will the Federal Reserve exit from its loose monetary policy decisions on interest rates—and what will be the effects on the economy?

Forecasting future economic conditions accurately requires understanding in the direction and the speed that policy is likely to be adjusted in the future, says Coibion, co-author of *How inertial is monetary policy? Implications for the Fed's exit strategy?* published on VoxEU.org, a leading international economic research site.

"The speed of the exit strategy is likely to hinge in part on the amount of inertia inherent in the U.S. monetary policymaking process, i.e., the speed at which policy adjusts to incoming information," he said.

A specialist in macroeconomics and international economics, Coibion investigates why the Federal Reserve has historically changed interest rates in a much more gradual manner than might be expected, based on changes in the underlying economic conditions.

"Policymakers prefer to move interest rates only gradually toward their desired levels to minimize the volatility of interest rates and asset prices more generally," he said. Economists refer to this gradual adjustment as "policy inertia."

Therefore, Coibion says that consumers should not expect rapid policy changes in the near future. Policy inertia is a plus for the housing market, says Coibion, since a longer period of lower interest rates is likely to provide additional support, thereby quickening its recovery, he said.

"Policy inertia will also affect students," noted Coibion. "With lower student loan rates, it will be cheaper for them to pursue their education."

Overall, Coibion stresses that the Fed's exit strategy will be a gradual process, which will in turn trigger market interest rates to gradually rise.

"Monetary policy changes take time to affect the economy," said Coibion. "Policy inertia sheds light on how rapidly the Fed's exit strategy from its current period of nontraditional tools is likely to proceed."

—Megan Shearin

Diaz, mapper of aquatic 'dead zones,' is named one of four Virginia Outstanding Scientists

Robert J. Diaz of the Virginia Institute of Marine Science received one of four Outstanding Scientist Awards for Virginia for 2010.

The award is bestowed by the Governor's Office and the Science Museum of Virginia. Diaz, professor of marine science at VIMS, is the international "go-to guy" on the ecological effects of low-oxygen marine "dead zones." His work highlights dead zones as barometers of global environmental stewardship, as their severity corresponds to nutrient inputs from human activities.

Last year, Diaz briefed Congress on the ecological effects of chemical dispersants used in the Gulf oil spill, and on the oil's potential effects on dead zones.

"As the international expert on this issue, Bob is a truly worthy recipient of the Governor's award," said John Wells, dean of the School of Marine Science at W&M and director of VIMS. "It reflects his years of research to understand the scientific basis of dead zones, and his success in bringing the problem—and potential solutions—to the world's attention."

—David Malmquist, VIMS

Psychologist will use Cattell Fund fellowship to develop zebrafish model of fetal alcohol spectrum

Pamela Hunt, professor of psychology and associate director of the interdisciplinary neuroscience program, was one of three recipients of the 2011-2012 James McKeen Cattell Fund Fellowships. Since 1974, the fellowships have provided professors a supplemental sabbatical allowance, allowing them to extend their leave time and research efforts. Hunt is the first William & Mary professor to receive the fellowship.

Beginning in July 2011, Hunt will use her one-year sabbatical to develop a zebrafish model of fetal alcohol spectrum disorders in order to better understand how prenatal alcohol exposure affects humans.

"What I would like to do ultimately is learn how to use these fish as a model of what's called fetal alcohol spectrum disorder," she said. "The main problem would be fetal alcohol syndrome, but just any exposure to alcohol prenatally can result in problems with cognitive performance and attention and some other things."

During the first semester of her sabbatical, Hunt will work in Robert Gerlai's laboratory at the University of Toronto-Mississauga.

"He has a number of paradigms and techniques that he uses to look at fish behavior and some simple forms of learning, and so my intention would be to go up there and learn about his paradigms and then come back to my lab and try to develop those procedures to look at alcohol effects on learning," Hunt said.

During the second half of the sabbatical, Hunt will begin a zebrafish colony in her own lab with the intent of transforming the lab to support zebrafish as a new research area. Hunt also plans to spend much of her sabbatical writing articles for publication and a grant proposal so that she may obtain the necessary equipment to transform her lab.

Hunt said that her zebrafish research will allow her to form new collaborations, including one with Chancellor Professor of Biology Margaret Saha, who also works with the species.

Stephen Salpukas

Pamela Hunt

—Erin Zagursky

Henry Hart is honored for a lifetime of work with receipt of the Carole Weinstein Prize in Poetry

Henry Hart, the Mildred and J.B. Hickman Professor of English and Humanities, was honored for a lifetime of poetic achievement and support last fall, when he was awarded the Carole Weinstein Prize in Poetry during the Virginia Book Awards ceremony at the Library of Virginia in Richmond.

Joseph McClain

Henry Hart

The prize, first given in 2005 and awarded annually to a poet with strong ties to Central Virginia, recognizes recent contributions to the art of poetry and is awarded on the basis of a range of achievement in the field. Past recipients have included Pulitzer Prize winners Charles Wright and Claudia Emerson.

"I was very honored to be one of the recipients of the Carole Weinstein Poetry Prize," Hart said. "I know the poetry of Charles Wright, and in fact I've written numerous essays about Charles and his poetry. I also know the poetry of Claudia Emerson and of the other winners and admire it greatly. So to be included in the company of these fine poets is very flattering."

Hart has published several critical books on modern poets, including *The Poetry of Geoffrey Hill* in 1986, *Seamus Heaney: Poet of Contrary Progressions* in 1991, *Robert Lowell and the Sublime* in 1995, and *The James Dickey Reader* in 1999. His 2000 biography, *James Dickey: The World as a Lie*, was runner-up for a Southern Book Critics' Circle Award. He has also published three books of poetry: *The Ghost Ship* in 1990, *The Rooster Mask* in 1998 and *Background Radiation* in 2007.

—Jim Ducibella

Sea-level study brings both good news and bad news to localities across Hampton Roads

A new study of local sea-level trends by researchers at the Virginia Institute of Marine Science brings both good and bad news to localities concerned with coastal inundation and flooding along the shores of the Chesapeake Bay.

John Boon, the study's lead author, says the good news is that "absolute sea level in the Chesapeake Bay is rising only about half as fast as the global average rise rate." The bad news, says Boon, is that "local subsidence more than makes up for it."

Boon, an emeritus faculty member at VIMS, has previously warned of the long-term impacts of sea-level rise in Hampton Roads, particularly in light of the increased likelihood of coastal flooding during hurricanes and nor'easters.

In their report, Boon and co-authors, VIMS Professor John Brubaker and Assistant Research Scientist David Forrest, stress the distinction between absolute sea level—a measure of the volume and mass of ocean water, as compared to relative sea level—the level of the ocean surface measured relative to land (and more specifically a tide gauge).

The authors note that for the Chesapeake Bay, relatively moderate rates of absolute sea-level rise, when combined with locally high rates of land subsidence and an increasing coastal population, add up to a significant and growing threat.

They call for continued operation of the local tide gauge network and addition of new mapping tools such as LIDAR to aid in smarter coastal planning and improved emergency-response measures.

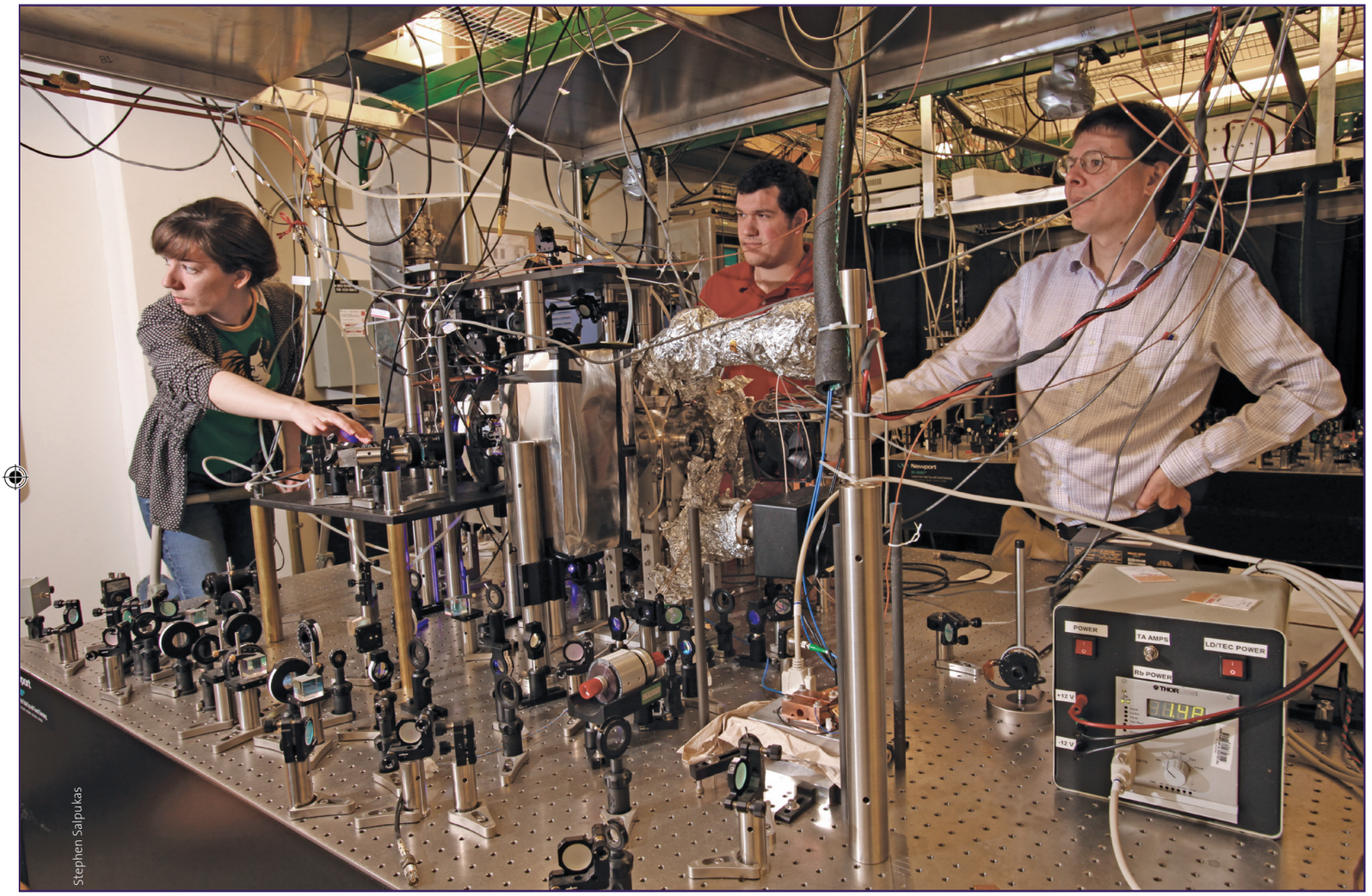
The VIMS study was funded by the Norfolk District of the U.S Army Corps of Engineers and reviewed by officials with the National Oceanic and Atmospheric Administration (NOAA) and the Maryland Geological Survey.

—David Malmquist, VIMS

THE WILLIAM SMALL LABORATORY OF PHYSICS

COLD & ULTRACOLD

Chilled atoms are going to heat up scientific opportunities



Stephen Salpukas

Looking away from the experiment is necessary for researchers (from left) Megan Ivory, Austin Ziltz and Seth Aubin. The team watches a computer monitor to track the transition of rubidium-87 atoms into the Bose-Einstein Condensate. 'Eureka!' will be called when a round blob on the monitor becomes oblong.

By Courtney Wickel '11

A COLLECTION OF ATOMS IN the basement of Small Hall is a million times colder than outer space. It's one of the coldest spots in the universe, but it's not cold enough. Yet.

Seth Aubin has big plans for these tiny particles. A group led by Aubin, assistant professor of physics at William & Mary, is putting finishing touches on an apparatus that will chill atoms to near absolute zero. At such ultracold temperatures, the quantum nature of atoms takes over and they begin to follow an altogether different set of physical laws than atoms at room temperature—laws that Isaac Newton never dreamed of.

Atoms normally move about according to classical Newtonian physics, Aubin explains, like apples falling from trees or billiard balls colliding on a pool table. However, under certain extreme conditions—in this case, cold—Newtonian laws don't hold and physical behavior can only be described by quantum mechanics. Under extreme temperature conditions, atoms begin "behaving less like billiard balls and more like waves," he says.

Aubin plans on exploiting the non-Newtonian

properties of ultracold atoms to investigate fundamental questions in quantum physics. But, for Aubin's atoms to enter the quantum regime, they need to be cold enough. Specifically, atoms need to be on the order of a hundred nanokelvin—a hundred billionth of a degree Kelvin—before they start displaying the desired wavelike properties. To put that number in perspective, 0 degrees Kelvin is absolute zero; it is theoretically impossible for anything to be colder than absolute zero. Water freezes at 273 Kelvin. Outer space is about 3 Kelvin.

"They're pretty cold," says Aubin, describing the lab's current record temperature of four microkelvin. "But, unfortunately, that's not good enough for us. At these temperatures, the atoms still behave like billiard balls. If you can get down to a hundred nanokelvin, basically a thousand times colder than they are right now, those particles become quantum-like."

"At high temperatures the atoms all have different velocities," explains Aubin. "But, once you get cold enough, they all clump together. They say, 'that's it, we don't need to be different. We're all going to be the same.'" Aubin explains that atoms oscillating in phase are acting according to the laws of quantum mechanics.

CATCHING A WAVE

Because atoms are so small, Aubin uses laser-generated images to monitor the atoms throughout the cooling process. On the lab's computer monitor, a clump of about a hundred million atoms appears as a red globular blob. "It always starts off round," describes Aubin. "As you go colder, it gets smaller but it stays round. When they become completely quantum, they stop being round. They get very elongated. That oblong-ness is a characteristic of their wave nature. Instead of being a blob, you actually get a whole bunch of blobs that are evenly spaced—essentially, a wave."

It takes both science and engineering to make the transition from Newton to quantum. The first thing you notice in Aubin's research laboratory is the seemingly random disarray of mirrors and lenses scattered across two large optics tables. However, Aubin explains that the assembly of optics is anything but random: "Whenever my family or my friends come to visit, they'll say, 'Seth, your table's a big mess. Why don't you clean all this stuff up?' But, really, if any of this moves by between ten and a hundred microns, it won't work."

These mirrors and lenses concentrate and direct the lasers responsible for the initial cooling phase. Aubin concedes that it seems counterintuitive to use lasers as a cooling device. "It is true that if you shoot a laser at something, it will get hot," confirms Aubin. However, in terms of entropy, the thermodynamic measure of the order of a system, lasers are extremely cold.

"Laser light is made up of photons, the particles of light, and all the particles are identical," explains Aubin. With the same direction, polarization and wavelength, the

continued on page 8

ATOMIC CLOCKS: BIGGER ISN'T BETTER (BUT ULTRA COLD IS)

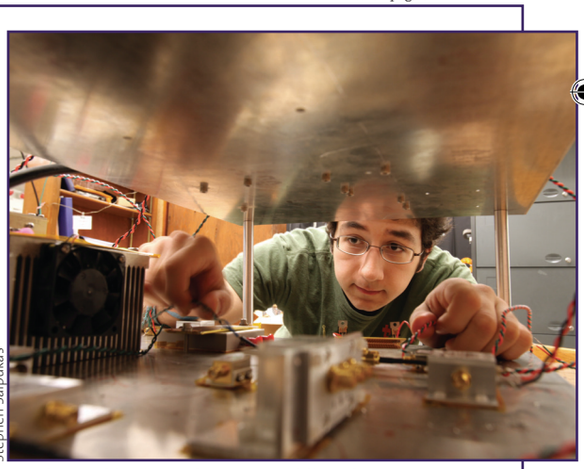
The oscillations inside of an atom are more regular than a pendulum—or virtually anything else.

"The electrons of atoms absorb and release radiation as they undergo shifts in energy. The frequency of this radiation can be used for measurement of time," explains Sandro Gvakharia '12, who is constructing an atomic clock as part of his senior honors thesis. While today's best atomic clocks are accurate to within a second every billion years, such timepieces are big and need at least a meter of vertical room. Seth Aubin hopes to show in principle that a cold-atom atomic clock can be made much smaller, while limiting trade-offs in accuracy.

Gvakharia's atomic clock is one of several spin-offs coming from the Aubin's lab's investigation of cold atoms. Aubin explains that all atoms display an internal waviness. Occasionally, this waviness is interrupted when two atoms collide. Such interruptions, or "clock shifts," are responsible for that one second of drift every billion years.

Aubin explains that traditional atomic clocks send a fountain of cold atoms into the air, while an ultracold atom clock uses a magnetic trap to cool and hold atoms. Cold atoms move more slowly than room-temperature atoms; they make better atomic clocks because they have fewer colliding atoms. Ultra-cold atoms can have fewer yet; but there's a trade off, because trapping ultra-cold atoms concentrates their density, increasing the clock shift.

To make a smaller clock, Aubin hopes to use fermions, particles with an inherent repulsive nature. Aubin expects the mutually repellent fermions will minimize collisions between the particles—and increase clock accuracy.



Stephen Salpukas

Sandro Gvakharia works on assembling the components of a small atomic clock in Aubin's lab.

Accurate timekeeping is important to a number of applications. For example, your dashboard GPS works by measuring the time between signals sent and received between your car and a set of satellites. The importance of accurate timekeeping increases as distances grow.

Aubin notes that the lab receives funding from the Virginia Space Grant Consortium—itself funded by NASA, which wants the most accurate clocks possible to improve their tracking of deep-space probes, which may benefit from the construction of more compact atomic clocks. His lab has also received support from the Jeffress Memorial Trust and the Army Research Office.

—Courtney Wickel

In extreme cold, atoms go quantum

continued from page 7

photons of a laser oscillate in phase. "That's extremely ordered," says Aubin, "you couldn't get more ordered than that. So, lasers are actually extremely cold."

During the initial cooling phase, a few million rubidium-87 atoms are bombarded by six precisely oriented and tuned laser beams. An atom's temperature is proportional to its kinetic energy, which is a measure of its velocity: When an atom is bombarded by photons of just the right wavelength ("color"), it loses speed and therefore, it also loses energy and its temperature decreases.

"We can slow atoms down from room temperature to essentially zero in a matter of milliseconds," Aubin said. "It's a very massive deceleration. And a massive cooling."

When atoms become quantum-like, they are said to exist in a state known as the Bose-Einstein Condensate, or BEC. After laser cooling, temperatures typically range between ten and a hundred microkelvin, but, these atoms still haven't reached BEC. Further cooling the atoms—from microkelvins to nanokelvins—requires some additional electromagnetic hoop-jumping.

As spring began, Aubin and his lab were trying to get the atoms the rest of the way from cold to ultracold—and into a Bose-Einstein Condensate—via a second phase of cooling. Going from one millionth of a degree to one billionth of a degree isn't trivial.

"When I got into this business, I thought, 'You know, a hundred microkelvin, a hundred nanokelvin—same difference. You're just adding a few zeros. You're already pretty close to absolute zero. What difference does it make?,'" Aubin said. "Actually, it makes a huge difference."

BOTTLING ATOMS

This second phase of cooling involves moving the atoms into a magnetic bottle. "In the magnetic bottle the atoms are literally suspended in space" explains Aubin. "The atoms are sort of trapped, confined by a magnetic force." Inside the magnetic bottle the atoms will collect on an aluminum nitride chip. This chip, about the size of a microchip, serves as the site for the second cooling phase, in which the atoms are shot by a stream of RF—radio waves.

The chip generates a magnetic trap, shaped like a well. The most energetic (and therefore warmest) atoms jostle about at the top of the well while the cooler atoms sit nearly motionless at the bottom. A shot of RF removes the warmest atoms.

"It's just like when you blow the steam off your coffee to let it cool down, you blow away the hottest coffee molecules," explains Austin Ziltz, a graduate student working in Aubin's lab. "By adding some RF, you can make the hottest atoms flip out of the trap. Get rid of the hottest ones and the collection will go to a colder average temperature."

As the lab makes the progression from cold to ultracold, they're performing a number of measurements and experiments.

"We're characterizing the system with physics. We're measuring the temperature; we're measuring the density of the atoms. We have lots of 'little experiments.' We're gearing up to do a nonlinear optics experiment, we also have magnetometry, measuring magnetic fields," says Aubin. "These experiments are not the main focus; they're little things that will help us massage the system into proper

Stephen Salpukas

Seth Aubin is flanked by Ph.D. students Austin Ziltz and Megan Ivory, who holds the special scope that the researchers use to see the cloud of cold atoms.

A BETTER & BIGGER SMALL HALL

"The building itself is always part of a physics experiment" says Keith Griffioen, professor and chair of the physics department. And in recent years, he added, Small Hall often was an unwanted part. "Vibrations, from whatever source, can kill the precision of a laser experiment. Variations in temperature can make a large superconducting magnet become unstable," he said. "Electrical currents running through a building can influence precise electronics, and therefore each circuit needs to be properly isolated. Signals from radio stations can interfere with precise detectors."

After 50 years of service, the William Small Physical Laboratory, as it's formally known, has undergone a well-earned overhaul. The renovation/expansion created 22,000 square feet of lab space in a new wing and renovated 68,000 square feet of existing space in the old Small Hall. In addition to being more physics-friendly, Small Hall has many new features. There's a Faraday cage, which shields against external electromagnetic radiation. Other new additions include a clean room and a high bay, designed for constructing very large particle detectors for use at national facilities such as Jefferson Lab and Fermilab.

The physicists moved into their renovated offices shortly after commencement. Seth Aubin's group and other researchers with labs in the new wing began moving in a year ago.

"They did a very nice job on the space and the temperature control; that was one of our big concerns," Aubin says of the new Small Hall lab space.

The $28 million renovation—all done with Commonwealth of Virginia funds—also included updated and expanded physics teaching labs. "These teaching labs are intended to build on the intuitive physics that everyone has learned by walking with gravity, knowing how to catch a ball and watching waves break on the beach," says Griffioen. "With these new facilities, we will be able to teach the art of experimenting more effectively."

—Courtney Wickel

Stephen Salpukas

The bigger, more physicist-friendly, Small Hall.

working conditions so we can finely tune the machine."

Aubin has a menu of experiments planned once the lab achieves a BEC and he and his colleagues can investigate the quantum-wave behavior of atoms. High on the list is an atomic laser.

"Atomic lasers don't sound that incredible, but they can be quite useful. Just like how the photons in a laser all have the same wavelength, the same polarization, the same direction—atoms do the same thing when they're in BEC," explains Aubin. "A BEC is like a laser for atoms." Atomic lasers are more powerful than traditional lasers made of light. Because atoms have mass, atomic lasers are characterized by much shorter wavelengths.

He points out the atomic laser will advance theoretical study as well as address practical problems in the field of physics. Aubin is interested in creating an atomic-laser interferometer to investigate the Casimir-Polder force, a force that causes attraction between a surface and an atom at the atomic scale. This force is too small for us to notice in our everyday life; however, once you get down into the microenvironment of individual atoms, surface forces are more powerful than gravity. The Casimir-Polder force is especially problematic in nanotechnology applications.

"When you make these micromechanical devices, the surface force dominates," explains Aubin. "It's the biggest force around. In fact, often these micromechanical devices will stick together, and then they don't work. Understanding and characterizing this force is a big deal."

SIMULATING COMPONENTS

An atomic laser also provides new ways to simulate solid-state systems. A resistor, transistor, superconductor, microchip or any solid-state system consists of solid crystals through which electrons flow. The crystals have inherent impurities that affect the flow of electrons. Aubin plans on using light lasers to create perfect crystal lattices through which BEC atoms, simulating electrons, will flow.

"By using atoms instead of electrons, the atoms are easier to see, and they're much easier to manipulate," explains Megan Ivory, a Ph.D. student working on the cold atom project. And, she adds, using lattices made of light allows control of the system quality.

"It won't make a new device for you," stresses Aubin. "If you want a single-electron transistor, or a one-dimensional quantum wire, you need something that's based on electrons, but what this simulation can do is provide you with a much better understanding of what's going on. You can test all your theories. From a theoretical standpoint, it will help us understand how real quantum-scale electronics work."

Atom interferometry and experimental solid-state simulation are just two of the exciting things that will be done at William & Mary with ultracold atoms. But first, the atoms need to enter the Bose-Einstein Condensate. Aubin expects that his lab will achieve BEC before the beginning of the 2011 fall semester. "The idea is that if everything goes well, we should have the BEC sometime this summer" says Aubin. "And, it could be sooner if things go our way, 'Knock on optics table.'"

À vous de voir!

Texts explore French filmmaking from the inside out

By Lillian Stevens

SINCE THE INVENTION OF THE CINÉMATOGRAPHE IN 1895, cinema has played a key role in French culture. French filmmaking, in turn, has had a huge influence upon the industry worldwide. With more cinemas per inhabitant than any other place in the world, the French love movies.

Maryse Fauvel, professor of French and Francophone studies, loves them too. Fauvel recently completed the second installment of a two-part text—written in French—on French filmmaking. *À vous de voir!* offers a critical analysis of 24 Francophone films, as well as a step-by-step explanation of film production.

The book's title is a play on words, Fauvel says. Literally, *à vous de voir* means "it's up to you to see," she says.

"I want readers and my students to learn to look at movies and make decisions concerning all of the meanings. I want them to view films with different approaches," Fauvel explained. "Films are complex works of art which use and manipulate cinematographic codes, but they also employ historical, political, technological, cultural and sociological references."

Fauvel is doing her part to ensure that her students are equipped with the tools to analyze and appreciate films. What's more, many are learning the steps involved in making a film. She has incorporated the students' work, a multimedia CD, into the second volume of *À vous de voir!*

"Making films is technically within the reach of any William & Mary student. We would never teach our students to read without also asking them to write," she says. "How can we teach them about film, without teaching how to make movies?"

Fauvel says that her book is intended to reach a wide audience interested in discovering Francophone cinema. She doesn't write books in English and she doesn't teach in English.

"To publish in English for me would mean to present French/Francophone cultures through a filter," Fauvel explained. "It is important to see the world from other points of view, in different languages, and not always in English, not always from an American point of view."

CULTURAL & POLITICAL REALITIES

Fauvel explains that the idea of "Francophone" incorporates not only cultural concepts—it also incorporates a set of political and geo-political shifts. The idea acknowledges realities such as decolonization and political/cultural self-determination, she says, while at the same time remaining aware of continuing links between France and its former colonial possessions. Thus, "Francophone culture" embraces postcolonial France and former French colonies such as Algeria and Vietnam.

French filmmaker Jean-Paul Jaud discusses films with William & Mary's Maryse Fauvel in the lobby of Richmond's historic Byrd Theatre during a break in the 23rd annual French Film Festival. The cinema is an especially rewarding medium through which to study French and Francophone cultures, Fauvel says.

Stephen Salpukas

FAUVEL'S FAVORITE 5 FRENCH/FRANCOPHONE FILMS

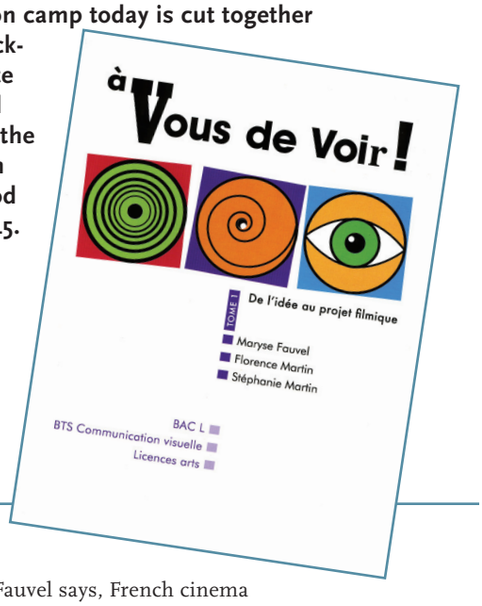
- ***La Grande Illusion***, **("Grand Illusion"), 1938 by Jean Renoir: an antiwar movie which reflects mechanisms of the construction of national identities. This black-and-white movie is also well known for its techniques, e.g., parallel editing, long takes in deep focus and dynamic compositions.**

- ***Bienvenue chez les Ch'tis,* 2008 by Dany Boon: a comedy with an enormous commercial success, although made without special effects and a reduced budget. It illustrates the role of regional cultures and identities in a nation. The script has been bought by a U.S. filmmaker, who wants to rewrite it for an American audience.**

- ***La Haine*** **("Hate"), 1995 by Mathieu Kassovitz: illustrates the cinéma de banlieue genre (unemployment, ethnic violence and racism in underprivileged environments, especially suburbs of Paris, social fragmentation). Filmed in black-and-white, the camerawork and editing underline social fragmentation of the time.**

- ***Les Silences du Palais*** **("The Silences of the Palace"), 1994 by Moufida Tlatli: illustrates the new Tunisian Cinema and the recovering of personal and historical memory. The film visually translates an indescribable suffering, a scream without a sound.**

- ***Nuit et brouillard***, **("Night and Fog"), 1955 by Alain Resnais: a 35-minute-long documentary on Nazi concentration camps. Using powerful, graphically discontinuous editing, color footage of an abandoned concentration camp today is cut together with black-and-white newsreel shots of the camps in the period 1942-1945.**



"Film is a great medium to study French/Francophone cultures," she says. "It's entertaining, but beyond that, it is a medium which reflects the evolution of French/Francophone history and concepts like identity, women's and men's roles in society, images of the body, homosexuality and bisexuality, AIDS, relations to space, daily life, racism, the exclusion or inclusion of minorities, social or political problems, etc."

À vous de voir! explores other societal changes, including advances in technology, the progress of film studies, and the evolution of an increasingly visually-oriented audience. Each of its 14 chapters contains analyses of three films—directed by Amari, Tlatli, Haneke, Jeunet, Varda and Truffaut to name a few—through various approaches (historical, feminist, postcolonial, for example). The chapters mirror the steps necessary to the making of a film, from the script, to the storyboard, the *mise en scène* (staging), the shooting, and—ultimately—the editing and marketing strategies.

PRODUCING A FILM

"Since 2007 a lot of my students have produced everything necessary toward not only a film analysis—which is usually what we expect in a film class—but they will produce a movie. Working in teams, they write a script, and then make the storyboard which is necessary to prepare and explain the work in advance before shooting so that you know exactly which material you will need—sequentially," Fauvel said.

The storyboard illustrates, for example, where to put the light, what kind of sound would be connected to that picture and what kind of material is needed.

"Once they have completed the storyboards, I comment on them and then they produce a short movie," she said.

Fauvel notes that in France, the teaching of film studies is encouraged in high schools and at the university level—but the French government actually sponsors the film industry and supports art-movie theaters. French film, of course, has played a large role in terms of global filmmaking, contributing terms like "*mise-en-scène*," "*film noir*," and "*auteur*" to the international filmmaker's vocabulary.

French film is often considered to be intellectual, even edgy. But Fauvel warns of the dangers of pigeonholing such a dynamic form of expression.

"The definition of what makes a movie 'French' has evolved greatly in the past twenty years," she said. "A traditional definition of French cinema served the interests of the traditional nation-state until the 1980s. But more recently, the French state encourages the development of a post-national and transnational cinema competing for a share of global markets."

Today, Fauvel says, French cinema includes not only views of French people and French stars, but also the often marginalized postcolonial voices. "Instead of showing an idealized image of the nation, this cinema exposes, from moveable centers and margins, struggles, traumas, successes and differences," she said.

FOCUS ON THE AUTEUR

Like U.S. movies, French cinema is also defined to a certain extent by "stars." But Fauvel points out French movies are traditionally identified with their auteur. The title of a movie is usually accompanied by the name of the filmmaker. As a result, French cinema buffs follow filmmakers such as Renoir or Truffaut, rather than stars such as Belmondo or Depardieu.

Fauvel encourages students and film-goers alike to approach movies critically, to analyze the angles of the camera, the scale of the shots, the editing choices and the effects of these choices on the spectators.

"Intellectually, for instance, one should question how cinematic language works. What are the effects of the various techniques on the viewers? How do films question the world? Which elements are borrowed from other films and why? How does intertextuality (references linked to well-known films) manipulate the viewers?"

It's up to you to see.

PROJECT ON INTERNATIONAL PEACE AND SECURITY

COVERT OPERATION

The CIA slips onto campus to conduct 'a Model U.N. for the intelligence community'

By Joseph McClain

THE SCENARIO: THE GOVERNMENT OF NORTH Korea has collapsed following the death of Kim Jong Il. Three factions are struggling to fill the power vacuum. The threat of civil war looms.

The assignment: Sort through the raw intelligence and prepare a half-page brief outlining the situation and suggesting a course of action. You have three hours.

Those are the basics of the first PIPS-CIA Crisis Simulation Competition held at William & Mary in February. Thirteen intelligence analysts from the Central Intelligence Agency came to campus to conduct the event, which engaged eight five-student teams in an intellectual and analytical experience that one participant said made him feel as if his head would explode.

The CIA usually conducts a simulation with just a single school, Dennis Smith explained. "We proposed to them a competition-type simulation involving multiple schools. It was kind of like a Model U.N. for the intelligence community. They loved the idea and brought us a new scenario."

Smith is visiting assistant professor of government at William & Mary. He and Amy Oakes, assistant professor of government, are co-directors of PIPS—the Program on International Peace and Security. PIPS is an elite program that draws on high-performing students from the College's government, public policy and international relations programs to grapple with sensitive and important global issues.

Other participants in the crisis simulation came from Norfolk State, Sweetbriar College, the University of Mary Washington, University of Richmond, Washington College, Old Dominion University and Virginia Tech.

1:10 P.M.: FIRST DOCUMENT DUMP

The scenario was introduced at 1:10 p.m. to the eight teams sequestered in rooms at the Sadler Center and the Cohen Career Center. It came in what the analysts call a "document dump"—a stack of double-sided pages containing raw intelligence. Each team had one copy of the report, a white board and a mentor—one of the CIA analysts.

"The mentor did not lead," Smith said. "The mentor was there to observe and provide suggestions."

The raw intelligence was fragmentary, contradictory and larded with red herrings and uncertainty. It came from sources ranging from news stories to reports shared by British and South Korean governments. To add to the verisimilitude, the CIA built a number of curves into the scenario. At intervals, the door would open and more raw intelligence would come in.

As the teams and their mentors tried to make sense of the scenario, the faculty associated with the teams gathered in the Cohen Center's lobby. One of the CIA analysts distributed copies of what their students were dealing with. The faculty

The PIPS-CIA Crisis Simulation team took on a realistic scenario involving a power vacuum in North Korea. Team members (from left) Katie Mitchell, Emily Pehrsson, Co-Director Dennis Smith, William Shimer, Co-Director Amy Oakes, Lindsay Hundley and Julia Zamecnik.

Stephen Salpukas

PIPS—AN UNDERGRADUATE THINK TANK

The Program for International Peace and Security (PIPS) is a practical, research-based initiative that prepares William & Mary students for the demands posed by sensitive international issues. Many graduates of our government, public policy and international relations programs find careers with government agencies or with contractors for the federal government. PIPS fellows learn to master the dominant communications vehicle of the Beltway, the policy brief. Policy briefs are four- to six-page distillations that not only outline a problematic international situation, but also propose a solution. Five or six high-performing William & Mary students are accepted into the PIPS program each year. PIPS fellows often meet with high-level policymakers and are regularly invited to present their own briefs in think tanks and government offices.

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read through the intelligence and, one by one, looked around at their colleagues. Smith finally said what the rest were thinking: "I'm glad it's them in there and not me."

WORKING NAMES

During the competition, the faculty spoke with the CIA analysts who weren't serving as mentors. The analysts introduced themselves using first names only, their offhand manner suggesting that the name they're using didn't necessarily appear on their birth certificate. One confessed to being a William & Mary graduate, and at least two others talked about the College in a way that suggested the familiarity of an alumnus/a.

The analyst who prepared the scenario spoke with the faculty about his goal of making the simulation as close as possible to a day in the life of CIA analysts. It's their job to interpret and distill raw intelligence. Their work is funneled up the CIA command and is further distilled into the agency's daily security briefing for the U.S. president. The analyst noted that while his scenario had a plausible geopolitical basis, many elements, such as the identity and politics of the three competing North Korean factions, were completely fictitious.

'ONLY BAD OPTIONS'

"This is a very fast-moving simulation with multiple parts. Things aren't clear. You don't have clear evidence, like a satellite image of a tank coming in," the analyst told the faculty. "And it's a no-win situation. You're left with only bad options."

As the CIA was telling the faculty that the scenario contained no right answers, the eight teams of contestants were finding it out the the hard way. The William & Mary team consisted of Emily Pehrsson '13, Julia Zamecnik '11, William Shimer '13, Lindsay Hundley '12 and Katie Mitchell '13.

Their assignment was to focus on the regional implications of a North Korean civil war. Shimer noted that they weren't even given a definition of "regional." "Our interpretation was Russia, China, Japan, the Korean peninsula," he said.

The William & Mary team noticed differences among the factions. One group had considerable Russian support; a second faction was close to the Chinese government. There was evidence of Chinese troops already on the Korean peninsula.

"The third group was seeking international legitimacy. They had coordinated humanitarian missions with South Koreans who were moving food and water in," Shimer explained. "There also was a probable assertion that they had nuclear material, too. Based on their previous actions, we figured that if this group won they were the most likely to reach out to us."

Each team was to deliver a written brief and to send a representative to deliver an oral briefing—just as it's done in the agency, the analysts pointed out. Shimer was elected to represent the William & Mary team. He left his team to spend 10 minutes with a senior CIA analyst who took the part of the director of national intelligence during the simulation.

"I was interrupted many times with questions. They were trying to challenge what I knew and what I didn't know," Shimer said. "I think I did a pretty good job fielding the interruptions. In the end, I wish I could have spent a little more time on my main points. "

DUELING BRIEFS?

Meanwhile, back in the conference room, the rest of the William & Mary team finished their half-page brief and delivered it, on deadline, while Shimer was on his way back. "I hope the written brief said essentially the same thing that I said," Shimer said. "I didn't get to see the final version."

To accommodate oral briefings from eight teams, there were two "directors of national intelligence," each of whom received oral briefings from four teams. The three senior analysts reviewed the written briefs from all eight teams. The top two teams in each group engaged in a "brief-off" in front of the entire CIA contingent. The winner—by what the analysts all described as a "razor-thin" margin—was declared to be the team from Norfolk State. Smith points out that the experience was more about the simulation than the competition.

"It was designed to be an educational event," Smith said, "to teach analytical skills and the importance of knowing how to deliver a brief. I talked to students from all the schools. They all said that it was the most intense experience that they've ever had. One student told me that he felt like his brain was going to explode with all the facts he had to juggle in his head." i

ECCE HOMO

Scholars of the historic Jesus engage multiple disciplines to 'behold the man'

By Megan Shearin

Stephen Salpukas

For centuries, the life of Jesus has inspired writers, musicians, artists—and, of course, scholars. In the College's Muscarelle Museum of Art, Michael Daise and Bethany Rishell examine a print from a 1649 engraving by Claude Mellan. The artist engraved the image in a single spiral line, beginning at the tip of the nose. *Le Sainte Face (Veronica's Veil)* was purchased for the museum collection through the Ralph and Doris Piper Lamberson Memorial Endowment Fund.

SINCE THE LATE 18TH CENTURY, scholarship on the study of Jesus has moved from faith-based research to a cultural investigation focused on historical probability.

Known popularly as the "quest for the historical Jesus," the academic enterprise uses literary data, archaeology and modern historical method to reconstruct the life of Jesus.

Michael Daise explains that history-based inquiry into Jesus's life began in Germany when the Zeitgeist, or "spirit of the time," embraced philosophical rationalism. Daise is William & Mary's Walter G. Mason Associate Professor of Religious Studies. He has included a student, Bethany Rishell '11, in his investigation of this fascinating field that mixes history, religious studies, archaeology and ancient and modern languages. They critically analyze first-century Judaic literature and other sources in hopes of building a composite picture of Jesus.

Despite the empirical nature of the research, scholars studying the historic Jesus start with the Bible. Their primary sources are the four canonical Gospels of Matthew, Mark, Luke and John, says Daise, which describe the life, ministry and death of Jesus. Historical and cultural context are also taken into consideration to figure out the events of Jesus's life.

NON-CANONICAL SOURCES

Non-canonical sources—texts not contained in the Bible—are also studied to cross-reference data and establish historical fact, said Daise. Such texts include the Old Testament Pseudepigrapha, Jewish writings from the era not included in the canon; the Old Testament Apocrypha, a body of early Jewish and Christian texts, most of which are included in the Roman Catholic canon; and *Antiquities of the Jews*, a 20-volume book composed by Jewish historian Flavius Josephus.

Scholars agree that Jesus was a Jew, says Daise, and therefore they expect continuities between the person of Jesus and other aspects of the age.

"To study Jesus, you don't need to study material that mentions his name or even includes him as a character," said Daise. "You can simply study anything about Judaism of the time and that will help you reconstruct his milieu. Then, you can look back at the canonical Gospels with a better lens."

Daise has devoted his career to studying Judaism and the formative years of Christianity. He is part of the Enoch Seminar, which began in 2001. It's a group of scholars from 15 countries who gather, by invitation only, to share research on Second Temple Judaism and Christian origins. He brings this background into his classes at William & Mary, such as his Christian Origins course where he met Rishell.

Raised in what she described as a religious, conservative family, Rishell says she developed a very personal interest in discovering who Jesus really was.

"When I came to William & Mary, I really wanted the opportunity to study Jesus from a secular perspective," said Rishell. So she started working on research, under Daise's direction, during her freshman year.

"I had to do some 'grunt work' as Professor Daise called it," she said. She began by updating a database and assisting Daise with a bibliography. The majority of her time, however, was focused on her own research.

Under Daise's mentorship, Rishell started to focus on ancient Judaism and the afterlife. She read original texts and wrote down every reference to the afterlife, such as "Kingdom of Heaven" and "Son of Man Coming," found in the Christian Gospels, the Old Testament Pseudepigrapha and Old Testament Apocrypha. She compiled a line-by-line analysis and comprehensive lists of verses that refer to the afterlife.

Rishell immersed herself in even more research after learning she was a recipient of a Monroe Scholarship through the Roy R. Charles Center. Monroe Scholars—representing the top seven percent of the College's student body—design their own unique research projects, receive a stipend for their work and are largely funded through private support.

After two intense years of research, Daise asked Rishell to participate in a second research assistantship. She immediately embraced the opportunity. "This time I was doing less 'grunt work' and more of my own research focusing on the concept of Jesus as the messiah," said Rishell.

Last year, professor and student collaborated on a review of *The Messiah in Early Judaism and Christianity*. Their piece appeared in the *Journal for the Study of the Historical Jesus*, where Daise serves as book review editor. The review is a critique of five essays on the subject of messianism from a series of lectures at Lund University.

When *The Messiah in Early Judaism and Christianity* came across Daise's desk, he knew the topic coincided with Rishell's research and his responsibility as book review editor. Like other professors within the humanities, Daise had worked with students on various research projects, but never at this level.

"Working with a student on a book review was a first, and completely new for me," he said.

The 188-page book encapsulates five authors and their messianic arguments that have shaped Jewish and Christian belief in a messiah. Rishell took the initial lead and read each chapter, and then met with Daise to discuss the messianic images. Rishell drafted chapter-by-chapter summaries. The end product was written by Daise, incorporating Rishell's insights.

INTRO TO MESSIANISM

"Overall, the book gives a nice historical introduction to the subject of messianism," says Rishell. "I think the authors were strong on the scriptural acts of Jesus, which is really important because they are our most comprehensive source for understanding the life of Jesus."

Separating the myths from the facts is critical when studying the historical Jesus, said Daise. Scholars must put their own subjective interpretations aside, he said, and seek the facts.

Messiah, a Hebrew word meaning "anointed," has a Greek corollary in *Christos*, or Christ. There are several references to Jesus as the messiah in the canonical Gospels, says Daise. Jesus is called *Christos* and several places use Greek letters to spell out the Hebrew, he noted.

"We are attempting to distill the theology from the history in stories, excise the theology and then take the history and reconstruct Jesus," said Daise, "to find out who Jesus really was, or how he would meet our perceptions of reality—rather than who he was theologically."

CRITERIA FOR EVALUATING THE HISTORICAL JESUS

Certain criteria have been developed to study the historical Jesus, Michael Daise says. For instance, anything that Jesus is alleged to have said or done is considered to be more historically credible if scholars have accounts from two or more independent sources.

Scholars agree on only a few aspects of the life of Jesus, Daise explained, such as his being a Jew. Another fact, which scholars agree upon universally, is Jesus's death by crucifixion.

The canonical Gospels agree that Jesus was crucified under Pontius Pilate. The Jewish historian Flavius Josephus, who Diase points out had no known connection with the canonical Gospels, also attests to Jesus's execution by Pilate. Finally, the Roman historian Tacitus also mentions that Jesus was executed under Pontius Pilate, which Daise says counts as a third attestation, independent of the first two.

Even the money is real

Wall Street intersects with Ukrop Way in the high-tech, high-stakes 'trading room'

By Joseph M. McClain

Stephen Salpukas

John Merrick speaks to second-year M.B.A. students in the Acuff Financial Markets Center, a room he designed to be a close approximation of the trading floors of Wall Street. The constant distraction provided by the 11 large monitors on the walls is all part of the trading-room experience, he says.

THE PHILOSOPHY OF THE MASON SCHOOL OF BUSINESS to "bring business to the business school" was the driving force reconciling academia and Wall Street in the form of the Marshall Acuff Financial Markets Center.

John Merrick is Richard S. Reynolds Associate Professor at William & Mary's Mason School of Business. A veteran of Wall Street trading floors, Merrick designed a room in Alan B. Miller Hall to serve both as a premiere high-tech classroom and a lab able to simulate the environment of the trading floor for his M.B.A. students in finance.

The Acuff Financial Markets Center—the "trading room," as it's often called—features 11 wall-mounted large-screen monitors firehosing information. There are world news crawls, market snapshots, stock price graphs and constantly updating pages from selected financial web sites. Typically, three of the monitors are tuned to CNBC—subtitles/no sound.

It's an appropriate and powerful setting for Merrick's Career Acceleration Module (CAM) for second-year M.B.A. students. CAMs are seven-week immersive classes heavy on direct contact with the field's top practitioners. Merrick notes that these CAM interactions not only develop his students, but also help to drive his academic research program.

For example, a visit from the Federal Home Loan Bank's Office of Finance led the FHLB to provide proprietary data to Merrick and his teaching and research colleague Vladimir Atanasov to support analysis of its debt auctions. Atanasov is an assistant professor in economics and finance at the Mason School. This summer, the two will collaborate on an innovative study of securitized asset pricing using new data provided by the Financial Industry Regulatory Authority—another by-product of CAM speaker connections.

THE POWER OF THE CAM

Students have no other courses while they're enrolled in a CAM and so Merrick and Atanasov are able to take a busload of students to New York to meet with the heavy hitters in the financial world. In Williamsburg, though, classes are taught in the trading room, which Merrick says complements the CAM principle. The silent yammering of the monitors is all part of the training for the real world.

"I want to teach in a room that's full of technology. I want to teach in a room that's full of random distractions," Merrick said. "That's what the trading floor environment is like. You have to be able to treat that as background and learn to operate in that sort of culture."

Seating is arranged in a horseshoe facing a pair of giant projection screens that display

what's going on in class. Each seat is outfitted with a pair of monitors and a keyboard. White keyboards with brightly colored buttons mark the presence of the nine Bloomberg Terminals.

The Bloomberg Terminal provides an immediate conduit to data and analysis on thousands of individual securities on the market, allowing a degree of due diligence that just wasn't available a decade ago. CAM students use the Bloombergs in class and for the homework assigned to lab groups of four students. Merrick outlines a typical homework assignment: Use futures contracts to hedge an interest-rate swap.

"Each group is given an interest-rate swap position upon which they must make the floating side payments. The position is risky, since interest rates can go up or down. The groups are assigned to hedge that exposure using an interest rate futures market and constructing the correct futures contract trade," he explained. "They'll use the Bloomberg to help find out how many contracts to use, and they'll try to assess what the risk reduction will be."

ATHLETES TO MATHLETES

Merrick says technology has changed not only the way financial markets are conducted, but also the type of people involved.

"When I started at Lehman Brothers in 1988, the trading floor was filled with ex-athletes," he says. "The idea was that athletes are competitive, coachable, and they know how to come back from a loss. If you were to walk out onto a Wall Street trading floor now, you would most likely find a *mathlete*, not an athlete."

In the final days of the 2011 fall semester, Merrick and Atanasov have assembled mathletes and athletes of the CAM to present and hear committee reports. It's a bit of a historic moment, as the second-year M.B.A. students have been tasked with starting to assemble a framework for future financial markets CAMs.

The 2010 M.B.A. class gift seeded the Dittrick Fixed-Market Income Fund with investment capital for use by subsequent financial market CAMs. The fund honors John J. "Jack" Dittrick, Jr., an influential Mason School professor and assistant dean who passed away in 2009.

"This CAM will be investing with real money," Merrick says. The seed amount is expected to grow through increased capital influx and—more to the point—through astute and successful investment by student-led fund management. Running an investment fund with real money offers students the motivation that comes from playing for keeps.

"There's a this-is-not-a-drill aspect to it," Merrick said. "It gets the blood going." The flip side of the coin is accountability: "If you make a mistake, it can't be erased," he added. "You have to live with it and be judged by it."

The fall 2011 CAM was tasked with drawing up a framework and operating principles for the managers of the new fund. It's a challenging assignment, one that must take into account a number of sometimes conflicting factors.

"We have two mandates," Merrick explained. "We want the fund to do well. But we also have an educational purpose. And that's the challenge: How do you put together something that is true to our fiduciary responsibility to grow the endowment, and also something that's true to education, the learning-by-doing approach?"

REALITY CHECKS

Reports by the CAM committees at the final class session showed the challenges of reconciling the fiduciary and educational goals of the fund, as well as other nuts-and-bolts aspects. What kind of oversight should there be on student fund managers? How can the fund stay active during breaks? What mix of investment-grade versus high-yield securities make the optimum portfolio? What's the best hold-sell strategy? Merrick punctuates the committee recommendations with reality checks.

"You guys come here with a timeline where we're picking bonds in the first week of class," he says. "We can't even *spell* bonds in the first week of class!"

Merrick and Atanasov guide the discussion toward consensus. Atanasov writes the best ideas on a whiteboard for use by a panel with representation from all subcommittees. Merrick noted that the job of designing the fund will be continued in the fall by the class of 2012.

"This 'design the fund' stage is at least as educational—if not more so—as actually running the fund will be for later classes," Merrick said.

MASERATI OF THE INFO SUPERHIGHWAY: THE BLOOMBERG TERMINAL

John Merrick explains that the Bloomberg Terminal is a creation of the firm founded by Michael Bloomberg after he left Salomon Brothers (and before he became mayor of New York City). The Bloomberg Terminal is a hardware/software Swiss army knife for traders who many times a day tap into the enormous amount of data available about securities.

Each Bloomberg Terminal has a special keyboard, the better to follow prices in real time or to parse the vast array of securities databases available through a subscription to Bloomberg's services.

"Touch a key, you can find an entire range of analytics for any security you want," Merrick explains.

Stephen Salpukas

"Touch another button, all related securities come up."

Best of all, Merrick says, operation of the Bloomberg Terminal is easy to learn and students master it early in the seven-week Career Acceleration Module. CAM student Kristina Melendez agrees, saying it took her no more than a couple of weeks to learn to use the Bloomberg. She's excited about the versatility.

"Another function, which I think is really cool, is you can send messages to any other Bloomberg user," Melendez said. "For example, we met Mark Shenkman of Shenkman Capital when we were in New York. I can pull up his name and send him an email right through the Bloomberg Terminal. So it gives us access to all the different players in the industry."

Harry Gao '11:

Sensor sensibility

They're everywhere. Tiny sensors designed to track information. The technology has been around for some time, and computer scientists—including Harry Gao '11—are working on new opportunities to perfect and utilize these devices.

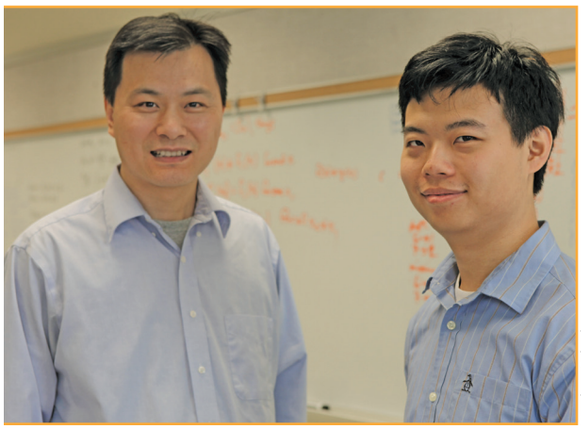
Gao is a double major in computer science and mathematics. He began his research career in his sophomore year, working on a more reliable and secure protocol for gathering information from roadside sensors. His results were published in the *International Conference on Wireless Algorithms, Systems, and Applications* and the *Journal of Communications*. And Gao was well on his way to an impressive undergraduate research career.

"Harry is a talented and enthusiastic young researcher for whom I have the highest regard," says mathematics Professor Michael Lewis. "He is the first undergraduate I've ever met who arrived with his own research agenda."

A summer 2009 National Science Foundation Computational Science Training for Undergraduates in the Mathematical Sciences Grant allowed Gao to pursue a project aimed at improving the function of sensors that detect human motion.

These sensors are often used in senior care to alert care providers if a person moves or falls. To reduce battery drain, the sensors are equipped with a sleep mode that kicks in when the sensor remains inactive for a period of time.

"The problem is, the sensor can't detect motion when the sleep mode is on," says Gao. He worked with fellow student Andrew Wilcox to try to reduce battery drain and thereby eliminate the need for a sleep mode. "We redesigned the data sent by the sensor to use less information. By compressing the data into one small byte, less of the battery is used."



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Qun Li (left), associate professor of computer science, says Harry Gao has been doing research at the level of a third-year Ph.D. student.

Gao's current research examines the secure use of inexpensive RFID technology (the same radio wave communication system used for collecting tolls with a smart tag E-Z Pass) to provide "proof of location" for people, an application useful in areas like criminal investigation when confirming an alibi.

"We have the ability to verify a person's location now, but the technology is very expensive," says Gao. "Many cell phones are already RFID-compatible, and using this technology could offer many more less expensive uses. We believe sensor networks will be the next big thing, but they must be secure."

Gao's research record to date won the attention of the Computing Research Association (CRA), which named him a finalist for this year's Outstanding Undergraduate Award.

"Harry's selection as a finalist places him among a small number of outstanding candidates," says W&M computer science department chair, Professor Virginia Torczon. "The department is exceedingly proud to see Harry in this short and highly selective list of outstanding young researchers in computer science." In February, Gao received the annual Thomas Jefferson Prize in Natural Philosophy, an honor awarded every Charter Day which recognizes excellence in the sciences in an undergraduate student.

According to Gao's advisor, computer science Professor Qun Li, "Harry's research capability, in my opinion, is equivalent to that of a third-year Ph.D. student. I have no doubt he will do very well in his future career."

—Leslie McCullough

CrimD '08:

A turn of the phage

William & Mary's first freshman phage lab has demonstrated what possibly is the straightest learning curve known to science: zero to co-authorship in a peer-reviewed journal in under three years. Along the way, there was discovery of a form of life previously unknown to science—an organism which is now being examined as a possible biological tool to combat tuberculosis.

It started in fall 2008, in a freshman lab section devoted to the study of a group of viruses known as bacteriophages. William & Mary was one of 12 universities selected by the Science Education Alliance of the Howard Hughes Medical Institute to participate in the first year of an initiative designed to re-invigorate science education by introducing the youngest college students to an authentic research experience.

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Phage authors (from left) Allison Perz, Mark Forsyth, Jillian Walton, Kobie Gordon, Kurt Williamson, Hilary Whelan, Margaret Saha and Arrykka Jackson.

Each of the students in the yearlong phage labs collects, isolates and analyzes a phage. One from the group is submitted to a commercial lab for genomic sequencing. The faculty involved say the publication of a paper in a peer-reviewed journal underscores the success of the teaching-through-research principle.

"We work from this principle: There really isn't any difference between our educational goals and our research goals," explained Mark Forsyth, Dorman Family Distinguished Associate Professor of Biology at William & Mary. "The best way to accomplish an educational goal is to set out to do authentic discovery research. This paper was the final proof that this principle actually works."

In January, participants in the inaugural phage lab joined their collaborators—including their three faculty mentors—as co-authors of a paper in the peer-reviewed journal *PLoS One*. The paper is an

examination of the genomes of bacteriophages studied by the inaugural HHMI phage labs. It includes characterization of CrimD, the new phage isolated from the muck of campus landmark Crim Dell by the first phage lab.

William & Mary's student authors on "Expanding the Diversity of Mycobacteriophages: Insights into Genome Architecture and Evolution" are Hilary M. Whelan '12, Kobie C. Gordon '12, Samuel E. Harvey '12, Arrykka S. Jackson '12, Molly J. McDonough '12, Allison M. Perz '12 and Jillian M. Walton '11. Forsyth is one of the faculty authors, along with Chancellor Professor of Biology Margaret Saha and Assistant Professor of Biology Kurt Williamson.

Williamson is a virologist, a specialist in phages and other viruses. He says HHMI's choice of bacteriophages as a focus is inspired. "It's a great model," Williamson said. "The goal is to learn about genome sequencing and genome annotation—in other words, where the genes are and what the genes code for. The nice thing about phages is that they're fairly small. They have only 40 to 100 genes that you have to figure out what they do. In terms of a project that has to be done in two semesters, this is a great benefit."

HHMI has funded three cohorts of the yearlong freshman phage lab and Saha says that W&M will both continue and expand the phage lab. In addition to the freshmen phage lab, a new upper-level lab will be offered that allows students to take their study of the viruses to the next stage through a new collaborative class with the mass spectroscopy lab of J.C Poutsma, the Margaret Hamilton Professor of Chemistry at William & Mary. Saha noted that the idea for a "continuation" lab actually arose from a student in the first cohort, Arrykka Jackson, who asked at the end of the year, "Is this it? Can't we continue this?"

"The biologists sequence the phages and that gives you the genetic code. Basically, what the genes do is encode for a bunch of proteins," Poutsma said. "In the new upper-level lab, we're going to try to identify what these proteins are. We're going to chop 'em up and put 'em in my mass spec and weigh 'em. This is how we'll move from genetics to proteomics."

Saha says that the phage lab has been the most exciting thing she has participated in since coming to William & Mary. "This has just excited students in a profound and lasting way. This phage lab concept was a big risk on the part of HHMI. It was a big risk on the part of William & Mary, too, because nothing like this has been done before," she said. "And there's been just a huge payoff."

—Joseph McClain

Rachel Taylor '11:
Taming the SciClone

Combining the power of 159 computers and 475 individual processors, SciClone, William & Mary's scientific computing complex, is an important resource for the College and a unique feature for a campus this size. Rachel Taylor '11 has developed a suite of software to monitor the performance of SciClone. Tests performed by this software have led Taylor to believe that SciClone holds the potential to speed up computational time considerably.

Taylor is an undergraduate research assistant working with Tom Crockett, the College's manager of high-performance computing. Crockett points out that speed is one of the driving forces in computational science. Both agree that a faster SciClone would have important implications for William & Mary researchers.

"One thing that computers are really good at is doing a series of single tasks really fast," explains Taylor. "But, eventually, because of the laws of physics, you can't make them do those tasks significantly faster. If you want to be able to have your computer do more stuff in a shorter amount of time, you need more computers. You take whatever your computational task is and you divide it up and give one little piece to each computer in the cluster."

SciClone is available to anyone on campus who needs it. "Anybody who has a worthy project gets time to run it and is supported by the College and by grant funding," explains Crockett. "We have a very wide range of projects, and it's constantly changing. Our biggest users recently have been the Virginia Institute of Marine Science and applied science. Over a period of more years, the physics department has been one of the heaviest users." Other users include mathematics, computer science, psychology and economics.

A math major, Taylor created monitoring software to evaluate the speed at which nodes—individual computers within the complex—can relay messages back and forth. She explained that most of the time, nodes will relay a message back and forth at the same rate, regardless of the individual

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Rachel Taylor and Tom Crockett get ready to pull a SciClone node. Taylor has identified anomalies that might speed up the computer cluster.

node or the message being sent. However, Taylor discovered that sometimes the message is delayed. Interestingly, when a delay occurs, the delay is always the same amount.

Perhaps more significantly, sometimes the messages are communicated faster—again, always by the same amount.

"When everything is working, they're all the same, all close to the peak performance," Taylor says. "But, sometimes they're slower, just a little bit. But, a significant enough amount that we're wondering: 'Hey, why is this happening?' And then, sometimes, they will be faster, which is really weird."

"The question is why?" says Crockett. "An even more interesting question is: 'How can we get them all to go fast? All the time.'"

Taylor is devising experiments to figure out the causes of both the fast and the slow anomalies. Her ultimate goal is to figure out a way to make the fast anomaly the default running mode.

"A lot of projects run for days," Crockett says. "Some VIMS applications will run for ten to fifteen days. If you can get your results back a day earlier, that's pretty helpful."

There is one big problem: Examining SciClone is a challenge, because SciClone is constantly being used. "It can be hard sometimes to do controlled experiments because the system is always in use," explains Taylor. "If other people are doing stuff on the system, we can't just kick everybody off."

Crockett agrees: "The system is just so busy now, we don't have the luxury to do pristine experiments, which is what you would like to do if you were doing a real scientific study. We're just trying to understand the behavior of the system."

Ultimately, Taylor's results will enhance our understanding of SciClone—and perhaps other cluster computer systems.

—Courtney Wickel

Christie Warren takes a moment to visit with a group of local people during a United Nations Standby Team deployment to southern Kyrgyzstan. Violence erupted in the area shortly after the team left. Despite visiting numerous global hot spots, Warren said she never felt afraid during her 12 months of service in the field.

Return of the peacemaker

Legal scholar is back after a 12-month stint with a U.N. negotiating team

By Ami Dodson

CHRISTIE S. WARREN HAS RETURNED TO THE WILLIAM & MARY LAW SCHOOL AFTER spending a year shuttling between Darfur, Kyrgyzstan, Somalia and other geopolitical hot spots.

As a member of the U.N.'s Mediation Support Standby Team, Warren was an integral cog in the peace process, helping to draft cease-fire documents, encouraging women to take a seat at the negotiating table and mediating talks between representatives of governments and the rebel groups who had been contending against them.

Warren is the founding director of the Program in Comparative Legal Studies and Post-Conflict Justice, a program designed to bridge the gap between resources available at academic institutions and the need for them in the field. Back at William & Mary, she resumes her appointment as professor of the practice of international and comparative law.

For a 12-month term, Warren was the senior mediation expert in constitutional issues for the U.N.'s Mediation Support Standby Team, a group that deploys members on very short notice to assist U.N. mediators globally, or to provide "short-order" advice or analysis. She said the Standby Team functions as a resource for the U.N. system in classic peacemaking contexts, preventive diplomacy and other settings requiring mediation expertise.

"The Standby Team is deployed at very high levels," she notes. "We weren't deployed anywhere unless there was a request for us from a head of state or a special representative to the secretary general of the U.N. Because of this, we had access to the people we needed to consult with to complete our assignments."

EXPERTISE AND ADVICE

Warren provided technical expertise, mediation support and advice on constitution-making and transitional institutional arrangements as well as expertise on the design, planning and management of negotiation frameworks.

"The modern theory of post-conflict constitution building relies heavily on consultative processes, since participation by people engaged in conflict helps bridge the gap between conflict and peace," Warren explains. "We bring conflicting groups together to work

on a new vision for their country. As part of the consultative process, constitutional experts provide comparative examples of how people in other countries have addressed similar issues and solved similar problems when transitioning from conflict to peace."

WOMEN AT THE TABLE

Warren notes she was one of two female members of the U.N. Standby Team and says that she made a point to try to make sure female voices were heard.

"In many situations I was one of the only women at the table. When I was organizing a training program for the Darfur rebels, for example, I met with several female rebel leaders; they were very interested in the fact that I was leading these training programs," she explained. Warren asked the women why they weren't participating; they said they had not felt that the atmosphere was welcoming to them as women.

"I encouraged them to come so that women would have a voice in the peace process, and they ended up attending the remainder of the sessions," she said. "I don't think they would have come if there hadn't been a woman there. It makes a difference when women who are marginalized see another woman in a leadership position."

When she was not deployed in the field, Warren completed analytical assignments with the assistance of three research assistants, William & Mary Law School students Mary Rude, Eve Grina and Arya Hariharan.

"My research assistants produced comparative charts, graphs, tables and case studies that can be used by the Department of Political Affairs for many years," says Warren. "I wouldn't have been able to successfully complete this year without their help."

Warren says her year with the U.N. was very intense. "I began my term in February 2010 and within a week I received my first deployment. I was sent to Doha to participate in the Darfur peace talks. I expected to be there two weeks, but we were asked to stay for over a month," she said. "Our job was to assist the Joint African Union–United Nations mediator in his efforts to mediate the conflict between rebel groups and the government of Sudan."

Her team assisted in drafting ceasefire documents, one of which was signed while they were in Doha. She said another of the group's tasks in Doha was to plan and deliver training programs for the rebel groups so they could better focus their negotiation strategies.

"The situation in Darfur has changed so much in the years since the conflict began that some natural resources, for example, that parties may have negotiated for a year ago may no longer exist," Warren said. "We facilitated discussions about which mediation outcomes might be possible now."

She and other Standby Team members were then sent to Kyrgyzstan to provide recommendations to the special representative of the secretary-general on national reconciliation strategies following the April 2010 popular uprising.

"We spent a great deal of time traveling around the country talking to people about sources of tensions and trying to assess how peace might take root," she said. The week after the Standby Team left southern Kyrgyzstan, violence erupted in the region, leaving hundreds dead.

Despite the volatile situations into which she was sent, Warren says she never feared for her safety. "Before we're allowed to start our standby year, we take two comprehensive security courses—a basic and an advanced security course. I never felt that I was physically in danger."

Photos courtesy of Christie S. Warren

Doha: Aiding the Darfur peace negotiations.

Senegal: Setting up a regional mediation unit.

Kyrgyzstan: Seeking out sources of tensions.

After a brief assignment in Senegal to assist the U.N. Office of West Africa in setting up a regional mediation unit, Warren spent most of the fall of 2010 in Nairobi providing assistance during the Somali constitutional process. "Because of ongoing security issues inside Somalia itself," she explains, "the U.N. Office for Somalia is currently based in Nairobi. Teams make periodic trips into Somalia to ensure the participation of Somalis in the constitutional process."

During her term, Warren was also sent to Moldova, at the request of the interim president, to provide assistance interpreting provisions of the constitution that impacted elections. Other assignments included an analysis of potential constitutional impediments to the north-south referendum in Sudan that was scheduled for early January.

Warren says her year as a Standby Team member provided the most rewarding work of her professional career. "Being deployed to assist with high-level mediation efforts that are of immediate concern to the international community is an experience I will always value," she said. "I learned so much from each of my deployments. Even the way I think about my own field, post-conflict reconstruction, has changed as a result of this year."

A TEAM EFFORT

Warren is careful to note that no single person is responsible for successful mediation efforts. "I am a strong believer in the concept of the Standby Team as an aid to mediation," she says. "Many of these conflicts are longstanding and span across generations. They can't be resolved overnight by any one person. Members of mediation teams cannot be egocentric, bent on making international reputations for themselves. Each team member has to do his or her best to nudge the ball forward. If you can do that, you are doing your part."

"There are so many people who have died in these conflicts," she concludes. "It is their sacrifices that deserve to be remembered."

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this just in...

Susan Verdi Webster just had the April of a lifetime

SUSAN VERDI WEBSTER will never forget the fourth month of 2011.

It began early in April. Webster, the Jane Williams Mahoney Professor of Art History and American Studies at William & Mary, was awarded a 2011 John Simon Guggenheim Memorial Foundation Fellowship in Fine Arts Research.

Before the month was out, she learned she was a recipient of a National Humanities Center Fellowship.

"Professor Susan Webster is a very distinguished scholar and highly valued faculty member at William & Mary," said Provost Michael R. Halleran. "Receiving two such prestigious fellowships is truly an honor and I am delighted at these recognitions of her achievements and ongoing scholarship."

Webster's Guggenheim is one of just two awards given this year for fine arts research. Likewise, her accolade from the National Humanities Center is one of two awards in the area of art history research.

Guggenheim awards are a family tradition for the Websters. Susan's father, the late Grady L. Webster, received a 1964 Guggenheim Fellowship in plant sciences. According to the Guggenheim Foundation, only two other father-daughter tandems have been so recognized.

Webster, a leading scholar in the art and architecture of colonial Latin America, focuses primarily on the indigenous architects, builders and artists who constructed colonial Quito, Ecuador. Twice a Fulbright Fellow, Webster is regarded internationally as an expert in confraternities—lay religious organizations—and their artistic patronage in Spain and Latin America. She is the author of numerous scholarly articles, as well as two books, *Arquitectura y empresa en el Quito colonial: José Jaime Ortiz, alarife mayor,* and *Art and ritual in Golden-Age Spain: Sevillian confraternities and the processional sculpture of Holy Week.*

Stephen Salpukas

Susan Verdi Webster

Webster is the sixth William & Mary professor to receive the John Simon Guggenheim Memorial Foundation Fellowship. Former recipients are Sean Keilen (English, 2008); Nikos Chrisochoides (computer science, 2007); Barbara King (anthropology, 2002); Talbot J. Taylor (English, 1994); and James Axtell (history, 1981).

She also is the sixth William & Mary faculty member to win a National Humanities Center Fellowship since the Center opened 32 years ago. Former recipients are Professors Katherine Preston (musicology, 2009); Talbot J. Taylor (English, 2006); Brad Weiss (anthropology, 2003); Paula Blank (English, 2001); and Norman Fiering (history, 1978).

"This has certainly been a banner year," said Webster. "I am deeply honored by both the Guggenheim Foundation and the National Humanities Center fellowships. I am grateful for the time to dedicate to research and writing and for the opportunity to engage with the community of scholars at the NHC."

— Megan Shearin