

FROM THE PRESIDENT

It's my pleasure to invite you into the expansive world of the arts and humanities at UD. "Expansive" is an appropriate word, because what these disciplines do — apart and, even more powerfully, together — is expand our understanding of our world, our histories, our perceptions and perspectives. They illuminate why we are who we are, and do what we do.

They give us a frame for contemplating and expressing our shared humanity, and considering our future against the backdrop of our past, our nature, our ideals and aspirations. In this way, the arts and humanities do more than provide texture to our lives, context to our explorations and nuance to our analyses; they help us integrate our knowledge and give us a better platform for designing effective solutions to persistent and pervasive problems.

The arts and humanities don't engage only with the world of ideas; they engage with the world. In debunking common myths about the misunderstood medievals (page 42), philosophy professor Kate Rogers redefines our early relationship with science and belief, which can inform our views about their intersection today. In excavating Egypt's ancient port of Berenike (page 24), archaeologist Steve Sidebotham dissects large-scale international trade from the first days of the Roman Empire, which can offer context to the modern global economy.

In archiving centuries-old samplers (page 36), history professor Ritchie Garrison and his team offer a glimpse into the intimate, largely undocumented lives of girls in Colonial and post-Colonial America—girls who would become the mothers of this young country. In portraying patients and family members with whom health sciences students interact (page 32), UD's theatre students are improving the communication that occurs in health settings, which ultimately improves the level of care patients receive. In helping Iraqis preserve their cultural heritage collections (page 20), UD's art conservators are building a bridge between two nations that need a bridge more than ever, strengthening our mutual understanding and, in the process, our national security.

I know you'll find in this issue of *UD Research* stories that give you a deeper insight into ourselves and each other, and illuminate how, through the millennia, we create and express this extraordinary human experience.



Patrick T. Harker

President, University of Delaware



The arts and humanities don't engage only with the world of ideas; they engage with the world.

The Essential Arts and Humanities

by Mark Barteau

We have chosen “Illuminating the Human Experience” as the title for this issue of *UD Research* featuring the arts and humanities. It is clear, though, that no single verb can capture the “action” or the impact of research and creative endeavors in these fields. We seek not just to illuminate, but to discover, describe and evoke; to apply, communicate and share; to relish, connect and contrast the richness and complexity of the human experience.

That experience does not always fit neatly within the boundaries of traditional academic disciplines like history, philosophy, language or fine arts. The arts and humanities have always been multi-disciplinary. And the University of Delaware is leading the way in creating new ways to foster the connections between them — through initiatives in environmental humanities and material culture studies, as well as through the establishment of centers like the Interdisciplinary Humanities Research Center and the Delaware Design Institute.

But the arts and humanities do more than illuminate the human experience, they nurture the soul! Think of the last time you took a break from daily life for a day or a week. While you likely relied on one or more marvels of technology — a plane, an automobile, a GPS device — to help you reach your destination, odds are that you sought rejuvenation by experiencing the wonders of the natural world or of human creativity and experience: a performance, a museum, a historical site, an architectural masterpiece. Such explorations connect us to the world beyond ourselves, to experiences shared and imagined, to accomplishments and failures that inspire and guide us. They both reveal and sustain the human spirit.

Just as Nature stimulates inquiry but requires stewardship, so too do the legacies that civilization has bestowed upon us. Yet it seems to be human nature to take such gifts for granted, to forget that



Mark Barteau, *Senior Vice Provost for Research and Strategic Initiatives, and the Robert L. Pigford Chair of Chemical Engineering*

the garden needs tending. We routinely communicate with descriptions, allusions and phrases of Shakespearean or biblical origin, but with little awareness of why or how these have become touchstones of our common experiences.

To quote one 20th-century U.S. president, Harry S. Truman: “The only thing new in this world is the history that you don’t know.” An overstatement to be sure, but one that reminds us of the wealth of the human experience. That experience is far richer than the classical western canon — we shortchange ourselves and the generations we would educate if we

do not develop and cultivate knowledge of the rich contributions of those who have traditionally fallen outside it. Our commitments to the preservation of cultural heritage are global — and fundamental to our Path to Prominence.™

As you read this issue of *UD Research*, I am confident that the multi-disciplinary and multi-cultural nature of our scholarship, education and creative activities in the arts and humanities will shine throughout. And when you hear occasional suggestions that a liberal arts education is an unaffordable luxury in this technology-dominated era, remember that the liberal arts are neither monolithic nor static. They are very much alive; indeed they are both a source and a measure of the vibrancy of human society, past, present and future.

What could be more essential?



EVAN KRAPE

NEWS BRIEFS ///

Vice President Biden officially signed over his senatorial papers to the University of Delaware Library on Sept. 16. He is flanked by UD President Pat Harker and Susan Brynteson, vice provost and May Morris Director of Libraries.

Vice President Biden donates senatorial papers to UD

SEPT
16

Vice President Joseph R. Biden Jr., a U.S. senator from Delaware for 36 years until his election as vice president in 2008, and a 1965 graduate of the University of Delaware, was on campus Sept. 16 to donate his senatorial papers to the University Library and to deliver the inaugural James R. Soles Lecture on the Constitution and Citizenship. The lecture, to be given annually in celebration of national Constitution Day, is named in honor of the late Alumni Distinguished Professor Emeritus Jim Soles.

The vice president's senatorial papers — a collection that also includes records in various formats such as recordings and web pages — will be processed, preserved and housed in the UD Library's Special Collections Department, where staff members are nationally known for their expertise in managing political archives.

The donation is expected to encompass over 2,500 cartons of papers, in addition to 415 gigabytes of electronic records, all of which are stored currently at the National Archives and Records Administration. The papers will be sealed for two years after Biden retires from public office.

UD President Patrick Harker thanked Biden "for this extraordinary donation of senatorial papers, an abundance of materials that will illuminate decades of U.S. policy and diplomacy and the vice president's critical role in its development."

Susan Brynteson, vice provost and May Morris Director of Libraries, called the donation priceless. "The Biden Senatorial papers will document a remarkable personal career but equally will help scholars understand a great deal about those significant decades in the history of Congress, the nation and the world," she said.

Presenting the Soles Lecture, Biden said the Constitution holds out the promise that every voice in a diverse society can be heard and blended together — "not always in harmony, but in unity." If Americans trust the process of government, today's generation will successfully get through "this temporary period of political paralysis."

At the lecture's conclusion, Biden urged students in the audience and others to get involved in public service. "Politics is not a dirty word. Politics is the only way a community can govern itself and resolve its differences without the sword."

AND THE SURVEY SAYS ...

Thanks to all who completed our recent readership survey! The results tell us that you consider *UD Research* to be of high quality and a spark for positive action. The lucky winners of \$100 gift certificates to the UD Bookstore were Susan Arruda from Wilmington, Del.; Kevin Falini from Los Gatos, Calif.; and Karen Schramm from Turnersville, N.J. We love hearing from you — write to us at udresearch@udel.edu.

The results have been compiled and indicate that:

- Overall, you consider the magazine to be "excellent" or "very good" (96%).
- Many of you read your copy and pass it on: 48% say 2-5 individuals read their issue.
- You prefer to read the printed issue (we will continue to publish in both print and electronic formats).
- We received lots of suggestions for future topics, from landscape architecture to bio-medical engineering.
- *UD Research* sparks you to take actions such as these:
 - Discuss a topic with others (76%).
 - Recommend UD to others (74%).
 - Vote for candidates for political office who support research (39%).
 - Attend a UD research lecture or other event (35%).
 - Make a financial contribution to UD (24%).
 - Visit the UD website (22%).
 - Contact a researcher to collaborate (13%).

Company to power up electric vehicle-to-grid technology

NRG Energy Inc., owner and operator of one of the nation's largest power generation portfolios, is now partnering with the University of Delaware to take electric vehicles (EVs) to the next level with eV2gSM — a company commercializing new technology that will enable EV owners to sell the energy stored in the batteries of their parked cars to help stabilize the electricity grid.

Pioneered by Willett Kempton, director of UD's Center for Carbon-free Integration, the patented "vehicle-to-grid technology," or V2G, holds promise in transforming the future of the electricity supply.

The eV2g technology will for the first time offer a two-way interface between EVs and the electric grid, resulting in cost savings to EV owners and consumers, and cleaner, more reliable electricity, said Denise Wilson, president of NRG's Alternative Energy Services. "It's one more way EV owners can commit to a sustainable energy future and get paid for it at the same time," she said.

The technology will allow EV owners to sell battery storage back to the grid while the vehicle is plugged in — at no risk or inconvenience to daily driving needs. The program initially will help fleet managers to get connected, then individual owners. Once plugged in, EVs will be able to communicate with the grid and enable grid operators to pull power during peak usage periods. Owners can schedule in advance times when their EVs need more charging than usual, as for an unusually long trip, and what minimum level of charge they want to maintain. eV2g collects payment from the grid operator and pays EV owners for making their vehicles available.

"The energy storage inherent in automobiles is staggering," said David Weir, director of UD's Office of Economic Innovation and Partnerships. "If all the automobiles in the U.S. were electrified it would be enough to power the entire U.S. for half a day. The strategic partnership between NRG and UD provides the opportunity to tap this enormous potential thereby enhancing energy security, facilitating integration of renewables and lowering the cost of electricity."



EVAN KRAPE

A UD technology is being commercialized to enable electric vehicle owners to send power from their batteries back to the electric grid and get paid for it.



NEWS BRIEFS ///

Second thoughts:



Physicists calculate how to make atomic clocks even more accurate

When it comes to atomic clocks, every second counts. In fact, according to Marianna Safronova, every quintillionth of a second counts.

The UD associate professor of physics and colleagues from the Petersburg Nuclear Physics Institute in Russia and the Joint Quantum Institute in Maryland have devised a new calculation to aid ultra-precise timekeeping. Their findings could lead to the development of an atomic clock that loses only a second in about 32 billion years — that's more than twice the age of the universe.

"Extremely high-precision clocks have a lot of applications, from tracking deep-space probes to testing the fundamental principles of science," says Safronova, noting that all global positioning systems (GPS) are based on atomic clocks.

The world's most precise clock, developed last year by the National Institute for Standards and Technology in Boulder, Colo., loses about a second every 3.7 billion years. It is a quantum-logic clock, which is based on the atomic energy levels in the aluminum-plus ion, an aluminum atom that has lost one electron. The electrons in the ion vibrate between their highest energy orbit, or excited state, and lowest energy orbit, or ground state, at an extremely precise frequency, and that frequency is what the atomic clock uses to keep time.

"You have to know that difference to evaluate the accuracy of the clock, but it turns out that the frequency does change very slightly with temperature," Safronova says. "The frequency is defined at absolute zero, but the room isn't at absolute zero."

The temperature affects the ion's transition frequency because heat — even the tiny amount that exists throughout the environment and is known as "blackbody radiation" — changes the size of the electron clouds and causes the two energy levels to shift. She and her team have calculated a way to account for that very small shift.

Signs of health: Helping deaf children tell how they're feeling



KATHY F. ATKINSON

UD nursing student Allyson Hayes, right, and Terri Boothe, a nurse with the Delaware School for the Deaf, demonstrate sign language detailing medical condition symptoms with student Brandon Crosson.

An overwhelming majority of the parents of children who are deaf or hard of hearing are not fluent in American Sign Language, reflecting a communication disconnect that could be critical in a medical emergency. Now, a publication created by Allyson Hayes, who recently completed her bachelor's degree in nursing at UD, is available to help these children tell their caregivers how they're feeling.

Hayes completed her community clinical rotation at the Delaware School for the Deaf in Newark this past spring. Working in the office of school nurse Terri Boothe, she recognized a need to inform parents about signs their children might use in answering questions about their symptoms when they don't feel well.

Hayes wrote some explanatory text and collected images of signs for nine symptoms, includ-

ing cough, itchy, temperature, nausea and dizzy, as well as seven terms connected with hospitals, such as nurse, doctor, emergency, medicine and allergy.

The resulting brochure, "Important Signs for You and Your Child," was sent home to parents of children attending the school, but it also caught the attention of a school administrator, and plans have since been made for it to be used by Delaware's Statewide Programs for the Deaf, Hard of Hearing and Deaf Blind Services.

WEB EXTRA

Watch a video clip of this project involving UD and the Delaware School for the Deaf.



Life sciences partnership finalized

A partnership in the life sciences formalized in July between the University of Delaware and Fraunhofer USA is expected to yield a variety of economic and educational benefits.

"UD and Fraunhofer will join our respective and complementary technological capabilities and scientific expertise to further our joint goals — providing a safer, healthier nation and world, as well as jobs for the local economy, and establishing Delaware as a leader in life sciences," said UD President Patrick Harker at the partnership agreement signing.

The six-year agreement coalesces the strengths of Fraunhofer's Center for Molecular Biotechnology (CMB) in applied translational research and UD's strengths in basic research. Each partner will gain access to the other's expertise and facilities, as well as increased opportunities to collaborate and improved possibilities to commercialize results.

Located in Delaware Technology Park, CMB uses cutting-edge techniques in plant biotechnology to develop products for infectious disease and autoimmune disorders in humans. The center houses nearly 90 researchers with expertise in plant virology, molecular biology, protein engineering, protein biochemistry, immunology, vaccine development, quality assurance and quality control.



Seated from left, UD President Patrick Harker, Fraunhofer USA President Georg Rosenfeld and Delaware Economic Development Office Director Alan Levin sign a partnership agreement.

AMBRE ALEXANDER



Delaware Estuary a \$10 billion asset

The Delaware Estuary contributes over \$10 billion annually to the region's economy, and that's a conservative estimate, according to the University of Delaware's Water Resources Agency (WRA) in the first economic impact study of the estuary in 20 years.

The estuary's watershed occupies 6,000 square miles in New Jersey, Pennsylvania, Delaware and Maryland, and serves more than 6.7 million people. It supplies drinking water to the fifth largest metropolitan economy in the country. And companies across the Mid-Atlantic region, from DuPont to the Salem Nuclear Power Plant, depend on its waters to sustain their business.

"By putting an economic value on ecology, we can show that the natural resources of the Delaware Estuary provide real and significant economic benefits to the tri-state region," says WRA Director Gerald Kauffman. "What's more, we can show they're worthy of investment to keep them healthy and productive."

The study, available at www.ipa.udel.edu/publications/water.html, was commissioned by the Partnership for the Delaware Estuary, one of 28 tidal systems named by Congress to the U.S. Environmental Protection Agency's National Estuary Program.



ROBERT COHEN

DELAWARE ESTUARY ECONOMIC STUDY

In the first economic impact study of the estuary in 20 years, WRA researchers measured the value of the tidal Delaware River, Delaware Bay and tributaries in three different ways and found an economic impact of:

- \$10 billion through economic activity from recreation, water quality and supply, hunting and fishing, forests, agriculture and parks;
- \$12 billion through the value of goods and services provided by the estuary's ecosystems (such as water filtration, flood reduction and carbon storage); and
- \$10 billion through employment, including more than 500,000 direct and indirect jobs with annual wages in the coastal, farm, ecotourism, water/wastewater, recreation and port industries. This does not include federal, state and local income tax benefits, which researchers expect would have increased the economic value by one-quarter to one-third.

NOTE: *The three economic categories were not summed because of "overlap in values." For example, the ecosystem values of forests for water quality benefits are partially captured in the economic value of water supply.*

Climate change study focuses on heat stress in poultry



KATHY F. ATKINSON

To help the chickens of the future, Carl Schmidt is looking to the chickens of the past.

Schmidt, associate professor of animal and food sciences and biological sciences at UD, is studying heat stress on chickens — both those that would have been around in the

grocery stores of the 1950s and those found in supermarkets today.

The \$4.7 million, five-year research project is funded by the Climate Change Initiative of the U.S. Department of Agriculture's National Institute of Food and Agriculture.

"The basic thought is that with climate change, it's not so much the fact that the average temperature is going to go up a couple of degrees; it's more the anticipation that there will be more heat waves, they will

be hotter and they will last longer. And that is a problem for poultry production," Schmidt says.

By studying poultry from the 1950s, or "heritage" chickens, Schmidt is trying to see if any specific alleles, or individual gene variances, have been bred out of modern chickens that might make them less resistant to heat stress.

"Our hope is to identify particular alleles that help them survive heat stress. The thought is that if we can identify these alleles, industry could attempt to breed the alleles into their production lines," he says.

The heritage chickens for the study have been provided

by the University of Illinois. In 1956, Illinois scientists set aside a male and female line of chickens and stopped selecting them for improved meat production. Those lines have been maintained, unselected, throughout the years, allowing researchers to study the chickens much as they would have been found in the 1950s.

Among their differences, a heritage chicken is much smaller than a modern one. A modern chicken would go to market in six weeks; the heritage bird in 16 weeks.



Heritage Chicken

Modern Chicken





AMBRE ALEXANDER

Q&A

with Ann Ardis

Are the humanities receding in relevance or undergoing a renaissance at universities? Ann Ardis, deputy dean of UD's College of Arts and Sciences and director of its Interdisciplinary Humanities Research Center, formed in 2009, believes that knowledge of the so-called "soft" disciplines is as essential to students as ever, and she argues that there's nothing "soft" about them. Here, Ardis shares her views and the center's approach to engaging both the academic community and the public in the humanities in new ways.

PROFILE: ANN ARDIS

HOMETOWN:

Livermore Air Force Base, California
(Her dad was in the Air Force.)

EDUCATION:

Ph.D., University of Virginia

ROLES:

Deputy dean, College of Arts and Sciences; Director, Interdisciplinary Humanities Research Center; Professor of English

JOINED UD FACULTY: 1989

RESEARCH AREA:

Turn-of-the-Twentieth Century British and American print culture

MOST RECENT

ARTICLE PUBLISHED:

"Making Middlebrow Culture, Making Middlebrow Literary Texts Matter: The Crisis, Easter 1912," *Modernist Cultures* 6.1 (Spring 2011): 18–40.

Q: How do you define “the humanities”?

A: The National Endowment for the Humanities (NEH) offers a very useful definition on their website that stems from the 1965 National Foundation on the Arts and the Humanities Act:

“The term ‘humanities’ includes, but is not limited to, the study of the following: language, both modern and classical; linguistics; literature; history; jurisprudence; philosophy; archaeology; comparative religion; ethics; the history, criticism and theory of the arts; those aspects of social sciences which have humanistic content and employ humanistic methods; and the study and application of the humanities to the human environment with particular attention to reflecting our diverse heritage, traditions, and history and to the relevance of the humanities to the current conditions of national life.”

What I like best about NEH’s definition is its inclusiveness, its acknowledgment that some social science disciplines also employ humanistic research methods.

Q: I’ve seen discussions online debating whether the humanities — traditionally viewed as central to a student’s education — have been relegated to the periphery, a set of so-called “soft” disciplines pushed aside by “hard” science research. What is your opinion?

A: It’s certainly the case that “hard” science research and STEM [science, technology, engineering and math] education figure centrally in some current conversations both nationally and locally about critical priorities in GK20 education. But discussions are also being staged currently, in many different forums, about both the value of so-called “soft” skills — that is, cultural and historical understanding, language competency, and oral, written and digital communication skills — for a college graduate’s success in a 21st-century global economy and the need to view humanities research as “fundamental” rather than “ornamental.”

We don’t need to look beyond our own campus to find eloquent, passionate advocates of humanities research and education. The humanities have been vital to student

success ever since the Rev. Dr. Francis Alison founded the school in 1743 that would evolve into the University of Delaware. My phrasing about viewing humanities research as “fundamental” rather than “ornamental” is my colleague Matthew Kinservik’s, and has been his mantra in his new role as interim associate dean for the humanities.

A comment that one of our recent Arabic hires made in her on-campus interview has always stuck with me as well: “You can’t really understand what’s happening currently in Iraq without knowing something about the long and complex history of Shi’a and Sunni Muslim relations.” Cultural and historical understanding may be considered by some a “soft” skill; but that doesn’t make such knowledge “ornamental.”

I’d even contest its characterization as “soft.” Anyone who’s ever actually done research in the humanities knows that excellent work in these fields involves lots and lots of labor-intensive effort. From the design of research questions to the search for evidence (textual, archival, visual or object-based) to the formulation and publication of research findings: nothing’s easy or “soft” about any of these activities. Research and discovery learning in the humanities are every bit as central to the mission of the University of Delaware’s College of Arts and Sciences as research and discovery learning in the natural sciences, social sciences, and the arts. End of stump speech!

Q: What is the purpose of the Interdisciplinary Humanities Research Center? How novel is it?

A: The center’s mission is to ■ strengthen humanities research, enhance its visibility regionally as well as nationally, and provide support for multi-disciplinary collaborations and inter-institutional partnerships;

■ support interdisciplinary teaching collaborations that bring cutting-edge research into the classroom; and

■ enhance the University’s public programming, thereby contributing to UD’s overarching goal of making the Newark campus a destination: an intellectually and culturally rich and exciting environment for students, faculty and the community.

Although every collaborative research or teaching project funded by the IHRC must

have at least one humanities faculty member as a co-PI, we welcome collaborations across the disciplines and work closely in partnership with the University Museums to support programming that includes art exhibitions and makes the arts central to academic life.

The IHRC’s emphasis on collaborative, multi-disciplinary research and teaching collaborations is somewhat unique. Many of the humanities research centers and institutes affiliated with the international Consortium of Humanities Research Centers and Institutes (CHCI) use most or all of their funding to support individual faculty projects; and many only fund humanities research. We’ve chosen instead, at least in this initial phase of programming, to set up internal grant programs to support multi-disciplinary collaborations. And it’s been very exciting to see a whole host of new research and teaching partnerships take off, not only within Arts and Sciences, but also across colleges and in partnership with cultural institutions like the Philadelphia Museum of Art.

Q: What kinds of opportunities will the center provide to students, faculty and the public?

A: In a certain sense, the three grant programs that the IHRC is running currently — for collaborative research, team-teaching, and visiting artists and scholars — function like “venture capital” funding: they are helping the College of Arts and Sciences jumpstart and incentivize interdisciplinary research and teaching collaborations while also creating opportunities to enrich campus life and academic programming through public lectures, international symposia and showcase events.

All of the current grant programs require faculty to propose, plan and stage a public event or performance related to their collaborative research and teaching projects. Such events may be designed primarily for an on-campus audience of faculty and students, or they may engage the general public and/or faculty and students at other colleges and universities. This commitment to public engagement isn’t standard fare for humanities research centers and institutes around the country, but it’s an aspect of the IHRC’s activities that meets the College of Arts and Sciences’ strategic goals especially well.

www.udel.edu/ihr

WHEN PROFESSIONAL THEATRE MEETS HIGHER EDUCATION

A Stage for *All* the World

by Artika Rangan



PAUL CERRO

It was while starring in a critically acclaimed Broadway play a few years back that Gabriel Byrne had an epiphany. The audience, the Irish performer realized, was “packed with well-to-do, white-haired people.”

“Theatre is dead,” *The Usual Suspects* actor and stage veteran remarked to his fellow cast members. “There’s no one under 60 out there, and they can all afford \$200 for a night.”

The line got little ink beyond the arts and theatre blogs, but sobering traces of his words remain evidenced elsewhere: in declining ticket sales, smaller productions with smaller casts, and capital losses for regional theatres across the country.

While it was only five years ago that most theatres operated in the black, more than half had a negative bottom line in 2008 and 2009, and an increasing percentage experienced shortfalls greater than 20 percent of their operating expenses, according to the most recent data from Theatre Communications Group, the leading organization for American theatre.

The stage for American regional theatre — for the professional companies across the country that produce classics like Shakespeare and Wilde alongside contemporary plays written without the commercial appeal of Broadway productions — is a rocky one. And so within this national context, it may come as quite a surprise that in the small college town of Newark, Del., theatre is not just alive, but thriving.

An academic home for regional theatre

In only three seasons of its existence, the Resident Ensemble Players (REP), UD’s professional theatre company, has produced seven plays that have been named “Critics Pick” by the *Philadelphia Inquirer*.

Established in 2008, the REP is composed of one stage manager and 10 of the country’s most talented and respected actors. In addition to their extensive credits on Broadway and at America’s leading regional theatres, all 11 REP members are among the 322 alumni of the University’s Professional Theatre Training Program (PTTP). Named one of *U.S. News and World Report’s* top-10 graduate master of fine arts (MFA) programs in theatre, PTTP has been a major force in supplying actors, stage managers and theatre technicians to the profession. Nearly 1,000 students apply for the graduate program’s 24 seats.



O BEAUTIFUL

In this scene from the climax of the Theresa Rebeck play commissioned by UD, a mother, mourning the suicide of her son and speaking before the town hall, exclaims, "At night I tell myself that we are all together, through time, the dead and the living. That we share creation with our ghosts."

"The marriage of experienced professionals and gifted actors-in-training allows us to offer a full season of plays at the highest quality to the entire region — and for less than a night at the movies," says Sanford Robbins, REP producing artistic director and chair of UD's theatre department, who also frequently guest directs for many of America's leading professional theatres.

REP productions are directed and designed by UD faculty as well as major world-renowned artists. The past season's production of *All the King's Men*, for instance, was designed by Tony award-winning director Adrian Hall, and the scenery was designed by three-time Tony winner Eugene Lee, a production designer for "Saturday Night Live" whose Broadway credits include *Wicked* and *Sweeney Todd*.

Sales for REP productions have grown each year, with audience growth of 44 percent in its second year, and a 30 percent increase above that in its third. No ticket exceeds \$25, and in the 2010–11 season, REP performed for 22,327 people.



DEENIE HOWATT

"But REP is more than theatre," says Stephen Pelinski, a member of the Resident Ensemble Players. "It's a university resource."

Educating the future of American theatre

Because the PTTP operates on a four-year rotation, in which the graduate students spend three years training and only one performing fully produced productions for the public, the REP members are contracted for four years. In addition to offering the larger community a full season of plays, this cycle provides extraordinary training opportunities for MFA students in acting and stage

management, each of whom is mentored by a member of the REP, and an exceptional education experience for the many undergraduates who take courses taught by the REP actors.

Pelinski, a leading actor with 20 years at the Guthrie Theatre and past roles in the Yale Repertory Theatre and Harvard's American Repertory Theatre, calls this academic emphasis the "UD difference."

While other universities have training programs and acting companies, what they

"The REP is a wonderful resource for the entire campus community and a distinguishing feature of a University that dares to be first."

—Michael Cotsell



-
- 1 | The REP's performance of Shakespeare's *A Midsummer Night's Dream*, took the audience into an enchanted forest filled with mischievous fairies, mismatched lovers and misguided would-be actors.
 - 2 | Oscar Wilde's *The Importance of Being Earnest*, a comedy in which two bachelors pretend their names are "Ernest" to impress their beloveds, was a REP hit in 2010.
 - 3 | A costume fitting for *A Midsummer Night's dream* shows the wonder of theatre.
 - 4 | A new adaptation of Robert Penn Warren's *All the King's Men* featured scene designs by Tony Award winner Eugene Lee.

AMBRE ALEXANDER / DEENIE HOWATT / PAUL CERRO





Television writer, novelist and Pulitzer Prize finalist Theresa Rebeck, UD's first playwright-in-residence, and director Sandy Robbins watch a dress rehearsal of *O Beautiful*.

don't offer is a pipeline of graduate students into leading roles. "To bring the MFAs along to go toe-to-toe with the professionals is not something that's done," Pelinski says. "By being part of their acceleration process, we're helping out the future of American theatre."

Part of that future, as Gabriel Byrne understands, relies on those who attend the plays. The REP audience is composed of 52 percent general public, 16 percent faculty and staff, and 32 percent students. "Having such a large segment of young theatre-goers is highly unusual at any theatre in America these days," Robbins says.

But given theatre's role in the academic curriculum, perhaps it isn't so unexpected.

The number of undergraduate theatre minors in the University has grown from 27 students in 2008 to more than 130 today. The classes, taught by REP actors, are among the most popular on campus, with courses often filled in days. And because the plays are closely intertwined with material taught in various humanities courses, students can watch the works they study in class as they were intended.

"Plays were never written to be read; they were written to be seen," says Michael Cotsell, an associate professor of English who requires his drama and American literature students to attend REP productions and frequently invites the actors to discuss the works with his students. "The REP is a wonderful resource for the entire campus community and a distinguishing feature of a University that dares to be first."

Indeed, only a dozen institutions have professional theatre companies, with Harvard, Yale, Princeton and Brown

among this select group. Even fewer still are the number of universities to commission an eminent playwright of Theresa Rebeck's stature to write a play specifically for their company.

Rebeck — a television writer, novelist, Pulitzer Prize finalist and executive producer (alongside Steven Spielberg) of "Smash," an NBC pilot that will debut this fall — wrote *O Beautiful*, which made its debut this past spring in UD's Roselle Center for the Arts.

Topical play brings national attention to UD theatre

From a prominent article in the front-page Arts section of the *New York Times* to the half dozen directors of national theatres who came to Delaware for the world premiere, "*O Beautiful* put REP on the map," says Robbins.

The play — "a satirical look at the politics of the Tea Party, Glenn Beck and the failed Senate candidate Christine O'Donnell, as dramatized through [an] abortion story and a related, fictitious incident of bullying at a high school," wrote the *Times* — sold out each night of its three-week run.

Following the success of *O Beautiful*, Robbins, who directed the production, has received more than a dozen scripts from prominent playwrights and *New York*



A STAR IS BORN

From a prominent article in the *New York Times* to the directors of national theatres who came to UD for the world premiere, "*O Beautiful* put REP on the map," says director Sandy Robbins.

Times authors who want to produce original pieces for UD's theatre company. And with adequate funding, they well could.

"*O Beautiful* demonstrated that we can do it really well and do it in a way that garners national attention," he says.

Investing in such a project, Robbins adds, is an investment not just to theatre, but to the larger campus community.

Rebeck was commissioned by the departments of English and Theatre through a private \$50,000 grant from the Unidel Foundation and administered through the Interdisciplinary Humanities Research Center. As the University's first playwright-in-residence, she guest lectured in a variety of English courses and spoke to students in the Freshmen Year Experience program, interacting with nearly 1,000 students, in total.

Still, it's her play that captivated national attention and put the Resident Ensemble Players on an even larger stage.

Rebeck and REP beyond UD

In January 2013, *O Beautiful* will be presented at Houston's prestigious Alley Theatre, with Robbins directing and many of the REP and PTTP actors assuming the same roles they had during the play's UD debut. Productions are also under consideration at several other major theatres in America and the UK.

Gregory Boyd, artistic director for the famed Alley Theatre, calls *O Beautiful* "a very big play about a lot of things at the forefront of people's minds." The Alley has produced six of Rebeck's prior works, and Boyd has a long history with both Rebeck and Robbins.

This fall, Boyd will come to campus to direct the REP production of *Noises Off*, the 1982 play-within-a-play farce that has been called "the funniest play written in my lifetime" by *New York Times* columnist Frank Rich.

"Difficult to direct, but great for the audience," Boyd says. "To do it right, you need terrific actors."

And he has no qualms about the Resident Ensemble Players, a group he has "long admired but never worked with."

"I can do any play I want [at the Alley], so it has to be an attractive project to get me away," Boyd explains. "The thing you look for as a director, besides the script, is a group of actors who really excite you, and this group is fantastic."

A social media message

Don't underestimate new technology's role in politics

National headlines tell the story in bold-faced type:
 “Anger and anxiety fuel high election stakes.”
 “Frustration and fear among voters as election nears.”
 “Anger, close races spur higher Tuesday turnout than for midterm.”

There is no doubt that emotions are deeply entrenched in politics — even the 2008 presidential election was largely won on a campaign of hope and change — but to what extent do emotional appeals by candidates lead people to engage in politics?

To answer that question, researchers at the University of Delaware looked to the Internet, a medium some scholars claim is an ideal channel to mobilize and engage, and uncovered rather surprising results.

“The conventional wisdom says the ill-informed would be easily swayed by emotional appeals, but that wasn't the case,” says Lindsay Hoffman, an assistant professor with joint appointments in the Department of Communication and the Department of Political Science and International Relations.

Hoffman, a principal investigator on the study, whose research examines the political uses of new technology, teamed up with co-principal investigator and political science professor Philip Jones, as well as political science professors Julio Carrión and David Wilson (a former consultant for Gallup) and communication professor

Dannagal Goldthwaite Young to conduct a national online survey of 1,000 respondents.

Funded by the Interdisciplinary Humanities Research Center and the Center for Political Communication, the team created a website for a fictitious political candidate, who either expressed anger, hope or anxiety about the economy, or displayed no emotional plea whatsoever. Respondents then indicated how likely they were to participate on his behalf.

“Contrary to popular belief, it was the most engaged and politically sophisticated voters whose decisions were swayed by emotional appeals, not the politically apathetic ones,” says Hoffman. “We believe this is because the most engaged citizens use emotion as an informational cue, so that in the absence of other information (like the candidate's party or ideology), emotion serves as an important signal to action.”

The second aspect of their research assessed political participation and communication on a variety of Internet tools, including social media.

They found that Republicans were more active than both Democrats and Independents in behaviors such as signing online petitions, communicating with others online, signing up for news updates and contributing money. Independents, however, were more likely than Democrats and Republicans to post comments or questions, “friend” or “like” a candidate's Facebook page, start or join an online group, or submit information to media. Yet even the most frequently reported activity — signing an online petition — was only cited by 18 percent of respondents.

“People aren't terribly politically active online,” Hoffman explains. “The ones who are most engaged offline are doing the most online, too.”



www.udel.edu/epicenter

Although candidates may not gain an entirely new constituency through new technology like social networking sites, the role, prevalence and importance of such sites must not be underestimated, she adds. Hoffman points to Sarah Palin's widely reported tweets or the infamous Weingate as examples of how social media pervade traditional media, and she expects social media to play an integral role in the 2012 elections.

“These websites allow candidates to connect with their supporters in a way they never could before,” she says. “Politicians have to be well-versed in their use because technology is altering the landscape of political campaigns.”

Hoffman is extending the findings from this study to examine how Delawareans utilize technology for political purposes. Her ultimate goal, she says, is to understand the broader, normative implications of technology's role in politics.

“How are we using technology? Is it good? Is it making us better citizens?” she asks. “Or is it making us more polarized? Does it enable us to become more sealed off, surrounded by likeminded ideologues?”

“There is so much that is still unknown,” she notes, “and what makes this research exciting is that media technologies and how citizens use them are constantly evolving.” — *Artika Rangan*



DOUG BAKER

From left, seated, Dannagal Goldthwaite Young and Lindsay Hoffman, and from left, standing, David Wilson and Julio Carrión.

Paradise regained

by Tracey Bryant

By distancing ourselves from nature, are we losing the paradise we were given? **Gardens** and **gardening** can help us find it again, according to the UD editor of a forthcoming book.

Flush with fragrant pink phlox and jade-green ferns, mayapples and jack-in-the-pulpits, the woodland garden in Annette Giesecke's backyard creates a refreshing retreat, a paradise gained through dedicated weeding and cajoling, the former to keep the forest at bay, and the latter to rein in her rambunctious Irish setters Maia and Kura.

For Giesecke, professor of classics in UD's Department of Foreign Languages and Literatures, a garden isn't simply an embellishment to add "curb appeal" or a space for growing tomatoes. Gardens connect us to nature and provide a place for reflection and inspiration. Yet these botanical oases do much more than even that, she says.

"The garden is one means by which humanity tries to find its utopia, its ideal space in nature," Giesecke notes. "I believe that gardens can help humanity move toward a better world."

As Giesecke points out, "utopia" is that ever-shifting horizon toward which human beings are always traveling. Sir Thomas More coined the term, which, derived from the Greek, means both "good place" and "no place," for his book *Utopia*, published in 1516. The work describes an imaginary island in the Atlantic Ocean with an ideal society. Among their traits, More's Utopians were ardent gardeners who vied to outdo their neighbors.

From the biblical Garden of Eden to New York's Central Park, gardens have been essential to human existence, Giesecke says, but she is concerned that they are becoming undervalued, as humans increasingly distance themselves from nature.

She worries about the residential development she once lived in where the backyards weren't used, and the kids played in the cul-de-sac out front, with each family having its own basketball hoop. When it was time to barbecue, the grills were pulled out onto the macadam driveway rather than onto the lawn.

That's far-removed from the environment Giesecke grew up in, with a mom who was "a really keen gardener," a home in California where it wasn't out of the ordinary to see rattlesnakes in the backyard, and vacation meant camping trips to places like Yosemite National Park with its spectacular mountains and giant sequoia trees.

Giesecke's understanding of the importance of gardens and gardening expanded with her academic training in the classics. She earned her bachelor's degree from UCLA, and her master's and doctoral degrees from Harvard, developing specializations in the areas of Greek and Roman painting, Greek tragedy and Latin epic poetry.

Her studies of ancient wall paintings revealed how much the Romans revered gardens. Roman houses were built around a central courtyard with a garden, and entire walls inside a room would be painted with garden scenes. As a result, the Romans lived entirely immersed in nature.

The House of the Golden Bracelet in Pompeii, Italy, buried by Mt. Vesuvius in 79 A.D. and unearthed from 1958 through the 1970s, holds some of the most striking examples. Its walls feature intricately painted roses, daisies and poppies, ivy and oleander, sycamore and palm trees. Magpies, barn swallows and numerous other birds are depicted in flight or resting on tree branches and birdbaths.

Recently, Giesecke was invited to present her research as part of a panel on gardens at a conference of the Society for Utopian Studies. As co-panelist Naomi Jacobs, professor and chair of English at the University of Maine, talked about the moral struggle in her garden — of whether to plant ornamentals for beauty, or to plant vegetables to help feed humanity — Giesecke was so moved that she set out to explore the meaning of gardens more deeply.

That quest has resulted in the new book *EARTH PERFECT? Nature, Utopia, and the Garden*, edited by Giesecke and Jacobs.

Annette Giesecke, professor of classics at UD, is the editor of a major new book about the importance of gardens. She is shown in her woodland garden in Landenberg, Pa.

Scheduled for release in May 2012 by Black Dog Publishing in London, the heavily illustrated book includes essays by an international group of scholars and experts from the classics, cultural studies, literature, architecture, art history, horticulture, urban planning, landscape design and philosophy.

For example, environmental artist U We Claus documents his transformation of a former medieval cloister's vineyard in Germany's Odenwald into a work of "sacred" garden art that enables immersion with the natural world.

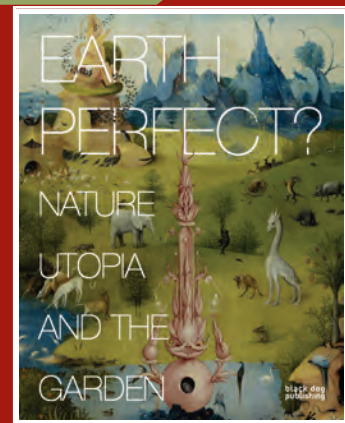
In an essay structured on the juxtaposition between her gardening practice and the BP oil spill in the Gulf of Mexico,



EVAN KRAPE



UD AUTHOR



Set for release in May 2012, Giesecke's book includes essays by renowned experts from the classics, cultural studies, literature, architecture, art history, horticulture, urban planning, landscape design and philosophy. A symposium on gardening for humanity will be held at UD in June 2013.

“What is it about gardens that is important to our imaginations, our psyches, our existence?”

— Annette Giesecke

organic farmer Susan Willis, a professor of literature at Duke University, ponders how her “island of sustainability” and others like it can matter against a backdrop of massive environmental degradation.

And in his essay, Doug Tallamy, professor and chair of entomology and wildlife ecology at UD, argues that our emphasis on aesthetics in the garden must be replaced by an ecological consciousness that foregoes values of beauty, neatness and control.

Instead, he says we should make homes for native plants that can sustain food webs for insects, birds and other creatures — and ultimately for ourselves as well.

UD's Interdisciplinary Humanities Research Center has helped to support Giesecke's work on the book, as well as an extension of it: a four-day symposium to be held at UD in June 2013. The event, co-sponsored by UD, the American Public Gardens Association, Longwood Gardens, and

Chanticleer, is aimed at people “who love their gardens and care about the planet” and will discuss issues raised in the book. It also will include tours of nearby public, historic and community gardens.

“What is it about gardens that is important to our imaginations, our psyches, our existence?” Giesecke asks. “It's actually a very complicated concept, and a really, really important thing. If ever there was a time to care about gardens, it's now.”





BOOK
spotlight

A lifelong observer brings the wonder of dragonflies to light

by Tracey Bryant / Photos by Jim White

Poking along Spring Creek in central Pennsylvania, young Hal White wasn't interested in the lunker brown trout hiding in the riffles of the cool, shaded limestone stream revered by fly fishermen. Rather than an artificial caddis fly deftly cast from a fishing rod, another "fly" caught the boy's eye, glistening in the sunlight.

About two inches long, it had a slender iridescent green body with large green eyes and black wings and fluttered a bit like a butterfly as it flew.

"It turned out to be an ebony jewelwing, a very pretty damselfly," White says. "A friend of mine liked to call them 'Flapdoodles' because of the bouncy, flapping flight they have."

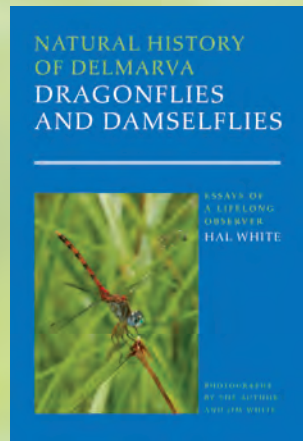
That encounter would mark the beginning of a lifelong hobby for White, who brought his passion for "odeing" — the pursuit of dragonflies and damselflies — with him when he joined the faculty of the University of Delaware Department of Chemistry and Biochemistry in 1971.

Today, White is not only a highly respected UD professor with interests in vitamin-binding proteins, biochemical evolution, metabolism and problem-based learning, he also is recognized as Delaware's preeminent authority on dragonflies and damselflies. While both insects belong to the order Odonata, dragonflies are larger and hold their wings open when at rest, compared to the more petite damselflies, which hold their wings together when resting.

These elegant predators with enormous eyes dart into view along wetlands, ponds and creeks on hot, sunny days, hunting for mosquitoes, gnats and other insect quarry. Delicate, yet powerful, some species can fly for hours above the water's surface.

White brings the wonder of these colorful insects to light in *Natural History of Delmarva Dragonflies and Damselflies: Essays of a Lifelong Observer*, published earlier this year by the University of Delaware Press in collaboration with the Delaware Nature Society.

Although well-illustrated with color photographs taken by the author and by UD alumnus Jim White, associate director for land and biodiversity management at the Delaware Nature Society (and no relation to Hal White), the book is not a field guide. In his quest to "write



Swamp Darner

This 4-inch dragonfly with the big blue eyes is one of the largest dragonfly species found on the Delmarva Peninsula. It perches on objects with its body hanging vertically compared to the horizontal posture of smaller species.

THE JET SET

The fighter jets of the insect world, dragonflies can pick off prey and consume it in mid-air. Over their 300 million years on the planet, they've evolved flying skills that continue to challenge aircraft engineers, such as the transition from hovering to high-speed pursuit.

Comet Darner

This male dragonfly is large, striking in color, and has distinctive long legs that are held close to the body during flight.





Hal White prepares for another foray into the swamp. The UD chemistry professor is recognized as Delaware's preeminent authority on dragonflies and damselflies.



something different," White found inspiration in the fascinating accounts of 19th-century naturalists Alfred Russel Wallace and Henry Walter Bates who traveled to the Amazon on an insect-collecting expedition in 1848. He also read numerous nature books from the 1900s and revisited Rachel Carson's monumental *Silent Spring*, which was published in 1962 and is credited with launching the environmental movement in the United States.

In his book, which was over 10 years in the making, White introduces each of the more than 125 species of Odonata from the Delmarva Peninsula with an interesting story, brief essay or anecdote through which he hopes to offer "a broader lesson."

With chapter titles such as "Living Like a Mole" and "Catch Me If You Can," he touches on the concepts of evolution and natural selection, life cycles, behavior, physiology, anatomy, ecology and conservation of dragonflies and damselflies, and introduces readers to how science is done and the people who do it. And he does not

overlook the sheer beauty of these flying creatures, intriguingly known as "snake feeders" by some cultures and viewed as symbols of good luck by others.

In "Dragonfly Art," White introduces the Calico Pennant (*Celithemis elisa*), a small red dragonfly that often perches facing the wind on the tips of reeds emerging from shallow ponds.

"In my experience, it prefers fishless ponds where its abundance can be quite high, and mass emergences in June can be spectacular natural 'artistic happenings,'" he writes. "Although the Calico Pennant has an appropriate name, some people think that an even better name would have been the Valentine Pennant to call attention to the little red heart-shaped marks on the top of several abdominal segments of the males. Females have similar markings, but their colors are more yellow than red. Regardless of its name, the Calico Pennant would be a good model for any artist."

White has spent lots of weekends wearing a "goofy hat with a veil" to protect

himself from the sun and biting flies, a camera and binoculars strung around his neck, bug collecting net in hand. He has explored numerous habitats from White Clay Creek, a National Wild and Scenic River flowing through Newark, Del., to Idylwild Wildlife Management Area in Caroline County, Md., all the way to the marshy islands flanking the entrance to the Chesapeake Bay Bridge-Tunnel on Virginia's Eastern Shore.

"You may wade into a stream and go into mud knee deep and so dark it stains your skin. When I come back from one of my trips, nobody wants to get near me," he says with a broad smile.

Although a little mud doesn't bother White, the state of the environment does deeply concern him. In his book, he pleads for greater awareness and protection of fragile habitats for the future of dragonflies and damselflies — and perhaps for ourselves. If these spritely insects that preceded the dinosaurs can no longer survive, can we be far behind?

"Our seemingly innocent routine activities of building houses, fertilizing lawns and crops, salting roads in the winter, cutting down stream-side vegetation, tapping groundwater supplies, introducing alien plants and many other activities will contribute far more to the demise of certain species than most people realize," White says. "If these vignettes in any way motivate others to prevent the further loss or disruption of wetland and aquatic habitats, the effort will be wholly worthwhile."



Calico Pennant

The male of this dragonfly species displays red, heart-shaped markings like valentines on the top of its abdomen. In females, the markings are yellow.



Ebony Jewelwing

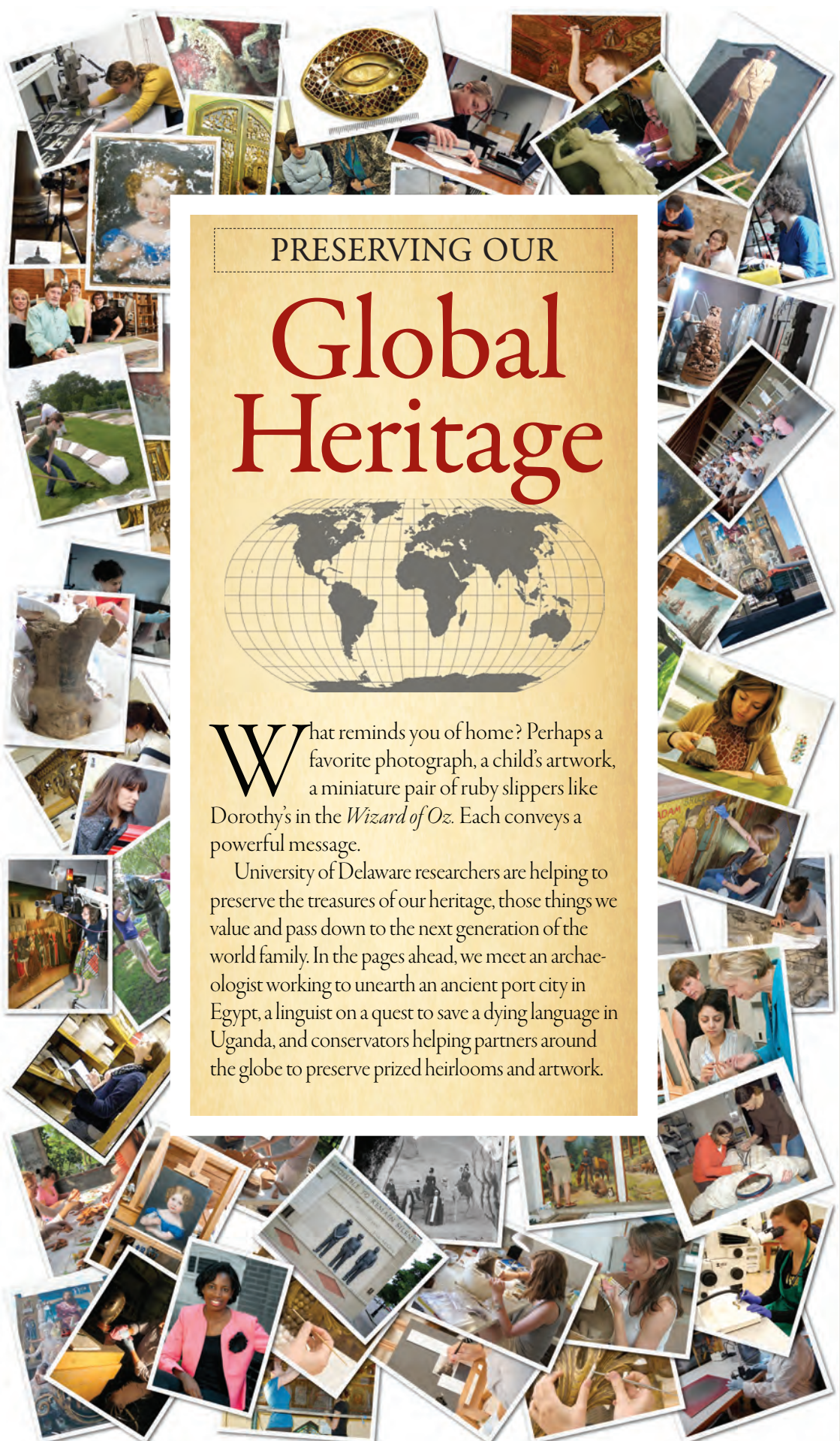
This large damselfly has a bouncy, flapping flight. If a female has mated recently, the male will remove the previous suitor's sperm packet and replace it with his own.



American Rubyspot

This damselfly adds its bright colors to autumn's glory until the first hard frost. See the bright red spot at the base of the wings? That means this is a male.





PRESERVING OUR

Global Heritage



What reminds you of home? Perhaps a favorite photograph, a child's artwork, a miniature pair of ruby slippers like Dorothy's in *Wizard of Oz*. Each conveys a powerful message.

University of Delaware researchers are helping to preserve the treasures of our heritage, those things we value and pass down to the next generation of the world family. In the pages ahead, we meet an archaeologist working to unearth an ancient port city in Egypt, a linguist on a quest to save a dying language in Uganda, and conservators helping partners around the globe to preserve prized heirlooms and artwork.

IRREPLACEABLE *you*

Faculty and graduate students of the Winterthur/University of Delaware Program in Art Conservation have helped to preserve these priceless treasures and more....

DECLARATION OF INDEPENDENCE

U.S. CONSTITUTION

EMANCIPATION PROCLAMATION



STAR-SPANGLED BANNER

TREATY OF PARIS

DEAD SEA SCROLLS

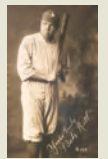
PAINTING RESTORATION

Paintings by "Old Masters" to contemporary artists, from Rembrandt to Van Gogh and Wyeth



NEIL ARMSTRONG'S SPACESUIT

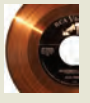
BABE RUTH'S BASEBALL CONTRACT



R2D2 FROM STAR WARS

WORLD'S FIRST PHOTOGRAPH

ELVIS PRESLEY'S 81 GOLD RECORDS



1905 WRIGHT FLYER III

RUBY SLIPPERS FROM THE WIZARD OF OZ



ARCHITECTURAL INTERIORS of Mount Vernon and the Forbidden City





Caring for the world's collections

Worldwide, pieces of our heritage, from photographs to monuments, are deteriorating. UD researchers are helping to build a caring culture for global heirlooms.

Astunning 190 million photographs are in need of conservation treatment in the United States, according to a 2005 report from Heritage Preservation, a non-profit dedicated to preserving the nation's cultural heritage.

And that represents only a portion of one sector of the world's heritage at risk. Many countries lack professional conservators and the resources to properly preserve their collections, such as library materials and photographs, paintings, sculpture and archaeological artifacts.

However, growing connections among preservation professionals are brightening the outlook for these global heirlooms.

Sixty conservation delegates from 32 countries on five continents met in Salzburg, Austria, in 2009. The gathering, hosted by the Salzburg Global Seminar and the U.S. Institute of Museum and Library Services, was designed to develop effective ways to promote conservation and to implement best practices worldwide.

The resultant Salzburg Declaration affirms the need to strengthen education, increase community engagement, and raise public awareness regarding at-risk cultural

heritage, according to Debra Hess Norris, Henry Francis du Pont Chair in Fine Arts.

Norris, the chair of UD's Department of Art Conservation and an authority on photograph conservation, led the international meeting with Vinod Daniel, head of the Cultural Heritage and Science Initiative at the Australian Museum. Joyce Hill Stoner, Edward F. and Elizabeth Goodman Rosenberg Professor in Material Culture and director of the Preservation Studies Doctoral Program at UD, was the meeting's official rapporteur.

"If we can continue to strengthen our global partnerships and share our knowledge and strategies, we can make a significant difference in protecting and preserving our international cultural treasures," Norris notes.

Norris and her UD colleagues cultivate budding conservators through the renowned Winterthur/University of Delaware Program in Art Conservation, one of only five master's programs in the world, a collaboration with Winterthur Museum in Winterthur, Del. Additionally, program faculty are engaged in numerous projects at home and abroad, from South America

to China. The Middle East Photograph Preservation Initiative, led by the Arab Image Foundation, Metropolitan Museum of Art, Getty Conservation Institute, Qatar Museums Authority and UD, seeks to save photographic treasures spanning the archaeological expeditions of the 1800s, whose images of the great pyramids and sphinxes



Debra Hess Norris (left) instructs Tatyana Sayatina from Russia's Hermitage Museum in techniques for restoring damaged 19th-century photographs.

captivated the world, to the wedding parties, refugees, and other scenes of daily life that capture both the beauty and tumult of the region today. Conservator workshops in Beirut, Doha and Cairo will be followed by eight months of an applied practicum coupled with distance mentoring.

UD is training museum professionals from the Hermitage State Museum in St. Petersburg, Russia, in the art and science of photograph conservation through a project of the Foundation of the American Institute for Conservation of Historic and Artistic Works, and funded by the Andrew W. Mellon Foundation. The Hermitage encompasses not only the largest collection of paintings in the world, but over 472,000 photographs, ranging from family pictures of Czar Nicholas II to historic scenes of St. Petersburg.

Also with the support of the Mellon Foundation, a consortium involving UD and nonprofit library and conservation organizations is working to preserve the photographic collections in historically black colleges and universities (HBCU) as vital pieces of American history. In June 2012, UD will host a weeklong photo-preservation training institute for selected HBCU undergraduates.



Joyce Hill Stoner (left) works with visiting scholar Sagita Mirjam Sunara of Croatia as part of the State Department's Junior Faculty Development Program.

GLOBAL HERITAGE



GLOBAL IMPACT

UD's Richard Wolbers has invented new art and architectural restoration techniques and directly trained more than 3,000 conservators worldwide.

The Miracle Worker

Just as surgeons have saved lives, Richard Wolbers has saved his “patients” — great works of art and architecture — and perhaps also the conservators who treat them.

Every morning when Wolbers, an associate professor of art conservation at UD, arrives in the light-filled studio where he works at Winterthur Museum in Winterthur, Del., a worried conservator somewhere in the world has emailed him for advice about a restoration treatment.

“Richard Wolbers is a genius,” says Debra Hess Norris, chair of the University’s Department of Art Conservation. “He’s changed the field of conservation. A timeline for art conservation was done, and it was divided between ‘the dark ages’ — and when Richard Wolbers came on the scene.”

Wolbers’ entrée into art conservation was through, he says, “a funny nexus of science and art.”

After earning a bachelor’s degree in biochemistry in 1971, he landed a job as a research associate at the Salk Institute in La Jolla, Calif. His office was right next door to Jonas Salk’s.

In this seemingly unlikely environment, working in the midst of the discoverer of the polio vaccine and other pioneering medical researchers, including several future Nobel Laureates, Wolbers began to nurture his interest in art.

“The irony is that I discovered art through a staff of scientists,” Wolbers says. “All of the scientists who worked at the institute were world-class and interested in art. They even had Helen Frankenthaler on the wall — Helen Frankenthaler!” he says softly, with awe in his voice for the abstract expressionist painter who influenced Jackson Pollack and generations of other artists.

Wolbers took a painting course at the nearby University of California at San Diego and enjoyed it so much, he decided to pursue a master of fine arts in painting.

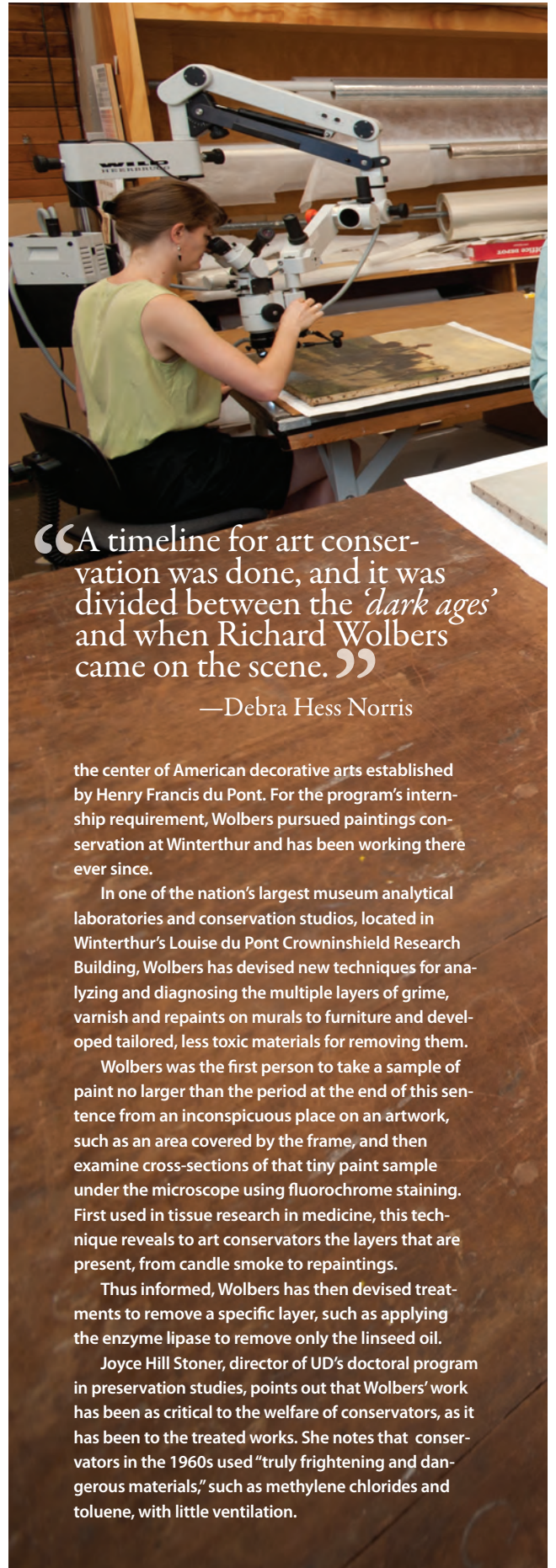
“If you don’t tell a person they can’t do something, they don’t know they can’t,” he says simply.

A few years later at a faculty party at the University of Colorado in Denver, where his first wife, a biochemist with interests in architecture, was interviewing for a job, a happy coincidence occurred for Wolbers, who had been finding the unorthodox combination of a bachelor’s in chemistry and a master’s in painting “a difficult resume to present.” He met an art conservator and found out how he could combine science and art in a professional way and not have to choose between them.

Wolbers applied and was accepted into the University of Delaware’s graduate program in art conservation, a joint effort with Winterthur Museum,



Richard Wolbers is associate professor and coordinator of science in the UD Department of Art Conservation and adjunct paintings conservator at Winterthur Museum.



“A timeline for art conservation was done, and it was divided between the ‘dark ages’ and when Richard Wolbers came on the scene.”

—Debra Hess Norris

the center of American decorative arts established by Henry Francis du Pont. For the program’s internship requirement, Wolbers pursued paintings conservation at Winterthur and has been working there ever since.

In one of the nation’s largest museum analytical laboratories and conservation studios, located in Winterthur’s Louise du Pont Crowninshield Research Building, Wolbers has devised new techniques for analyzing and diagnosing the multiple layers of grime, varnish and repaints on murals to furniture and developed tailored, less toxic materials for removing them.

Wolbers was the first person to take a sample of paint no larger than the period at the end of this sentence from an inconspicuous place on an artwork, such as an area covered by the frame, and then examine cross-sections of that tiny paint sample under the microscope using fluorochrome staining. First used in tissue research in medicine, this technique reveals to art conservators the layers that are present, from candle smoke to repaintings.

Thus informed, Wolbers has then devised treatments to remove a specific layer, such as applying the enzyme lipase to remove only the linseed oil.

Joyce Hill Stoner, director of UD’s doctoral program in preservation studies, points out that Wolbers’ work has been as critical to the welfare of conservators, as it has been to the treated works. She notes that conservators in the 1960s used “truly frightening and dangerous materials,” such as methylene chlorides and toluene, with little ventilation.



EVAN KRAPE

"It's been given to me to care for, and now I'll do the best I can." — Richard Wolbers



LAURA EVA HARTMAN / EVAN KRAPE

At top, Richard Wolbers is shown conferring with graduate student Laura Hartman in the conservation studio at Winterthur Museum. On one of the easels is this painting, "Portrait of Paulina," from the late 19th or early 20th century. A private collector in South Carolina brought the painting to the Winterthur/University of Delaware Program in Art Conservation after a poor attempt at restoration had covered it with a difficult-to-remove adhesive and tissue mixture in an attempt to hold the fragile structure together. One of the gels that Wolbers developed was used to safely remove the glue and tissue that had been applied over the painting's surface. A half dozen UD undergraduate and graduate students in art conservation have been involved in the painting's remarkable restoration.

"Wolbers has brought the field safe new cleaning materials, such as gels, enzymes, and pH-adjusted aqueous solutions, some based on food industry materials — so we could almost safely eat them!" she says.

Wolbers looked to other fields to solve the toxicity problem associated with the solvents of the past. Today, he says, half of his cleaning materials come from cosmetics.

When Wolbers shared his techniques at a conference for conservators in Valencia, Spain, last year, the participants were so

grateful they composed a song about him and sang it on the bus ride back to the hotel.

Wolbers has a reputation for being both patient and generous with his time. In addition to instructing his UD students, he has taught over 150 workshops in Europe, South America and North America, and he has shared his innovations through the best-selling book *Cleaning Painted Surfaces: Aqueous Methods* (Archetype Publishers, 2000), which has been translated into German, Italian and French.

Currently, Wolbers is exploring how to conserve modern acrylics, as well as historic buildings such as the U.S. Capitol.

Having been consulted on a long list of world-famous works of art and architecture, how does Wolbers feel when he has, say, Van Gogh's *The Potato Eaters* in front of him, waiting for treatment?

"I treat it like a surgeon would," he says. "How's its health as a patient, and what can I do to buy it its longest life possible? It's been given to me to care for, and now I'll do the best I can." — Tracey Bryant





Partners in preservation

Conservators in Iraq and the U.S. unite in an ambitious program to protect priceless collections and archaeological sites in the “Cradle of Civilization.”

A delegation of Iraqis who are dedicated to preserving their nation’s cultural heritage gained a new perspective — while sharing their own — during a recent visit to Delaware.

The group of seven represented the five-member board of directors and two Iraqi advisers of the Iraqi Institute for the Conservation of Antiquities and Heritage, an ambitious program to train museum and preservation professionals in the best methods for protecting their collections

and archaeological sites. Located in Erbil in northern Iraq, the institute is funded by a grant from the U.S. Embassy in Iraq that is administered through a partnership led by the University of Delaware.

Since the institute began in 2009, UD, Winterthur Museum in Winterthur, Del., and the Walters Art Museum in Baltimore have worked with Iraq’s State Board of Antiquities and Heritage and the Kurdish Regional Government to create academic programs and construct modern facilities, with classes taught by faculty from UD and other institutions.

A \$500,000 grant from the U.S. Embassy in Iraq, awarded early this year and

Don’t leave Grandma in the attic!

..... TIPS
to protect your photos for the future

Have boxes of old family photographs in the attic? Here are some tips for preserving your heirlooms for future generations, courtesy of UD’s Debra Hess Norris, Henry Francis du Pont Chair in Fine arts, and Jae Gutierrez, assistant professor of art conservation.

If you’re fortunate enough to have 19th-century cased photographs in your family collection, like daguerreotypes, ambrotypes and tintypes, be sure to protect them from high humidity and poor handling. The cases that typically hold these types of photographs can be vulnerable to damage at the hinge that attaches the two halves of a case together. Always handle these photographs with clean, dry hands, and try not to force them open to an entirely flat position. If each half of the case is cradled in one hand and opened to 90 degrees or slightly further, minimal stress will be placed on a case hinge while viewing the image.

Many 19th-century studio portraits, including albumen and collodion photographs, were adhered overall to rigid boards (or mounts) to provide additional support and decorative presentations for photographs. Over time, these boards, or mounts, can become brittle and weaken, and are best handled with care.



The daguerrotype, the oldest type of photograph, typically was housed in a “Union case,” so named due to its popularity during the Civil War.

The dominant photographic process in the 20th century was black-and-white silver gelatin, until color photography surpassed it in popularity in the 1960s. Many amateur silver gelatin and color photographs were not mounted and have been stored loose in boxes or within family albums. When possible, store your photographs in archival, long-lasting materials. When seeking appropriate storage products for your photographs, look for materials that are advertised as having passed the PAT (Photographic Activity Test). If a product has passed the PAT, it is safe to store your photographs in.

The best storage environments for your photographs are cool and dry spaces that don’t experience a lot of extreme temperature or humidity changes. High humidity and high temperatures will cause photographs to deteriorate and should be avoided. Therefore, attics and basements are not good choices for storing your photographs. Interior closets, located near the center of your house, not on an exterior wall, are good storage areas.

In the 21st century, most family images are printed at home. If you are printing your own images, be selective when buying paper and inks. Research has shown that pigment-based inks are more stable than dye-based inks, and therefore will have greater longevity. Images printed on “photo paper” will also have greater longevity than those printed on paper intended for other purposes.



Jae Gutierrez (left) teaches students from several universities about photograph conservation during the Arts and Humanities Summer Institute at UD.



administered by UD's Institute for Global Studies, is allowing the program to continue and expand.

"Our goal was to strengthen the connection between the American and Iraqi leaders of the institute by meeting in person as a group," said Debra Hess Norris, Henry Francis du Pont Chair in Fine Arts and chair of UD's Department of Art Conservation, who helped spearhead plans for the institute. "It was a chance to bring together all these people who care very deeply about the preservation of Iraq's cultural heritage."

In addition to joint meetings at Winterthur in which the institute's directors and advisory council members were able to discuss their goals, the weeklong visit included tours of the Smithsonian Institution and other area museums.

"We gave them a tour of our conservation labs — metals, glass, ceramics — and the work we're doing," said Bruno Pouliot, Winterthur's objects conservator and UD assistant professor of art conservation. "We showed them, not just the preservation techniques, but also how we teach museum professionals and conservators."

Members of the delegation described the visit as informative and collegial.

"It has been a golden opportunity for me to visit and tour these places," said Noman Ibrahim, a member of the institute's board of directors and professor of



AMBRE ALEXANDER

Bruno Pouliot, seated, shows a group of Iraqi professionals the work being done in his objects lab at Winterthur Museum. In the foreground is a 5,000-year-old copper statue of a bull from Mesopotamia, encased in plaster and foam, that conservators have been working to restore. A similar artifact is in the Baghdad museum.

archaeology in Iraq. "We saw many important exhibits, and I very much admire the good care that's being taken of objects in the museums we visited."

Norris said the Americans were able to broaden their own perspectives by hearing the Iraqis discuss the institute's mission, plans and challenges. "Together, we've built this remarkable institute, in really a very short time," she said. "We hope the institute will be a model of excellence, for the United States, for Iraq, and also for the world."

Ibrahim agreed that the institute — which has trained 44 professionals from across Iraq in its full-length program and about another 55 in shorter courses — is off to a great start. The U.S. Embassy in Iraq grant continues through December, after which new funding will be required.

"The institute is in its infancy, but I'm very optimistic about the success of our mission," Ibrahim said. "We're at the beginning of the road, but we'll be going far."

— Ann Manser

KATHY F. ATKINSON



La Tanya Autry

Research that reaches out

La Tanya Autry has always felt a responsibility to share the results of her research on lynching memorials by giving public presentations in person and via social media, blogs and other formats.

Two summers ago, Autry was one of 12 graduate students who participated in UD's Public Engagement in Material Culture Institute (PEMCI), a two-week workshop in which they learned how to use accessible language and new digital technologies to involve and inspire the public in their research.

This past September, the doctoral student in art history further expanded her outreach skills through the 2011 Imagining America PAGE (Publicly Active Graduate Education) Fellowship program. One of 12 PAGE fellows

selected nationwide, Autry attended a Fellows Summit and the Imagining America national conference in Minnesota.

The PAGE program partners new fellows with senior scholars to serve as mentors, as well as encourages peer mentoring among the Imagining America national



LA TANYA AUTRY

A public memorial in Duluth, Minn., commemorates the 1920 lynching of three men.

network of colleges and universities. In addition, each fellow agrees to take part in a yearlong working group to promote collaborative art, teaching, writing or research projects.

While studying for her master's degree in art history at UD, which she received in 2009, Autry became interested in the photographs and postcards that often were produced during lynchings of African Americans that occurred in America, primarily from the 1880s through the 1930s. Her research later expanded to encompass memorials created to commemorate these incidents of mob violence and to remember the victims.

Lynchings were horrific acts, she says, but the memorials tell an important story: "These memorials can be small or large, but if they're respectful of the history, then they can be a starting point for public education and discussion."





Amanda Norbutus and a colleague examine the UV-protective coating that is resaturating the colors of Meg Saligman's mural Common Threads in Philadelphia.

GLOBAL HERITAGE



USA

With over 3,000 outdoor murals, Philadelphia has earned international praise as the "City of Murals."

A public display of restoration

Amanda Norbutus tunes out the street sounds of inner-city Philadelphia and focuses on Dr. J's knee. It's not the real-life basketball legend, of course. Standing in a bucket truck, Norbutus (below), a doctoral student in preservation studies, is helping to bring the towering mural of Julius Erving back to life. As you'll read here, Norbutus is intent on expanding the science and practice of outdoor mural preservation. She reports her findings regularly through blogs, Facebook and Twitter.

What led you into this work to save outdoor murals?

When I initially learned of UD's Preservation Studies Program, I wanted to investigate varnishes using analytical chemistry. In one of my first meetings with the program director, Prof. Joyce Hill Stoner, we talked about how the conservation field needed research in the modern art field, particularly the preservation of public murals.

Outdoor public murals are an underrepresented group in conservation research. Since I started at UD in 2008, I've learned so much about the subject matter, the artists who work so hard to create and share their visions with the public, the caretakers who are dedicated to saving these beautiful murals, and the people who simply enjoy murals and want them to last as long as possible. The people I've met during my research are so animated and driven to save public murals that I couldn't help but be drawn into the outdoor mural community.

When I look at murals as I'm wandering around a city or viewing them on the Internet, I want to learn more about the maker and the story behind the imagery. Was the mural intended to represent a community, to be considered a sign of progress (or protest), or simply created to beautify and energize a public space?

When I see a faded mural, one that has had graffiti or perhaps patches of lost paint, I want to know if there had been warning signs that might have allowed mural caretakers to prevent further degradation. If there are common markers, how can they be identified so that the wider mural community can be aware of when actions need to be taken? With my research at UD, I hope to



identify some of these markers and then offer preservation solutions.

What project are you currently working on?

I'm working on the aging of several protective coatings for outdoor murals. Coatings need to respond

well to changes in UV exposure, temperature and humidity over time. I'm looking at the usefulness over time of UV-protective coatings, where the coating could act like a sunscreen, protecting sensitive pigments in the mural paint from UV rays that could lead to fading, or other damage to the paint, like cracking and flaking.

The aging of the coatings will help me separate the useful coatings from those that won't provide beneficial coverage to outdoor murals. One of my recent projects involved consulting on the restoration of Meg Saligman's *Common Threads* in Philadelphia (photo at left). The artist was able to successfully use a UV-protective coating to resaturate the bold colors that had been muted over time, and the coating should help the colors to remain as vibrant in the future.


What do you hope to do once you've completed your Ph.D.?

I'm looking forward to a post-doc where I'll be teaching chemistry and the science of art, and I'll also continue researching ways to better conserve outdoor murals using science.

In the future, I hope to work in a museum science research department, where new research questions about art materials and their conservation concerns can be investigated using a combination of art history, science and public engagement.



GLOBAL HERITAGE



ENGLAND

The Staffordshire Hoard is billed as the largest Anglo-Saxon treasure ever found. It dates to 600–700 A.D.

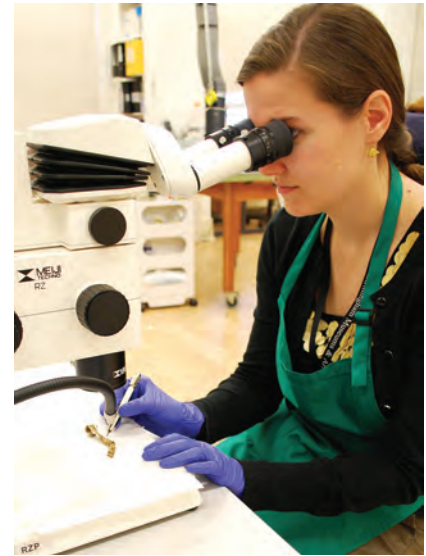
The Staffordshire Hoard:

Treasure sheds new light on the Dark Ages

As Terry Herbert maneuvered his metal detector in a farmer's field in Staffordshire, England, in July 2009, it suddenly started beeping and kept on beeping. The unemployed 55-year-old would discover more than 1,500 gold and silver artifacts dating to the seventh century, from the cheekpieces of warriors' helmets intricately embossed with stylized animals, to garnet-inlaid crosses so finely crafted they made some experts cry.

During the Anglo-Saxon era, the area where the hoard was found was part of the kingdom of Mercia, and its kings and chieftains waged fierce battles. Thus, there is speculation that the mysterious hoard may be an ancient victor's spoils or a royal arsenal for arming new warriors.

Ellen Promise, a master's student in the Winterthur/University of Delaware Program in Art Conservation, is among the rare few to have handled objects from this astonishing find, as an intern working with the Birmingham Museum and Art Gallery. The following are excerpts from her blogs and emails over the summer.



UD graduate student **Ellen Promise** treats a cloisonné object from the Staffordshire Hoard.

AUGUST 2011

From *National Geographic* film crews to exciting discoveries by my colleagues, there hasn't been a dull moment. I have been treating several objects, chosen as high-priority pieces and earmarked to be featured in a major exhibition.

One of my favorite pieces has been a beautiful gold object called a lentoid (for its lens shape), with intricate cloisonné cells. It was my first treatment and a rather striking introduction to the Hoard.

The lentoid was clearly designed to impress, with an estimated 239 cloisonné cells, gold backing foils stamped with two different patterns, and a double border of filigree around the outside edge. The cells were heavily caked with soil prior to cleaning, obscuring the distinctive features of the piece.

I began by examining the object and taking note of its condition and construction. Then I took photographs and wrote a brief report to document the object's state before treatment.

The treatment protocol is meticulous. Everything that is removed from the object including soil, corrosion products, and residues, is saved in labeled sample vials for future analysis.

I used a natural thorn in a pin vice to clean the lentoid under high-powered magnification. Water is sparingly used where soil is compacted.

Altogether, 211 garnets remain in the lentoid. Some cells are missing garnets or backing foils, and while this interrupts the design, it also reveals the astonishing intricacy of the object's construction.

In the empty cells, possible remnants of a backing paste exist. This would have bulked up the cells beneath the patterned gold foils into which the cut garnets were precisely set.

Several rivet holes and one intact rivet, seemingly in its original location, indicate that the object would have fastened to a support of some kind. For the present, this object remains a mystery.

SEPTEMBER 2011

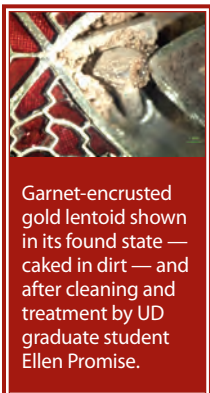
Holding the materials from the Staffordshire Hoard feels surreal when you actually focus on the full magnitude of their history and uniqueness. Usually, you are working on such a tiny scale and concentrating on

observing every detail. That can be extraordinary in itself, but stepping back to observe the big picture on occasion can be breathtaking.

Some of the most amazing and iconic pieces in the hoard include the folded cross, discovered with its arms bent around some of its original settings and garnets, and a miniature seahorse with intricate filigree spirals. To give a sense of scale, a grain of rice is longer than three of these spirals. The craftsmanship of these pieces is unbelievable. We truly don't know how certain things were accomplished, especially considering the limited technologies available at the time.

The internship has demonstrated for me the critical importance of collaboration amongst museum professionals, who are instrumental in working to preserve, understand and showcase these artifacts. I feel a renewed sense of commitment to public outreach after my involvement with tours, blogs and news coverage this summer. People are excited about this find and deserve to be able to access information about their cultural heritage. — *Ellen Promise*

The Staffordshire Hoard will be on display at the National Geographic Museum in Washington, D.C., from Oct. 29, 2011, to March 4, 2012.



www.staffordshirehoard.org.uk





UNCOVERING THE SECRETS OF BERENIKE

by Ann Manser / Photos by Steven Sidebotham

Archaeologist Steven Sidebotham discovers the cosmopolitan trappings of a truly global economy at the ancient port of Berenike in Egypt's Eastern Desert.

It's commonly accepted that today's economy is a global one, but make no mistake about it, says Steven Sidebotham: We aren't the first people to experience such a phenomenon, and it isn't unique to the last century — or even the last millennium.

"You hear a lot about globalization today, but there was a 'global economy' linking Europe, Africa and Asia during the first century of the Christian era, and the city of Berenike is a perfect example of that," says the University of Delaware history professor and archaeologist, who has been uncovering the secrets of the ancient Egyptian port for almost two decades. "In the Roman era, Berenike became a very international emporium, trading as far west as Spain and as far east as Indonesia, and it was an extremely cosmopolitan place."

Working painstakingly and in severe desert conditions where every drop of water and all food, supplies and equipment must be hauled to the site from great distances, Sidebotham travels to the Red Sea port every year. There, layer by layer, the ancient, multicultural city that for centuries was a trading hub of the Roman Empire reveals a new chapter of its story to him and his international team.

"This is an amazing, huge site with excellent preservation because of the hyper-arid climate," Sidebotham says. "We've probably un-

"We've probably uncovered only about 2 percent of the ancient city, so there are still several lifetimes' worth of work to be done."

covered only about 2 percent of the ancient city, so there are still several lifetimes' worth of work to be done."

The project began in 1994 and has survived government upheavals, administrative delays, changing international partnerships, budget shortfalls and even this year's political turmoil that ousted Egyptian President Hosni Mubarak. From 1994 until 2001, the archaeological dig was a joint project with Leiden University in the Netherlands and then with the University of California at Los Angeles; since 2008, it has operated in collaboration with the University of Warsaw and Iwona Zych, who is co-director.

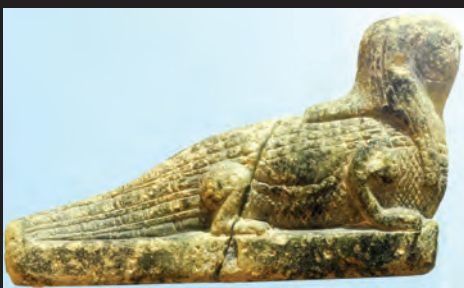
Operating on a shoestring budget that often includes large infusions of his own money, Sidebotham and his colleagues have documented

a thriving culture that existed in the city for some 800 years, beginning about the middle of the third century B.C.

"This project is not just my research; it's my life," Sidebotham says. He publishes annual field reports detailing his findings and has authored or co-authored several books, the most recent of which is *Berenike and the Ancient Maritime Spice Route*, published in January by the University of California Press. In 2008, the Discovery Channel featured his work in the documentary "When Rome Ruled Egypt."

DISCOVERIES OF A LIFETIME

A UD-led team brings to light the secrets of a once-thriving culture at Berenike.



Crocodile sphinx found at the Serapis Temple in Berenike.

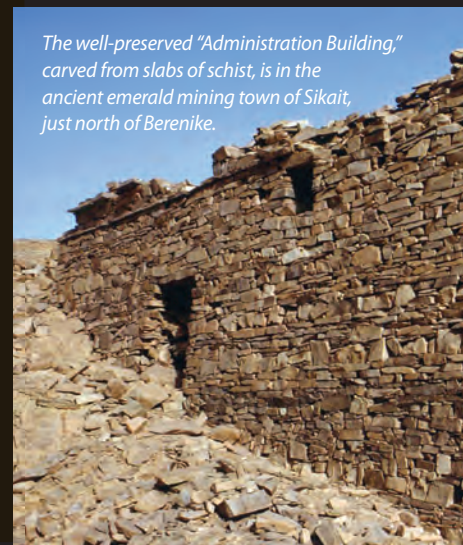


Graffito of a sailing ship dating to the 1st century.



Bilingual inscription in Greek and Palmyrene dedicating a statue to a religious deity. It records several Roman soldiers plus the Roman governor of Berenike by name.

The well-preserved "Administration Building," carved from slabs of schist, is in the ancient emerald mining town of Sikait, just north of Berenike.

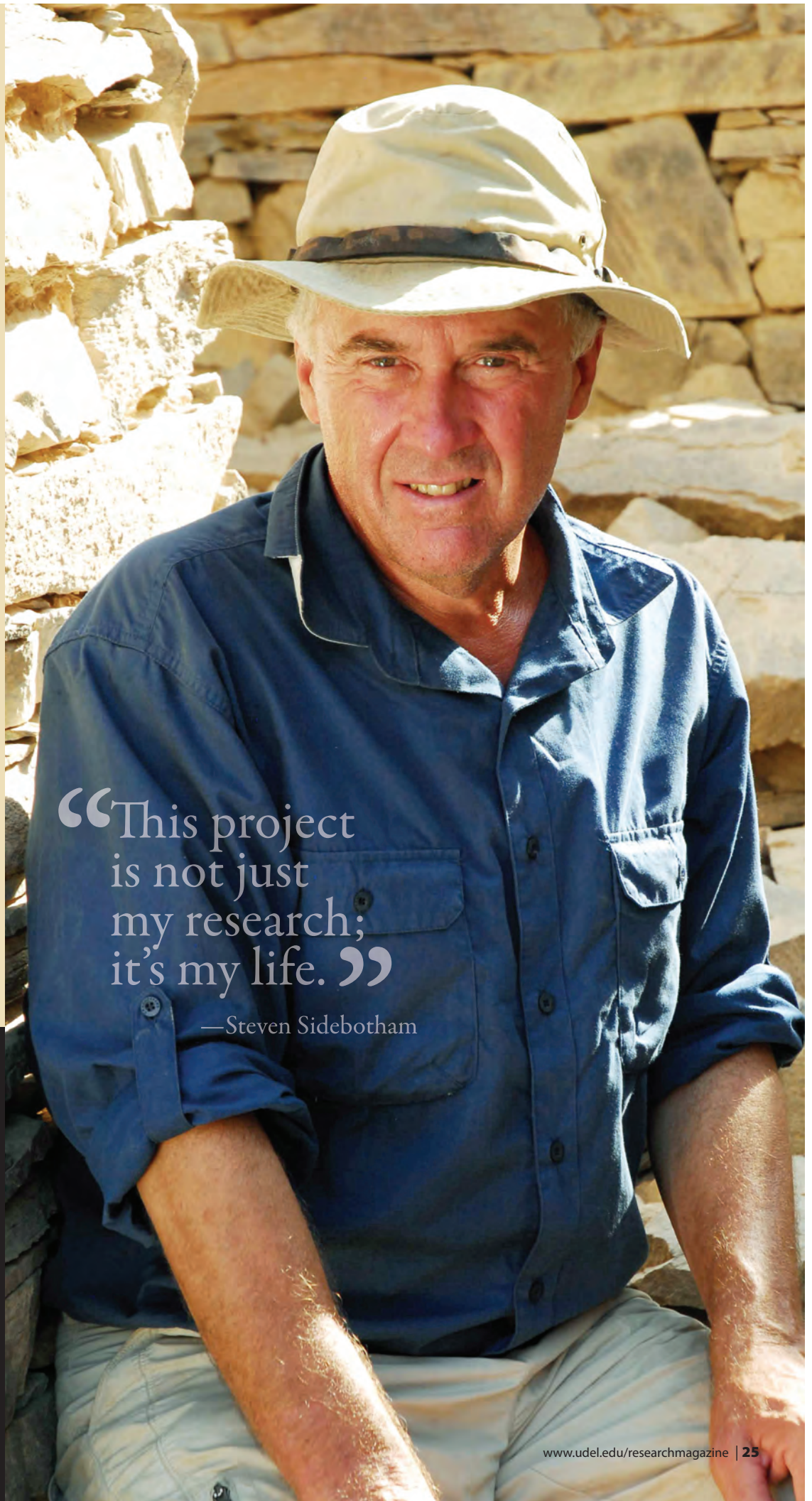


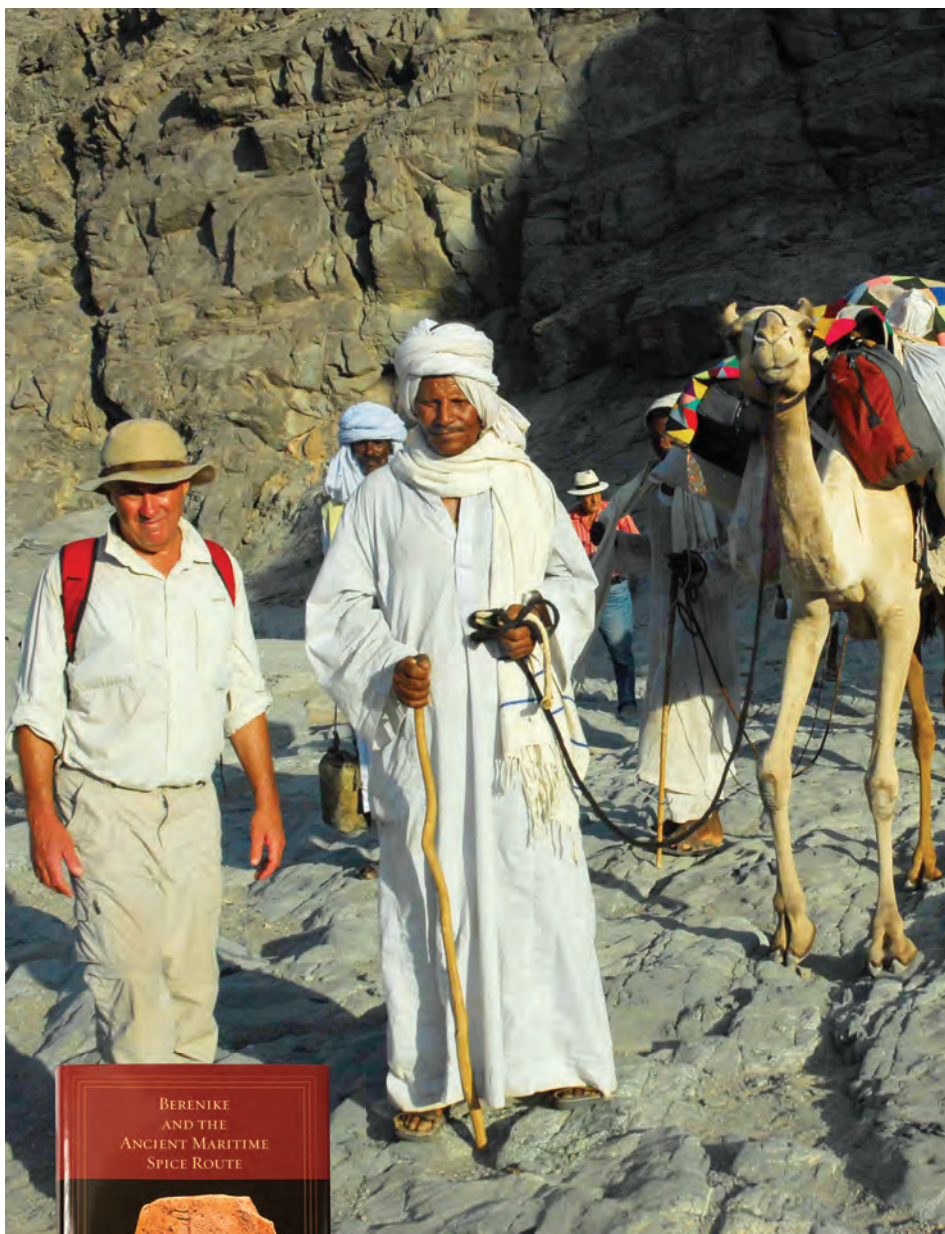


In 275 B.C., Egypt's King Ptolemy II founded Berenike, which he named for his mother. The Red Sea harbor was needed for importing elephants for use as "tanks" for war. They were ferried from farther south along the African Red Sea coast aboard large transport vessels. Berenike would reign as the major trading center between Africa's east coast, Alexandria, Rome, Arabia, and India until the port was abandoned 800 years later, in the 6th century A.D. Since 1994, UD's Steven Sidebotham has been working to uncover Berenike's story.

“This project is not just my research; it’s my life.”

—Steven Sidebotham





The emeralds of an EMPIRE



Steven Sidebotham's work in Egypt extends beyond the port city of Berenike, a key point on the Roman Empire's ancient maritime trade route, to include investigations of wide swaths of the Eastern Desert.

One of the more prominent locations the University of Delaware history professor and his archaeological team have studied lies about 75 miles northwest of the Red Sea port in the mountainous region known to ancient Egyptians as "the Red Land." There, the remains of the Roman town of Sikait, with its buildings and temples constructed of stone or carved into the mountainsides, are still visible.

"This is one of the most inhospitable regions on Earth," Sidebotham says, where summer temperatures routinely exceed 130° Fahrenheit and a mere eighth of an inch of rain falls in a typical year. "But the city had a population of more than 1,000 for over 500 years. That's because it was the only source of emeralds available within the entire Roman Empire."

Emeralds, known as "green fire," were prized by the Romans, who, Sidebotham says, extracted millions of them from the mines near Sikait. The miners, believed to be willing workers rather than forced or slave laborers, used basic tools such as metal picks to extract the emeralds over hundreds of years.

Today, traces of pick marks mar many of the deep, narrow mining shafts the ancient workers dug into the mountainsides. They left behind oil lamps that provided their only illumination and fragments of pottery jugs that once contained their water supplies. Sidebotham and his team even found a well-preserved basket that may have carried the miners' food or may have been used to haul rocks to the surface.



UD AUTHOR

Amazon.com calls Sidebotham's latest book "an intriguing read, an accessible account full of fascinating finds and careful analysis."

On the edge of Egypt's Eastern Desert, Berenike thrived as a trading port for goods from Europe, the Middle East, south Asia, sub-Saharan Africa and southern Arabia. Sidebotham's excavations have turned up such varied items as Indian-made pottery, textiles, ships' sails and beads, stone and wooden figurines of Venus, ships' timbers made of cedar from Lebanon and teak from southern India, a clay jar containing decorative silver pieces, Roman glass, a gold and pearl earring, sapphires and other gems, a mother-of-pearl cross and slivers of Turkish marble used as veneer for walls or floors. Several inscriptions carved in Greek on large stone blocks have also shed light on the religious lives of the city's residents.

A particularly significant find was made in 1999, when the team discovered a large jar embedded in the courtyard floor of the Serapis Temple, which contained nearly 17 pounds of black peppercorns from the first century. Cultivated at the time only in southwestern India, peppercorns were highly prized in ancient medicines and religious rituals as well as cooking. The large quantities found throughout the city confirmed that Berenike was not only a transit point for this and other exotic merchandise but also a consumer of these commodities.

The city was founded in the third century B.C. for the importation of elephants, gold and ivory from regions of Africa south of Egypt. The intimidating size of elephants, Sidebotham says, made the animals the tanks of ancient armies.

In the Roman era, Berenike became a bustling boomtown, where merchants

came to trade a wide assortment of goods and where many grew very wealthy. Despite the harsh living conditions that included extreme heat, lack of rainfall and plenty of insects, the city became home to families as well as businessmen. Sidebotham's team has discovered human remains and numerous artifacts indicating that people of all ages as well as backgrounds lived in the city.

Goods came to Berenike after a two-week trek across Egypt's Eastern Desert from the Nile to the Red Sea, where they were loaded onto ships and traveled down the Red Sea and over the Indian Ocean — assisted by the annual monsoon winds — to India, southern Arabia and coastal Africa. When the winds reversed their course months later, the ships traveled back to Egypt laden with products for Mediterranean markets.

Based on ancient writings from the first century B.C. and first century A.D., Side-



botham says, at least 120 ships carrying a minimum of 75 tons of goods each may have sailed each year between India and Berenike and her sister ports farther north along Egypt's Red Sea coast. Because the vessels carried such valuable cargo as spices, incense and plant and animal products, he estimates that the trade amounted to more than \$10.5 trillion in imports over some five centuries of activity in Roman times.

"Berenike was a very cosmopolitan place where people — men, women and children, many of whose names and ethnic and social statuses we have discovered — lived, worked and perished," Sidebotham writes in his latest report summarizing work at the site last January and February. "It was a cultural melting pot where the common interest was making a great deal of money from the lucrative trade ... that passed both ways through the emporium."

Writings on scraps of papyrus have yielded everything from a personal letter, in which a mother complains that her son doesn't write her as often as she would like, to a surprisingly detailed bill of sale for a donkey. Like Americans today, Sidebotham says, the merchants of ancient Berenike were litigious businessmen who carefully spelled out every aspect of a transaction.

Each year, the site reveals more information about its past, Sidebotham says. This

year, for example, the team found a pet cemetery containing the remains of 17 dogs and cats, ship timbers and other maritime artifacts from the harbor area, and a trove of objects from an early Roman-era trash dump.

In addition, the project has yielded much information about life in and around the city, Sidebotham says. Findings include artifacts from religions with a variety of deities and evidence of 12 different written European, African and Asian languages, including one that is as yet unidentified.

Tight budgets mean that less time and manpower is now available, Sidebotham says, but he notes that the past three years have had "really spectacular" results and that he has every intention of continuing.

"This site is massive," he says. "There's no way, by excavating it properly as we have been doing, that it could be completed in my lifetime. There's probably enough work for four or five more generations of archaeologists."

"There is probably enough work for four or five more generations of archaeologists."

Dated July 26, 60 A.D., this papyrus from Berenike is a surprisingly detailed bill of sale for a white male donkey and its saddle for 160 drachmas.



Archaeology more than just a "handmaiden to history"

To Steven Sidebotham, archaeology is more than the "handmaiden to history" label that sometimes is used to describe the discipline. Rather, he says, it is one of the humanities that also includes some features common to research in the natural sciences.

"The discipline is more like a science in some ways," he says. "In a lot of historical research, you go to an archive with a particular objective in mind, you find a finite number of documents, and you use them."

"At an archaeological dig [like the Egyptian port city of Berenike, where he has been working for almost two decades], the research is extremely long term, time-consuming and expensive. It is also very collaborative — definitely not a one-person endeavor."

The Berenike project is jointly run by the University of Delaware and the University of Warsaw, with assistance from European undergraduate and graduate students and local Bedouin

workers. Sidebotham and the international team also work with a number of specialists to examine everything from ancient botanical remains to bones, textiles, coins, glass, pottery and other artifacts unearthed at the site.

Sidebotham has been hooked on archaeology since he was a teenage "Army brat" living in Turkey. While in high school there, his ancient-history teacher inspired him to visit nearby archaeological sites. He first went to Egypt in 1965, studied at the American University in Cairo from 1969 to 1971, began his own excavation career in 1972 and first excavated in Egypt in 1980.

Archaeology is clearly one of the humanities, he says, "not a math-science type of exercise" with results that can be tested with precision. And, while it is not history, its goal is to obtain as complete a historical record of any dig site as possible.

But the biggest difference from a laboratory experiment, he says, is that work at an archaeological dig cannot be repeated: "You get only one shot at it, and if you get it wrong — if you don't dig and record it properly and carefully — there is no way of going back and doing it again. You've lost the information forever."

WEB EXTRA

Dig this! Sidebotham tells more about Berenike in this video clip.





EVAN KRAPE

Irene Vogel, professor of linguistics and cognitive science, is working to document Rutwa, the native language of the Batwa people of Uganda before the language is lost. At right is a hand-woven Batwa basket.

A MATTER OF TIME

Turning back the clock on a dying language

by Ann Manser

GLOBAL HERITAGE

UGANDA
Although English and Swahili are its official languages, many others are spoken in the "pearl of Africa."

When Irene Vogel hiked deep into the mountainous forest of southwestern Uganda this past summer, she was in search of something elusive and endangered — not a rare animal or plant species, but a language and, indeed, an entire culture at risk of extinction.

Vogel and a few assistants were seeking surviving Batwa, a people who some two decades ago were forced out of their ancestral homeland where they had lived for thousands of years as hunter-gatherers. Specifically, the UD professor of linguistics and cognitive science was looking for Batwa who remembered their time living in the forest and still spoke or remembered their native language, known as Rutwa.

"Rutwa is an extremely endangered language," Vogel said. "We don't even know how many speakers there still are, but there are probably fewer than 100. When the Batwa had to leave the forest, many did stay in the area, but they learned the local language and stopped speaking their own."

"Some of the people scattered, and even though some others are still living together, their language and culture are rapidly disappearing."

Because Rutwa is not a written language, Vogel noted, when the last elder who can speak it dies, the language will die as well. "If you have no written language and no recordings of your spoken language, then when the language dies, you lose your history, your songs, your herbal medicine.... What do you have left?" she asks.

"You might still identify yourself with the culture, but all you really have left is remnants. You will no



In the forest of southwestern Uganda, a Batwa elder tells about medicinal herbs.

ITUUZA

longer have access to the knowledge and traditions that had always been passed along by word of mouth.”

The goal of her trip to the southwestern tip of Uganda, with UD undergraduate Matthew Herman, was to find as many Rutwa speakers as possible and start to compile a phonetically written list of words and phrases. Assisted by Vogel's daughter, Rachel, a high school senior, and guides from the nonprofit Batwa Development Program, the group also made video and audio recordings of all Rutwa speakers they were able to interview.

Their trek began just outside the Batwa's homeland in what is now Bwindi Impenetrable Forest National Park, a preserve created by the Ugandan government in the 1990s to protect the mountain gorillas that live there. With the park off limits to everyone except tourists who pay hundreds of dollars in admission fees to see the gorillas, the Batwa now must live elsewhere.

In the town near the park, Buhoma, the researchers located a small group of Batwa who remembered bits of their native language. A grueling, daylong hike brought the team to a tiny settlement where they found two more elders who recalled a small number of Rutwa words. They were able to record some vocabulary from the nine speakers they found, which Vogel describes as only a starting point.

“We recorded lists of some words — names of animals, plants, fruits from the forest — and a couple of songs, but we weren't able to get full sentences,” she said. “Some people remember more than others, but it's been 20 years since they lived in the forest, so it's not easy. And it's very painful for some to remember that time, too, since it contrasts sharply with the poverty, illness and ostracism they currently experience.”

If Rutwa disappears, Vogel said it would be a loss not only for the Batwa, but also for the world.

“There will be no record of the way the Batwa interacted with nature and among themselves in families and larger groups,” she said. “Moreover, we will lose the wealth of factual knowledge about which plants cure various diseases, which insects make different types of honey, how to catch fish and other animals for food, and much more.”

Vogel, whose project was supported by a grant from the General University Research program, hopes she can continue the research by focusing on the elders she



Irene Vogel and undergraduate Matthew Herman (photo far left) met with members of the Batwa of Uganda this past summer to compile a list of words and phrases from their endangered language called Rutwa.

found with the greatest knowledge of the language. She believes that if she could accompany them into the forests near their homeland, she could spark their memories by pointing out specific plants and places, for example. She hopes, furthermore, that when the elders get together they would inspire each other to remember and speak more Rutwa, and she could make additional recordings.

Even with the invaluable help from the Batwa Development Program, Vogel

knows the project faces many challenges, including the Batwa's remote settlements.

But the biggest challenge, she said, is time.

“The elders who remember their time in the forest aren't going to be with us forever, and they're already forgetting so much of the language,” Vogel said. “The younger people don't know how to live in the forest — how to hunt, what to eat, what not to eat — and have never even spoken Rutwa. We're really up against the clock.”

UD a leader in documenting endangered languages

Prof. Irene Vogel's quest to document and preserve the endangered language of the Batwa people of Uganda is only one example of research conducted by the Department of Linguistics and Cognitive Science at the University of Delaware.

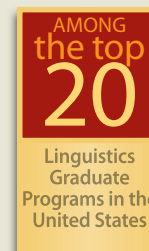
One of the few linguistics departments with an emphasis on fieldwork and the study and documentation of endangered languages, UD's program has made such study a focus since the late 1990s. A 2010 report by the National Research Council ranked its doctoral program among the top 20 linguistics graduate programs in the United States.

In August, the National Endowment for the Humanities (NEH) and the National Science Foundation (NSF) announced the award of 10 fellowships and 24 institutional grants in the agencies' ongoing Documenting Endangered Languages program to preserve records of languages threatened with extinction. Peter Cole, UD professor of linguistics and cognitive science, was awarded a \$219,983 institutional NSF grant as part of that program.

Cole studies endangered Malayic languages of Sumatra, where his former graduate student, Timothy McKinnon, who earned his doctorate in May, is working with the Max Planck Institute for Evolutionary Anthropology.

“The description of endangered languages is a strength of the linguistics and cognitive science department at UD,” said McKinnon, who won the 2011 Sypherd Prize for best dissertation in the humanities at UD.

About 7,000 languages currently are spoken worldwide, linguists say, and more than half of them are expected to be extinct by the end of the century. In awarding the latest grants, the NEH and NSF noted that “the window of opportunity for high-quality language field documentation ... narrows with each passing year.”



NEW Directions NEW Connections

Glowing ideas and collaborations in the arts and humanities at UD are sparking novel educational opportunities for students, industry and the public. We introduce only a few of them in the pages ahead.

SPARKS a-flyin'

Delaware
Design Institute
nurtures innovation

Giving University of Delaware students “the opportunity to think in a different way” lies at the heart of the Delaware Design Institute (DDI), according to Provost Tom Apple.

Since Apple and Janet Hethorn, professor and chair of the Department of Art, initially discussed the idea about three years ago, DDI has rapidly taken shape. Based in historic Taylor Hall on the Newark campus, the institute today boasts meeting spaces and a “Collab Lab” equipped with white boards, design tools and comfortable chairs, where people from different disciplines can come together to share ideas and develop opportunities.

All seven colleges and more than 20 departments at the University are involved in the institute, which facilitates collaboration across disciplines and encourages the use of “design thinking” in finding creative solutions to complex problems.

“Everyone wants to do interdisciplinary work, to address the messy problems, the big problems in today’s society,” Hethorn says. “In order to do so, we need to learn to interact with people differently. Faculty may not know people in other departments, so we’re a matchmaker of sorts, and we want innovation to be the outcome.”

As Hethorn explains, every project supported by DDI must include faculty and students from more than one discipline, as well as an external partner with a problem to be solved, such as a private company or nonprofit organization.

So far, DDI has helped to launch projects ranging from the creation of a three-acre sustainable teaching garden at Tyler Arboretum, to an online site for sharing business process management approaches. More recently, as you’ll read here, a DDI team put their creativity to work imagining products in the home of the future in response to a design challenge from one of the world’s technology giants: Xerox Corporation.



Janet Hethorn
Professor and Chair,
Department of Art

“We want
innovation
to be the
outcome.”

— Janet Hethorn

Imagining the future

The Audio Flower Pot features
“techno-blooms” that act like
speakers and microphones.



Students tap “inner inventor” to meet Xerox design challenge

The pot of flowers with sparkling lucite petals on chunky metal earthworm stems may pose as modern art, but that’s not all that Matthew Amey has in mind for it.

The senior art major at UD envisions the flower heads acting as speakers and microphones. Rather than bending toward the light as most living flowers do, one of his techno-blooms would light up and turn toward the nearest person in the room when a call came in. And the directional speaker would allow only the person directly in front of the flower access to the conversation.

Amey’s concept is one of several cool ideas developed by Prof. Abby Donovan’s team for Xerox Corporation.

Last fall, Xerox contacted Donovan, assistant professor of art at UD and an experienced toy designer, to do consulting work on some innovation concepts. When Donovan asked if she could involve UD students in the creative process as a learning experience, Xerox gave her a big thumbs-up.

Donovan quickly assembled her interdisciplinary team through the Delaware Design Institute, including Amey, a self-taught artist from Maryland’s Eastern Shore who is working on his bachelor of fine arts degree; Michael Pfeifer, a leadership major who graduated with his bachelor’s degree this past spring; Yingbo Wang, a computer engineering major; and three recent alumni of UD’s art program — Greg Kleiber, Emily Bunker and Brittany DeNigris. Terry Harvey, assistant professor in the Department of Computer and Information Sciences, joined Donovan in leading the group.

The team’s challenge was to imagine the home of the future and then transform their ideas into creative prototypes for an exhibition hall at Xerox, a space the company’s engineers pass through every workday.

Unlike Donovan’s inventions for toy companies, the prototypes for Xerox were not required to be functional, but they needed to be engaging. The team’s goal was to trigger the

imaginations of the Xerox engineers, sparking them to think about how to implement the new ideas technologically.

And the deadline was entirely “real world” — the UD team had a month and a half for the entire process, from brainstorming ideas to transforming the ideas into sketches, then models and three-dimensional mockups for the exhibit.

“Xerox was very explicit — they painted a process of what and where to imagine,” Donovan says. “They wanted to be totally surprised by our concepts, but they wanted them to fit within specific, confidential parameters.”

Donovan says she learned early on as a toy designer that it’s important to respect your client’s priorities when assigned a project, but you also need to be “a little razzly dazzy” when presenting your ideas.

“It’s not always easy coming up with new ideas, and it’s another thing entirely for people to take those ideas seriously, so your ideas need to be creative but they can’t be super pie-in-the-sky,” she notes. “You need to listen carefully to what you’re told by the company, and then let your imagination go.”

Her team took that advice to heart, working on their projects for the technology giant. Headquartered in Norwalk, Conn., Xerox is one of the world’s leading document management and business process outsourcing companies and has more than 135,000 employees in 160 countries.

At the team’s first meeting, Donovan outlined the challenge and provided the dimensions for the exhibition space. The group began mulling over ideas and agreed to meet again in three days. Donovan encouraged the students to go after “what grabbed them.”

At the next meeting, the group discussed their concepts, as well as the practicality of fitting them within the exhibit space. After more brainstorming and sketching, the group met with Xerox representatives to make sure what they were planning was in line with the company’s objectives. Then they raced to create their prototypes. By November, the tableaus were installed at Xerox’s New York office, where they would remain until August 2011.



Angelfish and seahorse hologram avatars would help keep family members on track with schedules and to-do lists. Amey, Donovan and Kleiber envision

“Imaginary Friends” such as these holograms would follow their humans around, responding to an electromagnetic leash woven into clothing.

these “Imaginary Friends” following their humans from place to place, responding to an electromagnetic leash system woven into clothing.

“CeramaPuff,” by Donovan and Harvey, could be easily molded into cooking containers of all shapes and sizes — and then quickly formed back into a smooth slab for easy cleaning in the sink or dishwasher. Interfacing with recipe displays, it could keep track of ingredients so that, as the designers note, no one would need wonder again, “Did I already add the baking soda?”

“This project was refreshing in that it allowed us to come up with some crazy ideas working with a large corporation in a once-removed, ultra-secretive fashion,” says Amey, who is looking forward to future projects. “All-in-all, it was an exciting and creative experience.”

— Tracey Bryant

The team’s **challenge** was to imagine the home of the future.

Among the creative prototypes, “Maple Seed,” designed by Wang, represents a camera that could take 360-degree panoramic photos. Once thrown into the air, it would unfold into a monocopter controlled from the ground by the photographer through remote control viewing goggles.

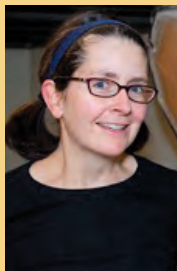


“Maple Seed” is a creative prototype of a camera that would unfold in the air to take panoramic photos.

Unleashing Invention

“Our education system isn’t really set up to nurture invention — to be a little weird and wacky and play around with materials and processes — so I try to help my students go back to that space,” notes art professor Abby Donovan of her work at UD’s Delaware Design Institute. “My first priority is to get my students to feel comfortable and confident in their curiosity.”

A talented inventor, Donovan has designed several toys, including a wand that creates interesting light patterns when waved around, in partnership with her husband, Tom Hughes, an electronics engineer. The UD art professor also stokes her creativity regularly as a member of the artist performance group “the 181,” which was featured at the 2011 Stockholm Fringe Festival. And in July, her “Model T” debuted as the first in a series of



Abby Donovan
Assistant Professor,
Department of Art

“My first priority is to get my students to feel **comfortable** and **confident** in their **curiosity**.”

artworks of the *New York Times* logo, commissioned (and blogged about) by *New York Times Magazine*.

Donovan notes that it’s important to cultivate the individual senses of a group involved in a design task. “What will be of interest is their idiosyncracies,” she says, “not figuring out how to all walk together.”

Then she encourages her students to investigate their ideas through the material (physical) world.

“It’s important to be unsettled in your assumptions,” she says. “Don’t try to force a material to do something, but see what it does naturally.”

And don’t be afraid of failure as you experiment. Embrace it, she notes. Thomas Edison, one of the world’s greatest inventors, refused to consider any of his work a “failure.”

“Every wrong attempt discarded is a step forward,” the uber-inventor once said. At his death in 1931, Edison had 1,093 patents — a record that remains unbroken today.

Setting the Stage for Better Health Care *by Diane Kukich* *Photos by Evan Krape*



In UD's novel Standardized Patients Program, nursing student Elizabeth Morris and physical therapy student Jerry Choi attend to a "patient" played by theatre student Zachary Jackson.

When Amy Cowperthwait finished nursing school, she found herself half-wishing she could be hospitalized so that she would know what it was like to be a patient.

Twenty years later, Cowperthwait, who is now resource simulation center coordinator in the University of Delaware School of Nursing, found a less extreme way to give her students that empathy-developing experience.

UD's Standardized Patient Program (UDSP), a collaboration between the College of Health Sciences and the Department of Theatre, is a unique way to prepare students for their roles as health care professionals. With this approach, individuals are trained to portray patients and family members so that students can practice such skills as taking medical histories and doing physical exams.

UD's distinctive twist on the traditional standardized patient concept is that the actors are not professionals — they're undergraduate theatre minors.

The resulting scenarios develop in a very dynamic way, with the health sciences and theatre students interacting with each other and providing feedback in an unscripted give-and-take.

"We believe that UD is the only school in the country taking this approach," says Allan Carlsen, undergraduate adviser and

"We believe that UD is the only school in the country taking this approach." — Allan Carlsen



coordinator in the theatre department. "A few other institutions are using graduate theatre students as standardized patients, but our theatre minors are critical to the approach we're taking and the results we're seeing."

The connection with the theatre department includes not only students but also theatre directors to help train the actors and provide them with ongoing feedback throughout their "performances."

"Our 180 theatre minors, who represent the full range of majors at UD, make up a tremendous pool of talent for us to tap into," Carlsen says. "All of these students, regardless of the career path they follow, will need good communication skills, and this program offers them a great opportunity to develop those skills."

"Better communication is key to better health care," says Kathleen Matt, dean of the College of Health Sciences. "The quality of our health care is directly connected to how we present ourselves to medical professionals. That's why this program is so valuable not only to the health sciences students but to the theatre minors as well — they're learning how to be better patients."

Matt points out that the program also offers a critical opportunity for the students to learn how to work together. While the program has so far included just nursing and physical therapy students from the health sciences side, plans are to phase in other disciplines, including athletic training, medical technology, exercise science and nutrition.

"The next generation of health care professionals and leaders will be required to work in teams," Matt says. "Our standardized patients program provides that experience, with the patient as an integral partner."

The addition of family members further complicates the dynamic and enhances the realism of the scenarios.

"In a pediatric case, for example, you might have not only a child in pain but also one parent who is hysterical while the other has completely shut down," Cowperthwait says. "Our nursing students are much better prepared for the clinical experience in their senior year if they've already dealt with situations like this through the standardized patients program."

According to Cowperthwait, one important new direction for the program is patient safety.

She cites hand washing as an example. “Nurses tend to be very diligent about this,” she says, “but sometimes doctors are not. At the same time, a nurse may be intimidated about confronting a physician who has overlooked this basic precaution. Going through a scenario can teach nurses about the best way to handle a situation like this and empower them to actually do it in a clinical setting.”

Carlsen agrees: “With the standardized patient approach, there’s no cost when a grievous error occurs. But there’s something visceral about live. The lesson sticks.”

The UD team has also contributed to the development of a set of interactive videos to teach communication skills to health care professionals across the country. Produced and marketed by the F. A. Davis Company in Philadelphia, the videos were filmed on the UD campus, with theatre minors playing roles in more than 20 scenes.

The scripts were written by Cynthia Diefenbeck, who has a doctorate in clinical psychology and is a member of the UD nursing faculty, and Kyle Phillips, who holds degrees in both theatre and nursing.

Although Phillips’ cross-training might seem unusual, faculty are starting to see overlapping interests in the students who are involved in the UDSP.

“Some of our theatre minors have switched to the nursing major after participating,” Carlsen says, “and we’ve also seen students choose the theatre minor based on the opportunity it offers to join the program.”

Bethany Callaway planned to earn a degree in health behavior science and then enter an accelerated nursing program. Her plans changed after she participated in the UDSP, and she is now a junior in UD’s traditional undergraduate nursing program.

Never having been seriously injured or hospitalized, she found her eyes opened to the effect nurses have on their patients.

“Their empathy, voice and even touch or lack of it affected how I responded to them and how I felt,” she says. “I was able to tell when the nursing students wanted to be there or whether they really cared about me as a ‘patient.’ I think patients deserve the best care, and it’s not just by way of machines, medicines or needles, but also by way of empathy.”

Based on growing interest in the subject, the team recently developed an interdiscipli-

nary elective course, Healthcare Communication. Open to all undergraduates, the course incorporates film, text, observation, improvisation and experiential learning to prepare students for their roles in various health care settings.

UD’s clinical partners have recently become interested in the Standardized Patients Program as well. Nemours/A.I. duPont Hospital for Children is planning to imple-



Jazmine Tooles, a doctoral student in physical therapy, works with her “patient,” theatre student **Zachary Jackson**. He is portraying the victim of a car accident.

ment the approach in training first-year pediatric emergency fellows, and Christiana Care Health System is applying it with third- and fourth-year medical residents.

“Standardized patients will provide our clinicians with unique educational interventions and allow for direct feedback that will enhance interpersonal and communication skills,” says Dr. Maria Diaz of the Division of Emergency Medicine at Nemours/A.I. duPont Hospital for Children.

At Christiana Care, Dr. Tabassum Salam has been involved in the education of physicians-in-training and medical students for over 10 years. “I am very excited to have a novel modality with which to teach them communication skills and the art of working in multidisciplinary teams,” he says. “The simulated scenarios will make the clinical cases feel very real for the learners, and they will get to practice skills that just cannot be taught in a traditional classroom format.”

The program is still so new that little data has been collected at this point. However, evaluations indicate that the approach is “eye opening” and “revolutionary.”

“I think the UDSP exemplifies the transformative experience that we believe our students should have at the University of Delaware,” Carlsen says.

In my experience

The standardized patients program taught me invaluable lessons that I don’t believe I could have learned

anywhere else. Being a patient in a “hospital room” with all its equipment gave a very realistic sense to the experience.

Perhaps most important is that I will always remember how it felt to be a patient. In medicine, the patient’s mood and willingness to cooperate can lead to better diagnosis and treatment. Since we had many nursing and physical therapy students rotate throughout the day, I got to experience many different ways of treatment. Even as an actor and not a real patient, I still felt the difference within me when a nurse, for example, held my hand and asked me how I was doing. I felt like a human being and someone that was cared for.

So I made a decision to spend more time with people who I may one day give care to, so that I can help them to heal with not only medicine but also compassion and love. I have long been interested in the mind-body connection, so I am taking a year off after graduation to travel, to gain a better understanding of people and a better sense of cultural differences. I want to open my eyes to the variation within the world.

After I return, I plan to attend Jefferson Medical College in Philadelphia, where I hope to put my new knowledge to good use. — *Sepehr Sedigh Haghighat*

Editor’s Note: Sepehr Sedigh Haghighat graduated from the University of Delaware earlier this year, with a degree in biology and a minor in theatre.

Being a “patient” opens future doctors’ eyes to the importance of compassion.



Striking the right note

by Diane Kukich

Could music help cure what ails you?
An evolving collaboration at UD tunes in to the powerful connection between music and health.

Rob Ellis graduated from the University of Delaware in 2003 with a psychology major and three minors: biology, cognitive science and music. His academic background might seem unusual, but Paul Head, chair of UD's Department of Music, believes that people like Ellis can help to connect the dots between disciplines as music becomes more entrepreneurial and medicine becomes more holistic.

As a first step in an evolving collaboration, Head and Kathleen Matt, dean of the College of Health Sciences, jointly led a session on the transformative power of music at the Salzburg Global Seminar in Austria this past April. The meeting brought together musicians, social change-makers, philanthropists, cultural policymakers and scholars to shed new light on ways to exploit music's instrumental value.

Karen Avino, assistant professor of nursing, is convinced of this value. "There is a definite connection between music and health," she says. "Helping people reach optimal health is about tapping into their innate healing abilities. Music is another tool in the health care practitioner's toolbox, and it gives us an added way to reach people, not just through the body but also through the mind and spirit. There is a growing awareness in health care of the need to understand the whole person by connecting all three of these facets."

While music therapy programs tend to target special populations such as children with autism or adults suffering from depression, Head sees the UD collaboration going in a different direction.

"Music is a universal language," he says, "and my interest lies in how it affects the brain and how we can use it to help the general population heal from injury and illness."

Head also sees new avenues for music majors in the future. "Not everyone is going to seek a position playing in an orchestra," he says. "I think we're looking at a new discipline — 'entrepreneurial musicianship' — where people are trained to use music to achieve a specific result. We want to better understand the 'chill factor' of a great piece of music so that we can harness that effect."

Matt and Head are planning a course to be co-taught by several faculty, with segments addressing various domains of music, from the metabolic to the psychological. "Co-curricular courses like this help us to attract talented students interested in the non-traditional connections between disciplines that we're trying to tap into," she says.

Ellis was one of those talented students, and he believes that UD offers the perfect environment for nurturing eclectic interests like his own. "The University offered me multiple options and outlets," he says. "I felt equally welcome in the Music Department and the psychology lab. I didn't have to give up one for the other — at UD, I could sing and do research."

Ellis went on to complete a degree with distinction, writing his thesis under the advisement of Prof. Robert Simons in the Psychology Department. He continued the research, which focused on the impact of music on measures of emotion while viewing films, at the Ohio State University, where he earned his Ph.D. in 2009.

Now a postdoctoral research fellow in neurology at Harvard Medical School, Ellis is using advanced imaging technology to better understand how music affects the brain. Applications for his work include the use of music to help stroke survivors regain lost language function and to restore normal gait patterns in Parkinson's disease patients.

"Rob is a perfect example of the student who wants to study music and comes to Delaware for the overall intellectual environment," Head says.

He and Matt believe in the transformative power of not only music, but also the scholarly environment at UD.

"When you have faculty who can think 'outside the box' and students hungry for experiential learning," he says, "lots can happen where music and medicine meet."



Kathleen Matt, Dean
College of Health Sciences



Paul Head, Chair
Department of Music

Venturing into the NOT SO secret life of **MAPS**

by Ann Manser

Americans seeking their place in the world in the late 18th and early 19th centuries didn't have to look far. Maps, says the University of Delaware's Martin Brückner, were everywhere.

"Maps were not just useful objects, but they were also decorative and sentimental objects," notes the associate professor of English, who has extensively researched the role of maps in American life, focusing on the period from about 1750–1876. "They could document your national pride, help tell the story of your heritage and enable families to visualize where their relatives were traveling or living."

In fact, Brückner says, maps were downright fashionable at the time and were incorporated into a variety of everyday objects. To showcase this trend, he has organized an exhibition that will be on display at Winterthur Museum near Wilmington throughout 2013, with the working title, "American Cartifacts: The (Not So) Secret Life of Maps, 1750–1850." He says he especially likes the word "cartifacts," coined from the combination of cartography and artifacts.

The idea for the exhibition originated when Brückner was a National Endowment for the Humanities Fellow at Winterthur in the spring of 2009. Already focusing his scholarship on maps, he discovered numerous objects in the museum's collections that related to the subject — most of which Winterthur had never before connected for display.

"I was working on a book, *The Social Life of Maps*, and I kept discovering these items at Winterthur that I could see were linked — and the link was cartography," he says. "My question was: What were they used for? Nowadays, we might frame a map and hang it on a wall, but in the past, people used them for multiple purposes."

Among the objects that arose from the map fad in American life were samplers that girls embroidered in school, ladies' handkerchiefs and fans elaborately decorated with maps, paper maps that fit onto the face of a pocket watch, map designs incorporated into advertising and business letterheads, and large "parlor screens" or room dividers lavishly covered with various maps. The exhibition is expected to encompass some 150 maps and related artifacts.





“Maps tell stories and force us into a particular mindset. They really are fascinating — we all use them, but we don’t think twice about them.”

—Martin Brückner

In the University Library’s Special Collections, Martin Brückner pages through the North American Atlas, published in London in 1776.



EVAN KRAPE

Maps found their way onto many objects of everyday life, including this fan from the Winterthur Museum Collection.

Brückner says the popularity of maps came about from a combination of factors. In Colonial America, maps were expensive and rare, but around the time of the French and Indian War, which began in 1754, more people grew interested in geography, and maps began appearing in shops in Boston and Philadelphia. With the Revolutionary War, Americans became even more focused on geography, including the location of battles and a new sense of nationalism, and by the early 1800s, new printing technologies had made paper maps relatively inexpensive to produce.

“At the same time that maps became increasingly in demand, they became affordable, so their use just took off,” Brückner says. “They really became ubiquitous.”

His own scholarly interest in maps began with their appearance in literature, but Brückner was intrigued by the subject much earlier than his time in graduate school. Before starting college in his native Germany,

he served two years in the Army in the mid-1980s and was assigned to a surveying unit.

His job was land surveying — “which is just boring math,” he says — but he would watch his military colleagues take the survey results and use them to create maps. He says he was especially interested in what maps showed and what they didn’t show, such as locations of secret military installations that were left off the final diagrams.

“The mapmaking is what captured my imagination,” he says. “I realized maps tell stories and force us into a particular mindset. They really are fascinating — we all use them, but we don’t think twice about them.”

After his military service, Brückner earned a bachelor’s degree in English and American literature and cultural geography and then studied American literature in graduate school, where he noticed that 19th-century novels contained numerous references to maps and map-related metaphors. His interest continued as he earned a doctoral degree in the United States at Brandeis University and began teaching at UD in 1999.

“I realized that maps are artifacts, that they’re not only used in the way of telling stories or as metaphors in literature but also as objects,” he says. “So I made a transition to studying material culture, too.”

In addition to his faculty appointment in UD’s Department of English, Brückner has a secondary appointment in the University’s Center for Material Culture Studies.

He is the author of *The Geographic Revolution in Early America: Maps, Literacy, and National Identity*, published in 2006 by the University of North Carolina Press and winner of the Louis Gottschalk Prize.

During the summer, Brückner was the 2011 Research Fellow at the Social and Cultural Institute at Mainz University in Germany, where he studied the relationship of material culture, cartography and communication in the context of the Atlantic world between 1700 and 1900. His new book, *Early American Cartographies*, published for the Omohundro Institute in Early American History and Culture by the University of North Carolina Press, will be available later this year.





SAMPLER
IN TIME

go online *by Tracey Bryant*
Photos by Evan Krape

National project to create digital archive of historic American samplers



Sarah Talley of Talleyville, Delaware, must have smiled with satisfaction as she embroidered the last silk threads into her needlework sampler in 1798. At the age of 17, she was relatively old to be completing such needlework, but a close inspection of the stitchery helps unravel the compelling story why.

In addition to the religious poem and fanciful geometric shapes, the leaping hounds, delicate flowers, and proud eagle skillfully embroidered in the uniform x's of cross-stitch to the vertical lines of flame stitch, Sarah documented the names and birth dates of her siblings on her sampler. The youngest two, Lydia and Elihu, were twins born two days apart. Sarah's mother, Lydia Forewood Talley, died the day the second twin was born, on Aug. 16, 1795.

"It's likely that Sarah was too busy caring for the twins to be able to attend school, which is where most girls learned to do needlework," says Linda Eaton, director of collections and senior curator of textiles at Winterthur, the museum of American decorative arts established by Henry Francis du Pont in Winterthur, Del. "Sarah completed her sampler at Mary Sullivan's school the same year her father remarried."

It is such personal stories stitched into historic American samplers that captivate Eaton, a member of a research team working on the Sampler Archive Project. Recently funded by the National Endowment for the Humanities (NEH), the project's goal is to build an online searchable database of American samplers stitched in the 17th, 18th and 19th centuries.

According to Ritchie Garrison, professor of history at the University of Delaware and director of the Winterthur Program in American Material Culture Studies, the work is all about enlisting technology to connect the public with its cultural legacy.

"This project brings together the University of Delaware and the University of Oregon — two great universities with deep strengths in American material culture and advanced digital technology. Joining the project is a consortium of museums, histor-

ical societies, and collectors passionate about the study of historic samplers," notes Garrison, who is the principal investigator on the NEH grant. "We hope to do for American samplers what has been done for American quilts, opening another portal into the nation's heritage."

Garrison's co-investigators include Project Director Lynne Anderson, professor of education in the Center for Advanced Technology in Education at the University of Oregon, and Patricia Keller, who earned both her master's degree in American material culture and doctorate in American civilization at UD.

In the initial phase of the project, Anderson and Keller will work with curators at three museums: Linda Eaton at Winterthur, Kirsten Hammerstrom at the Rhode Island Historical Society in Providence, and Olive Graffam at the Daughters of the American Revolution (DAR) Museum in Washington, D.C.

The team currently is refining the process for collecting data about samplers and also programming an online database that will make information and digitized images available to the public. At the end of the two-year project, they will have digitized approximately 100 samplers from each of the three pilot sites.

Anderson became interested in samplers when she inherited three from her mother in 2004, one of which had been in the family since it was stitched in 1805 by Mary W. Collins.

“As I began researching sampler history, I was shocked at how little I knew about this aspect of female education. I hadn’t known that samplers were made at school, under the direction of a teacher, even though my entire professional life had been in the field of education,” Anderson says. “I decided to learn everything I could about samplers and other schoolgirl embroideries, which turned out to be harder than I expected. Much of the scholarship is buried in books that are out-of-print, and the samplers themselves are rarely on view, even when owned by public museums.”

In 2008, Anderson and three other sampler scholars launched the Sampler Consortium, an international organization of historians, curators, scholars in material culture, genealogists, educators, collectors and needlework enthusiasts interested in the study of historic samplers. Now with more than a thousand members, the organization conceptualized the Sampler Archive Project and initiated the process that led to the NEH grant.

Light of literacy shines through

Proudly displaying numerals and ABCs, scenes of faith and farm life, Bible verses and witticisms, the samplers embroidered by girls in early America not only brightened the home, but also shined the light of literacy into the needleworkers’ young lives.

“Sampler” is derived from the Latin word “exemplum,” which means “an example to be followed.” Young girls, typically from six to 15 years old, would learn different stitches as they created their embroideries, gaining skills they could use for the rest of their lives.

“Sewing skills were vital to a family’s welfare,” Garrison notes. “Clothing was expensive and usually was mended or remade rather than discarded. In addition, some women depended on such skills to earn a livelihood.”

The earliest signed sampler was made in England in 1598 by Jane Bostocke. The work, with its elaborate geometric patterns, a dog, deer and flowers, is in the Victoria and Albert Museum in London.

“There were English sampler themes and American sampler themes, and design ideas crossed the ocean,” Garrison says, noting that samplers were made in one form or another throughout Europe, the Middle East, Mexico, Central and South America.

Once sampler making became a standard part of the school curriculum for girls, regional and local styles emerged. Teachers often created unique sampler designs, and girls copied the alphabets and motifs associated with their particular school. As they were copying, Garrison says, they might also be learning to read and write, as well as to stitch and embroider.

Eaton notes that some samplers are referred to as “marking samplers,” because a girl learned to stitch alphabets and numbers that could be used to “mark” her own clothes as well as family linens with identifying initials.

On the tail of a man’s shirt from 1790 in Winterthur’s collection, Eaton shows the finely embroidered initials of the owner, with the numeral “12” stitched below.

“If you lived in a city like Philadelphia or Wilmington, you would have sent your laundry out, so you ‘marked’ it to make sure it didn’t get mixed up with someone else’s,” Eaton says. “The initials identified the owner, and the ‘12’ indicates that this was his twelfth shirt. Because doing laundry was so difficult, you would amass a sizable amount before sending it out,” she explains.

Sampler making was embedded in the education of girls of all backgrounds, including free African American students, and Native American girls in mission



At Winterthur Museum in Winterthur, Del., from left, **Lynne Anderson, Linda Eaton, Ritchie Garrison and Patricia Keller** examine several historic samplers. The museum’s collection will become part of the searchable online database being created by the Sampler Archive Project.



The sampler at left was made by 11-year-old Hannah McIntier in 1790. Bordered by exquisitely stitched blossoms, it features this verse framed in a grapevine motif:

“Youth tho’ yet no losses grieve you, Gay in health and many a grace, Let not cloudless skies deceive you, Summer gives to autumn place, On the tree of life eternal, Mayst all thy hopes be lay’d, Which alone forever vernal, Bears the leaves that never fade.”

At right is 11-year-old Ann Jane Couper’s finely stitched sampler with its clearly visible verse. It was made at D.H.M.’s Seminary in New Castle, Del., in 1824.



FROM THE WINTERTHUR MUSEUM COLLECTION

schools. By the mid-19th century, however, the making of elaborate samplers had fallen out of practice because the curriculum in most girls’ schools, especially in urban areas, increased the emphasis on academic subjects. However, stitching samplers remained an important part of the schoolgirl curriculum in some areas of the U.S. and in schools run by conservative religious groups.

Because a sampler often identifies the girl who made it (along with her age and the year it was completed), many have been preserved as family heirlooms. Others are far removed from their original homes, tucked away in museums or private collections. All have stories that are just waiting to be told.

The Sampler Archive Project and its central database will now help connect these historic needleworks to the scholars and interested public who can help tell their stories — collectively, an important part of the American story.

“Our hope is that historical societies, art museums, private collectors and families will help us build this online database by contributing information and digital photographs of the antique samplers in their possession,” says Garrison.

According to Anderson, the Sampler Consortium has located more than 10,000 samplers in American collections, although they may not all be American in origin. And there are many more to be found. She and Garrison estimate that there may be as many as 15,000 to 20,000 American samplers in existence.

“Our goal” says Anderson, “is to find them all.”

Unraveling the secrets behind the stitches

What information will the first centralized database of American samplers contain? Each needlework will undergo extensive scholarly interrogation, referred to by Patricia Keller, curator of digital collections for the Sampler Archive Project, as “a much expanded and refined version of who, what, when, where, why and how.”

- **“WHO”** concerns the maker of the piece, her family, and her needlework teacher and school, if those facts can be known.
- **“WHAT”** captures the sampler’s physical construction — the fiber of the ground fabric, the weave, threads per square inch, color and condition, and the fiber types and colors of the threads used to work the visual elements. The intellectual content — numbers, dates, alphabetical letters and texts — will be transcribed exactly as worked by the needle, Keller says, and the pictorial representations will be identified and matched, where possible, to period illustrations and print sources.
- **“WHEN”** addresses the date the sampler was made, which some makers stitched on the fabric. Otherwise, an approximate production date might be determined by curatorial study and comparison to similar, dated objects.
- **“HOW”** concerns the techniques and kinds of stitches and embellishments the maker employed. Information about the sampler’s mount (if there is one) and original framing and glazing (if that can be known) also is important.
- **“WHY”** is among the deeper questions driving the research, notes Keller.

“These objects are infinitely varied and yet structurally patterned, beautiful and often humble, and always a testament to a young woman’s significant investment of time and effort — and her family’s commitment to her participation in this handwork activity,” Keller says. “Through analysis of the data, we expect to learn more about the meanings young women created as they worked needlework samplers in schools, as well as the meanings communicated when families displayed and retained these objects across generations, making them available for study today.”



Patricia Keller, Curator of Digital Collections, Sampler Archive Project

<http://samplerarchive.org>

An Intellectual Destination for the Arts

by Artika Rangan

When the University of Delaware decided three years ago to lease space in Philadelphia's historic Crane Building, the goals were twofold.

In addition to marketing the graduate arts program to prospective MFA students (applications have doubled since 2008), the satellite gallery presented a unique opportunity to promote knowledge and spark an intellectual dialogue within a larger regional arts community.

"Research, in the traditional sense, is about the creation, cultivation and disseminating of new knowledge," says Janet Hethorn, professor and chair of the Department of Art. "So how does that work in the arts? In the very same way."

UD@Crane is, as the name suggests, a two-story, 3,000-square-foot space leased by the University at the Crane Building in the Northern Liberties section of Philadelphia. Originally designed as a plumbing warehouse, the massive four-floor building that spans an entire city block is now home to an eclectic community of artists and institutions, with schools such as the University of Pennsylvania and Temple University's Tyler School of the Arts exhibiting there.

For the University of Delaware, the space in one of the country's most vibrant urban arts communities "allowed us to be part of what's happening in contemporary art and help lead that conversation," says Hethorn.

With six exhibitions a year — an annual "New Blood" show each fall that highlights the works of incoming MFA students, a final show in the spring for graduating MFA students to display their thesis presentations, and four broader exhibitions in between — UD@Crane has increased both the University's presence and prominence in the creative exploration of the arts.

"Our exhibitions are never of just one artist; they are always about ideas," explains curator Anthony Vega. "Our goal is to put together different pieces to make up a whole conversation."

Previous exhibitions have ranged from ceramic sculptures depicting the "idiosyncratic approaches to the ancient medium of clay" by second-year graduate students, to performances and paintings by students, faculty, alumni and prominent national artists exploring "the complexity of meaning within the continuum of being Asian."

The most recent exhibition, "Faction Politic," examined fashion and its relationship to the body, and demonstrated the successful partnership between the departments of Art, and Fashion and Apparel Studies, and artists at the University of California-Davis, who contributed pieces to the exhibit.

"Collaborating with departments and scholars outside of the art department," says Hethorn, "is part of what makes this experience so special."

Students and faculty in the English Department have given poetry readings there, and the gallery has even been used as the site of performance art created by Ashley Pigford, an assistant professor in art, and Marianne Gythfeldt, associate music professor.

As Hethorn puts it, "Art has no boundaries. It permeates our being, and this venue affords us an incredible opportunity to explore the role of artistic conversation in everyday life and create meaningful discussions that extend well beyond the walls of an art gallery."

UD@Crane Exhibitions 2011-2012

MAY 10 to JUN 17
MFA THESIS SHOW
Graduating MFA students exhibit their thesis presentations.

DEC 8 to JAN 29
DECADENCE
Indulge yourself in this exploration of the overdone, overwhelming and often-unnecessary nature of decadence.

FEB 9 to APR 1
ECONOMY SHOW*
A possible collaboration on the myriad concepts and tensions found in "economy," from the notions of use and elegance, to finances and social debt.

APR 6 to APR 29
CHOICE SHOW*
How does choice relate to art, politics and the notions of self?

EVAN KRABE

* These shows are in concept stages and subject to change over the course of the year.



THE AFRICAN AMERICAS PROJECT AIMS TO

“contextualize the United States’ experience within the larger Latin American and Caribbean one, bringing new depth and scope to the understanding of the African diaspora.”

—Persephone Braham

Lasting Ties

by Artika Rangan

Project explores the African facets of American identities

There are deep and lasting connections between Latin America, the Caribbean and black artists, intellectuals and institutions in the United States. And yet “these connections are often overlooked due to language and geographic barriers,” explains Persephone Braham, associate professor and director of Latin American and Iberian Studies at UD.

To help bridge some of these divides, Braham created the African Americas Project, which among its activities, hosted an ambitious two-day symposium, on Oct. 6–7, that brought together artists, musicians and scholars of black music, art, history, literature and anthropology. The project coincides with numerous Black American Studies events under way at UD this fall.

As the Black American Studies program — awarded department status just last year — celebrates its 40th anniversary, and as the Center for Black Culture cele-



Colette Gaiter, Associate Professor,
Department of Art

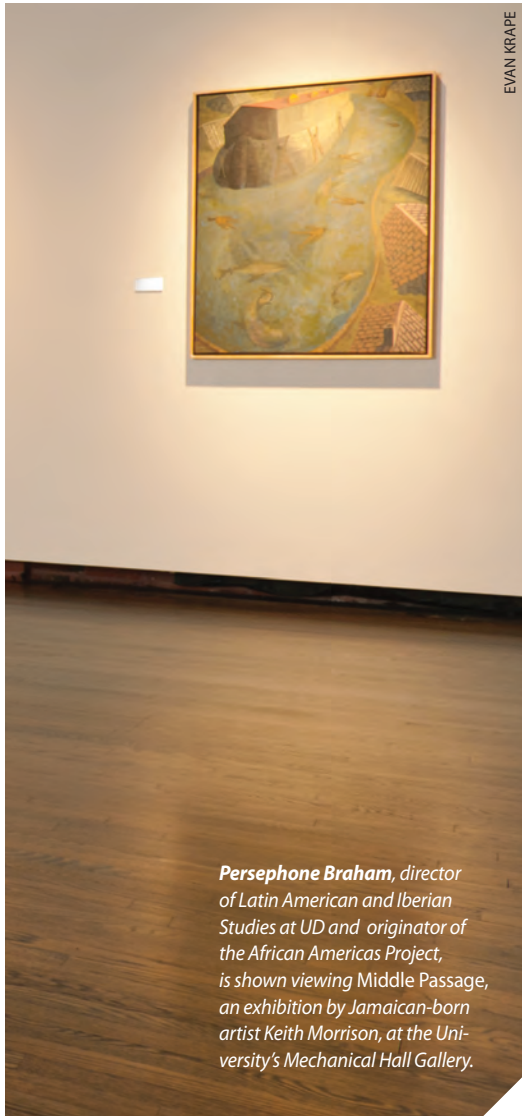
“Every place and culture has distinctive artwork.”

— Colette Gaiter

brates 35 years, the African Americas Project aims to “contextualize the United States’ experience within the larger Latin American and Caribbean one, bringing new depth and scope to the understanding of the African diaspora,” Braham says.

The project also takes place during Latino Heritage Month and coincides with an exhibition by artist Keith Morrison, whose works will remain on display at the Paul R. Jones Collection of African American Art until December.

During the symposium, multidisciplinary panels, led by guest experts and UD faculty members, emphasized the importance of African influences on American identity. The music panel, for example, featured Robin Moore, an ethnomusicologist from the University of Texas at Austin who specializes in Cuban musical influences on early jazz; Wayne Marshall, a DJ, journalist and expert on reggaeton; and UD Assistant



EVAN KRAPE

Persephone Braham, director of Latin American and Iberian Studies at UD and originator of the African Americas Project, is shown viewing *Middle Passage*, an exhibition by Jamaican-born artist Keith Morrison, at the University's Mechanical Hall Gallery.

Professor and Director of the Percussion Ensemble Harvey Price, who spoke on the development of steel drum music from the ghettos of Trinidad to the ivory towers of American higher education.

“You would hardly ever hear the Trinidadian steel drum in Cuba, or the traditional Cuban son [musical style] in Jamaica,” Braham explains. “We looked at recent trends like reggaeton, a form of urban Latin music, to highlight both the diversity and interconnectedness of the African diaspora.”

Associate Professor of Art Colette Gaiter presented a range of works by Cuban artists focusing specifically on the Havana biennial, an art exhibition that takes place every two years with the principal aim of promoting Third World contemporary art.

“Every place and culture has distinctive artwork,” Gaiter says, “and because of our limited exposure to Cuba and Cuban art, I

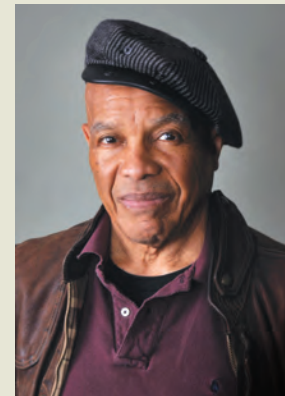
Keith Morrison: Middle Passage

UD Mechanical Hall Gallery through Dec. 11

Middle Passage highlights a selection of oil paintings and watercolors from the last decade by Jamaican-born artist Keith Morrison, who is a professor of art at Tyler School of Art at Temple University. Morrison’s work engages local, global and Caribbean diasporic concerns. A recent suite of paintings, forcefully evocative yet reductive in form, give the exhibition its title.

At once a reference to the cross-Atlantic passage that brought enslaved Africans to the Americas in an elaborate trade route — Europe, Africa, the Americas — the significance of *Middle Passage* is redoubled in the context of Morrison’s paintings that favor an iconography of cultural mélange. Settled and unsettled territories, unseen tragedy implied by trauma, and verdant and enigmatic groves and waterways permeate the work of the artist. Deeply mythical and often political, Morrison’s exquisite paintings offer sensory delight and compositional shrewdness.

Keith Morrison, *Slow Boat*, 2003. Watercolor, 40 x 30 in. © Keith Morrison
Photography by Richard Paradowski



Keith Morrison, Artist



want people to understand the African experience, especially as it has been depicted in a Communist country.”

Ultimately, Braham adds, the African Americas Project aims to “investigate the cultural, historical, philosophic and creative dimensions of the human experience.

“Our hope,” she says, “is to engage students, faculty, guests and the general public in a conversation about one of the fundamental facets of American identity: our colonial and slave-owning origins and the ramifications of these origins throughout our collective intellectual and cultural experiences.”



A two-day symposium at UD, on Oct. 6–7, brought together artists, musicians and scholars of black music, art, history, literature and anthropology.



first person

MEDIEVAL MYTHBUSTERS

by Katherin Rogers




KATHY F. ATKINSON

Katherin (Kate) Rogers is a professor of philosophy at the University of Delaware, where she teaches courses in Medieval philosophy, the great Western philosophers and philosophy in film. She earned bachelor's and master's degrees in philosophy from UD, a doctorate in philosophy from Notre Dame and a doctorate in humane studies from St. Anselm College. Her most recent book, *Anselm on Freedom*, about the teachings of the eleventh-century Benedictine monk who would become archbishop of Canterbury, was published by Oxford University Press in 2008.

Ready for enlightenment?

The people who lived during the Middle Ages (5th – 15th centuries) didn't believe the Earth was flat. In fact, as UD philosophy professor Kate Rogers tells us, the medievals were a lot more hip about the world, and science, than you might think....



 The great philosopher Socrates was sentenced to death for, among other things, telling young folks they can't believe everything they hear. Part of my job as a medievalist is getting this sad fact — well, actually both sad facts — across to my students.

In the last 500 years, the brilliant ad agency doing PR for the so-called Renaissance, Enlightenment and Age of Reason has sold us such a bill of goods concerning the Middle Ages that the misperception of this period is almost ubiquitous, even today. It has to stop!

Here, I list, and bust, three (*among many*) common myths about what people in Western Europe thought in the Middle Ages.

Myth 1:

The Earth is flat!



Now, we don't know what farmer John or Hilda, the potter's wife, thought about the shape of the Earth. However, among the educated — at least later in the period, from the 9th century on —

it was generally known that the Earth is round. Aristotle had said it, and there's plenty of evidence from observation. Well before Columbus set sail, they had calculated the Earth's circumference to within about two miles. Nobody said to Columbus, "Don't sail west in those little boats. The Earth is flat and you'll fall off the edge." What they said was, "Don't sail west in those little boats. The Earth is *big*, and you won't make it to China."

Nothing against Columbus. He was a brave man and a brilliant sailor, but he was just darn lucky there was a big, fat continent in between Lisbon and Shanghai.

It's true that medieval folks believed the Earth to be at the center of the universe. Aristotle had said that, too. Some people say the reason why our medieval ancestors placed the Earth center stage is because they thought human beings were the most important creatures in the world.

But no. Our medieval ancestors put Earth at the center because that's how it appears when you look up into the heavens at night. They also thought the world outside the sphere of the moon was really much nicer than down here where things fall apart and die. They did think (*Silly old them!*) that human beings were among the most valuable creatures. Fond as we may be of Brother Squirrel and Cousin Oak, human beings are cooler in that we are rational agents.

Myth 2:

The physical universe is evil, so don't waste your time studying science!

Au contraire! The universe is made by God, and in the words of the foundational architect of western medieval thought, St. Augustine of Hippo (354–430 A.D.), "All that you [God] have made is good... And because you did not make them all equal, each single thing is good and collectively they are very good, for our God made his whole creation *very good*."

The medievals did believe there were more important things about you than your store of scientific information, such as your values and your relationships with other people. But the nature of natural causation was a hot and ongoing topic among medieval thinkers. One major debate, still with us today, is this: Does observation justify belief in necessary causal connections between objects, or only in a consistent pattern of behavior, which might change or disappear next moment?

And we have our medieval ancestors to thank for science as we know it. Aristotle, who constructed theories based on observation and even carried out the stray experiment, should perhaps be called the "grandfather of modern science." But to have science as the discipline we know today, you need universities where groups of scientists can work together and pass their findings on to their successors.



Albert the Great (1193/1206–1280), the teacher of Thomas Aquinas (1225–1274), is arguably the first to conduct his scientific research, including the construction of experiments, within the setting of the then pretty new university system of Western Europe. The title of "father of modern science" goes to Albert, and it's been a story of steady progress since his day.

Myth 3:

The Church should rule the State!



In parts of the medieval Muslim world, you did have theocracy — rule over the state by religious authorities. Unlike Jesus, Mohammed had been a political and military, as well as religious, leader. But in Western Europe, with the possible exception of the small Papal States in the middle of Italy, there was no theocracy. There were no theocratic governments, and there is not a single political philosopher defending theocracy.

There were kings who tried to wrap themselves in the mantle of the Church and probably wished they could run it. And Churchmen tried to exercise authority over the state and likely thought they could do better than the rulers. But Europe in the Middle Ages followed Augustine who had insisted on a separation of Church and State, each with its own job to do.

If you doubt this, have a glance at medieval history. It tells a tale of constant tension between Church and State.

Think of St. Thomas Becket (1118–1170), murdered by the king's men!

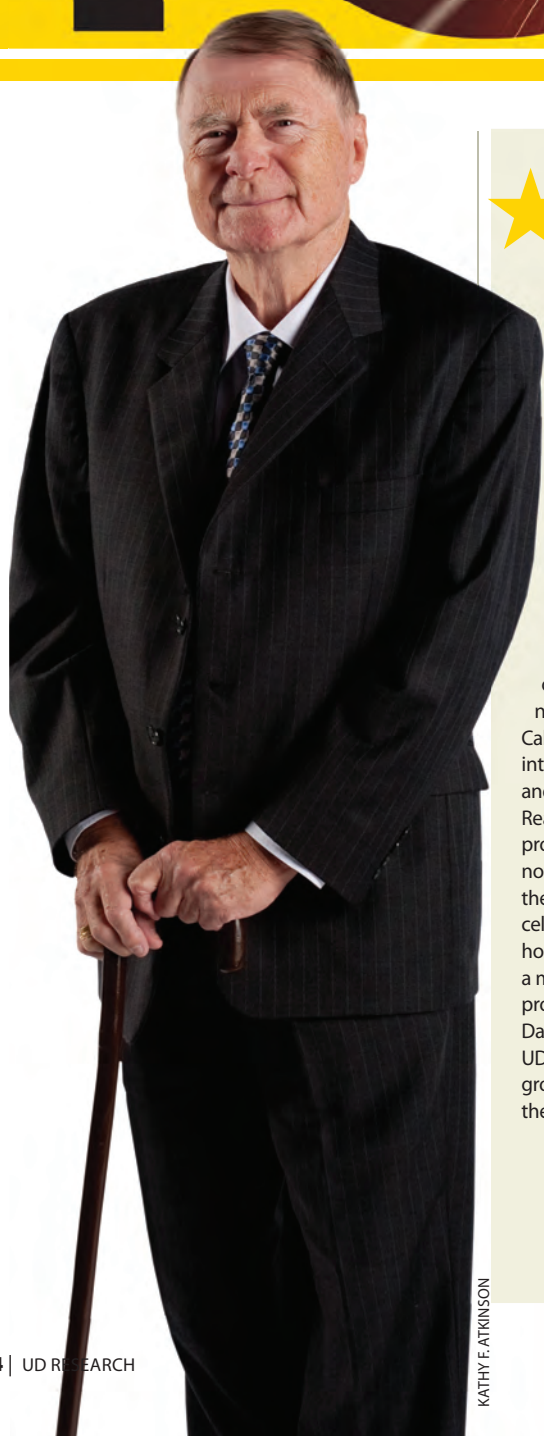
As I tell my students, now that you know the truth, you must correct people when they spread these old myths. I'm sorry, but with knowledge comes responsibility. Plus, service to the Truth is liberating — at least that's how the medievals saw it.



10

BIG RESEARCH DEVELOPMENTS at UD FY 2011

Welcome to our eight-page *Year in Review!* We invite you to check out the research people, programs and facilities that really made UD shine during the past year. May our “stars” continue to light discovery’s path.



★ Nobel Laureate Richard F. Heck

On Dec. 10, 2010, at the age of 79, Richard F. Heck, the Willis F. Harrington Professor Emeritus at UD, was awarded the Nobel Prize in Chemistry for “palladium cross couplings in organic synthesis” alongside Ei-ichi Negishi from Purdue and Akira Suzuki from Hokkaido University. Heck’s path to chemistry was through the front yard. His parents put the teenage Heck in charge of landscaping the family’s new home on a barren lot in California, which spurred his interest in plant fertilizers — and chemistry. Today, the “Heck Reaction” is essential to the production of pharmaceuticals, not to mention sunscreen and the screens of next-generation cell phones and TVs. Heck was honored on May 26, 2011, with a major symposium and the proclamation of “Richard Heck Day” on campus. He retired from UD in 1989 and today enjoys growing orchids at his home in the Philippines.

KATHY F. ATKINSON



★ An “innovation ecosystem” under cultivation

Among universities without a medical school, UD is now in the top 20 percent in licensing income and also ranks among the top 25 percent in patents issued, according to the Association of University Technology Transfer Managers. At the second annual Inventors Reception, co-sponsored by the University’s Office of Economic Innovation and Partnerships (OEIP) and the law firm RatnerPrestia, 170 faculty and staff were recognized as inventors on UD patents. David S. Weir, OEIP director, noted that an important component of the University’s Path to Prominence™ is the creation of a culture in which invention, innovation and entrepreneurship are valued and supported. Although OEIP is early in the development of “this innovation system,” Weir said, “some promising signs are appearing, and an increasing number of our research community is taking advantage of this process and infrastructure.”



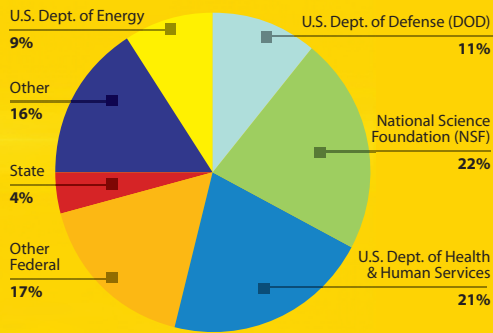
Year in Review 2011

UD RESEARCH

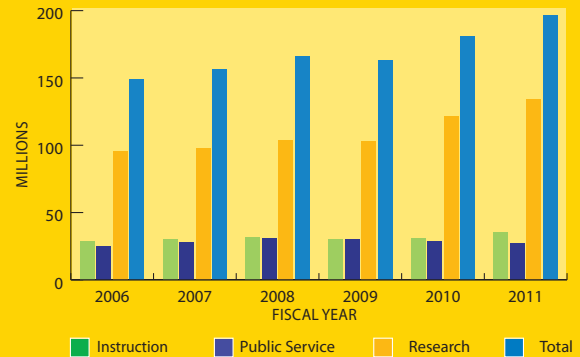
The Carnegie Foundation for the Advancement of Teaching classifies UD as a research university with very high activity — a designation accorded less than 3 percent of U.S. universities. UD ranks in the nation's top 100 universities in federal obligations for science and engineering.

During the past fiscal year, UD's contract and grant funding topped \$196 million, more than double the sponsored expenditures of a decade ago.

FY 2011 Research Expenditures by Sponsor



FY 2011 Sponsored Program Expenditures



★ Interdisciplinary Science and Engineering Laboratory

Scheduled for completion in 2013, the 194,000-square-foot Interdisciplinary Science and Engineering Laboratory (ISE-Lab) will be a place where teaching and research are integrated, with the research providing content for the curriculum. Students will learn fundamental scientific principles in newly structured courses encompassing biology, chemistry, and physics and then apply those principles to solve real-world problems in areas such as renewable energy. The building will house the University of Delaware Energy Institute, the Center for Energy and Environmental Policy, the Delaware Environmental Institute and the Catalysis Center for Energy Innovation. Find out how you can be part of the vision at www.udel.edu/iselab/.

WEB EXTRA

Visit the ISE-Lab website and preview the lab in a cool video fly-thru!



★ Top doctoral programs

The National Research Council ranked UD's doctoral programs in biomechanics and movement science, chemical engineering, linguistics and cognitive science, materials science and engineering, and mathematics among the top in their fields overall. In the category of student support/outcomes, which includes such aspects as financial aid, UD's doctoral programs in chemical engineering, English, human development and family studies, oceanography, plant and soil sciences, political science and international relations, and urban affairs and public policy stood in the top tier. In diversity of the academic environment, which considered percentages of female, minority, or international faculty and students, UD's doctoral programs in animal science, art history, biological sciences, linguistics and cognitive science, oceanography, political science and international relations, and urban affairs and public policy won high marks.



KATHY E. ATKINSON

10 **BIG** RESEARCH DEVELOPMENTS at UD, FY 2011

Tower of power

UD's wind turbine at the Hugh R. Sharp Campus in Lewes produced 5.1 million kilowatt hours (kwh) of energy during its first year of operation. That was enough to power the seaside campus, with a surplus of 1.3 million kwh — sufficient for about 120 homes — sent to the Lewes Board of Public Works for use by the city's homeowners. The turbine serves as a platform for research, including a study that looks at its impact on area birds and bats, a corrosion study to assess how the salty coastal air affects the machine, and a project investigating wear and tear on its drive train. Such research is building the U.S. knowledge base on the viability, cost-efficiency and impacts of wind energy. Plus, UD and the National Renewable Energy Laboratory are working toward testing commercial wind turbines off the Delaware coast. A test site in Delaware could mean significant jobs in wind-energy manufacturing and engineering.



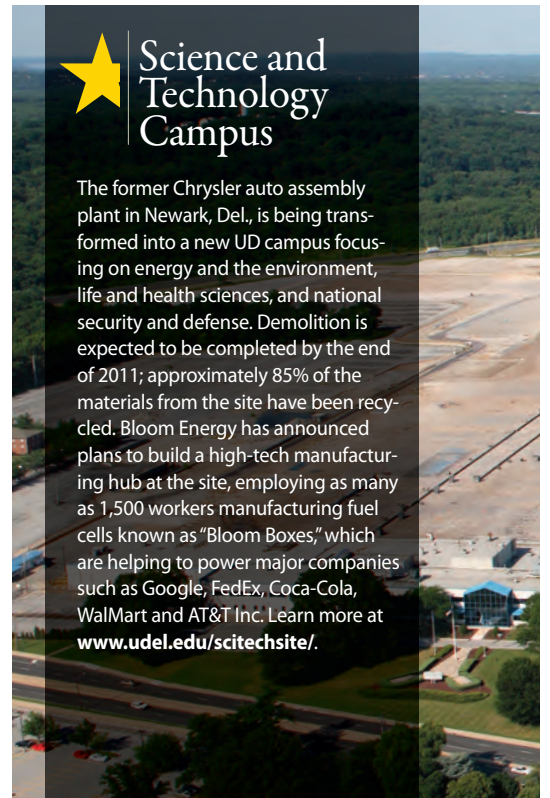
KATHY F. ATKINSON

Health research centers launch

Two new centers at UD serve as critical components of the Delaware Health Sciences Alliance (DHSA), which includes Christiana Care Health System, Alfred I. duPont Hospital for Children, Philadelphia's Thomas Jefferson University and UD as major partners in improving health care for Delawareans. The Delaware Cardiovascular Research Center focuses on the prevention and treatment of heart disease — a killer responsible for more than one-third of U.S. deaths. Ulhas Naik, professor of biological sciences, directs the center, which initially is being housed at the Delaware Biotechnology Institute, with plans for a future home at UD's Science and Technology Campus. The Delaware Rehabilitation Institute, under the direction of Thomas Buchanan, George W. Laird Professor of Mechanical Engineering, brings together academic and clinical scientists and clinicians to find innovative ways to help people of all ages recover from injury and disease and improve the state of the art in rehabilitation medicine.

Science and Technology Campus

The former Chrysler auto assembly plant in Newark, Del., is being transformed into a new UD campus focusing on energy and the environment, life and health sciences, and national security and defense. Demolition is expected to be completed by the end of 2011; approximately 85% of the materials from the site have been recycled. Bloom Energy has announced plans to build a high-tech manufacturing hub at the site, employing as many as 1,500 workers manufacturing fuel cells known as "Bloom Boxes," which are helping to power major companies such as Google, FedEx, Coca-Cola, WalMart and AT&T Inc. Learn more at www.udel.edu/scitechsite/.



KATHY F. ATKINSON

Consortium to help injured soldiers

"Our goal is to see every wounded warrior living a full and engaging life," says Steven Stanhope (above), professor in UD's Department of Kinesiology and Applied Physiology, of the new BADER Consortium, which won a five-year, \$19.5 million grant from the Department of Defense to improve orthopedic rehabilitation for soldiers with musculoskeletal injuries. The consortium's name, the acronym for "Bridging Advanced Developments for Exceptional Rehabilitation," is inspired by Sir Douglas Bader, a Royal Air Force fighter pilot who lost both legs in a plane crash, but went on to valiant service during World War II. Partners include Spaulding/Harvard Rehabilitation Hospital, the University of Texas at Austin, the Mayo Clinic, Naval Medical Centers in San Diego and Portsmouth, Va., the San Antonio Military Medical Center, and Walter Reed Army Medical Center.





GREG SACHS

“This site represents the next 100 years of growth for the University.”

—Patrick T. Harker
President, University of Delaware



★ Stellar scholars

Among UD's many high-achieving students, Matthew Watters (above with friends from Haiti), from Ramsey, N.J., who graduated with a bachelor's degree in neuroscience and a minor in political science, became the 12th Rhodes Scholar in UD history. He is now working on a master's degree in development studies at Oxford University, with plans to attend medical school and pursue a career in health policy. He founded Students for Haiti, which raised more than \$60,000 to help rebuild a hospital in Villa destroyed by the 2010 earthquake. And Megan Pell, a doctoral student in the special education program, was one of only 10 students selected nationwide by the Council for Exceptional Children Division of Research to participate in the 2010–2011 cohort of “Doctoral Student Scholars in Special Education Research,” which is helping her to expand her research on the transition between school and the workforce for students with disabilities.

★ An expanding global outlook

UD research is growing around the world. The Confucius Institute, recently launched in partnership with Xiamen University, is developing initiatives focusing on international issues and fostering economic scholarship and entrepreneurship, in addition to building interest regionally in the Chinese language and culture. UD and Xiamen University established the Joint Institute for Coastal Research and Management in 2008 and now offer a dual doctoral degree program in oceanography. In Latin America, a longstanding partnership in engineering research and education with 14 Colombian universities is being expanded to other UD departments, with the mutual goal to train 100 future Colombian faculty at the Ph.D. level over the next 10 years. And a partnership with the Federal University of Lavras (UFLA) in Brazil (shown below) will support undergraduate internships, build teaching modules for UD courses, and provide opportunities for as many as 12 doctoral students from UFLA to spend up to a year working with UD faculty on collaborative research in agriculture and biological science.



2011 FACULTY HONORS

UD faculty won major honors during the past year. Here we proudly share but a few of their accomplishments.

Golinkoff awarded UD's highest faculty honor

Roberta Golinkoff, H. Rodney Sharp Chair in the School of Education, won the 2011 Francis Alison Award, the University's highest faculty honor. Named for the Rev. Francis Alison, who in 1743 founded the school to which UD traces its roots, the award is made to exceptional scholar-teachers and consists of a \$10,000 prize and membership in the Alison Society.

Director of the Infant Language Project, Golinkoff developed a method to assess language comprehension in babies who do not yet speak. Her Intermodal Preferential Looking Paradigm (IPLP) "tricks" babies to reveal their knowledge of language. Because of her research, it is now known that infants do not sit passively while words wash over them; instead they are actively analyzing what they hear and extracting language's rules and regularities.

Passionate about the importance of play in children's lives, Golinkoff argues that Americans underestimate the value of play and maintains that to ignore the role of playful learning in children's lives is to doom the next generation to follow orders rather than innovate, and to memorize rather than create.



Roberta Golinkoff, noted for her work with children and infants, is the 2011 recipient of the Francis Alison Award, the University's highest faculty honor.

Stoner receives national preservation award



Joyce Hill Stoner

A highly respected scholar, professor and conservator of paintings, Joyce Hill Stoner has treated major works of art in galleries and private collections across the United States. She also has been on the other side of the paintbrush. Her portrait

was painted by Andrew Wyeth.

In recognition of her "essential research" that "has fundamentally shaped" the field of conservation scholarship, Stoner, the Edward F. and Elizabeth Goodman Rosenberg Professor of Material Culture in UD's Department of Art Conservation, was bestowed the 2011 CAA-Heritage Preservation Joint Award for Distinction in Scholarship and Conservation. The College Art Association (CAA) is the national organization of art historians and artists, and Heritage Preservation is a national nonprofit dedicated to preserving the cultural heritage of the United States.

The author of more than 80 articles or book chapters, Stoner directs UD's Preservation Studies Doctoral Program, which embraces both historic preservation and the technical study of art and artifacts. In 2003, she received the Lifetime Achievement Award from the American Institute for Conservation.

Profs among most influential in corporate governance



Roger Coffin



Charles Elson

Charles Elson, Edgar S. Woolard Jr. Chair and Director of the John L. Weinberg Center for Corporate Governance, and associate director Roger Coffin have been named in the National Association of Corporate Directors (NACD) Directorship 100, a who's who of the most influential corporate governance professionals in the nation.

The Directorship 100 list recognizes individual corporate directors from such public companies as Microsoft, Coca-Cola, Dreamworks Animation, Procter and Gamble and Xerox for their boardroom influence and leadership.

"The Weinberg Center is playing an instrumental role in the critical policy issues affecting investor protection, shareholder rights and corporate conduct," said Coffin. "We are proud of the impact we have had on the national debate, and look forward to the future and the opportunity to work toward thoughtful reform in the governance arena."



James Jones

American Psychological Association honors Jones for outstanding contribution

James Jones, professor of psychology, was presented the American Psychological Association's Award for Outstanding Lifetime Contribution to Psychology for his "unparalleled career as a scientist, academic, author, administrator, thinker, innovator, and social justice advocate."

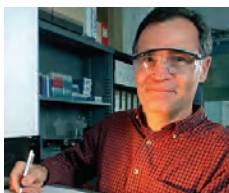
A leading scholar in the study of prejudice and racism, Jones has championed inclusion and diversity throughout his professional and personal life.

The APA's Minority Fellowship Program (MFP), which Jones directed for 30 years, is regarded as one of the most successful training programs for ethnic and racial minority researchers and service providers in the history of federally funded programs. The MFP Advisory Committee has recognized his enduring legacy with the naming of the "Minority Fellowship Program James Jones Lifetime Achievement Award."

Jones played a key role in transforming the APA's Office of Social and Ethical Responsibility for Psychology into the Public Interest Directorate, and served as the directorate's first executive director, as well as APA's Affirmative Action officer. He also served with distinction as president of the Society for the Psychological Study of Social Issues (SPSSI), and the Society of Experimental Social Psychology.

Fulbright awardees pursue global study

Three UD faculty won awards from the Fulbright Program, the flagship international exchange program sponsored by the U.S. State Department and designed to "increase mutual understanding between the people of the United States and the people of other countries."



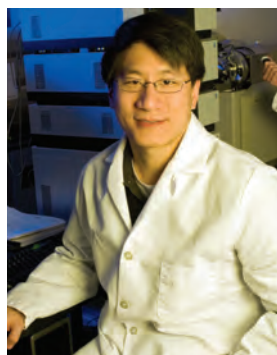
PATRICK GAFFNEY, professor of marine biosciences, contributed to field and seminar courses in marine biology at Victoria University of Wellington (VUW) in New Zealand this past spring. Now he is developing collaborative field courses with colleagues in VUW's School of Biological Sciences that will lead to new opportunities for UD students. A specialist in oyster genetics, Gaffney also worked with VUW shellfish biologists and aquaculturists on aspects of shellfish breeding and production.



JACK PULEO, associate professor of civil and environmental engineering, is concerned about rising sea levels. Experts estimate that global sea levels will rise nearly five feet in the next century, increasing shoreline erosion and costing the U.S. an estimated \$130 million annually on beach nourishment alone. This fall, at the University of Plymouth in the United Kingdom, Puleo is deploying sensors he developed to capture comprehensive data on sand transport for improving erosion models.



S. ISMAT SHAH, professor of materials science and engineering, is developing research collaborations at Baku State University (BSU) in the Republic of Azerbaijan. His research focuses on the synthesis and characterization of nanoscale materials, with a focus on energy applications. His expertise in thin-film photovoltaics, or solar cells made from plastics, is of special interest to scientists in BSU's Nano Center because solar power is an untapped resource in Eastern Europe, a region with abundant sunshine.



Lee elected AAAS Fellow

Kelvin Lee, Gore Professor of Chemical Engineering and director of the Delaware Biotechnology Institute at UD, has been elected a fellow of the American Association for the Advancement of Science (AAAS).

Lee was selected for "distinguished contributions to the development and application of proteomics technology to human health."

Kelvin Lee has been elected a fellow of the American Association for the Advancement of Science.

Lee and his team have been at the forefront of developing next-generation tools for protein expression profiling and applying existing tools to specific problems in biomolecular engineering and medicine, with a special emphasis on Alzheimer's disease. Their efforts recently have led to the first validated pre-mortem test for the diagnosis of Alzheimer's disease based on spinal fluid proteins.

"Using a proteomics approach to study changes in protein expression in cerebrospinal fluid, we identified a panel of biomarkers useful for the diagnosis of the disease in living individuals, a previously unmet challenge because a definitive diagnosis must await post-mortem confirmation," Lee said.

In close collaboration with clinicians, Lee's group has extended this approach to the assessment of a passive immunization strategy for the treatment of Alzheimer's disease which has shown significant promise in early clinical trials.

Five win national awards for early-career research



Maciek Antoniewicz



Sharon Rozovsky



Matthew Doty



Thomas Epps, III



Xinqiao Jia

NATIONAL SCIENCE FOUNDATION (NSF) EARLY CAREER DEVELOPMENT AWARDS

These prestigious National Science Foundation awards support research by rising academic leaders of the 21st century.

Using a novel measurement technique called tandem mass spectrometry, Maciek Antoniewicz, DuPont Young Professor in the Department of Chemical Engineering, aims to quantify the metabolic state of cells. By better understanding how cells communicate and respond to their environment, he ultimately hopes to engineer microbes that will help produce cheaper biofuels and develop improved drugs for treating diseases like diabetes and cancer. His grant award is for \$400,000.

Sharon Rozovsky, assistant professor in the Department of Chemistry and Biochemistry, is exploring proteins that contain selenium with her \$800,000 grant.

"When cells make energy — through normal living — they produce oxygen, and that can damage the cells," she said. As that damage accumulates over years, it can result in diseases such as cancer and Alzheimer's.

Selenium-containing proteins can help to both slow and prevent that damage, according to Rozovsky, with some acting like "police" to prevent the damage, and others acting like "reporters," transmitting the message to the cells that the level of reactive oxygen is too high.

DUPONT YOUNG PROFESSORS

Three UD assistant professors from the departments of Materials Science and Engineering and Chemical Engineering, were among 12 professors from universities in the United States and China to receive DuPont Young Professor grants, which provide \$75,000 in unrestricted start-up assistance.

Matthew Doty's focus is on understanding and controlling nanostructured materials at the quantum mechanical level for such applications as the design of coupled "quantum dot molecules" for next-generation information processing devices and nanostructured photovoltaics with optimized energy absorption and transport.

Thomas Epps' research focuses on surface and interfacial interactions in nanostructured polymeric systems. He wants to create conducting membranes for current and next-generation energy generation and storage devices, such as batteries, fuel cells and solar cells.

Xinqiao Jia's primary focus is the synthesis of functional biomaterials for drug delivery and tissue engineering applications. Her work on the development of elastin mimetic hybrid polymers for vocal fold repair and regeneration was highlighted in *Chemical and Engineering News* in September 2008.

2011 STUDENT HONORS

Highlighted are national and international student award winners from across UD. We salute their excellence!

Facial recognition research earns national honor

Previous studies have found that a person is more likely to recognize a photo of a face as familiar if that person belongs to the same racial group as the one in the picture. But now, a UD graduate student says other "same-group" characteristics influence recognition and can be just as important as racial identification.

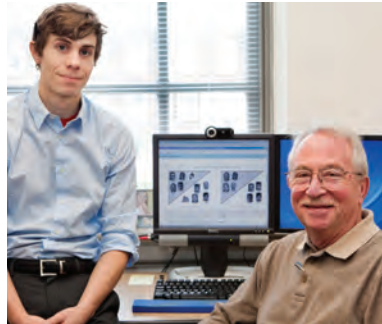
That finding earned Eric Hehman, a doctoral student in the Department of Psychology, the Psi Chi/American Psychological Association's Edwin B. Newman Graduate Research Award for his work exploring what characteristics of a person cause others to remember or forget having seen his face before. The research was published in the *Journal of Experimental Social Psychology*.

"We found that white students [participating in the research] recognized white faces better than they did black faces," Hehman said. "But when we identified the faces as either University of Delaware students or James Madison University students, the UD students recognized other UD students better than the JMU students, regardless of their race."

Previous such studies indicated that "you can't overcome the racial distinctions" that people make, Hehman said, but his research contradicts that.

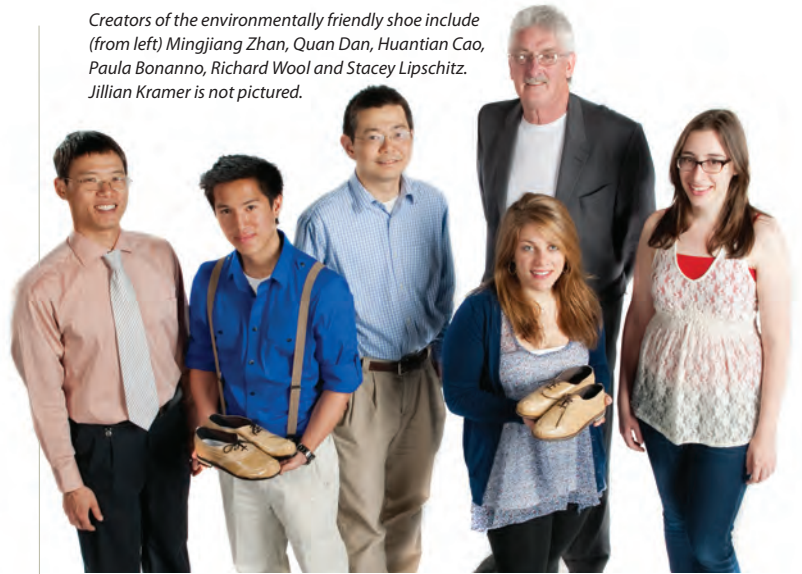
Hehman showed UD undergraduates 40 photos of faces — displayed eight at a time on a computer screen — and told them they'd be asked later if they recognized them. After a break, they were shown numerous faces one at a time and asked to identify each as one they had seen before or one that did not seem familiar.

When the photos were grouped by race, that characteristic played a significant role in recognition, but when they were grouped by university affiliation, that affiliation became key. Hehman said the psychological mechanism that causes differences in whether a face is recognized is unknown, but he suspects that people remember those who belong to their own group because those people seem more likely to affect or interact with them.



Doctoral student Eric Hehman, left, with his adviser, Samuel Gaertner, professor of psychology.

Creators of the environmentally friendly shoe include (from left) Mingjiang Zhan, Quan Dan, Huantian Cao, Paula Bonanno, Richard Wool and Stacey Lipschitz. Jillian Kramer is not pictured.



Eco-attire wins sustainability competition

Chicken feather fibers and soybean polymers lie at the heart and "sole" of the prototype eco-shoes developed by a UD undergraduate research team. The team's innovative eco-friendly clothing and footwear earned the 2011 Youth Council on Sustainable Science and Technology (YCOSST) P3 design award given by the American Institute of Chemical Engineers' (AIChE) Institute for Sustainability.

The team included Paula Bonanno, Jillian Kramer and Stacey Lipschitz from fashion and apparel studies — all University Honors Program students — and Quan Dan from chemical engineering.

Huantian Cao, associate professor in fashion and apparel studies, and Richard P. Wool, chemical engineering professor and director of the Affordable Composites from Renewable Sources (ACRES) program at UD, advised the group with help from chemical engineering graduate student Mingjiang Zhan.

While interdisciplinary work between chemical engineering and fashion might seem like a stretch, Wool said it is potentially the most beneficial ACRES collaboration to date.

"Using biobased foam in place of toxic polyurethanes could revolutionize the high-polluting leather industry. It could also lead to new multidisciplinary graduate degrees between chemical engineering and fashion," he said.

The project is funded by the U.S. Environmental Protection Agency's P3 program, a national student design competition for sustainability focusing on people, prosperity and the planet.



Detail from an untitled work by Dan Jackson.

MFA student awarded Joan Mitchell Foundation grant

Dan Jackson, who graduated this past May with a master of fine arts degree, was selected to receive a highly competitive annual grant from the Joan Mitchell Foundation.

From an invited nomination process of 125 nominees, only 15 graduating painters nationwide receive the MFA Grant.

"Not only is this a feather in the cap of the art department to have been invited to nominate someone, but it is a tremendous achievement for our student to win," says Joann Browning, associate dean for the arts.

The MFA Grant was established by the Joan Mitchell Foundation in 1997 "to help MFA painters and sculptors in

furthering their artistic careers and to aid in the transition from academic to professional studio work upon graduation."

The grants are given in recognition of artistic quality to artists chosen from a body of candidates put forth by nominators from the academic art community across the United States.

Four win Fulbright awards

Four UD students were selected to receive grants from the highly competitive Fulbright Program that will support their education at overseas institutions. They include graduate students Adrienne Harding in music, Devin Wardell in fashion and apparel studies, and Corinne Weidinger in art history, and undergraduate Kimberly Stevenson in biological sciences.

Stevenson will attend the University of St. Andrews in Scotland to pursue a master of research in medicine degree and to work with orthopedic surgeon James Robb and Prof. Peter Donnelly, studying hip dislocation prevention and treatment in children with cerebral palsy (CP).

"Having the rare chance to work with a renowned orthopedic surgeon on work so important to me is once-in-a-lifetime," said Stevenson, who will enter medical school at Georgetown University in 2012. A student in the University Honors Program, her undergraduate research at UD focused on orthopedic issues seen in children with CP. The work means so much to her, she said, because her younger sister has CP.

Harding, a supplemental faculty member who earned bachelor's and master's degrees in music as a flute performance major at UD, will continue her studies in Austria. In an interdisciplinary project combining her experience as a professional musician and her ballroom dance training, she will study the implications of 18th-century social dance as it pertains to musical pedagogy.

Wardell is pursuing the Department of Fashion and Apparel Studies' graduate certificate in Socially Responsible and Sustainable Apparel Business, which addresses labor and environmental problems in the global supply chains for the apparel, textile and footwear industries. She will travel to India to partner with a professor at the National Institute of Fashion Technology in New Delhi on research on handcraft development projects there, with special emphasis on handloom weaving.

Weidinger received a nine-month grant to conduct research in Belgium for her doctoral dissertation, "Labor, Technology and the Body: Representing Mine and Factory Work in Wallonia, 1880–1905." It examines works of art by Belgian artist Constantin Meunier and French painter Maximilien Luce depicting miners, factory workers and industrial landscapes in Wallonia, the southern, French-speaking region of Belgium.



Kimberly Stevenson

SMART Scholarships help launch careers

Three UD graduate students received the Science, Mathematics and Research for Transformation (SMART) Scholarship from the Department of Defense. It provides full tuition, a cash award and employment placement after graduation.

Growing up in Medellin, Colombia, Cristina Fernandez loved to collect rocks. The master's student in geological sciences is set to graduate in spring 2012 and then will begin work as a scientist with the Army Geospatial Center in Alexandria, Va. Joining the center's Hydrologic and Environmental Analysis branch, Fernandez will help supply water resource and geospatial information to the Army and Department of Defense.

The placement not only utilizes her geology skills, it also complements her six-year experience as a sergeant in the Army. Having been deployed to Kuwait in 2004–2005, she said she can identify with the troops she'll be supporting.

Matthew Puterio already has considerable experience working at his SMART placement facility, the Naval Undersea Warfare Center in Newport, R.I., first as a high schooler building a miniature submarine at the facility's summer camp, and then as a warfare center intern during winter and summer breaks since his freshman year. The computer engineering major from Kingston, R.I., said he hopes to get involved with software development as his career progresses.

Joseph Senne, a doctoral student in UD's Physical Ocean Science and Engineering Program, studies how water waves and bubbles on the ocean's surface affect sound waves moving through the sub-surface. The Mobile, Ala., native works at the Ocean Acoustics Laboratory, where understanding the physics of acoustics and surface water-wave interactions is leading to improved underwater communication systems for unmanned research vehicles. After graduating in January 2012, he will head to the Naval Oceanographic Office at Stennis Space Center in south Mississippi.



Cristina Fernandez



Matthew Puterio



Joseph Senne

Goldwater Scholars set high goals

Timothy Edward Kilpatrick and Joey D. Kim won prestigious Goldwater scholarships to support their studies in biochemistry and chemical engineering, respectively.

The scholarship program, honoring the late U.S. Sen. Barry Goldwater from Arizona, encourages outstanding students to pursue careers in math, the natural sciences and engineering. It covers the cost of tuition, fees, books, and room and board up to \$7,500 per year.

A student in the University Honors Program, Kilpatrick, from Nashua, N.H., learned of his recognition as a Goldwater Scholar during spring break while preparing buffer solutions in a Drake Hall lab. "My reaction was one of somber gratitude and joy, which may have included a small dance," he said.

Receiving the scholarship, he said, has "encouraged me to remain focused and to continue through the challenges of my education."

Kilpatrick's professional goal is to conduct research and teach at an academic medical center. His research interest is in analyzing signaling pathways of the immune system, which he said "has many applications, including vaccine development and the treatment of autoimmune diseases."

When he received the email notifying him of his selection for the scholarship, Kim said he "was struck with such an indescribable and incomprehensible emotion that I didn't know what else to do other than get on my knees and begin worshipping God with all that I am."

To Kim, who is from Irvine, Calif., being named a Goldwater Scholar "is a representation of the first major step toward achieving my career goals." He plans to earn a doctorate in renewable energy and become a research professor at a university "to have direct impact on both the future generation of engineers and the world of science."

From left, Goldwater Scholars
Timothy Kilpatrick and Joey Kim.



TEST YOUR KNOWLEDGE

Mineral Match-Up

UD's Mineralogical Museum, located in Penny Hall, is a real gem. It has a nationally known mineral collection. Exhibits change often, as only a small portion of the sizable collection can be displayed at a time. Admission is free. Hours: Wed.-Sun., noon to 5 p.m.; Thurs., noon to 8 p.m. Visit www.udel.edu/museums to learn more.



Can you identify these natural sparklers?



1

TOURMALINE Number

Tourmaline comes in a variety of colors, with pink especially prized. California's Himalaya Mine was the source for the pink stone in the early 1900's. The last empress of China bought almost a ton of it to make toggle-like buttons, snuff boxes and more. She was even buried with a carved pillow made from this gem.



2

RHODOCROSITE Number

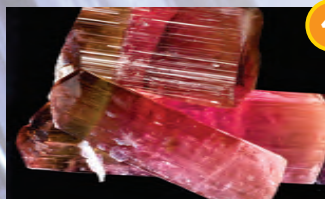
First found in the silver mines of Romania, rhodocrosite is a very soft, banded stone that is used to make inexpensive stainless steel and aluminum alloys, as well as jewelry. Colorado's Sweet Home Mine produced many fabulous specimens.



3

SILLIMANITE Number

The state mineral of Delaware, it is used in the glass industry. It is named after Benjamin Silliman (1779-1864), a professor at Yale who was the first to distill petroleum.



4

MALACHITE Number

This mineral is often formed from the weathering of copper ore. A gift from Czar Nicholas, the giant tazza, a saucer mounted on a footed base in the Linda Hall Library in Kansas City, Mo., is one of the largest pieces of malachite in North America.



5

AMETHYST Number

The ancient Greeks and Romans put a piece of this stone at the bottom of their wine goblets when drinking to protect from getting drunk. Medieval soldiers wore it as an amulet for protection in battle. Crystals of it have been found across the U.S. East Coast.



Check out the answers!

- 1 — RHODOCROSITE
- 2 — AMETHYST
- 3 — MALACHITE
- 4 — TOURMALINE
- 5 — SILLIMANITE

