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The humor pioneer
Exploring Mark Twain’s comic brand and its legacy in contemporary American humor
Essential creative expression

The remarkable talent of our faculty and students in the creative and performing arts is part of what makes Ohio University a great institution.

While the productivity of universities often is gauged by grant dollars for scientific research or royalties for patented technologies, such measures tend to ignore the university's mission to advance culture through the arts and related endeavors.

Creative activity has a long tradition at Ohio University, and the balance between its efforts in the arts and other disciplines sets us apart from many of our peers. This tradition was on display in 2012 as the College of Fine Arts celebrated its 75th anniversary. Creative expression that speaks to the human condition is integral to other parts of the university as well, with examples found in the creative writing program in the Department of English, and in the intersection of media and culture embedded in the Scripps College of Communication. The role of communication as a creative activity was manifest in one of the first doctoral programs at Ohio University, called Public Address, established in the College of Fine Arts in 1957. (That program was the forerunner of our current doctoral programs in the School of Communication Studies and School of Interdisciplinary Arts.)

While the growth of the university through the latter half of the 20th century resulted in a proliferation of new departments, schools, and colleges, the future of creative activity and other sectors at the university increasingly looks to transcend organizational boundaries and explore fertile intellectual territory at the intersections of traditional disciplines. The College of Fine Arts’ School of Interdisciplinary Arts is based on this premise, and the Schools of Dance, Film, and Theater are planning a merger in 2013 that will move interdisciplinarity in the creative arts to a new level at Ohio University. The Scripps College is likewise looking to an increasingly interdisciplinary future as faculty and students of its constituent schools move into space under a common roof in the Schoonover Center beginning this fall, occupying the site of the former Baker Center.

Ohio University's outstanding programs in the creative arts continue to draw students and visitors in large numbers who understand the importance of this medium for discovering meaning in the human experience. The resulting community has made Athens an arts destination in Ohio, and part of what defines the university's distinctive sense of place. In parallel with our efforts to advance the university's endeavors in science, technology, letters, and social inquiry, we like to highlight in Perspectives the remarkable achievements of our faculty and students in the arts and creative disciplines.
in his famous “Checkers” speech, Richard Nixon—then a senator from California and Dwight Eisenhower’s troubled running mate in the 1952 presidential election—downplayed his connection to a cabal of extremely wealthy donors. He portrayed himself as a middle-class guy whose wife wore “a respectable Republican cloth coat” and whose primary gift from his supporters was a cocker spaniel puppy named Checkers.

Although the speech is remembered today as a maudlin appeal to popular sensibilities, Nixon’s gambit worked spectacularly well at the time. The largest television viewing audience to date responded with a torrent of letters and telegrams to the GOP urging the party to keep Nixon on the presidential ticket. The “Checkers” speech also had a lasting political impact, argues historian Kevin Mattson in his new book Just Plain Dick (Bloomsbury USA). Mattson, Connor Study Professor of Contemporary History, says it set the stage for decades of conservative rhetoric critical of elites, even though conservative candidates often come from or are largely backed by the wealthy and well-connected.

Although politicians have long sought to make themselves “relatable,” Mattson says, Nixon realized television’s potential as a powerful image-creating tool. Ironically, Nixon was famously uncomfortable with people and not particularly likable. Yet he used television to his advantage, designing a set as an intimate living room to make it seem as if he were speaking from his own home. And viewers of the time, unused to or unaware of the ploy, ate it up.

“(Today) we live in an ironic age, with the notion that everything is staged,” Mattson says. “People then didn’t think about how you can stage authenticity.”

The technique worked: “People felt that Nixon reached their hearts,” Mattson notes. Few complained that Nixon didn’t address the underlying issue: the influence of money on campaigns and, by extension, policy. Nor did they consider the irony of a well-known conservative portraying himself as a man of the people.

“The original populist People’s Party hated railroads, bankers, and big business,” Mattson says. What Nixon did so astonishingly was to echo that distrust of elites, even as he was taking their money. Who could fault a man who praised the virtues of cloth coats and the love of dogs?

To this day, the ability of television to elevate image over issues is a huge factor in politics, Mattson says. “I don’t think politics is about having a rational debate,” he says. “We need to be aware that our politics operates on an emotional basis.”

He points to George W. Bush as an example. A scion of wealth—his great-grandfather was a rail tycoon tied to the Rockefellers and Harrimans—“W” was famously embraced by the public as an ordinary Joe they’d like to drink a beer with. Bush reinforced that image with frequent photos of himself clearing brush at his Texas ranch.

Mattson, for one, would like to see more honesty in politics. “You can talk in a way that you connect with people, explain policy without talking down to people,” he says. “You can push back (against opposition) without denigrating what brought you to enter public life in the first place.”
In sync

Mathematicians solve a biology problem. How do yeast cells communicate?

Although yeast may call to mind rising bread and brewing beer, these microorganisms have played a much different role in the world of science and technology. Researchers first mapped the DNA of yeast before moving on to bigger life forms, and also have used it to understand issues in cell biology—such as the spread of cancer. Engineers rely on yeast to produce biofuels for energy.

The researchers who cultivate large populations of yeast in bioreactors have noticed an interesting phenomenon: The microorganisms start, stop, and change levels of their consumption of oxygen en masse.

“You have a huge tank of these cells doing this. How do they coordinate this activity? How do they know it’s time to process oxygen?” asks researcher Todd Young.

Young, a professor of mathematics at Ohio University, thought he could help seek an answer. He’s an expert in dynamical systems—in other words, he knows how to use math to describe how systems change over time.

Working with a team of Ohio University undergraduate and graduate math students, Young developed a mathematical model that suggested how these changes, or oscillations, in yeast activity occur. They theorized that negative feedback caused by chemicals produced in the process of growth and division prompts groups of cells to grow in sync, while inhibiting other groups.

Collaborator Erik Boczko, a biologist and mathematician at Vanderbilt University Medical Center, tested and confirmed the model in his lab. He looked for where the oscillations occurred in the yeast cell life cycle. He observed that during one phase, about half of the cells grew and divided, while the other cells were inhibited. Then, in the next phase, the first half were inhibited while the second half divided.

There could be an evolutionary benefit to the process, Young notes, as it could help the yeast cells regulate resources while they go through the important DNA transcription process that ensures proper growth and survival. (Young clarifies that the study did not conclude this, but it’s one possibility.)

The researchers were supported by a joint award from the National Institutes of Health and National Science Foundation, which funded the project for four years. They published their findings in the *Journal of Theoretical Biology*.

Understanding how the yeast move through these oscillations could help scientists who rely on the microorganisms for genetic research, Young explains. In addition, it could help engineers use yeast more efficiently.
If you’ve ever wondered if dwelling on negative events in your life could be bad for your physical health as well as your mental health, an Ohio University study provides new food for thought.

Researchers discovered that when study participants were asked to ruminate on a stressful incident, their levels of C-reactive protein, a marker of tissue inflammation, rose. The study is the first to directly measure this effect in the body.

“Much of the past work has looked at this in non-experimental designs. Researchers have asked people to report their tendency to ruminate, and then looked to see if it connected to physiological issues. It’s been correlational for the most part,” says Peggy Zoccola, an assistant professor of psychology at Ohio University who led the study.

The research team recruited 34 healthy young women to participate in the project. Each woman was asked to give a speech about her candidacy for a job to two interviewers in white laboratory coats, who listened with stone-faced expressions, Zoccola explains.

Half of the group was asked to contemplate their performance in the public speaking task, while the other half was asked to think about neutral images and activities, such as sailing ships or grocery store trips. The researchers drew blood samples that showed that the levels of C-reactive protein were significantly higher in the subjects who were asked to dwell on the speech, reports Zoccola, whose research was funded by the Ohio University Research Committee.

For these participants, the levels of the inflammatory marker continued to rise for at least one hour after the speech. During the same time period, the marker returned to starting levels in the subjects who had been asked to focus on other thoughts.

The C-reactive protein is primarily produced by the liver as part of the immune system’s initial inflammatory response. It rises in response to traumas, injuries, or infections in the body, Zoccola explains.

C-reactive protein is widely used as a clinical marker to determine if a patient has an infection, but also if he or she may be at risk for disease later in life.

“More and more, chronic inflammation is being associated with various disorders and conditions,” Zoccola says. "The immune system plays an important role in various cardiovascular disorders such as heart disease, as well as cancer, dementia, and autoimmune diseases."
Game changer

Can video games help players score a daily dose of exercise?

Video games aren’t known for their health benefits, as most require the user to be seated for play. But a new study by Cheryl Howe, assistant professor in exercise physiology, may change that perception.

Howe recruited 56 participants to play four games on the X-Box Kinect system, which forces users to actively move during play. Study subjects were allowed to choose their opponents.

“You’re going to choose someone you want to compete against. If I chose a stranger, I wouldn’t necessarily play at the right intensity,” says Howe, who adds that she heightened the competition by offering prizes.

Although the results are still in the preliminary stages, Howe says that the active games, when played with high intensity and for 20 to 30 minutes at a time, were comparable with other physical activities such as team sports or running. The research team presented findings at the Midwest Chapter Annual Meeting of the American College of Sports Medicine.

Study participants wore an Oxycron Mobile system, a portable metabolic unit, which measured how fast they breathed and how much energy they expended during exercise. To evaluate participant efforts, Howe expressed energy expenditure as a metabolic equivalent (MET). Two METs is standing and walking, three METs is moderate intensity, and anything above six METs qualifies as vigorous intensity.

Anything higher than three METs counts toward the daily recommended dose of activity, which for adults is 30 minutes per day, three to five times per week.

The most intense game was Zumba, clocking in at almost eight METs for the most vigorous players. Also above six METs: Kinect Adventures and Dance Central 2.

“Some of the main reasons kids don’t get enough exercise is that it’s not safe to go outside, but all this can be done in their living room.”

—CHERYL HOWE, assistant professor of exercise physiology
A dense metropolitan area is probably the last place anyone would expect to find an 18th century African burial ground. When the General Services Administration purchased land in lower Manhattan to build an office building in the early 1990s, an archeological survey revealed a 7-acre cemetery. The construction project went on as planned, however. "There was this huge controversy about spiritual space versus secular space. And this amazing African-American history that gave a direct tie to Africa," says Andrea Frohne, an associate professor of African art history at Ohio University.

The cemetery was used from 1712 to 1795 and contains the remains of about 15,000 African and African-American individuals. The historical documents recovered, as well as research performed on some of the bodies examined after the excavation, paint a graphic depiction of slavery in the United States, she says.

Minutes in New York City documents state that burials could not be performed at night, and there was also a law stating that no more than 12 people could be present at an African burial. "That makes me think that these funerals would have become pretty large gatherings and made Euro-Americans nervous in terms of engaging indigenous cultural traditions," Frohne says.

There were no headstones on any of the graves, and almost all of the bodies were buried with their heads pointing toward the west. Due to the intense physical labor that many slaves endured, there was evident wear and tear on the bodies. Researchers found early signs of arthritis, malnutrition, abscessed teeth, and bones in children's necks that hadn't fused properly because they were carrying heavy loads on their heads at such a young age.

At a ceremony in October 2003, the excavated bodies were reburied. Artworks have been installed inside and outside of the building throughout the last 20 years to commemorate the site, which has been declared a national monument.

Frohne, who is working on a book on the topic, says a variety of opinions exist about how the government handled the site and its restoration. She hopes that her work can serve as a fundamental resource for the African burial ground, as well as an exploration of space, spirituality, and memory at the site.

"Telling this story will help to prompt a rewriting of history to include the pervasiveness of slavery in the northern United States and to acknowledge that it was largely enslaved people who first built what has today become New York City," she says. "The burial ground is therefore significant not only as an African diaspora, but is also a vital part of American history."
A

n Ohio University engineer is developing a new technology to clean the wastewater that results from hydraulic fracturing (or “fracking”) on site.

With more than $2 million in support from nonprofit corporation The Research Partnership to Secure Energy for America, the Ohio Third Frontier initiative, and the university’s Russ College of Engineering and Technology and Technology Transfer Office, Jason Trembly and partners plan to design, demonstrate, and commercialize an innovative water management process.

“(The technology) eliminates the extra cost for transporting the water—and also eliminates the need for disposal sites, which addresses concerns about wastewater wells,” says Trembly, an assistant professor of mechanical engineering and associate director of the university’s Ohio Coal Research Center.

The process uses technologies similar to those deployed at power plants and in refining industries. In the first portion of the process, ultraviolet light and water softening technologies used in municipal wastewater treatment remediate bacteria in the water and remove hard water ions. Then, via a pump, high-pressure wastewater is treated in a reactor powered by gas from the well.

This process transforms the water into a supercritical state, where at very high pressures and at a very high temperature, the water takes on properties of both a liquid and a gas. The contaminants—salt and hydrocarbons—either precipitate out as solids or gasify into hydrogen, leaving only clean water. The salt can then be used for a variety of applications such as road de-icing, and the hydrogen is returned to the process to heat the reactor.

“This is very impressive technology that could mean almost all of that water could be reused instead of hauled to a site for deep geological injection,” says David Bayless, Ohio University Loehr Professor of mechanical engineering.

Over the next 24 months, Trembly will work with partners Hess Corporation, Aquionics, Parker Hannifin, and the Ohio Gas Association to construct and operate a fully integrated prototype capable of treating a barrel per day of water. Data will be used to develop a detailed design for a commercial-scale unit and to further demonstrate the advantages of the process.

The project is one of several new initiatives in the Russ College that explore the effects of horizontal drilling and hydraulic fracturing.

“(The technology) eliminates the extra cost for transporting the water—and also eliminates the need for disposal sites, which addresses concerns about wastewater wells.”

JASON TREMBLY, assistant professor of mechanical engineering

(Clean Solution) Can a new technology treat fracking wastewater on site?

(Above) Richard Tumbleson, a sophomore chemical and biomolecular engineering major, analyses a flowback water sample in the lab.
In the late 1990s, an all-male committee of the Pennsylvania state senate was deciding which benefits to mandate in health insurance coverage sold in the state. On the advice of Democrat Allyson Schwartz, the chairman included annual gynecological exams for women. Later, though, Schwartz heard that the proposed coverage had been changed to just Pap smears—meaning poor women would still have to pay for the office visit and any other medically necessary procedures.

“The Republican male chairman didn’t know what happens in a yearly gynecological exam,” says Poggione. Once Schwartz explained, the language was changed back.

Educating male colleagues on the finer points of women’s health care is just one effect women have on policy, says Poggione, associate professor of political science. She specializes in gender issues in politics, particularly at the state level.

For example, she has found that the old saw about women being more liberal than men is actually true—at least where welfare reform was concerned.

“Even after I accounted for ideology, party, district demographics, and personal characteristics, gender still had an effect,” she says. “Women held more liberal preferences even than men in the same party.”

It’s not that women are touchy-feely, big-hearted softies, Poggione says. Even in these more liberated times, women are still more likely to be primary caregivers to children and the elderly, and those experiences give them real-world perspectives on issues such as health care and education.

As a result, women were more likely to consider exemptions to work requirements for those caring for young children, for example, or health care coverage for children. For Democrats, it’s a matter of social responsibility; for Republicans, it’s a pragmatic solution to a real problem. But either way, “there was a greater willingness among women to think of exemptions,” Poggione says.

“That's where you see an effect on policy—on the ground,” she says.

Women’s roles as caregivers also affect their credibility as politicians, Poggione says. Where it once was considered a liability, being a woman increasingly is an asset.

“Gender signals competency on certain issues, such as education,” she says. Women aren’t automatically viewed as competent on the economy or security, but focusing on those issues gives them credibility without diminishing their assumed credibility in education and health care. “It appears that when men do the opposite, they do get hurt,” Poggione says.

That may have been the case in the 2012 election cycle, widely viewed as a triumph for women. Men who held controversial views on issues such as abortion and rape lost their races; both the U.S. House and Senate saw record numbers of women elected. New Hampshire tapped the nation’s first all-female Congressional delegation (as well as a female governor).

New Hampshire is an example of another of Poggione’s interests: how context affects gender differences in politics. In the case of the Granite State, she says, women benefit from a political culture that emphasizes public service as a public good, as well as its tradition of door-to-door campaigning. However, Poggione warns, women are neither a bloc nor selfless.

“Women aren't monolithic,” Poggione says. “The institution you're in and your constituency will really influence what you're going to do. And women are just as strategic as men in wanting to get re-elected and to work their way up in the party.”
an invisible DISEASE

SCIENTISTS SEEK ANSWERS ABOUT MAL DE DEBARQUEMENT SYNDROME, A RARE CONDITION THAT EVOKES A CONSTANT FEELING OF MOTION

by PHILIP BARNES
Arianne Daume will never forget what happened on February 28, 2010. Immediately after stepping off a week-long Caribbean cruise, her head was spinning—and it hasn’t stopped since.

Daume has Mal de Debarquement syndrome (MdDS), a rare condition involving a constant feeling of motion. Even when standing still or simply sitting on the couch, Daume feels as though she is bobbing up and down on a raft.

No one is sure what triggers MdDS. No one knows if there are any truly effective treatments. It remains an invisible disease, often mistaken for vertigo or other inner ear disorders. On average, it takes an MdDS patient a staggering 20 visits to a health care provider for a proper diagnosis.

Brian Clark, a physiology professor in Ohio University’s Heritage College of Osteopathic Medicine, aims to cut that number down to one. Two years ago, he received an e-mail from an Ohio University alumna with MdDS. She asked if there were any clinical trials, immediately prompting Clark to dig up anything he could find online.

“I joke that I became an MdDS expert in one day. There was virtually nothing written about it at the time except for a handful of case studies and brief reports,” says Clark, the director of the university’s Ohio Musculoskeletal and Neurological Institute (OMNI). While a few researchers at institutions such as Northwestern University and UCLA have taken a look at the rare condition—which has received some national media attention in The New York Times, Los Angeles Times, and other publications—the lack of more detailed information piqued Clark’s interest.

After surveying 101 patients from across the United States, Clark and colleagues published a study in the Journal of Neurology detailing the economic and social impact of “persistent” MdDS, when symptoms last longer than one year. The research revealed that the average annual cost of treating each individual with the syndrome is $11,400 to $13,500, comparable to or higher than such expenses for Parkinson’s disease.

High treatment costs coupled with inexorable symptoms also took a toll on the participants’ average quality of life score, which measured 59 out of 100, about the same as patients with multiple sclerosis.

“There are huge economic and personal impacts that come with having MdDS,” Clark says. “These people are not commonly eligible for insurance reimbursement or disability because, as it stands, it is not diagnosable.”

For Daume, MdDS symptoms have turned each day into a battle. Her migraines last for days at a time, and when trying to fall asleep, she feels as though she is about to “roll into the ocean.”

Like other MdDS patients, Daume has found her own unique coping methods—that is, a Botox injection every two months to help with headaches and is prescribed antidepressants and clonopin to deal with daily feelings of seasickness and “brain fog.” However, her most vital lifeline doesn’t come wrapped up in a pill.

“If mommy is sick, my two boys know to go to the neighbor’s to play quietly. If I’m crossing a bridge over water, they come back and hold my hand to help me cross. I get sick at the sight of moving water,” says Daume. “My husband understands that I am unable to work—it is a struggle for me to even clean the house. I am blessed to have such great support from my family.”

Interestingly, not all MdDS patients seem to have the same symptom triggers. Janis Kahle, who has spent 10 “long” years with MdDS, feels perfectly fine while driving in a car. (That’s a common sign of MdDS, Clark notes.) Yet, she has to wear earplugs in loud places and can’t be around groups of people for very long—their movement sends her into a fit of lightheadedness and nausea. She too is prescribed antidepressants and “tranquilizers” (as she calls them), and she too is lucky to have a solid network of support. But in spite of all of this, Kahle can’t shake her symptoms.

“MdDS totally changes your life,” Kahle says. “It is like you are in a head-on collision, like you are a whole new person in the same body. I want my old life back!”

To address the root cause of physical impairments such as these, Clark and colleagues at Ohio University and Ohio State University conducted a clinical study. Since MdDS occurs mainly in women (the reason for this is unknown), the researchers ran 20 control female patients, 10 with MdDS and 10 control patients, through a series of three assessment tests: balance, psychological, and neurophysiological.

Compared to the control group, MdDS patients were much less stable when standing on a platform with one foot in front of the other. Psychological surveys revealed greater fears of movement and feelings of fatigue in participants with MdDS. For the neurophysiological portion, Clark and his team used transcranial magnetic stimulation to stimulate the primary motor cortex, the muscle-controlling area of the brain, in order to assess differences in excitability. This technique is an innovative, non-invasive, painless method that permits scientists to induce an electrical current into the brain.

“It’s like measuring someone’s response if you were to startle them,” says Clark, whose team published the study findings in the Journal of Clinical Neuroscience. “But we didn’t find anything different happening in the motor cortex, although we did observe differences in pathways more localized to subcortical and spinal regions, so we’re thinking it must be somewhere deeper in the nervous system.”

Last summer Clark received grant funding from the MdDS Foundation for a second, more sophisticated series of tests. This time around, the balance assessment will attempt to determine the changes in balance when the visual and vestibular systems are also experimentally manipulated. Additionally, researchers will examine the effects of MdDS on other changes in the brain, including the visual cortex. Clark hopes this work will better pinpoint the specific area affected by MdDS.

“After these studies, more questions are left unanswered than answered,” he says, “but it’s the first step—and ultimately, it is what you want.” —

Brian Clark
Professor of Physiology

“Illustration: Alix Northrup; Portrait, John Sattler

“After these studies, more questions are left unanswered than answered, but it’s the first step—and ultimately, it is what you want.”

Brian Clark
Professor of Physiology
a career FIGHTING cancer

by CORINNE COLBERT

MONICA BURDICK AND COLLEAGUES EXAMINE HOW AND WHY CANCER SPREADS, SEEKING WAYS TO IMPROVE DIAGNOSIS AND TREATMENT
Anyone who has watched a loved one suffer from cancer develops a visceral hatred of the disease. Unfortunately, few can do much about it beyond giving to charities.

Monica Burdick is one of the few. Having lost two uncles and an aunt to cancer, the assistant professor of chemical and biomolecular engineering has made fighting cancer her life’s work.

And she’s not alone in taking her work personally. “When I talk to my students in the lab, they tell me personal stories about why this research is important to them, why it’s important for them to be a part of it,” she says.

She’s a serious scientist, but for Burdick, personal passion is just as important as professional detachment.

“I feel a connection to my research,” she says. “It’s part of why I do what I do. As an engineer, I find it satisfying to be able to make a product that has the potential to change how we think about cancer.”

**Making a Difference**

Since arriving at Ohio University in 2007 after a postdoctoral fellowship at Harvard Medical School, Burdick has been busy doing just that. Much of her work has focused on metastatic cancer—how and why cancer spreads from the original tumor to new places in the body.

“Monica’s work has been instrumental in identifying how cancer cells attach to the surface of blood vessels, a key step in cancer metastasis, and also in developing biological tools to help unravel the mysteries of cancer immune-evasion and progression,” says Steven Barthel of Brigham and Women’s Hospital at Harvard Medical School.

More recently, though, Burdick has turned her attention to cancer stem cells. While little is known about cancer stem cells—which are found in tumors, can self-renew, and spur additional tumor formation—Burdick says they resist traditional radiation and chemotherapy. They may lie dormant in the patient’s body and, when conditions are right, strike back even stronger than before.

Figuring out what makes stem cells tick is the focus of a nearly $500,000 grant Burdick received in 2011 from the National Science Foundation. Working with David Tees, associate professor of physics, and Fabian Benencia, a faculty member with joint appointments in the Russ College of Engineering and Technology and the Ohio University Heritage College of Osteopathic Medicine, Burdick is using a method called micropipette aspiration, together with biochemical assays, to see if they can distinguish cancer stem cells from regular cancer cells.

“There may be a special marker or signature that would let us better identify stem cells, which would help us diagnose or treat patients better, or potentially get rid of their cancers,” she says.

Cancer stem cell research is so new that anything the team finds will be a significant contribution to the field, she says.

At the same time, Burdick is heading another project, backed by $442,500 from the National Cancer Institute (an institute within the National Institute of Health), to try out a new way to analyze cancer tissue that may yield more than just a yes/no diagnosis. This team includes Doug Goetz, professor of chemical and biomolecular engineering, and Ramiro Malgor, an associate professor of pathology in the Heritage College of Osteopathic Medicine. The team has applied for a patent on its technique, so Burdick can’t get too specific about how it works. But she will drop a hint: It involves cancer in situ (where the tumor is).

“Where we are looking is as important as when we are looking,” she says. “If we can figure out some of these progressions, we can help figure out the disease.”

**Strength in Numbers**

Notice something interesting about those teams? A chemical engineer, a physicist, an immunologist, a biomolecular engineer, and a pathologist. In cancer research, interdisciplinary is the way to go, Burdick says. A complicated disease requires a complex approach.

“Cancer doesn’t break down into just physics or just chemistry or just engineering or just biology,” she notes. “It has a little bit of all those things. It’s not just one disease.”

Each member of the team brings a fresh approach to the investigation that the others might not have considered. “We each have different ways of looking at the problem; every day we learn something new,” she says.

It’s an important lesson for the many students involved in the team’s lab work. Multidisciplinary teams must be able to communicate and respect other points of view, she says.

Undergraduate students play a significant role in the research, and even have achieved co-author status on scientific papers coming out of the lab, Burdick adds.

“The work we’re doing wouldn’t be possible without dedicated, bright undergrads to support it,” she says. “We’re able to do more things and better things because of them. They’re doing work that grad students and postdocs get to do.”

And because all of these minds are in one place, the work can progress much faster than it would if such collaboration were taking place long distance.

“There aren’t a lot of people with the collective experience we have at a single institution,” she says. “It seems like we’re making leaps instead of incremental advances.”

Indeed, after just one year of work, the projects are already yielding findings worthy of publication. Burdick, Goetz, Tees, Benencia, and several student researchers collaborated on a paper for a special issue of *Frontiers in Oncology* edited by Michael King, professor of biomedical engineering at Cornell University.

“Monica and her colleagues contributed a provocative article to the journal presenting some new ideas on how the expression of cancer adhesion molecules may be related to fundamental changes that occur in cancer stem cells,” King says. “This is an exciting area of cancer research.”

Understanding these basic mechanisms of cancer growth can help Burdick and colleagues develop a new method of improving detection and treatment of cancer. To achieve this, they’ll spend the next few years putting their micropipette aspiration assay and their in situ assay through rigorous tests to determine how they can move from the lab to the clinical setting.

“If our test can predict cancer sooner or detect more aggressive forms of cancer, then we would definitely be on our way to put the test or device into practice,” she says, “and that’s what we’d like to see.”

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“I feel a connection to my research. It’s part of why I do what I do. As an engineer, I find it satisfying to be able to make a product that has the potential to change how we think about cancer.”

**Monica Burdick**

Assistant professor of chemical and biomolecular engineering

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*IMAGES: OPPOSITE PAGE, CHRISTINA ULLMAN; PORTRAIT, BEN SIEGEL*
by Corinne Colbert

Behind the online scenes

Sociologists explore the complex relationships we form in cyberspace.
When one thinks “social network,” it’s easy to envision Facebook posts or LinkedIn connections. When Ted Welser thinks “social network,” he sees the Industrial Revolution.

Welser, an assistant professor of sociology, specializes in studying how people represent themselves and relate to others on the internet. He compares today’s social media environment to the beginnings of sociology as an academic discipline.

“Sociology was born from the transition from rural areas to the metropolis,” he says. Early sociologists were interested in how that move would change people’s roles, particularly in the workplace.

Roles are changing again today, Welser says, as we create increasingly complex relationships in cyberspace. Six years after earning his doctorate in sociology at the University of Washington, Welser has created a significant body of research, particularly about the kinds of roles people play in collaborative online spaces.

“Ted has done some of the early, foundational work in understanding how online communities and social media operate in a modern context,” says Cliff Lampe, assistant professor in the School of Information at the University of Michigan. “This work has tremendous scholarly and practical importance, as these principles affect how we understand the ways in which different people use social media in a variety of ways.”

ALL THE (ONLINE) WORLD’S A STAGE

On the bulletin board across from Welser’s office in Bentley Annex is a huge poster bearing three network graphs; they look like varying formations of a child’s pick-up sticks. Each image is a visual representation of interactions on Usenet, an online forum popular in the 1990s. Like a bulletin board, Usenet allowed anyone to post a thought or a question for others to reply to with comments or answers.

Welser points to one image with hundreds of lines radiating out from a central point. “All this (type of) person did was answer people’s questions,” Welser says.

Answer People rarely posted questions or comments of their own, so all of their interactions were outward—hence the central point (the Answer Person) and the spikes (the people posting questions).

Answerers could have any of several motivations: a desire to show off to the less experienced, a sincere wish to help, or the hope of being recognized as an expert by others. Whatever the motivation, the Answerer represents a specific role that applies in multiple collaborative forums, Welser has found.

Welser did the research behind the poster as a doctoral student, while interning with a Microsoft Research group led by Marc Smith, then the software giant’s in-house sociologist. Smith’s work at Microsoft led to the creation of NodeXL, an open-source tool for mapping social networks, and pioneered technologies that now appear in apps for Apple, Facebook, and Google. Welser was intrigued by Smith’s application of sociology to technology—so much so that he has dedicated his professional career to it.

Since publishing the results of their first Usenet study in 2005, Welser and Smith have collaborated on more than two dozen projects, including journal articles, conference presentations, and book chapters. Smith, now the head of the Social Media Research Foundation, says his protégé has made him proud.

“Ted has been a pioneer in applying social science, social network analysis, and social media to address questions about how groups succeed or fail to generate collective goods and outcomes they desire,” Smith says.

SIX DEGREES OF TES WELSER

To Welser and his colleagues, online social networks aren’t just places to post pictures of your kids, your cat, or your dinner. “The Internet is not a sad—it’s a social space,” he says.

And it’s as legitimate a space as a bar or an office, he says. Rather than killing personal interaction, Welser says online social networks are building a digital metropolis where we can forge relationships based on common interests. Far from being superficial, these relationships can be just as strong and meaningful as those in the real world.

“Even if it’s just an emoticon (in an e-mail), we still feel real emotions,” he says. “In some ways, it’s a really wonderful thing.”

Everyone who has a social media presence has a web of connections—immediate and extended family, high school and college friends, co-workers and professional colleagues. Some of them may be people you wouldn’t stay in touch with without e-mail or Facebook. Some of them may be people you met through a common social media connection, linked only by a shared interest in cake decorating or pugs.

That’s one of social networks’ greatest powers: the ability to facilitate relationships in circumstances that might not be palatable or possible in the real world.

“In online social networks, we can have relationships with people who we wouldn’t have relationships with if we were restricted to using the phone or talking face to face,” Welser says. “At the same time, it brings us into contact with people we wouldn’t otherwise meet. We can transcend the accident of geography.”

STOP, COLLABORATE, AND LISTEN

So what happens when those diverse populations meet—say on a newsgroup? Just as happens in a classroom, an office or a sports team, people online fall into particular roles in their interactions. On Usenet, those were Answer People, Questioners, Trolls (troublemakers), Spammers, Flame Warriors (the argumentative), and Conversationalsists (social butterflies).

On Wikipedia, they are Substantive Experts, Technical Editors, Social Networkers, and Counter Vandalism. All are defined by what they do in the collaborative space.

The Industrial Revolution saw a “de-skilling” of labor, as work shifted from craftspeople who could do many things to assembly lines where workers did a single, narrow, repetitive task. On collaborative internet sites, Welser says we’re seeing a return to the generalist who contributes in many ways.

“In systems like Wikipedia we do see some specialization—some editors revert vandalism, others fix grammar—but many choose to contribute in a variety of ways on a variety of subjects,” he says. “The technology of the wiki combined with the social expectations of the community allow for more skillful producers.”

This could matter very much if you’re the manager of a social networking site and need to boost participation. Understanding your market is the most important step in any marketing campaign. It could also matter if you’re an organizational consultant—or a counterterrorism expert—trying to identify potential leaders in an organization by perusing an internal wiki or public social media.

Or, if you’re a random Wikipedia editor, you might just get a kick out of knowing your type.

“(Online social networks) bring us into contact with people we wouldn’t otherwise meet. We can transcend the accident of geography.”

TED WELSER

assistant professor of sociology

(ILLUSTRATION: ALIX NORTHROP; PORTRAIT, BEN SIEGEL)
MARIO GRIJALVA COMBATS A DISEASE—CARRIED BY A NOCTURNAL INSECT—THAT AFFECTS MILLIONS WORLDWIDE
Tonight, untold numbers of people throughout South and Central America will be bitten in their beds by a blood-sucking, nocturnal insect. It carries a parasite that causes a life-threatening disease for which there is no effective cure. Within hours, many victims will begin to see ominous signs of the attack of the infamous triatomine, or “kissing bug.” Some will find an eye swollen shut; others experience severe swelling wherever the bite occurred. Fever, fatigue, and nausea commonly follow. Usually, after a few weeks, symptoms disappear completely, never to return in many cases. Unfortunately, for many the microscopic worm-like parasite sits biding its time inside its new host, waiting as long as two decades or more before causing health problems. Left untreated, victims later may experience sudden heart failure or damaged digestive tracts. It's estimated that between 8 and 11 million people in Mexico, South America, and Central America are infected with this parasite, which causes a disease named Chagas after the doctor who first described it, according to the Centers for Disease Control and Prevention (CDC). Although the disease claims 21,000 lives per year, experts believe that the true number of deaths is underreported. Individuals are either never diagnosed with Chagas or die from the long-term side effects. 

(Above) A kissing bug (seen magnified; the adult is about an inch in length) is a vector for Chagas disease. The disease is caused by the parasitic protozoan Trypanosoma cruzi, which is transmitted through the insect's feces.
But more health officials and researchers are beginning to take notice of this “silent killer,” says Mario Grijalva, a Chagas disease expert who is director of Ohio University’s Tropical Disease Institute.

“The high burden of Chagas disease in countries where the disease is endemic has been known for several decades. However, high rates of migration and globalization have increased the awareness about Chagas disease in non-endemic countries, including countries in Europe and to some extent in the United States,” says Grijalva, an Ohio University professor of biomedical sciences in the Heritage College of Osteopathic Medicine.

Since 2007, Grijalva has been involved with an effort led by the World Health Organization to examine how Chagas can be controlled globally. He’s also been tapped for the Chagas Disease Epidemiological Network, a European Union project that studies the molecular pathway underlying the disease’s spread in 12 countries in Latin America and Europe.

Grijalva has more than 20 years of experience working to understand and combat the disease in his native Ecuador to bring to the table. Since joining the faculty in 1999, he’s helped put Ohio University on the map as a leading center for Chagas research in a country where just a few other universities, working in conjunction with the CDC, are tackling the disease.

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**REVEALING THE SILENT KILLER**

Although Chagas disease had been rife in his native Ecuador for centuries, the illness remained so obscure and so little understood that Grijalva first heard about it as a molecular and cell biology graduate student at Ohio University. The disease was first identified in 1909 by Dr. Carlos Chagas, a physician searching for the source of a mysterious, debilitating illness affecting patients in a small town in Northern Brazil. He later would be nominated for a Nobel Prize for discovering that a common, sharp-nosed insect with a tick-like habit of feeding off the blood of mammals, including humans, also carried in its gut a free-swimming protozoan that caused the disease.
It wasn’t until the late 1960s that “Chagas disease” was widely recognized as a major public health problem not just in Brazil but also throughout South and Central America. Experts say that the disease eventually kills up to 40 percent of its hosts. Intensive research led to coordinated control measures (heavily weighted toward using pesticides to exterminate the pest in houses) that eventually dropped infestation rates dramatically.

Control and prevention methods are important, as the search for an effective vaccine or drug to fight the disease continues. The two drugs typically used to treat Chagas, benznidazole and nifurtimox, are effective only during the early phases of infection, particularly in children under 12. Because both drugs are heavily toxic, causing severe skin rashes, vomiting, and other side effects, neither is FDA-approved. In the United States, the CDC grants permission to use the drugs on a case-by-case basis.

“This is a major issue,” says Grijalva. “Essentially, we don’t have anything in (our medical arsenal) that’s very effective against this disease. Right now, we have only two drugs used for treatment. Both are not very good and both are highly toxic.”

The disease also is becoming a greater concern in the United States, due to the rise in immigration of individuals from Chagas-endemic regions of South and Central America. The CDC estimates that 300,000 people here carry the disease, often acquired in their native countries. Although the triatomine bug can be found in the United States, “only rare vectorborne cases of Chagas disease have been documented,” the CDC notes. However, health officials are keeping watch for signs of Chagas disease in blood transfusions and organ donations, as well as transmission from mother to baby during pregnancy.

SUCCESS IN ECUADOR

While the spread of Chagas from Latin America to other parts of the globe is alarming, health officials can seek hope in one place where Ohio University’s Tropical Disease Institute has made progress in understanding and combating the disease:

“Above) An international team of researchers and medical students led by Mario Grijalva travels to Ecuador each summer to continue to survey communities about triatomine infestations and Chagas disease, as well as conduct biomedical research into the problem.
Grijalva’s home country of Ecuador.

“Our institute’s primary mission is to reach underserved populations with state-of-the-art training and technology to help eliminate or minimize the effects of these diseases,” Grijalva says. “When we started (in Ecuador) we had almost nothing to work with. We’ve come a long way since then but we still have a long way to go.”

Thanks to funding from such sources as the National Institutes of Health, the World Health Organization, and the Pan American Health Organization, Grijalva turned a small operation based in Quito into a powerful, multifaceted research and training program that has caught the attention of the Ecuadoran government. Based largely on Grijalva’s studies, in 2003 Ecuador’s Ministry of Health officially made Chagas research a national priority by establishing the National Chagas Disease Program. Today, Grijalva wears two hats in an international effort that by every measure has gone to work, the team has made a lasting, live-saving difference, he feels.

When the team tallies its success stories, foremost among them is its impact in improving Ecuador’s blood supply. Since the disease is easily transmitted by blood drawn from infected blood donors, establishing a fast, efficient, and reliable system of screening supplies for local and regional blood banks was recognized early on as a major weapon in the fight to arrest the spread of the disease. Until Grijalva brought Ohio University’s resources in trained microbiologists and technology to bear on the problem, Ecuador had no effective system in place to screen blood. That’s all changed, thanks to a successful blood bank initiative led by Grijalva’s center in Quito. Almost anywhere in Ecuador today, patients needing transfusions have dramatically improved chances of receiving safe blood than they did a decade ago.

During the past few years, one of the center’s most ambitious efforts in the field has been centered in Ecuador’s southernmost province known as Loja. This sprawling, mountainous region has been the focus of the center’s “Healthy Living” project, an effort aimed at the long-term control of Chagas disease in this region. Despite having lived (and died) with the disease for generations, Loja’s rural communities typify poor regions throughout South America that still are beset by widespread ignorance of what Chagas is, how it’s transmitted, and how it can be controlled and prevented altogether.

Relatively simple and inexpensive measures, such as keeping houses periodically fumigated with effective, bug-killing pesticides, was a novel idea in much of Loja until 2005, when the center launched a pilot disease control program in 58 of Loja’s most Chagas-ridden communities. After a single year, the population of kissing bugs dropped dramatically in most communities where homes were treated. However, research conducted by Grijalva’s group showed that bugs living in nearby sylvatic areas, mainly feeding on squirrels and rats, readily re-infested treated houses, with levels of disease transmission being restored as soon as two years later. Thanks to solid support from both government and non-government funding, the focus to find different alternatives to control Chagas in Loja continues. One of the priorities is helping some of Loja’s most vulnerable communities amass funding to build better housing, which is generally seen as the first line of defense against the invasive, dangerous insects.

MARIO GRIJALVA

“Our institute’s primary mission is to reach underserved populations with state-of-the-art training and technology to help eliminate or minimize the effects of these diseases.”

PHOTOS: COURTESY OF MARIO GRIJALVA
The parasite invades cells and can lie dormant for the rest of the victim’s life or emerge in 10 to 20 years to destroy organs—depending on which of the six known varieties of *Trypanosoma cruzi* are present.

1. The triatomines infect their sleeping hosts with the *Trypanosoma cruzi* as they defecate while feeding on the host's blood.

2. The protozoa get pushed into the bite wound or into eye membranes. Once beneath the skin, the organisms spread quickly throughout the body.

3. Once infected, victims experience swelling around the bite wounds or eyes, along with flu-like symptoms such as headaches, fatigue, fever, and loss of appetite.

4. The parasite invades cells and can lie dormant for the rest of the victim’s life or emerge in 10 to 20 years to destroy organs—depending on which of the six known varieties of *T. cruzi* are present.

**CHAGAS SYMPTOMS**
- weakened immune system
- nervous system damage
- digestive system dilation
- swallowing difficulty
- cardiac damage including heart rhythm abnormalities

**T. CRUZI HIDES IN ORGANS**
Chagas disease eventually kills up to 40 percent of its hosts, usually by shredding the muscles of the heart or the walls of intestines.

**Triatomines, or kissing bugs, are carriers of a single-celled, flagellate protozoan called *Trypanosoma cruzi*.**

(Above) The new research and training center near the PCU main campus is set to open sometime in 2014.

**THE NEXT GENERATION OF CHAGAS FIGHTERS**
Grijalva’s 20-year service at the front lines in the battle against Chagas disease in his native Ecuador is being recognized and rewarded in a profound way this year. Catholic University and Ohio University’s 1804 Fund have awarded funding for six new Chagas projects, such as creating models of disease distribution, population genetic studies of the insects, epidemiological studies, and the design and construction of an “anti-Chagas house” this summer.

A coalition of funding sources impressed with the Quito center’s record and its promise is making a major statement with construction of a ~100,000-square-foot research and training center. Now going up near the PCU main campus, the new facility is set to open sometime in 2014.

When fully operational, the new facility will be home to as many as 22 permanent Ph.D. researchers and dozens of support staff, along with some of the finest lab equipment and tropical disease research technology found anywhere, Grijalva says. He’s confident that the facility’s discoveries and spin-off technologies will benefit communities far beyond Ecuador, and may even lend a much-needed hand to Chagas-fighters in the United States.

“This will be a powerful magnet for researchers from throughout Latin America, not just for studying Chagas but also for a wide variety of other infectious diseases such as hepatitis, HIV/AIDS, tuberculosis, malaria, and dengue fever,” he says. “It will enable us to greatly expand on what we’ve already been doing down there for years. We can’t wait to get started.”
ALL IN THE DETAILS: Eddie Ashworth adjusts the position of a microphone for musician Charles Stanton in between tracks during a recording session at Ohio University’s MDIA Sound.
It's a chill gray afternoon and the sidewalks of uptown Athens are nearly empty. Inside the snug, softly lit confines of Ohio University's MDIA Sound studio Eddie Ashworth, veteran music producer turned assistant professor of media arts and studies, is just warming up for a long evening's work.

West Virginia singer-songwriter Jeff Ellis has come to MDIA to put finishing touches on his latest album, with Ashworth's guidance. As they prepare to overdub a rhythm track, they're debating whether percussionist Tom Berry should play congas or shakers.

"Congas is what I heard, but I'm up for anything," Ellis says.

"Maybe some (finger) snaps on the choruses?" Ashworth suggests.

They settle on congas, and Ashworth tells Berry, "We're just going to do two or three passes, and then we can mix and match." From behind the recording booth's glass partition he gives a count-off, and Ellis's acoustic guitar and vocal tracks come up in the speakers. Berry drops in cleanly, laying down a rhythm that's crisp but fluid.

Student Lorenzo Quiroga shows up with the take in progress; Ashworth quickly fills him in and seats him at a computer monitor, where the audio signal on each track is shown as a lengthening squiggle like the reading on a seismograph.
he first take finished, Berry seems uneasy. “There are things I did I'm not too happy with,” he admits.

“We'll keep that one, and do another,” Ashworth reassures him.

“Should I just keep it simple?” Berry asks.

“Just do what you feel,” Ashworth advises.

“Everything you're playing is just really tasteful and fits in the groove.”

This is Ashworth doing what he did exceedingly well for years as a West Coast music producer: creatively partnering with musicians to bring out the best in their work. He's still an active studio wizard, but when he works the sound board these days, he's usually surrounded by students from an audio production class.

In a career of more than two decades, Ashworth handled production, engineering, or mixing chores for major rock and pop acts including ska-punks Sublime, heavy-metal headliners Dokken, hard-rockers Great White, keyboardist Gary Wright of “Dream Weaver” fame, former Guns 'N Roses guitarist Izzy Stradlin, and Tommy Shaw of the arena-rock band Styx.

When Ohio University offered him a faculty position in 2003, one factor that sold him on the job was that he was urged to keep working as a recording pro. “They all wanted me to maintain a professional profile,” he says. “Teaching and producing now go hand-in-hand for me.”

As producer-cum-professor, he gets to seek out regional artists he wants to work with, and use their albums as teaching projects. Though he's recorded big-name acts, he's more drawn to helping a creative indie group develop its own sound.

“I'm a big fan of scrappy little rock bands,” he admits.

Ashworth imparts not only the ins and outs of mics and mixers, but also a career’s worth of insights on the care and handling of artists—how to steer them gently toward the best results, without stepping on their egos or grabbing the creative reins.

Ellis, who has worked with Ashworth since 2007, called this one of his greatest strengths.

“The first thing that struck me about Eddie was that he was just so laid back and easy-going, but he always got the result he was looking for, without kind of coming out and telling us what to do,” the songwriter says. “He lets you make the mistakes you need to get there. And another cool thing about him is he admits it when he's wrong—which isn't very often.”
“The thing I tell my students is, we have to keep our egos in check. It’s not about us. Our creativity is derived from the artists achieving what they do. That’s the job description... You have to find something to like in any kind of music that you do.”

EDDIE ASHWORTH

match the thrill of one of his earliest assignments, folk-rocker John Stewart’s 1979 “Bombs Away Dream Babies.”

“The thing I tell my students is, we have to keep our egos in check,” he explains. “It’s not about us. Our creativity is derived from the artists achieving what they do. That’s the job description... You have to find something to like in any kind of music that you do.”

To Ashworth, an engineer is a “mediator” between musicians and technology, helping artists “get the sound that’s in their head onto their finished recording.” Using microphones, compressors, equalizers, and various other tools, the engineer makes recording decisions that subtly affect the sound, and help create the appropriate “sonic landscape” to put each song’s meaning across.

A producer is even more involved in the creative process, he says, and is responsible for the “big picture” of how the album should turn out. This can include picking the studio and engineer, choosing which songs should be on the record, spotting material that needs more work, and even...
Eddie Ashworth learned his skills recording American pop music. But a project funded by an Ohio University 1804 Fund grant will let him use them to preserve a South American nation's recorded heritage. The project aims to digitize a large quantity of historically significant analog recordings (tape or even older formats), archived by Guyana's National Communication Network (NCN).

Emeritus Professor Vbert Cambridge, who helped organize the project, says the collection, with an estimated 11,000 items, is a treasure trove of music, history, and more. “This is phenomenal material,” he says. He cited recordings of Bill Rogers, a Guyanese musician who was “part of the first calypso wave in the United States in the 1940s,” and speeches by Guyanese leaders and British royalty on the occasion of the country's independence in 1966. Ohio University has a relationship with the University of Guyana dating back nearly three decades. When one of Ashworth’s students, Ricky Chilcott—now technology and facilities manager for Scripps College of Communication—traveled to Georgetown in 2008 with a student team to provide tech support for Carifesta, a Guyanese festival, he learned of the NCN collection.

Given Guyana’s tropical climate, “he was concerned about its stability,” Cambridge explained. Chilcott told Ashworth, who shares his interest in preserving analog audio, and the project was born.

In May Ashworth, Cambridge, Chilcott, and five graduate students traveled to Georgetown, where they collaborated with Guyanese archivists and media professionals to inventory and assess a cross-section of analog media in the public sector at several sites around the city. The teams confirmed the presence of many historically and culturally significant recordings, including an entire collection of multicultural music and spoken word recordings previously thought to have been discarded. They were also able to demonstrate that 40 percent of these recordings were rapidly deteriorating. A final report with recommendations regarding the stabilization and future disposition of the materials was presented to the Minister of Culture, who now has made preservation of the collection a national priority.

The team next will seek further funding for “a full-scale, multi-year effort” to digitize the materials, Ashworth says. Once it’s done, it will be available to scholars and students. Cambridge predicted some of it will be “of immense interest to our Contemporary History Institute,” as Guyana has played an important part in American and European history for centuries, including the Cold War.

The collection, with an estimated 11,000 items, is a treasure trove of music, history, and more.
“The students get the benefit of working with someone who is still in the industry, and is continuing to have an impact on the national and regional music scene. He’s worked in some of the biggest studios in the world, and he can bring that into the classroom.”

Josh Antonuccio

“The students get the benefit of working with someone who is still in the industry, and is continuing to have an impact on the national and regional music scene,” he notes. “He’s worked in some of the biggest studios in the world, and he can bring that into the classroom.”

Illius recalls that for one project, Ashworth handed her class the original unmixed tracks of a Sublime record, and let them season it to their sonic taste.

“How many people get to say, ‘I learned how to mix a Sublime album?’” she marvels. “We got to open up the session—that’s huge.” Ashworth can also give students an inside track on how the business is changing, and how they need to adapt their career strategies to work in it.

In the 2000s, he recalls, there was a big shift toward low-tech recording where musicians handled the sound themselves. “A lot of artists were really going DIY,” he says, which triggered an outpouring of fresh new talent. The

music scene in America now, he suggests, is as rich as it’s ever been.

The DIY ethos meant a drop in prestige for the professional studio hand. But, Ashworth adds, as time has gone on, more bands have come to appreciate the value an empathetic producer can bring to a project.

“They recognize how important it is to have a sounding board in the studio,” he explains.

For a graduate looking to build a career in the field, Ashworth suggests, the best advice is to reach out to bands, work a lot to get experience, develop a reputation, and market yourself to acts you want to work with. A 2013 grad is unlikely to repeat his trick of landing a studio job with a cold call; engineer/producers of today, he says, need to see themselves as bosses of their own small businesses.

“You have to be much more of an entrepreneur than you were 15 years ago,” he advises.
HOW MARK TWAIN CREATED THE CONCEPT OF A BRANDED COMIC PERSONA THAT COULD GENERATE PUBLICITY AND PROFIT

story by JEFF WORLEY
Mark Twain lived his robust life as a printer, riverboat pilot, soldier, miner, reporter, lecturer, editor, inventor, humorist, author, and publisher. He was also the first American author-celebrity to blaze the trail of “branding” himself and his work, according to Judith Yaross Lee, a professor of communication studies at Ohio University, in her newly published book from the University Press of Mississippi, Twain’s Brand.

“In traditional analyses of Twain’s significance, literary scholars have tended to believe that Twain’s humor belongs to a trivial 19th century popular culture of dialect writing, hoaxes, and tall yarns, while his themes—especially race and politics—belong to the more serious 20th century literary canon,” Lee says.

She believes this overly general dichotomy fails to recognize Twain’s contributions to American humor and culture in both centuries.
Samuel Clemens adapted 19th century comic traditions to burgeoning 20th century cultural trends in ways that won popular and economic success in his own time, while anticipating American humor and culture decades into the future,” Lee says. “And his comic capital remains productive and still profitable today.”

Clemens—whose life spanned two centuries, bookended by successive appearances of Halley’s Comet in 1835 and 1910—marketed himself as Mark Twain through his published newspaper articles, short stories, novels, essays, and even three patented inventions.

Throughout his lifetime, she says in her book, Clemens treated Mark Twain as a comic commodity to be marketed through modern media buzz. He exploited the links between publicity and profit and the synergy among various media as early as the 1860s, when he was a cub reporter on the Virginia City Territorial Enterprise. At the newspaper, Twain didn’t necessarily let the facts stand in the way of a good story. Lee mentions several outright hoaxes—sensationalist articles he fabricated and published in the Enterprise—that were designed to sell more newspapers and get his new pen name lodged into the minds of the reading public.

Lee writes that at this point in his young life, Twain used his notoriety as a journalist to promote his lectures, and in years to follow built on his performances as a lecturer to subsidize book writing (Innocents Abroad, Roughing It, Following the Equator), used his books to sell magazine pieces, and fiction to supply lecture material. The process eventually moved from the stage to literary readings of his work and to after-dinner and “occasional” speeches, but it continued to trade, commercially, on Mark Twain’s name and celebrity.

“At the beginning of his lecture career, he rented the hall himself, did his own publicity, and charged $1 per seat,” Lee says. “And then he toured the Midwest and gave lectures in New York City, picking up a few hundred dollars at a time.”

Twain estimated that he amassed $1,200 or $1,500 from his earliest West Coast tour in 1866 and 1867, which was about half the gate. That would be about $20,000 in today’s dollars. Some of this income went toward supporting his career as a writer, she adds, and all of his professional activities helped to strengthen his “brand.”

“What I call ‘Twain’s brand’ highlights the interrelationship among culture and commerce in American humor, and Mark Twain’s role in linking the three.”

Judith Yaross Lee
humor, and Mark Twain’s role in linking the three,” Lee explains. “The exchange of humor for laughter—and from the audience’s perspective, the exchange of money for humor—underscores that humor belongs to an economic system as well as an aesthetic one.”

She stresses the fact that Clemens consciously built his brand in an international context. By the time he first visited England in 1872, for example, he’d already successfully marketed Mark Twain there as the embodiment of American humor. Clemens capitalized on his international fame in an 1895-1896 global tour of live performances not only to pay off the debts of his bankrupt publishing house, Webster & Co., but also to convert his travel experiences into a new book, *Following the Equator*.

**THE NATURE OF THE BRAND**

In her book Lee focuses on four hallmarks of Twain’s brand that were central to his career and reputation, but are also significant for American humorists in many media in the 20th century, including stand-up comedy, short stories, novels, and even comics. Sixteen color plates illustrate the chapter titled “The Vernacular Vision and the Visual Vernacular” in which she discusses contemporary comics, such as *The Simpsons* and cartoonist Lynda Barry’s elaborate multimedia collages, as graphic extensions of Twain’s mocking of conventional modes and celebration of vernacular American speech.

“Whether lampooning the media’s obsession with celebrity (while exploiting it for his own ends), or presenting his fictional persona as both ‘real’ and extravagant invention, Twain’s brand of humor laid down the tracks for much of American humor today—in print, on television, in graphic novels, and in comedy clubs,” says Shelley Fisher Fishkin, editor of *The Oxford Mark Twain* and the Joseph S. Atha Professor of Humanities and professor of English at Stanford University. “Lee adds to our appreciation of the originality of his talent, and his genius for marketing it.”

Lee’s central focus in the latter part of her book—and the first “hallmark” she discusses—is stand-up comedy and the importance of the “performed self,” which was at the center of Twain’s early stage humor. Comic.
lectures brought him visibility as a humorous personality as well as a writer. In particular, his development as a stage persona only slightly removed from his biographical self intrigued and amused audiences. What Lee calls the performance of an “unstable self” is also a hallmark of many stand-up comics today, including Jon Stewart, Garrison Keillor, Margaret Cho, and Jerry Seinfeld.

A second hallmark Lee calls the alliterative “comic cross-cultural contrast.”

“Throughout his career, Mark Twain mined a nationalist strand of literary humor that celebrated American separation from imperial Britain through comic contrasts of American values, language, characters, and experience with those of other cultures, especially the more ‘cultivated’ European aristocracies,” Lee writes.

She points out that Americans’ love of dialect humor reflects this tradition, but it also lives on in novels such as Twain’s Connecticut Yankee in King Arthur’s Court, which jokes about cultural differences between Americans and others in ways that—more recently—Philip Roth has likewise explored in fiction.

A third hallmark, the “vernacular vision,” goes to the heart of what so many readers love about Mark Twain’s humor—the naïve ironies and antisocial antics of a young rascal like Huckleberry Finn. Lee devotes an entire chapter of her book to exploring how Twain’s brand of vernacular presentation in Huck drives both its literary satire and a range of contemporary counterparts from The Simpsons to Lynda Barry, and Aaron McGruder’s newspaper strip The Boondocks.

Finally, there’s the brand-name marketing of humor itself.

“From books and magazines to cell phones and the internet, the humor business of recent decades depends on the same brand-name promotion and cross-media synergy that Samuel Clemens pioneered a century ago when the information economy was young,” Lee points out. “Like any brand name, the name Mark Twain associates certain traits and values with its signature product.”

Twain’s visual identity, she adds, is central to the brand: The slender man in suit and bow tie with thick, wavy hair, bushy eyebrows, and a flowing, drooping mustache is well fixed in the popular imagination.

If there were any doubts about the brand’s continuing success, the publication of Mark Twain’s autobiography, which he mostly dictated during the last few years of his life with the caveat that it not be published until a hundred years after his death, underscored this success. Print runs on the book rose from an initial 40,000 copies to more than 400,000 while the book remained on The New York Times Best Sellers list for more than eight weeks during the 2010 Christmas shopping season.

STANDING UP AND BRANDING UP

A major focus of Twain’s Brand is that Clemens was a forerunner for a range of comedians in America from the mid-20th century to today who perform the fictional self and use these performances as a starting point to build a comic brand on which to trade.

But Lee is quick to point out that her book is not an influence study.
“The comic gap between on- and off-stage personas has always fueled the celebrity sitcom, but the show about the daily life of a comedian, Seinfeld, turned the tradition on its head. The conceit emphasizes the origins of stand-up in autobiography, thereby branding the self twice over as a comic commodity.”

JUDITH YAROSS LEE

“I don’t make an argument that later humorists consciously modeled their humor on his; instead, I argue that Twain’s humor not only expressed views of self and society well ahead of its time, but also inaugurated a tradition of comic branding through several media and in doing so anticipated contemporary comic practices,” she says.

There have been several 20th century variations of the humorist who plays a fabricated version of himself or herself. This strand of performance humor was the basis of television adaptations of radio hits such as The Jack Benny Program and The Burns and Allen Show, as well as situation comedies springing from nightclub routines, such as the one-sided telephone calls of The Bob Newhart Show. Other TV programs based on comedians playing fictional versions of themselves include The Cosby Show, Ellen, Margaret Cho’s All-American Girl, Everybody Hates Chris, and The Sarah Silverman Program.

In her book Lee provides an extended discussion of three contemporary comedians who she believes are the closest to Twain’s brand of stand-up: Garrison Keillor, Margaret Cho, and Jerry Seinfeld.

Keillor has delivered weekly mock-news reports from the fictitious Lake Wobegon for the last 35 years on the radio program A Prairie Home Companion.

“Though Keillor has described his monologues as sit-down rather than stand-up comedy, the weekly news from Lake Wobegon generates humor from the incongruity between the sincerity of Keillor’s narration—full of realistic detail and sympathy for human foibles—and the originality of his imagination,” Lee says.

With Midwestern modesty, she adds, Keillor uses the comic tool of self-deprecation, which was a common trait in Twain’s lectures and speeches.

“But while Keillor and Twain share a Midwestern approach to writing and performing comedy, especially in their middle American vernacular and moral standpoints, what unites their oral humor is their choice to put a comically unstable self at the center of their performances,” Lee adds. “And both found this self a platform for branding other, more lucrative writing and commercial activities.”

Cho’s stand-up routines play a bit differently with the performance of the self, both proclaiming and destabilizing her identity, Lee states. As Cho recounts her experiences as the daughter of Korean immigrants, the target of racism, and a bisexual, she artfully shifts accents and tones. In stark contrast to Keillor and Seinfeld, Cho is “notorious,” she proudly claims, for on-stage “trash talking.”

But the impact of her humor clearly goes beyond this, Lee says. Cho’s stand-up comedy imitates ordinary conversation, especially the pointed anecdote and her stories from supposedly personal experience. She shifts identities, acts out transgressions, and mimics opposing perspectives to convert outrage to ridicule.

“Together, Cho’s strategies illustrate how Twain’s brand of stand-up comedy relies on performance of a distinctive, unstable comic self. Keillor and Cho continue Twain’s brand of humor by feigning artless presentations of purportedly authentic experiences, those that are evidently their own and those that are obviously fictitious, or comically exaggerated, persons,” Lee explains.

Cho’s stage performance served as a launching pad for a sitcom vehicle for her in 1994, All American Girl, at exactly the time when Seinfeld topped all records for TV ad sales. “These sales speak to the importance of a stand-up comedian as a commodity suitable for marketing extensions in various media,” Lee notes.

Seinfeld began as a sitcom that would show where comics get their material by alternating scenes from Seinfeld’s daily life with clips from his stand-up act. The comic gap between on- and off-stage personas has always fueled the celebrity sitcom, Lee says, but the show about the daily life of a comedian, Seinfeld, turned the tradition on its head.

“The conceit emphasizes the origins of stand-up in autobiography, thereby branding the self twice over as a comic commodity,” Lee says, “first to the network that bought the series and then to the advertisers who financially supported the show.”

While Lee focuses on Keillor, Cho, and Seinfeld in this analysis of Twain heirs apparent, she argues that dozens of contemporary stand-up comedians have used these concepts to extend their brands. While Clemens may have used newspapers, novels, and essays, modern humorists are employing situation comedies, late-night television, films, and social media to merge “physical presence, a unique and edgy imagination, and a biographical identity with a comic persona,” Lee says.
DARK MYSTERIES

WHAT ROLE DO DARK MATTER AND DARK ENERGY PLAY IN OUR UNIVERSE?

by STEPHANIE DUTCHEN
Peer through a telescope and you’ll see a night sky filled with galaxies, gas and dust clouds, planets, pulsars, black holes, and ever more beautiful and strange objects.

But this cosmic light show reveals only part of the picture. When you add the masses of all the objects we can see—everything that’s built from protons and neutrons and other “normal matter,” from our own bodies to the most distant proto-galaxies—it’s not enough to explain why the universe works the way scientists observe. Galaxies and galaxy clusters that should have spun apart are still somehow held together. Galaxies in clusters orbit one another faster than they ought to.

Since the problem became apparent in the 1930s, scientists have been investigating two possible solutions: Either gravity works differently on cosmic scales than it does in our solar system, or there’s about five times more invisible or “dark matter” out there exerting gravity than there is normal matter.

Evidence has convinced most researchers in the field that dark matter exists, even if they don’t yet know what it’s made of. In fact, they think it accounts for 22.5 percent of the universe, while normal matter makes up only 4.5 percent. (The other 73 percent appears to be a component called dark energy, which is pushing the universe apart despite dark matter’s gravitational pull.)

In 2006, Ohio University astrophysicist Douglas Clowe and colleagues helped clinch the argument for dark matter. Analyzing two galaxy clusters that recently collided, they showed that dark matter needs to exist even if the laws of gravity change. Today, Clowe continues to probe the mysteries of dark matter and dark energy to understand them better and learn more about the past and future of the universe.

That’s no small task, given that "we know almost nothing about dark matter aside from that it needs to be there," he says.
90 percent of the normal matter in clusters had slammed into each other, while the individual galaxies, accounting for a mere 10 percent of the normal matter, had sailed through—the intergalactic equivalent of two convertibles smashing in a head-on collision while the occupants go flying past one another.

Clowe and team used lensing to calculate the total mass and distribution of gravity in the cluster. When they mapped it onto the visible matter, they found that most of the Bullet Cluster’s total mass corresponded not with the majority of the visible mass in the gaseous center, but instead with the galaxies on the sides. That meant the dark matter hadn’t slowed down with the gas.

That gave scientists their clearest idea yet of how much dark matter particles interact with one another. (Answer: not very much.)

Clowe also realized that “this was the first time we could show that dark matter had to exist even if we could change gravity,” he says. “There’s really no way you can change gravity in a way that you could have all the mass be in one position and the center of gravity be somewhere else. It would be like the sun
suddenly having its center of gravity be off around Jupiter.”

Even with modifying gravity, says Clowe, the best you can say is that you need only twice as much dark matter as normal matter.

THE SHOT HEARD ‘ROUND THE WORLD

Scientists and news media alike celebrated the findings. Discovery News named it one of the top 10 discoveries of the decade. Clowe’s Bullet Cluster image was splashed across magazines and textbook covers. It even made a cameo appearance on the TV show The Big Bang Theory.

Clowe’s team had provided key information about dark matter, but science requires repeatability. As Massey says, “The Bullet Cluster is great—but it’s only one collision, which we see from only one angle, and which occurs over such a long period of time that we effectively see only one still frame from its video.”

Researchers throughout the field joined in the search for more colliding clusters. For seven of the eight they’ve found (and given nicknames like Baby Bullet and Musketball), lensing measurements have indicated similar separations of dark and normal matter and comparable results for dark matter’s interactivity.

The one source of dispute so far is Abell 520, also known as the Train Wreck Cluster because it’s a cosmic mess of not two but four colliding clusters.

A team led by astrophysicist Andisheh Mahdavi of San Francisco State University found the expected concentrations of dark matter around the clusters—plus one in the middle, where there didn’t seem to be any galaxies. The team offered several possible explanations for this “dark core,” but they were “almost equally unlikely” and unappealing, says Mahdavi.

Meanwhile, Clowe and colleagues performed their own observations and analyses using a different camera on the Hubble Space Telescope—and didn’t detect a dark core. “What we saw was perfectly consistent with the standard model of dark matter,” says Clowe.

The question isn’t settled yet. One of

Clowe and colleagues made their breakthrough discovery while using a pair of galaxy clusters as their gravitational lens. They nicknamed it the Bullet Cluster because one cluster had shot through another at 1 percent of the speed of light, leaving a shock wave in its wake.

(Left) Composite optical image of two clusters of galaxies Abell 222 and Abell 223 with a dark matter map overlayed in blue shading and yellow contours. The two clusters are connected by a filament of dark matter. The optical image was obtained by SuprimeCam at the Subaru telescope. The mass map is based on the gravitational lensing signal of more than 40,000 background galaxies.

Ohio University astrophysicist Douglas Clowe and colleagues helped clinch the argument for dark matter
Mahdavi’s colleagues is examining Clowe’s latest results and expects to reach a different conclusion.

It’s not that one team or the other wants dark matter to behave in a particular way. Rather, the key lies in determining which lensing techniques are most accurate.

For now, Clowe is confident in his team’s findings. "Unfortunately," he says, not only is there a limited number of colliding clusters in the universe to study, but "we can only measure dark matter gravitationally, so we still don’t know that much more about it."

STRENGTH IN PARTNERSHIPS

Scientists interested in dark matter would love to determine exactly what kind of particle it is and how it behaves. Astronomy can’t currently achieve that, but particle physics might.

Experiments are being conducted in detectors and accelerators around the world to try to catch a speck of dark matter. Physicists think they’ve narrowed it down to three candidates—the sterile neutrino, the neutralino, and the axion—all of them incredibly hard to detect because of their near-zero interaction with normal matter.

Plus, there’s the boost from building bigger and better telescopes. A major upcoming opportunity for dark matter and dark energy research is the Large Synoptic Survey Telescope, or LSST, an international endeavor. Clowe is a member of one of the science working groups.

Tentatively scheduled to begin full operations in Chile at the end of this decade, with its 3,200 megapixel camera the LSST promises to "give us images of half the sky down to depths where we can easily do gravitational lensing measurements," says Clowe. “Instead of small numbers of colliding clusters, we’ll get hundreds. That will greatly help us understand what’s going on."

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The stages of the collision

1. **The Bullet Cluster**

Hot gas, containing most of the normal matter in the cluster, is shown in red and dark matter is shown in blue. During the collision the hot gas in each cluster is slowed and distorted by a drag force, similar to air resistance. A bullet-shaped cloud of gas forms in one of the clusters. In contrast, the dark matter is not slowed by the impact because it does not interact directly with itself or the gas except through gravity. Therefore, the dark matter clumps from the two clusters move ahead of the hot gas, producing the separation of the dark and normal matter seen in the image.
BEYOND DARK MATTER

While the LSST gears up, Clowe keeps busy with an array of research projects. For example, he was part of a team that recently detected a filament of dark matter connecting two parts of a supercluster. This filament is part of a “skeleton” of dark matter threaded throughout the universe that had previously been predicted but not reliably observed.

Many of Clowe’s other investigations go beyond dark matter. He has assessed star formation in the Bullet Cluster, determined the properties of galaxies that formed in the very early universe, and worked to calculate the redshifts of galaxies too faint to measure using the standard method of spectroscopy.

As the head of the imaging team for the European Southern Observatory Distant Cluster Survey, he studies the structural evolution of distant galaxy clusters and their components. Thanks to gravitational lensing effects, he also uses these clusters, including the Bullet Cluster, as magnifying glasses to learn about even more distant galaxies that are too faint to detect otherwise.

Then there is the dark energy question. “Dark matter is one of the science bogeymen in that we don’t know exactly what it is. Well, for dark energy we don’t even have any good ideas,” says Clowe.

He wants to learn more about the nature of dark energy and gauge its behavior throughout the history of the universe by using gravitational lensing studies of very distant galaxy clusters.

He’s conducting what are called photometric redshift analyses on about 90 clusters to see if he can replicate the results of similar studies done using supernovae.

His technique would provide another way of estimating the expansion rate of the universe—in other words, showing that dark energy exists—without relying on the underlying assumptions the supernova studies depend on. If it works, he plans to conduct a larger-scale study with data from the LSST.

The ultimate goal of his research and of cosmology in general, Clowe says, is to fully understand things like whether and how the universe began, how structures including the Milky Way formed, and what will happen to everything in the end—if there is an end. Key to attaining that knowledge is being able to pin down the values of about 10 fundamental cosmological parameters, including the expansion rate.

Whatever else he is able to achieve during his career, “I find cosmology fascinating,” says Clowe. “We know so little about the universe. We’re just now making the discoveries that are going to be part of every elementary school textbook, the same way that Galileo and Newton and some of the early scientists are. We have the ability to work on something fundamentally new that no one has any idea about.”

Scientists interested in dark matter would love to determine exactly what kind of particle it is and how it behaves. Astronomy can’t currently achieve that, but particle physics might.
When artist Melissa Haviland decided to capture the act of breaking seven entire sets of fine china on film, some of the crew members on the shoot cringed at the demise of so many delicate plates and teacups. The rest? They were cheering on the destruction.
This experience on the set of “Dinner Music,” a collaboration with video artist David Colagiovanni, sums up the dichotomy of reactions that people—especially women—have to Haviland’s work. At first blush, fine china may not seem to be a particularly political or emotionally charged topic, calling to mind tradition, femininity, etiquette, domesticity. For some, it’s a symbol of maternal heritage, of all the sweet and refined qualities one conventionally associates with womanhood. For others, it’s an oppressive sign of the role that females are expected to play: orderly, subservient, dainty, polite.

That’s why it’s such a catharsis to break it, Haviland says. Smashing a sugar bowl ignites conversation. “We need to be educated about the ‘scripts’ in our lives,” she says. “Etiquette is a way of discussing the underlying cultural framework we’re given that can trap us—or not.”

Haviland, an associate professor of art at Ohio University, has long been fascinated by symbols of traditional femininity. A printmaker who has experience with jewelry and costume design, she produces work that plays with images such as sewing pins, teacups, hankies, and china platters and presents them in startling ways. Pins are rendered large and imposing, ready to be wielded as a weapon; teacups shield a bare breast.

Over time Haviland expanded beyond the print to installations, such as “Contemplating a Need for Indulgence,” a black lace-trimmed tent with velvet cushions that invited viewers inside for a proper Victorian cup of tea. Other exhibits, such as “Pattern of Refinement,” featured the artist setting rows of miniature place settings with fine china, or walking in a circle with a dinner plate balanced precariously atop the head—calling to mind a young girl learning proper posture, at least until the china shattered against the floor in a spectacular clatter.

Although she bears the surname of one of the most famous fine china companies in history (there’s no relation that she’s aware of), Haviland says that she did not grow up in a fine china household. Her family dined on Corelle, an everyday white glass dining set, and she and her father worked at the nearby Ball glass jar factory. It’s a familiar story for anyone growing up in middle-class America—even for those raised with a china set stashed in storage, prized only for “special occasions.” Even today, most women rarely break out fine china for dining, but it’s still an expected purchase for weddings.

Because fine china’s reputation continues to loom large, Haviland has enjoyed exploring its various meanings in her work. But her interest is not just aesthetic. To bring deeper context to her art, Haviland secured a grant from the Ohio University Research Committee to travel to china factories in the United States, England, and France to learn more about the craft of china production. She visited traditional plants in Britain where entire towns—much like the coal towns of Southeast Ohio—were built around china manufacturing, as well as a company in Greensboro, North Carolina, focused on creating replacement pieces for more than 300,000 fine china lines.
The research helped Haviland see China out of the abstract and understand it more as a manufacturing industry and a product. It spawned new work, such as "A Host of Options," which featured dozens of laser-cut paper teacups in black, gold, silver, and mother-of-pearl affixed by corsage pins to the wall to create fine china wallpaper. The installation appeared at the University of Wyoming in Laramie in November 2012.

As Haviland got deeper into the fine china industry research, she also chose to explore other creative avenues for expression. She began working with Colagiovanni when she needed someone to videotape her installation performances. Together, they developed a plan for an entirely new project that merged their experience and interest in performance, installation, and video.

The first piece from the project, "Music for Teacups," is an 8-minute film that creates rhythms and patterns from the visuals and sound of fine china breaking. Shot outdoors in various U.S. locations, the experimental video plays with the natural sounds and motion of each teacup, creamer, and plate rolling, chipping, and smashing against rock or cement. The film is beautiful and hypnotic, humorous and startling.

"I just wanted to see what it looked like when a teacup opened up and split," Haviland explains. "It's an exciting moment for the viewer. It's very rebellious."

Shot with a high-speed camera, Colagiovanni used no special effects to create the visuals and sounds, but the piece required hundreds of hours of work to draw out the natural, bell-like music of teacups tearing apart.

"We shot it in slow motion and wanted to see what happened," he says. "It became more about the sound and the image than just the image alone."

The work is a bit of a departure for Colagiovanni, who previously had been an artist in residence at the Morehead Planetarium and Science Center in Chapel Hill, North Carolina. (This year he's a visiting professor of art at Ohio University.) His films explored flight, from astronauts to amateur soaring enthusiasts. The teacups project also considers the gravitational pull on objects—yet in a much more whimsical, abstract way—and ties into Colagiovanni's interest in experimental filmmaking.

Prior to a screening at the Athens International Film and Video Festival in spring 2013, "Music for Teacups" became the centerpiece of a new joint installation that Haviland and Colagiovanni debuted at the 621 Gallery in Tallahassee, Florida, in February. The piece featured hand-printed teacup wallpaper that lined the walls of the gallery. "Music for Teacups" played on a screen while the artists carefully walked a balance beam, holding pieces of fine china and silver platters.

The complex piece also featured bookmaking and record production. The artists created a 25-foot-long book of teacups laser cut from a
continuous piece of black paper, displayed accordion-style for gallery visitors. The duo also pressed the music from the film to a vinyl record, seeking a more tangible, classic embodiment of the sound than a more contemporary MP3 file can offer, Colagiovanni says. It's available in a limited edition of 100.

Newer exhibits, such as "White Gold," feature Haviland extending her performance to serving as a hostess who screen prints teacups with sugar onto buttercream frosted cookies. She plans to work more in sugar crystals as an art medium in the future. In the meantime, she's working with Colagiovanni to complete "Dinner Music," the longer film shot during a hot North Carolina summer last year.

Haviland hopes the various works will stimulate conversation about gender roles and conventions. She enjoys watching the reactions to her pieces, noting that the responses often fall along generational, class, and geographic lines. Women over 50 seem most protective of the fine china and its meanings, whereas younger women or those from middle-class backgrounds may have an ambivalence or negative view of the objects. Females from the South have shown the strongest reaction to Haviland's breaches of etiquette at the shows. One woman followed her around an installation, painstakingly turning dozens of knives "the right way" on the table setting, Haviland recalls.

"I'm always interested in the stories that come out," she says.

While Haviland and Colagiovanni don't hesitate to break fine china, they are also respectful of it, and take care not to waste it. Along the wall of the video editing room are shelves full of broken teacups and saucers that have been carefully patched back together. Although the jagged lines of wear and breakage show, these delicate pieces are whole again here.

"Maybe," Haviland says, admiring their restoration work, "it shows that we can't quite let go of these objects either."
Scott Varga's quest to understand Parkinson's disease begins in an unexpected place: inside the brain of a fruit fly. But maybe it isn't so unusual. Two-thirds of all human genes are found in fruit flies, and according to Varga, genes hold all of the answers.

“There are striking similarities between the disease in humans and fruit flies,” he says. “And with the short lifespan of flies, I can study the effect of Parkinson’s on them in a short time.”

Parkinson’s, which occurs in 33 percent of people over age 85, stems from the degeneration of dopamine-producing neurons, causing its victims to lose motor function, eventually resulting in stiff movement, uncontrollable shaking, and cognitive disabilities such as memory loss and dementia. The disease usually shows up in humans between ages 50 and 60. For fruit flies (which usually live around two months), it takes just 20 days.

Currently, one of the more promising treatments for advanced Parkinson’s disease is deep brain stimulation. A battery implanted in the patient’s chest is hooked up to small wires that stretch up into the brain. Electrodes at the tips of the wires emit a constant electric pulse. The technique has been shown to alleviate symptoms, but treatment is costly and the reason for its success remains a mystery.

“Now one knows why deep brain stimulation works,” Varga says. “So, I’m trying to pinpoint the pathways of the brain that are affected by it to see if I can find anything.”

Varga’s special fruit flies allow him to do just that. At birth, each one is inserted with a light-responsive gene. Using a lamp-like apparatus that he built from scratch, he shines different colors of light on the flies.

Blue light causes DA-producing cells (which are affected in Parkinson’s) to become hyperactive, while orange light makes the same cells dormant. This combination of gene manipulation and light, also called optogenetics, will allow him to link behavioral changes in the flies with specific areas of the brain. From there, he hopes to identify which pathways are targeted by deep brain stimulation.

“This is the first time optogenetics has been used for Parkinson’s,” Varga says. “Since blue light causes the flies to curl up, we know that the science behind it is working.”

Over the past year, Ohio University’s Life Sciences building has become Varga’s second home—the Honors Tutorial College senior logged around 30 hours per week in the lab. His mentor, Daewoo Lee, couldn’t be happier with his progress.

“Scott is one of the best students we have,” Lee says. “I let him be in total control of his experiments. It’s pretty much hands-off for me.”

Although a treatment for the debilitating disease they study may be a long way off, Varga is motivated by the search for new knowledge.

“A potential cure is the reason why I study Parkinson’s,” he says. “It’s always in the back of my mind. But you can’t just jump to a cure for a disease; you need to understand it first.”
Child support

Students explore how to enhance breastfeeding education in Appalachia

Holly Strickland recalls that she was surprised to learn that Appalachian Ohio has the lowest breastfeeding rates in the state, as the region is low-income and breastfeeding is an inexpensive infant feeding option.

In a recent research project she and psychology doctoral student Amy Borchardt helped conduct with the Voinovich School of Leadership and Public Affairs, the senior psychology major learned why there's such a big disconnect.

The Ohio Department of Health contracted with the school to examine the barriers and facilitators to breastfeeding initiation and duration, as well as opportunities for improving breastfeeding education and support. The study was held in 19 Appalachian counties with low breastfeeding rates, and feedback was gathered from women through focus groups.

The students, working with Voinovich School Assistant Professor Holly Raffle, co-facilitated 10 of those groups and then transcribed and analyzed responses from the female participants.

The 176 women interviewed were receiving Women, Infant, and Children (WIC) benefits, which is a federally funded nutrition assistance program for low-income women who are pregnant, breastfeeding an infant, or have had an infant within the past six months, and children from birth up to age five.

“We were just interested in getting perceptions and beliefs across the board,” Strickland says.

The researchers considered generational poverty (a cycle of poverty for at least two generations) and Appalachian culture when reviewing the focus group findings.

One characteristic of generational poverty is that most women are more focused on getting through the day than planning ahead for the future, Strickland explains. That has implications for breastfeeding, as women need to schedule various times throughout the day to pump milk and must keep track of the necessary supplies.

Family also is a big Appalachian value, and so if a woman’s mother or mother-in-law didn’t breastfeed or looks down upon those who breastfeed, the woman was more likely to be influenced by that opinion.

Another issue, Raffle adds, is that Appalachian women may prefer to communicate through stories. If their health care providers made them feel rushed or ignored their communication style, it affected the amount of effort the women wanted to make toward breastfeeding.

Women must be taught how to breastfeed, as it’s not an action that comes naturally, Raffle notes. It’s a new process that requires mothers to interact closely with their doctors, nurses, and lactation consultants.

“How (health care providers) interpersonally interact with women plays a big part in (women’s) health decisions,” Strickland says.

Borchardt, who shared a first-place prize with Strickland for their research at the university’s Student Research and Creative Activity Expo in 2012, agrees that strong interpersonal skills are crucial for making an impact.

“The key to helping increase breastfeeding rates in the area is to make sure there are lactation consultants and health care providers willing to take the time to make a connection with the mother so she feels comfortable asking for help when she needs it,” Borchardt says.

It’s important for health care providers to understand cultural issues, Raffle says, so that they can improve their interactions with patients.

“What we have to focus on is changing those interactions ever so slightly to help support those women from Appalachia who are living in poverty,” she says.

Although each woman must make a choice about how to feed her infant, Strickland says that studies have suggested numerous benefits of breastfeeding, such as improved infant health and stronger mother-child bonding.
Ohio University’s School of Theater is nationally known for its innovative costume, lighting, and set design work. Graduate students Kurt Tiede and Cassandra King in the Production Design and Technology Program created period costumes and scenery, respectively, for Stephen Sondheim’s Assassins, which tells the story of historical presidential murders—both actual and attempted (left). The creative team also included Carolyn Voss, lighting, and Chet Miller, sound. For the irreverent War is F**cking Awesome, penned by alumnus Qui Nguyen, graduate student Courtney Gomez-Odom created props such as this airplane for the comic book-style story about a female superhero who protects the United States (right). King and Miller also created the scenery and sound for this production, with Janelle Clingenpeel and Sara Watson contributing costumes and lighting design, respectively.