

CLAS

MAGAZINE

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The image shows the interior of a Gothic cathedral, characterized by its high, vaulted ceilings and pointed arches. The architecture is made of light-colored stone. Large, colorful stained-glass windows are visible, allowing light to filter into the space. In the foreground, rows of dark wooden pews are arranged on either side of a central aisle. A person wearing a bright orange jacket and a backpack is seen from the back, standing in the aisle on the left side, looking towards the far end of the cathedral. The overall atmosphere is one of grandeur and historical significance.

ASU COLLEGE of
LIBERAL ARTS
& SCIENCES
ARIZONA STATE UNIVERSITY

Letter from the editor



Margaret Coulombe
Photo: Jacob Sahertian

When I ask students and members of the community what comes to mind when they think about ASU's College of Liberal Arts and Sciences, I hear things like: diverse, a synergy between humanities, social sciences and sciences, and amazing research faculty. I also often hear the word: **BIG!**

It's true that in the last 10 years our size has nearly doubled, to now more than 21,075 students strong! That means we support 42 percent of the student population on the Tempe Campus, and that 40 percent of Barrett, The Honors College students are liberal arts and sciences majors.

These remarkable students come from all walks of life and experiences. They are National Merits Scholars, National Hispanic Scholars, National Achievements Scholars, Flinn, Fulbright and Goldwater Scholars, veterans and first-generation strivers. They go on to invest in and build resources for our local and global communities, as leaders starting non-profit organizations, publishing novels, advancing scientific and medical fields, educating youth, and pursuing the careers and opportunities of the future.

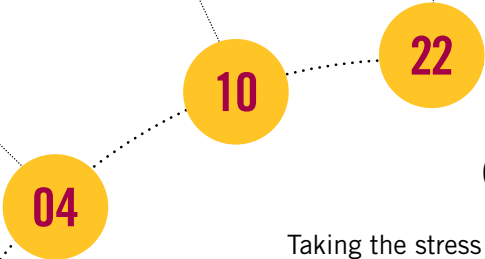
In this issue of the CLAS Magazine, you'll meet some of the standout faculty and students in our college, such as Leah Doane Sampey, director of the Adolescent Stress and Emotion Laboratory; Ed Finn, founder of the dynamic Center for Science and the Imagination; and author Lee Gutkind, who are creating new ways to visualize and expand our futures in science, medicine, and idea creation. You can walk through the streets of Paris or slip behind the bars of a Bolivian jail with our students and alumni pursuing careers with deep personal meaning. You can discover fearless women taking the path of a new K-12 teacher, who have shaped our past, or through the modern lens of the Center for Medieval and Renaissance Studies. Finally, you will see how students and faculty and our supporters in the community are changing the nature of how we all learn, through the expression of their enterprise and vision.

Liberal arts and sciences at ASU offer our community the greatest access to choose, explore, and sculpt a personalized and individually powerful learning experience. The proof is right here in the sum of our individual impacts: **size does matter.**

On the cover:

Notre Dame de Paris interior.
Photo: Stéphane Mijuskovic

Margaret Coulombe
Director, Academic Communications
College of Liberal Arts and Sciences



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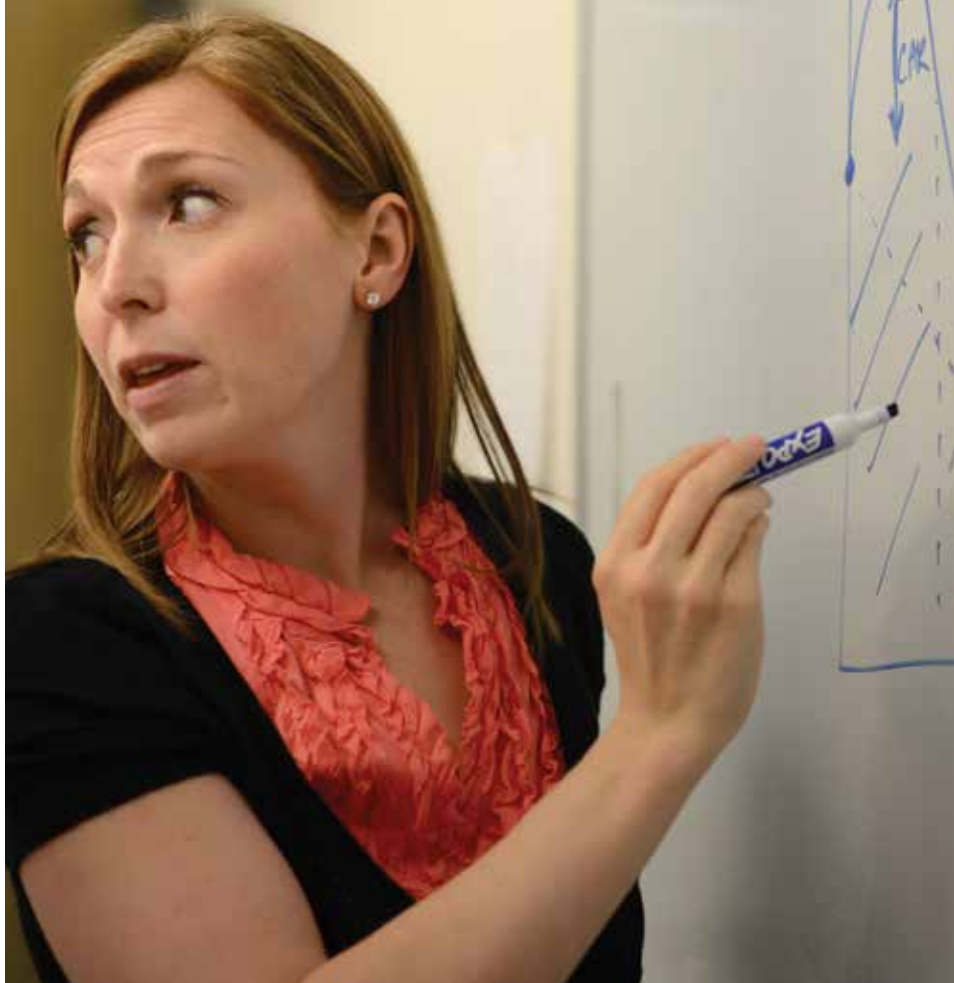
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Taking the stress out of ASU

By Gretchen Burnton



Leah Doane Sampey, director of ASU's Adolescent Stress and Emotion Laboratory
Photo: Olivia Ashton Stull

Feeling stressed about school, relationships, or transitions to new situations? Then Leah Doane Sampey, director of ASU's Adolescent Stress and Emotion Laboratory, might just have the solution that you need.

Doane Sampey's laboratory, housed in the Department of Psychology, was developed to better understand how day-to-day experiences and stressors impact students' health and future. Her research includes the "ASU Transition to College Study" and investigates the role that stress plays in the development of disease, such as diabetes.

"Stress is a common burden for any student or adolescent and while students must address the stressors they encounter, how

students cope with those stressors and how that stress affects them isn't entirely understood," says Doane Sampey, who is also an assistant professor in psychology.

"So I look at everyday experiences of adolescence. Specifically, I investigate their emotional and physiological responses to daily hassles to understand how their daily experiences 'get under the skin' to affect their physiology and health."

To study what impacts students most during the transition from high school to college, Doane Sampey's group recruited high school seniors from across the Valley who had been accepted to ASU and then followed them during their last year of high school through to the spring of their freshman year at ASU.

She asked participants to keep diaries of what happened to them throughout the day, and then examined their sleep patterns and hormone levels.

Each student wore a watch called an actigraph that tracked their movements throughout the day: “We wanted measures of their sleep efficiency and sleep duration. We also looked to see how their daytime experiences affected their stress hormone levels,” Doane Sampey said.

The study found that participants, when hit by a particularly stressful day, had shorter sleep durations and their sleep that night wasn’t as good in terms of quality. On average, stress contributed to 15 minutes less sleep a night. Sampey also found one more very interesting feature – one that might have particular impact on students entering into a new college environment: “For lonely individuals it was even worse,” said Doane Sampey. “After a stressful day, they slept almost an hour less than they typically would.”

“We know from research in older adults that loneliness is associated with heart disease and other indicators of morbidity, mortality, and diabetes. So, if we can find when these

associations first start to occur, we might be able to identify when those physical health manifestations begin to show up,” Doane Sampey said. “Thinking about preventions or interventions for loneliness can help make sure that this stressor doesn’t lead to serious disease pathways.”

Participant’s relationships with their parents or their grades in high school also helped predict how stressed that student would be in their new life at ASU.

Beyond offering students and soon-to-be ASU students insight into those daily situations that will complicate their experiences and health, undergraduate research students in the Doane Sampey lab have the opportunity to experience what the study of psychology can entail outside of what’s taught in the classroom. “Dr. Doane has given me incredible responsibility,” said Emily Thurston, a senior at ASU. “All that coursework we do, you get to apply it to the lab. I think without my lab research experience, I wouldn’t really know what psychology was and what’s happening in the field,” Thurston said.

While students may never be able to say goodbye to their days of stress, studies at the Adolescent Stress and Emotion Lab are helping students become more aware of how stress impacts their everyday lives and helping them make smarter choices in how to deal with their stress.

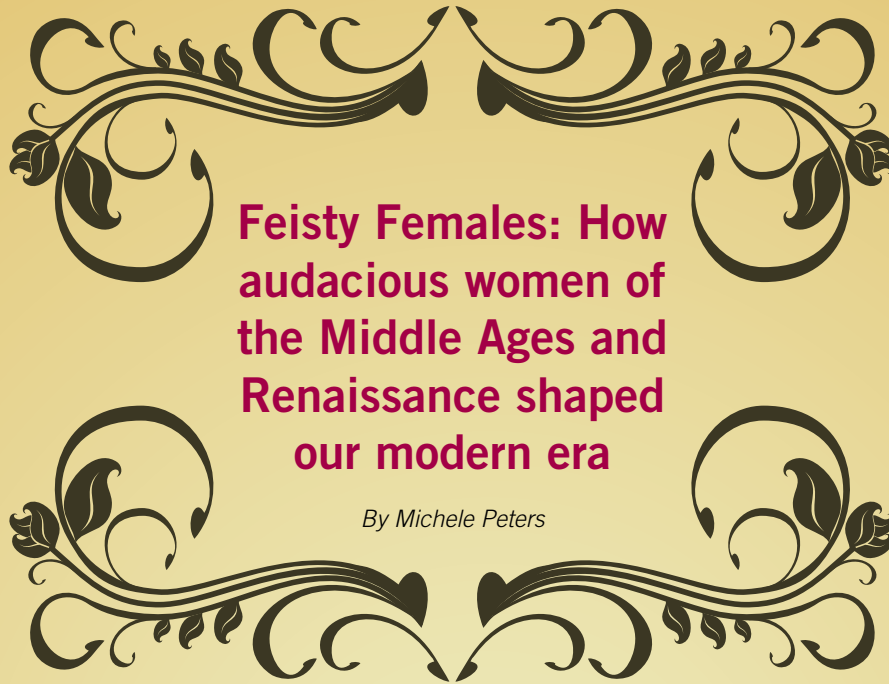
Doane Sampey’s group is also helping psychology and the wider ASU community understand how stress impacts students so that, in the future, ASU can provide stronger institutional support for youth as they transition to college. ▼



Leah Doane Sampey,
Devon Lathrop and Alex Zoloto
Photo: Olivia Ashton Stull



Vintage engraving showing Joan of Arc addressing Charles VII, the King of France. Saint Joan of Arc (ca. 1412 – 30 May 1431) is a national heroine of France and a Catholic saint. Image: Istockphoto



Feisty Females: How audacious women of the Middle Ages and Renaissance shaped our modern era

By Michele Peters

“Those that fail to learn from history are doomed to repeat it” – Sir Winston Churchill

Mention the Middle Ages and Renaissance and images of Henry VIII, the European landscape dotted with majestic castles, yards of silk with gold thread and pearls, and crowns encrusted with diamonds or rolling heads immediately come to mind.

“Those times are heroic and world changing. People are attracted to them partially because they can visualize themselves – in a highly romanticized way, of course – as living in a glorious past,” notes Professor Robert Bjork, director of the Arizona Center for Medieval and Renaissance Studies at Arizona State University. “But stories of Robin Hood, King Arthur, and Lady Guinevere, however embellished, have roots in the lives of real people. Those who lived during the Middle Ages had to be resilient, resourceful, skilled, and creative. Modern research shows that the challenges for survival, everyday struggles, the basic issues of the ‘human condition’ are dramatically similar to the same basic challenges we face today with disease, social upheaval, politics and wars for food security, riches, land, and religion.”

The center was created by the Arizona Board of Regents in 1981 and has become one of the top three research centers in the world for studies from the year 400, after the fall of the Roman Empire, to the 1700s. Affiliations include Oxford University, Cambridge University, Monash University’s Prato Centre in Prato, Italy, the University of Toronto and associations with the Metropolitan Museum of Art, The Cloisters in New York City. Through study of how people and past civilizations solved common issues, including challenges such as climate change, and more importantly, investigating what failed to work and why, scholars with the center believe that they can help inform modern day solution-building, promoting more peaceful approaches and generally better outcomes.

One area that requires attention to construct those better outcomes is building a full picture of the contributions of women in the past. While certainly critical to everyday life, the contributions of women and their impacts are rarely mentioned historically. Yet, it was the “lady of the house” who was left to navigate the seemingly hostile societal and

cultural conditions. While husbands, the lords of the manors, were obligated to fight in wars because of various alliances, debt or allegiance to kings, it was women who ran the manors. Women managed accounts, oversaw estates, and bartered for food, goods, and services.

Through the prism of today's enlightened society where focus is on gender equality, it's important to study the context of those medieval times to understand why the historical omissions were made. As a rule, women throughout this period were thought to be weak – physically, in mind and spirit – and therefore, inferior to males and thus required the protection and guidance of men – whether it was a father, a brother, a husband or even a son. Women were also considered “property” of the family and used as pawns and “goods” to gain wealth and position through arranged marriages. In addition, a major driving force behind every element of society, including the perception of the members of that society, was the church. Religious leaders were very powerful men. However, despite the challenges of those times some women were able to fashion their own lives. Abbesses of churches were powerful; widows and unmarried women were also able to live life on their own terms. So how best to build understanding of their impact within both scholarly and public spheres, and translate their contributions into insights about modern times?

Tackling the historical contributions of women, Arizona's Medieval and Renaissance Studies has launched a series of programs designed to illuminate the contributions and impact of the women of this era. Foremost among these is the public series: Fearless Females: Audacious and Feisty Women of the Middle Ages and Renaissance.

Why audacious? Consider Anne Boleyn, Lucrezia Borgia, Catherine de Medici, women of the Middle Ages and Renaissance, whose bold approach to how they met challenges of their day and how they lived their lives has captured and sparked the curiosity and study of academics, scholars, students and the general community for centuries, including to the present day.

“The Fearless Females series offers a captivating look at how women, then as they do now, exerted a tremendous influence at all levels of society,” says Bjork.

The series was launched this spring with the spotlight on the remarkable Christine de Pizan, with a talk by Professor Mark Cruse, a specialist in Medieval French literature with ASU's School of International Letters and Cultures, at Changing Hands Books in Tempe. Considered to be Europe's first professional female writer, Pizan was one of the first writers in Western history to compile a list of worthy women intended to legitimize women and argue for their essential morality and social importance. She created magnificent illuminated manuscripts and hundreds of ballads, poetry that even influenced 15th century English poets. Two of her most successful works – still published today – are “The Book of the City of the Ladies” and “The Book of the Three Virtues.” These books examine the importance of women's past contributions to society and exhorted women to cultivate useful qualities to combat the growing misogyny of the Judeo-Christian tradition. Notably, her last work, a poem eulogizing Joan of Arc, written in 1429, is said to be the only record of the military leader outside of the documents of her trial.



Anne Boleyn. Image: Wikimedia



Christine de Pizan. Image: Wikimedia



A cast of historical characters figured prominently at the Fearless Females event: "Wicked Women of Tudor England." Photo: Tom Story

Pizan had a pivotal impact on what we see and take for granted today, Cruse says: "Up until Christine's time, most women writers in medieval Europe wrote devotional literature: prayers, religious poems, and songs. She showed that women could be successful writers in any genre. In the centuries after she lived, women became increasingly prominent in the world of literature – Christine was a harbinger of this development. Closer to home, we see that she articulated many of the arguments that the modern women's movement has made about women's rights."

One example of Pizan's forward thinking was her insistence that a woman's intelligence was equal to man's, and that women should be educated. Interestingly, according to the National Bureau of Economic Research, in 1970-71, only 9.1 percent of bachelor's degrees in business were earned by women. By 2001-2, that number was up to 50 percent. In 2013, women will be 57 percent of the undergraduate student body in America.

"These are exactly the kinds of developments that Christine argued for and predicted – she argued that women were temperamentally more suited to study than men, and that the only reason women of her time were ignorant was because they were not given opportunities to learn," says Cruse.

The series has also offered a view of women outside of Europe or the Mediterranean regions commonly thought of in connection with the Middle Ages and Renaissance. Two programs examined the Daoist women of the Late Tang Dynasty in China and Goddesses in the Mayan Culture of Latin America. "I never thought of the Middle Ages happening in any place but Europe," said one attendee. "This has certainly opened my eyes and thinking in totally new dimensions." Another notes: "I'm not an academic and this [series] gives me the chance to learn from a true scholar, ask questions and then after the presentation get the chance to talk to people I have never met and probably would have never met, to talk history."

Bjork comments, "The Fearless Females series has proven a great success on a variety of levels for our center and participating scholars in the College of Liberal Arts and Sciences. Most importantly, the interaction between our speakers and the audience has offered an opportunity for a public conversation about a people and a time that formed the foundation for our modern society."

In addition to this public series highlighting women, a recent grant from the National Endowment for the Humanities is pioneering the center's research into medieval medicines,

diseases, and women's healthcare in medieval times; work that has the potential to be used in medical research and development of new medicines today.

With the center's scholars help, hopefully we will have better understanding of how the past contributions of women in the Middle Ages and Renaissance periods have helped to lay the foundations for functioning societies and some of the most important times for the development of human culture in areas of literature, theatre, language, art, communication and the reproduction of books. In addition, this period also set the stage for the sciences, math, engineering and medicine – or as a center scholar jokes: “Think of the Middle Ages as the original STEM (Science, Technology, Engineering, and Math) initiative.”

The Fearless Females series kicked off 2013 with two events: a special presentation on Catherine the Great of Russia and a talk by acclaimed author and researcher Sharan Newman on “The Lady as Lord in the Crusader States.”

On March 27, Professor Rachel Geschwind will present Italian artist Artemesia Gentileschi. Considered one of the most progressive painters of her generation, she was the first female accepted to the Italian Academy of Arts and was patronized by the Medicis and King Charles I – with a life's story to rival any novel today.

“The truth is that women often embraced and accomplished what traditional historians insist women never did,” says Bjork. “This series breathes life into medieval and Renaissance women, famous and not so famous – but all true leaders and visionaries from our past transforming our understanding of the social underpinnings of our modern society.”

Want a Fearless Female featured?

Contact acmrs@asu.edu. ▼



**QUIZ: How well
do you know your
medieval women?**



1. **Yes or No: Were women allowed into guilds in Europe?**
2. **What jobs were available to Native women in Latin America that were not available to European women?**
 - A. Merchants
 - B. Religious leaders
 - C. Revolutionaries
 - D. Breeding and training of horses
 - E. Only A and C
 - F. Only A, B, and C
3. **Who wrote the first autobiography written in English?**
4. **How did Scandinavian women stack up against their male counterparts?**
True or False:
 - A. Women and men benefited from a binary kinship system that gave essentially equal rights of inheritance to both males and females.
 - B. Women warriors fought as equals.
 - C. Only men were interred in boat graves, where body, ship and belonging were all buried to honor a person of greatness.

1. Answer: No. Some of the work that they could do was goldsmithing, weaving, domestic service and midwifery, farm labor, street performers, and acting as assistants to fathers, brothers, husbands and sons in many fields, but which remain unrecorded. 2. Answer: F. Women often handled the money in traditional communities, officiated as leaders of religious ceremonies, and acted as revolutionaries against Spain and the Inquisition. 3. Answer: Margery Kempe (1373-1438), a Scandinavian. 4. A and B are true, C is false.



Oil on canvas portrait of Empress Catherine the Great by Russian painter Fyodor Rokotov. Image: Wikimedia

Blind student offers new vision for STEM courses

By Sandra Leander

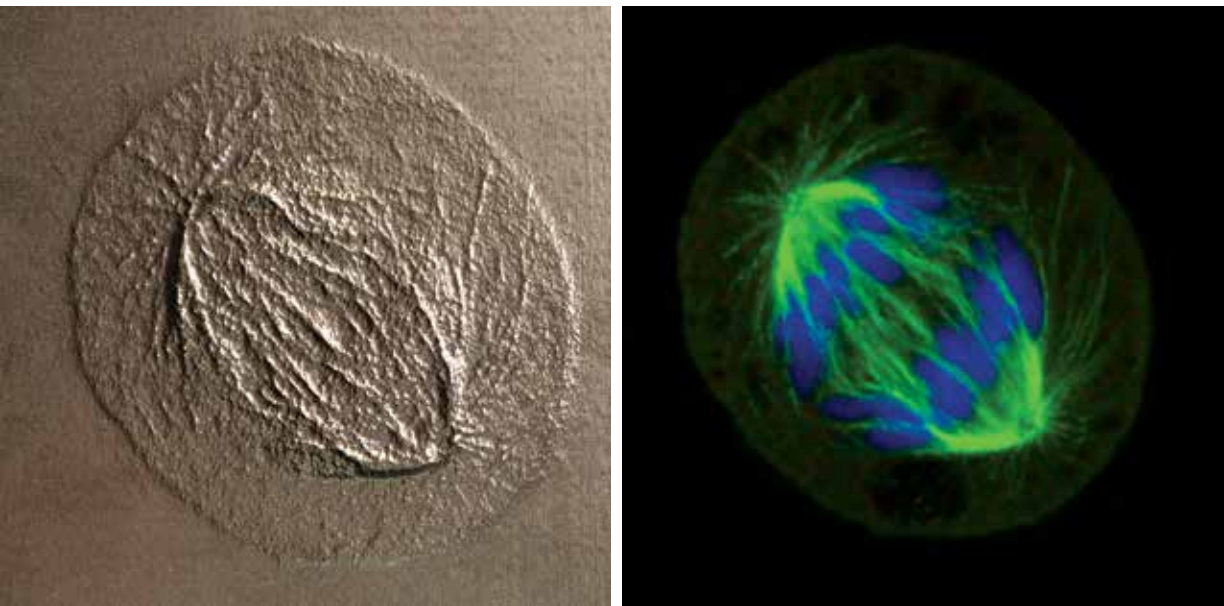


ASU senior Ashleigh Gonzales tests new 3-D tactile boards that will be used in basic STEM courses.
Photos: Jacob Mayfield

College-level Science, Technology, Engineering and Math (STEM) courses are typically rigorous, but for blind or visually-impaired students, these classes often present even greater challenges. Imagine taking an astronomy class and having to depend on someone else to accurately and effectively describe a photo of a nebula, or in biology, detail the image of a cell.

In 2012, Arizona State University kicked off a pilot program designed to improve access to STEM classes for students who are blind or visually impaired. Called 3D-IMAGINE (Image Arrays to Graphically Implement New Education), the program uses three-dimensional tactile boards to enhance independent learning in beginning Biology 100 and Astronomy 113 laboratory classes.

“Textbook images typically contain important messages whether it’s intensity or altitude,



Heart muscle cell undergoing cell division. Image captured using confocal microscopy (right) and then converted into a 3-D projected tactile image on HDPE board (left). Photos: Debra Baluch

or cell structure,” said Rogier Windhorst, Regents’ and Foundation Professor in ASU’s School of Earth and Space Exploration.

“We think these messages can be conveyed in a 3-D tactile platform just fine. While a person who is blind would have to sense the information, 3-D images may open up a new world in STEM courses for students who are visually impaired.”

Made of high-density plastic, the boards cost about \$60 each and can be used in place of or in addition to traditional lab materials.

The idea to translate digital images into 3-D tactile representations originated in Debra Baluch’s upper-level Cell Biotechnology class. Baluch, a research scientist in ASU’s School of Life Sciences and manager of the W.M. Keck Bioimaging Laboratory in the College of Liberal Arts and Sciences, met Ashleigh Gonzales after she enrolled in her class last spring. Gonzales, now a senior, is pursuing

a degree in molecular biosciences and biotechnology, and is visually impaired.

As part of the biotechnology course, students were tasked to design a research project and give a presentation of their results to classmates and bioimaging faculty. During her presentation, Gonzales, and her classmate Leanne Harris, described how 2-D images could be converted into 3-D tactile boards to allow blind or visually-impaired students an opportunity to learn about images found in textbooks, presentations or captured through a microscope.

At age 13, Gonzales lost her vision completely due to a rare genetic disorder. She had to learn Braille and other skills very quickly. As a college student, she has had to rely on current technologies such as raised line drawings, Braille, and image descriptions from teachers and classmates. Some of these methods present bias or skew the original information.



Researchers with the 3D IMAGINE pilot program are seeking blind or visually impaired students from ASU and the wider community to participate in beginning biology and astronomy courses. Participants will test new 3-D tactile boards used during labs. Photo: Jacob Mayfield

Through her and Harris' project, Gonzales hopes to expand the 3-D technology to other classrooms at ASU and improve access to STEM courses for others who are blind or visually impaired.

"I feel very strongly about the potential for the blind population to have access to STEM materials," Gonzales said. "Right now, very few blind people will pursue a career in a STEM field. There is a whole group of people whose only barrier to STEM fields might be easier to break than previously believed."

Gonzales and Harris presented their scientific poster titled "Pictures Worth a Thousand Words" at the national Microscopy and Microanalysis meeting last August in Phoenix. "Ashleigh was the lead author on the poster and presented her research to a large group of outstanding microscopists from around the world," said Baluch. "We were excited to see the positive response from fellow microscopists as she explained how to look at image data in an entirely different way."

The pair also presented their project at the Society for Neuroscience conference in New Orleans, and at the American Society for Cell Biology conference in San Francisco. This spring, the duo will be featured at the NASA Space Grant Undergraduate Research Symposium in Tempe.

"What Ashleigh chooses as a career may be decided by her visual impairment, even though she has the same level of education as her peers. What's remarkable is that despite this barrier she's helped to create a new way

of learning to overcome that barrier," said Baluch. "We can improve access to our STEM classes by providing these 3-D models."

"Accessible is an interesting term," said Terri Hedgpeth, director of ASU's Disability Resource Center. "When a student signs up for a class, we get the textbook and convert it into Braille or electronic text, and we render tactile diagrams that go along with it. That's time-consuming and expensive," she added. "3-D models provide a better tactile representation of the material. It's very different from the line pictures we typically produce."

If the pilot programs in biology and astronomy are successful, the team hopes to lay the foundation for using the 3-D tactile boards in all 100-level STEM courses at ASU. The group is currently seeking funding from the National Science Foundation and other organizations to support the program.

"I would like to see students be inspired to take additional classes in STEM and consider majors in the STEM fields," said Hedgpeth. "Maybe we can excite them a bit and raise their hopes for a better level of access."

The team includes researchers from two College of Liberal Arts and Sciences units – the School of Life Sciences and the School of Earth and Space Exploration, as well as the Ira A. Fulton Schools of Engineering and ASU's Disability Resource Center. For more information on 3D-IMAGINE, contact Rogier Windhorst at rogier.windhorst@asu.edu, or Debra Baluch at page.baluch@asu.edu ▼



Ed Finn: At the center of science and imagination

By Gretchen Burnton

The tallest building ever imagined. *The Jetsons*. Intel. Moon colonies. What do these things have in common? They are all in Ed Finn's orbit. Finn is the director of Arizona State University's Center for Science and Imagination, a research group launched this fall to bring together writers, artists and other creative thinkers with scientists, engineers and technologists "to reignite humanity's grand ambitions and look towards the future."

Finn came up with the idea for the center after Google's Solve for X conference last year. Science fiction author Neal Stephenson had taken to the conference stage to talk about how disappointed he was with society's dystopian visions of the future.

"He thought we had lost our grand ambitions," says Finn. "For Stephenson, the fact that we no longer send manned missions into space, that we're flying the same jet planes we built in the 60s, and that we're driving essentially the same cars shows that we've lost our ability to think on a grand scale and do big things." ASU President Michael Crow replied with a challenge to science fiction writers: Dream bigger. "When Dr. Crow said it was the science fiction writers who should be helping us be more ambitious and more optimistic, that struck a spark!" says Finn.

And with that, the center was born with Finn as its fearless leader.

Photo: Taylor Williams

fresh vision

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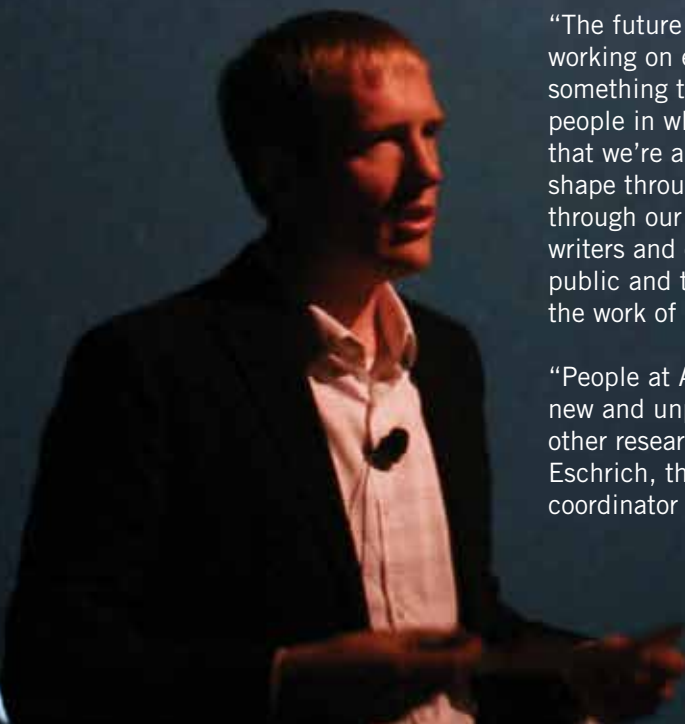
Finn's outlook is fundamentally interdisciplinary; he is an assistant professor with a joint appointment with the Department of English in ASU's College of Liberal Arts and Sciences and the School of Arts, Media and Engineering in the Ira A. Fulton Schools of Engineering.

"My training and my background infuse everything that the center does," says Finn. "The center uses storytelling and narrative as a way to get people thinking more concretely, more ambitiously, more optimistically about the future."

"The future is not something that Apple is working on exclusively," adds Finn. "It's not something that is only happening in labs with people in white coats. The future is something that we're all invested in and that we all shape through our choices, our actions, and through our failures to act. Our talents as writers and creative thinkers can benefit the public and the future just as profoundly as the work of scientists and other researchers."

"People at ASU have a real desire to create new and unprecedented connections with other researchers and thinkers," says Joey Eschrich, the research and operations coordinator for the center and an ASU alum.

Photo: Tom Story



ns

laborations

ense of agency

“The center is designed to be a space for those connections to take shape. We are an institutional platform for people from very different backgrounds to collaborate, to challenge one another and to do things they might never have imagined were possible.”

One of the center’s main projects is Hieroglyph, an “experiment” proposed and developed in collaboration with Stephenson.

“We’re pairing noted science fiction writers with ASU researchers and engineers to create stories set in the near future,” says Finn. These stories use technologies that exist today to try and imagine radically different futures

Another project teams up author Cory Doctorow with Kip Hodges, the director of the School of Earth and Space Exploration, to explore how 3-D printers could be deployed on the moon to quickly and cheaply build infrastructure for colonies or research stations without human construction crews. Hieroglyph stories like these are intended to inspire researchers to pursue bold, path-breaking projects; they also present thoughtfully optimistic visions of the future to counterbalance the dystopian thinking that dominates today’s science fiction.

These stories and others will be collected into an anthology, co-edited by Finn and Kathryn Cramer, an award-winning science fiction

based on real ideas, rather than warp drives or other fantastical technologies that aren’t yet on our horizon.

Stephenson’s project, a collaboration with ASU structural engineering professor Keith Hjelmstad, starts with the challenge “how tall can we build?” The team is working on a concept for a 20-kilometer steel tower that reaches into the stratosphere. From that height, weather patterns would be distant swirls. Planes could save fuel by docking at the tower instead of landing, and space missions could do the same by launching from it. The tower will serve as a canvas for artists, engineers, scientists and writers to dream and prototype new technological applications, social structures and physical landscapes.

anthologist, writer and critic, to be published by HarperCollins. The project also invites comments and ideas from the public through the portal hieroglyph.asu.edu.

Another of the center’s creative projects for 2013 is Emerge, which intersects with ASU’s blockbuster public event “Night of the Open Door” on March 2, 2013.

In 2012, the event-cum-conference explored the idea of being a human in a changing environment. It examined how technology has changed and will continue to change minds, relationships, where people live, and everything else in between.



Photo: Taylor Williams

“Emerge was so fabulous that we wanted to make sure it became a tradition at ASU,” says Finn. “Our theme for 2013 will be ‘The Future of the Truth.’ Working with ASU’s Project Humanities, Sandra Day O’Connor College of Law, Consortium for Science, Policy and Outcomes, Ira A. Fulton Schools of Engineering, School of Sustainability, and other partners, we’ll combine elements of a conference and a festival with performances and other interactive elements.”

Project Humanities is also collaborating with the Center for Science and Imagination around the center’s Science Fiction TV Dinner Series. The first evening in the series focused on the TV series *Star Trek*, and the November installment tackled the beloved 1960s cartoon series *The Jetsons*, featuring Yinong Chen of the School of Computing, Informatics and Decisions Systems Engineering and Karin Ellison of the School of Life Sciences and Center for Biology and Society. The series will

continue in 2013 with events on *The X-Files*, *The Twilight Zone*, and other favorites.

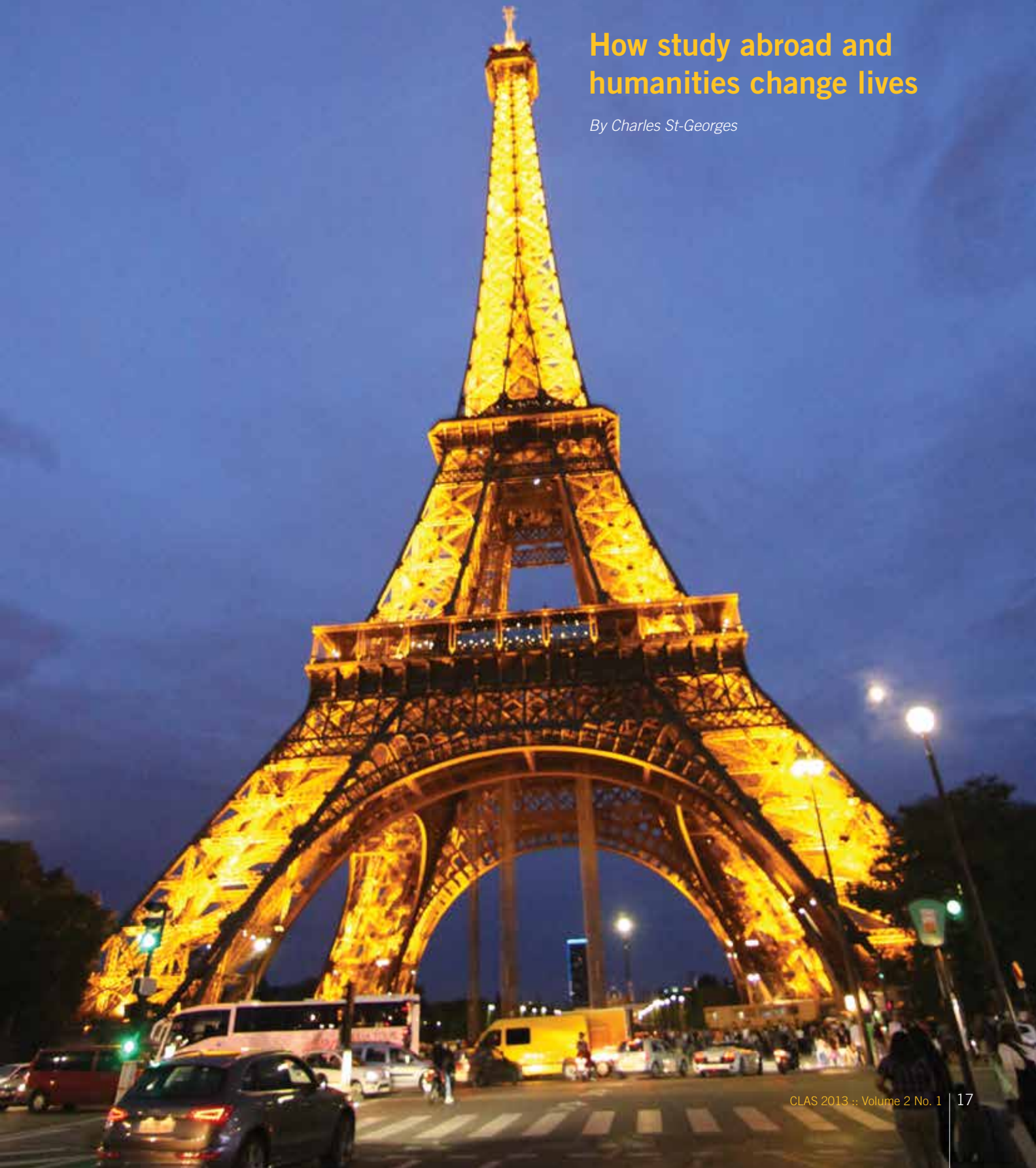
“These partnerships are bridging the imaginary divides that exist between humanities, sciences and social sciences,” says Patrick Reid, coordinator for Project Humanities. “Humanities are involved in everyday life and in all the other disciplines. It’s the goal of all our events to bring people together to foster dialogue and for people to make those connections and realize that what’s done in arts and humanities is no less impactful than what’s done in sciences. It just affects people in very different ways.”

“We are always looking for new ideas and new venues to hold events,” Finn says. “I tell people ‘if you’ve got a great idea, get in touch with us’.” To contact the center or find out more about center programs, email imagination@asu.edu or visit csi.asu.edu. ▼

Four weeks in Paris?

How study abroad and
humanities change lives

By Charles St-Georges



Kristin, an ASU communications major, had doubts about the advice that she was getting when it came to the importance of a second language in her career. “You can pick up a language anywhere. That’s what the software Rosetta Stone is for!” said older friends and relatives. “Besides, isn’t there a two-year language requirement already built into your program? I’m sure that’s all the French you’ll ever need. Why waste your time studying literature and culture?”

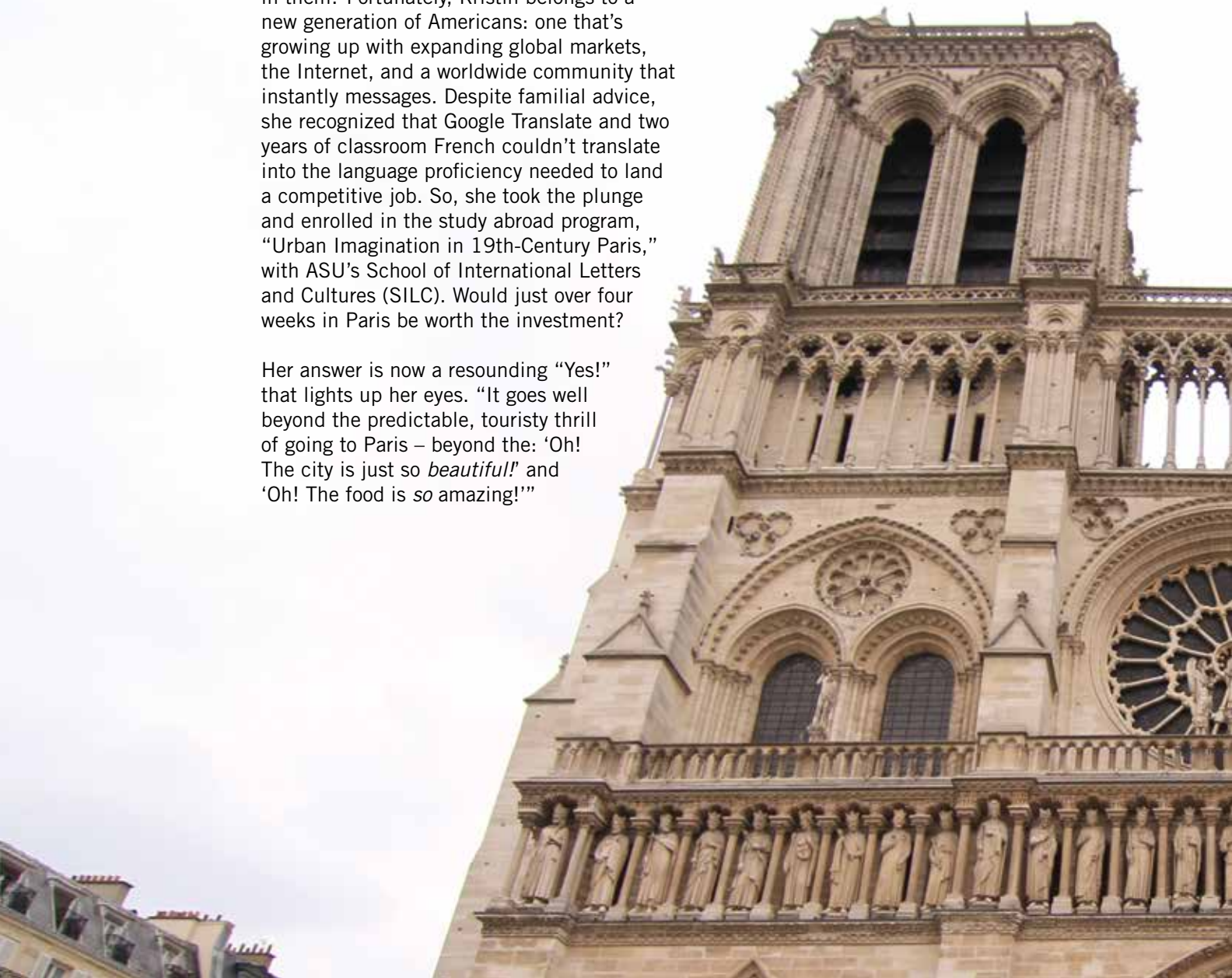
Until last summer, this Arizona native’s two decades (give or take) of life experience had been limited to the United States (except for a rare weekend in Rocky Point, Mexico). So deciphering what to do with the “rest of her life” presented some difficulties. How could she know which opportunities would reap maximum returns for her investment in them? Fortunately, Kristin belongs to a new generation of Americans: one that’s growing up with expanding global markets, the Internet, and a worldwide community that instantly messages. Despite familial advice, she recognized that Google Translate and two years of classroom French couldn’t translate into the language proficiency needed to land a competitive job. So, she took the plunge and enrolled in the study abroad program, “Urban Imagination in 19th-Century Paris,” with ASU’s School of International Letters and Cultures (SILC). Would just over four weeks in Paris be worth the investment?

Her answer is now a resounding “Yes!” that lights up her eyes. “It goes well beyond the predictable, touristy thrill of going to Paris – beyond the: ‘Oh! The city is just so *beautiful!*’ and ‘Oh! The food is so amazing!’”

“I discovered how important the knowledge of the culture was in getting around in everyday life,” says Kristin. “If someone is trying to learn a language for the purpose of business, their future career, or just travel, they require some foundation on which to base their decisions, behaviors, as well as their conversation. Without this, they can’t be effective communicators.”

Kristin says that the program changed the way she viewed the world and her role in it – both as a future professional and as a human being – and in ways that simply weren’t possible from a classroom or a laptop. “This experience breathed new life and energy into my communications program and my life in general.”

Kristin now laughs at her earlier assumptions that competency in French



or any language could be achieved without ever “living in the language” or studying the history and culture of the people who speak it. Besides discovering that culture sets the context for language, she now believes that the humanities set the context for all studies and disciplines.

“The ways in which knowledge is developed, shared, and questioned are framed and determined by any given society’s culture, history, and worldview,” she says. “Engaging with a field of study centered around the urban imagination helped me understand that much of my own cultural assumptions are informed by the same Western philosophical traditions that were in play in 19th-century Paris.”

Kristin was one of 136 students who participated in 14 programs directed by

ASU faculty in such diverse places as Brazil, Canada, France, Germany, Italy, Japan, Kuwait, Mexico, Romania, and Spain. Some of the School of International Letters and Cultures programs have been operating for decades, such as the French Language and Québécois Culture program now entering its 22nd year. The Romania and Central Europe programs were started in 1997, and, in 2010, the extremely popular program in Spain split into two – based in León and Seville – to offer students more choice and variety. One of the newest programs allows study of Arabic/Islamic Culture and Literature in Kuwait, and the summer of 2013 will bring aboard Classical Studies in Naples, Italy. Italy is home to several different programs, from one centered around language and art history in Florence – SILC’s oldest program – to the newest in Castelraimondo. In the Castelraimondo program, students are immersed in Italian culture and language in a region more isolated from tourist hotspots, to maximize sociolinguistic development and competence. Any way you look at it, “SILC programs offer students the insight that any study of the humanities is an international endeavor *par excellence*, since the word ‘humanity’ in and of itself invokes a global consciousness,” says Mark Cruse, faculty director of Kristin’s program in Paris and specialist in Medieval French Literature.

Now completing her senior year back on the ASU campus, Kristin says she can’t imagine any college education being complete – regardless of one’s major – without some kind of study abroad: “This kind of global perspective and knowledge crucial for building a career just can’t be programmed into software!” To find out more about ASU study abroad, including exchange programs: studyabroad.asu.edu. ▼

Photos: Stéphane Mijuskovic





Michelle Mass. Photo: Suzanne Cassano



Michelle Mass at the NSF Robert Noyce Teacher Scholarship Program Conference, July 2011. Photo: Mike Colella

Life sciences alum translates K-12 science into excitement

By Viviane Callier

Thinking “outside of the box” comes naturally to Arizona State University alum Michelle Mass, particularly when passing along her love of science. Mass, who holds a bachelor’s degree in biology with honors from Barrett, The Honors College, and master’s in education, blended her ASU degrees to develop a science education curriculum designed to engage traditionally underserved students in Surprise, Ariz. No surprise then that the path she sculpted at ASU is now changing lives and minds of many kids in our community.

Mass is a graduate of ASU’s School of Life Sciences, with a concentration in biology and society. This degree program is designed to empower students to understand the social context of science, explore policy and emerging areas of biology, to do research and bolster their skills in the communication of science to diverse audiences. Most importantly, it was through this program that Mass was able to focus on her interest – the problem of scientific literacy of America – a topic that interested her even before college.

“I loved tutoring younger children and enjoyed watching them grow, grapple with and master difficult concepts – basically watching the light bulb ‘go on’,” says Mass. “It is so satisfying and exciting to be part of that process.”

Mass’ own insights at ASU were equally illuminating. Her undergraduate course

of study included classes in the History of Science, Bioethics, the Human Event, Creationism and Evolution, and The Darwinian Revolution. These studies changed her awareness of how scientific applications and technology are used by society, and how society’s understanding of science impacts policies – such as the regulation of stem cell research. Creationism and Evolution, and The Darwinian Revolution, both taught by Barrett lecturer John Lynch, turned her attention to how difficult it is to teach evolution in public school classrooms because of the rift that some see between scientific evidence and religious belief. The courses also made her acutely aware of a deficiency in science education and a lack of scientific literacy in America, realizations that fueled her desire to remove the “mystique” around science that often scares students away.

In addition to her studies on campus, Michelle also participated in the “Learning Community” – first as a student in her freshman year, and then as a mentor in her sophomore and senior years. She organized events and study sessions, and also became a Residential Administrator (RA) living with other life sciences students in the honors college. A study abroad experience also offered Mass new perspectives on how her skills could contribute the most to her community. Mass traveled to China, as part of a five-week-long study abroad program organized by the college. It was in China where Mass saw first-hand the striking cultural differences between the values that



From left to right: George Cardenas (ASU STARR Noyce Scholar), Ayesha Brewster (ASU STARR Noyce Scholar), Suzanne Cassano (ASU STARR Noyce Scholarship Specialist), Michelle Mass (ASU STARR Noyce Scholar).

Americans and Chinese place on education: In China, education is very competitive and highly valued, whereas in America, resources to improve the quality and access of education are not always prioritized. This experience fueled her undergraduate thesis, which focused on the demographic and economic impacts of the one-child policy and furthered her motivation to address the need to improve scientific literacy in America and promote the value of education.

Upon completion of her undergraduate degree, Mass entered ASU's Mary Lou Fulton Teachers College and joined the Teacher Education for Arizona Math and Science (TEAMS) program. Pursuing a master's in education, she also applied for and was awarded a STARR Noyce Teacher Scholarship. This scholarship provides teacher training for science teachers; in exchange, Noyce graduates go on to teach two years in an underserved school for every year of support received through the program.

Her first job was in the Tartesso Elementary School, a K-8 school in Buckeye, Arizona. Mass quickly noticed that many of her 7th-grade students were actually only reading at a 3rd- or 4th-grade level. Mass had loved to read as a child, so at first it wasn't clear how she could help motivate her students who didn't.

"One of my primary goals was to become the kind of teacher who could make science accessible and enjoyable for my students," says Mass. "I thought maybe if I could find

books that they liked, that they would become more engaged and confident in their reading – so I started a science fiction book club." Students picked the book and decided how much to read each week. Michelle prepared questions, to promote discussions and also weave in opportunities to discuss science in the context of science fiction. Among the books they read was author Suzanne Collin's "The Hunger Games," which the group also went to see in the theater when the movie was released. The change in the students was significant. Students' reading levels improved. Their interest in science and understanding of science terminology also grew. And the students' enthusiasm directly transferred from the club to the classroom, where students generally became more involved, interested, and confident in asking questions and discussing science.

"The Noyce program offered lots of professional development opportunities, including a starting package that helped supply materials for my classroom, including the purchase of the books for the science fiction book club," says Mass. "The Noyce program helped me find a job, gave me feedback and ideas on how to improve classroom management and create new learning activities for my students."

Now a biology teacher at a high school in Surprise, Ariz., Mass (now Romero) invests in her students, many of whom come from low income families with limited experience and opportunities for success in a science classroom. With her support and help, she hopes that they will gain experience and confidence doing science.

"Science teachers who show dedication, creativity, and initiative have tremendous impact on students' career trajectories as well as on the scientific literacy of our country as a whole," says Suzanne Cassano, STARR Noyce Scholarship specialist at ASU. "We are fortunate to have students like Michelle and academic programs, like the Biology and Society program in the School of Life Sciences, the TEAMS program in Mary Lou Fulton Teachers College, and the Noyce Scholarship program, which partner to support these budding teachers and changemakers and their passion to contribute to our local communities." ▼



T. Denny Sanford honored with school



In recognition of his long-time support for ASU and his work to improve the lives of children, youth, and families, philanthropist T. Denny Sanford was honored by Arizona State University with the naming of ASU's T. Denny Sanford School of Social and Family Dynamics.

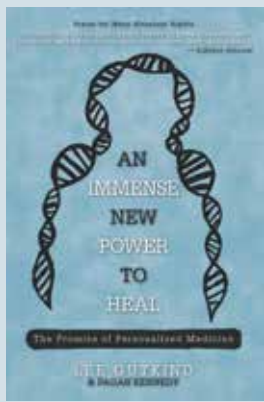
A pioneer of new ideas, thoughts, and programs, Sanford has helped to advance multiple programs at ASU, including the creation of the Sanford Harmony Program, designed to enhance relationships among girls and boys, and a partnership with Teach for America at ASU's Mary Lou Fulton Teachers College.

One long-standing dream of Sanford's has been to reduce the divorce rate in the United States by 50 percent within the next 50 years. The Sanford Harmony Program is a one-of-a-kind project specifically designed to help girls and boys to learn more about each other, develop positive attitudes and behaviors toward each other, and inspire mutual respect and cooperation in their everyday lives. It has been implemented in several early childhood and intermediate classrooms across the Phoenix metropolitan area.

The T. Denny Sanford School of Social and Family Dynamics features more than 60 world-class scholars, award-winning initiatives that break traditional academic boundaries and seek innovative solutions and a large and diverse student body. As noted by Richard Fabes, founding director of the Sanford school, "Although our name is changing, our dedication to research, teaching, and service for children, youth, and families is stronger than ever and Denny's inspiration and investment ensure that this will continue to be the case." ▼

naming celebration

Photos: Tim Trumble



The promise of personalized medicine

By Viviane Callier

“An Immense New Power to Heal: the Promise of Personalized Medicine” is Lee Gutkind’s most recent book. Professor in the Hugh Downs School of Human Communication at Arizona State University, founder and editor of *Creative Nonfiction Magazine*, and baptized “The Godfather” of creative nonfiction, Gutkind uses narrative – stories about people – to recount the beginnings of a revolution in how medicine is practiced.

Personalized medicine is the idea that specific information about individual patients, such as their genetic make-up, family history, and lifestyle habits, can be leveraged to tailor medical treatments to individuals. Blanket approaches to treating disease have repeatedly failed, especially in cancer medicine, because each tumor is different and susceptible to different drugs. By screening patients to determine if they have a specific mutation, physicians can choose a specific drug that will target that mutation and therefore increase the chance that the tumor will respond to treatment.

Gutkind’s fundamental belief is that narratives are the most engaging and impactful way to convey complex information and ideas to a broad audience. The biggest challenge for writing this book about personalized medicine, Gutkind says, is that so much of the story hasn’t happened yet. In his previous books, such as “Many Sleepless Nights: the World of Organ Transplantation,” Gutkind already knew the broad outlines of the story he wanted to tell. He then found patients

undergoing transplant procedures, which are exciting and dramatic events: perfect for writing narrative. In contrast, personalized medicine is full of ideas, theories, and promises, but is only at the very beginning of transforming patient care. The challenge, then, was to write a story about a topic where much of the story is yet to come.

After some detective work, Gutkind found several patients, doctors, scientists, each of which represented a different perspective on personalized medicine. It took a long time to identify and track down people who had stories to tell. For example, it took six months to find Mariano Camacho, a sergeant in the army, and another six months to get his family to discuss with him their experience with personalized medicine. Camacho decided to get genetic testing in 2009, because he wanted to know if he carried a gene for Alzheimer’s disease. His mother had Alzheimer’s, and several other relatives had also suffered from dementia. He wanted to know if the same fate awaited him. Camacho insisted on being tested for a version of a gene (APOE-ε4) that is a risk factor for Alzheimer’s, in spite of his physician’s reluctance to test for the allele. This reluctance was due to the fact that, even if the genetic test showed that Camacho was at higher risk of developing the disease, there was absolutely nothing that a physician could do to change that risk, so he believed the information to be useless, and even potentially harmful in causing unnecessary anxiety.

Most of the time, the people he interviews are delighted to be featured and written about, says Gutkind. However, very rarely, some of them will stop communicating with him. This is something that perhaps represents the fear and uncertainty about the legal and ethical issues in sharing personal health information. Indeed, there is no legal framework yet for the sharing of this information. What is the obligation of a patient to share personal health information with their family, for whom that information could also have health implications? What is the obligation of a doctor to share information that a patient might not want to know? Resolving these ethical issues is one of the obstacles that will need to be overcome before personalized medicine becomes truly mainstream. First, lawyers will establish a framework for the ethics of responsibility in sharing personal medical

information. Progress in making personalized medicine mainstream has been so slow partly because science, ethics, law and policy all play a role in developing the movement.

In his book “An Immense New Power to Heal,” Gutkind follows a physician by the name of Steve Murphy, chronicling his successes and failures at the cutting edge of personalized medicine over the course of several years. Murphy’s specialty is genetics, and his idea was to use genetic testing and individual information to counsel and treat patients. Murphy’s practice in New York City, the first private personalized medicine clinic, floundered for several years, partly because people did not understand quite what a “personalized medicine clinic” would provide. Eventually Murphy’s personalized medicine clinic transformed into a general practice, where he applies the concepts and ideas of personalized medicine to treating patients. Murphy spends more time with patients than most general practitioners (GP), and in some ways, he has gone back to an older style of medicine, where a big part of treating patients was simply to *listen* – something that many doctors, in today’s increasingly busy pace, cannot do. Murphy has come full circle, rebuilding the personal connection between physician and patient as the centerpiece of personalized medicine.

In discussing the structure of his book, Gutkind interleaves the stories of patients, physicians, and scientists, representing

different perspectives on personalized medicine. Gutkind also points to the perspectives that are absent: he chose to not represent insurance companies, pharmaceutical companies, or the FDA, for example. Unlike journalism, which aims to be unbiased, creative nonfiction does not pretend to be objective, says Gutkind. Gutkind chose to tell a story that required select perspectives, but did not aim to collect “all” perspectives. He predicts that in a few years additional perspectives could be added to write an even more complete story of the development of personalized medicine. Much like any narrative work, much of the story is still waiting to happen.

Because the revolution in personalized medicine involves so many people, not just physicians and patients but also policy-makers and lawyers, the promise of personalized medicine will probably take years – decades – to become actualized. Gutkind believes that things are happening in small steps, and the revolution in personalized medicine is picking up steam. There is promise, there is potential, but whether that promise is fulfilled is still an open question. There is much more to come. ▼

Gutkind is a Distinguished Writer in Residence with the Consortium for Science, Policy and Outcomes in the College of Liberal Arts and Sciences.

ASU supports the development of personalized medicine in many areas:

- The **Virginia G. Piper Center for Personalized Diagnostics** at the Biodesign Institute, directed by life sciences professor Joshua LaBaer, is developing tools to use individual patient profiles for diagnosing and treating disease.
- ASU’s **Transformative Healthcare Networks** initiative, directed by life sciences professor Anna Barker, is a large-scale effort to develop advanced technologies, disease interventions, and infrastructure to address major problems in healthcare.
- The Sandra Day O’Connor College of Law has established the **Program on Personalized Medicine, Law and Policy**, the first law program in the country to study the law, science and policy issues at the center of personalized medicine. One of the ongoing projects at the law school, supported by the National Institutes of Health, examines the liability implications of personalized medicine for physicians and other health care providers. law.asu.edu
- **The Office of Knowledge Enterprise Development (OKED)** has joined with the Center for Individualized Medicine at Mayo Clinic, offering awards for \$5,000-\$100,000 to promote prototype development, software or service development, pilot execution, company formation or research endeavors leading to commercialization of a product or service in the general area of personalized medicine. azte.com/index.php/news-events/ASU_Mayo_Awards



Nonviolent quest lands alum in Bolivian prison

Rachel Bishop, an Undergraduate Research Fellow with the Center for the Study of Religion, traveled to Bolivia during the summer of 2012 with support from the Friends of the Center Student Awards Program to learn first-hand about the role of religion in conflict resolution and nonviolence. This is her story.

In 1958, Martin Luther King Jr. wrote in his book “Stride Toward Freedom”: “At the center of nonviolence, stands the principle of love.” Perhaps a perfect example of the intersection of religion and conflict resolution, King, a Baptist minister *and* a civil rights activist, cited love, not religion, as standing at the center of nonviolence. Throughout my

studies of religion and conflict at ASU, I have been exposed to the numerous ways that religion plays a role in conflict resolution. This summer, however, I witnessed first hand a different way that religion actively serves as a catalyst towards peace, in a delicate balance of action and inaction. Working as an intern for the NGO Bolivian Quaker Education Fund,

I was able focus my efforts this summer as a volunteer for the non-profit organization Alternatives to Violence Project (AVP). AVP grew out of a collaboration between a group of prison inmates in New York and the Quaker Project on Community Conflict in 1975. What emerged was an experiential prison workshop in conflict-resolution, responses to violence, and personal growth.

Never in my wildest dreams would I have imagined myself working alongside Bolivian AVP facilitators in a juvenile prison called Qualauma. But, that is exactly where I found myself this summer. It was a challenging experience to be sure, filled with intense discussions on peace and nonviolence, individual struggles of the participants, and goals for the larger community. Always out of my comfort zone, I juggled speaking in Spanish (not my first language) and trying to be at ease in a room full of 25+ Bolivian young men (ages 14-22), who were – how should I put this – overeager to be working with a female foreigner. However, surprisingly enough, out of an environment that would not quickly be described as positive, I emerged with an optimistic view of the *positive* ways that religion can aid towards peace efforts.

During my internship, I asked my advisor (who is an AVP facilitator) if she would consider AVP to be a religious effort. Her response, “Absolutely not!” surprised me. Given the fact that the very organization was founded by Quakers on a fundamental Quaker notion, the idea that *there exists in every person an inborn power for peace*, I assumed that AVP would consider itself to be religious. This assumption was far from true. One contributor to AVP’s success is that it is not *blatantly* religious. There is no religious rhetoric during the workshops, no reading from religious texts, and the organization and its participants are not defined as one single religious group. Yet, there are strong currents of religion running through AVP. From its initial founding, to the fact that many AVP facilitators are deeply religious people, religion cannot simply be taken out of the equation here. What’s more, one also cannot deny a certain religious/spiritual sentiment that seems to underlie all of the AVP workshops: a profession of unity and a calling to the greater good in all of humanity.

So, how does this work? Religion is at once taking a back seat *and* a fundamental part of the AVP experience. At first, this notion seemed counterintuitive to me. But after much thought, I don’t believe that it is. In fact, I believe this delicate balance that AVP has achieved, in regards to the use (and non-use) of religion for conflict resolution purposes, could speak greatly to peace efforts on a larger scale. In this instance, religion takes a back seat by masking itself. Essentially, AVP took the most widely-applicable, overarching beliefs of religion and presented it as spirituality. Losing the structure, politics, and rhetoric of institutionalized religion that so often play a role in creating division and conflict, what was left were the universal appeals to humanity – relatable to people of all faiths and those who practice no faith at all. To me, this is an interesting idea – to lose the “ego” of institutionalized religion that so often feels compelled to say “*my way is the right way!*”

As King and many other leaders in the struggle for peaceful conflict resolution have realized, the foundation for peace lies in the most basic, elemental aspects of the human experience: love, unity, the collective experience of humanity. To this extent, religious efforts can be both a blessing and a curse. On the one hand, most world religions speak directly to these elemental aspects. On the other hand, many religions and religious followers insist that their teachings alone are correct. By encouraging the aspects of religion that unite people and draw them to act towards peace, yet discouraging the aspects of religion that so often draw lines between and separate people, AVP achieved, in my opinion, a most effective use of religion in conflict resolution efforts.

Rachel Bishop graduated from ASU with a double-major in global studies and religious studies upon her return from Bolivia. Her honors thesis project explored the role of religion and violence in American history, but her real passion lies with finding alternatives to violence, work that she is continuing to pursue in the San Francisco Bay Area with AVP and the Metta Center for Nonviolence. ▼





How modern humans conquered the planet

By Julie Russ

This winter, Doctoral Candidate Benjamin Schoville, Professor Curtis Marean and Faculty Research Associate Erich Fisher, with the School of Human Evolution and Social Change and ASU's Institute of Human Origins, and their co-authors documented one of the most significant technologies developed by humans – creating a projectile with an attached stone blade and then figuring out how to heat treat the stone to make weapons sharper, lighter and more lethal. By putting the first stone tip on a simple stabbing shaft some 500,000 years ago (more than 200,000 years earlier than previously thought), early humans increased the cutting edge and brought down animals

more quickly. With assisted leverage, such as with an atlatl or bow, the sharper, lighter stone-tipped projectiles developed 71,000 years ago could then be hurled with greater distance, power, and accuracy. This two-step process of projectile weapon evolution is what ultimately allowed modern humans to conquer the planet and set the stage for everything that followed – from hurling spears to artillery to spaceships whipping around the planets.

Image: Excavation site in Mossel Bay, South Africa, which shows layered sequences of nearly 50,000 years of human prehistory tagged with orange flags. ▼

Join the Origins Project for a weekend of science, myth and reality

March 29

**6 p.m. at Gammage Auditorium
Tempe campus**

“The Unbelievers”

Movie Preview and Panel Discussion

Kick off of the Origins Stories weekend with a preview screening of the new feature film documentary, “The Unbelievers,” starring scientists Lawrence Krauss and Richard Dawkins, with contributions from noted filmmakers, actors, and writers. Following the film is a panel discussion featuring the scientists, filmmakers, well-known actors and writers to discuss the importance of raising these issues broadly for the public in a film format.

March 30

**7 p.m. at Gammage Auditorium
Tempe campus**

Origins Stories: Science, Myth, and Reality

Join the Origins Project at ASU for the final night in the Origins Stories weekend, focused on the science of storytelling and the storytelling of science. The event will feature a panel of esteemed scientists, public intellectuals, and award-winning writers including astrophysicist Neil deGrasse Tyson, Booker-winning author Ian McEwan, theoretical physicist Brian Greene, Science Friday’s Ira Flatow, World Science Festival Executive Director Tracy Day and Origins Project Director Lawrence Krauss as they discuss the stories behind cutting-edge science – from the origins of the universe to the mind-bending technologies that will change our future.

origins.asu.edu/events

Origins Project is a research unit of the
College of Liberal Arts and Sciences

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