

# CLAS MAGAZINE

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**ASU** COLLEGE of  
LIBERAL ARTS  
& SCIENCES  
ARIZONA STATE UNIVERSITY

## Dean's note



This issue of the College of Liberal Arts and Sciences (CLAS) Magazine ushers in both a new academic year and a new app! We've gone electronic, now allowing you to delve more deeply into stories about our alumni, students, faculty and discoveries through the rich medium of audio, video and photography.

Apps and other advances in technology are redefining education, discovery, medicine and how we experience and perceive the world, making the role of liberal arts and sciences, language and literacy in society even more pivotal as a translator of the human experience.

The need for investment in our graduates is highlighted in a 2013 report released from the American Academy of Arts and Sciences called "The Heart of the Matter: The Humanities and Social Sciences for a vibrant, competitive and secure Nation." It opens with the question, "Who will lead America into a bright future?" and calls for "citizens educated in the broadest sense" and reminds us that the humanities and social sciences are, "the heart of the matter and the keeper of the republic – a source of national memory and civic vigor, cultural understanding and communication, individual fulfillment and the ideal we hold in common." Heart of the Matter video link: <http://vimeo.com/68662447>

What does it mean to be human? Come experience a virtual field trip with earth sciences entrepreneur Geoffrey Bruce and cross borders alongside poet Alberto Ríos and meteorite hunter Meenakshi Wadhwa. Play catch with ball-throwing athletes and alums Nikki Unbehaun and Amanda Young, and robots, with psychologist Michael McBeath. Accompany Dean George Justice as he examines the passion inspired by 19th century author Jane Austen and walk down a road as ancient as man – with war veteran-students Sean Cohmer and Michael Biggs.

These are just a few of the remarkable 1,300 faculty and 20,000 undergraduate influencers whose broad-based, interdisciplinary journeys re-imagine the future, creative technology development and translate the diversity of the human experience for Arizona, our nation and the world.

Robert Page  
*Vice Provost and Dean*  
*College of Liberal Arts and Sciences*

**On the cover:** A quadcopter, used for taking aerial video, in the Dales Gorge of the Hamersley Basin in Karijini National Park, Western Australia.

Photo: Ariel Anbar  
More about this story on page 6



## Digital edition



This publication is available in digital formats, with in-depth video, audio and photography. For information on downloading the app: [clas.asu.edu/magazine](http://clas.asu.edu/magazine)

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### Contact us!

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# Water polo alum enters career pool ahead of the game

by Margaret Coulombe

**W**hen Arizona State University alum Nikki Unbehaun graduated from Pioneer High School in Ann Arbor, Mich., ASU wasn't even on her radar as a college pick. California topped her list until she came to ASU's water polo summer camp, hosted by then Youth National Team Coach Todd Clapper, now ASU's water polo head coach.

"Then I just fell in love," remembers Unbehaun, whose stature reminds one of exactly why Norse Vikings conquered nations. "My parents saw the combination of a big university feel with high caliber programs and were thrilled and I saw a place where a math and science geek could have a perfect fit in both my academics and my sport."

Within a matter of weeks, Unbehaun enrolled in one of the top 10 water polo programs and joined one of the top undergraduate programs in the nation – Barrett, The Honors College – and signed up to pursue a global health major in ASU's School of Human Evolution and Social Change.



Photos: ASU Athletics

“ASU was also one of the few universities in the country that taught Thai. What a bonus!” Unbehaun recalls. “I had always been interested in medicine, but a trip to Udon Thani, Thailand, when I was 16 shifted my focus to people, why certain health issues affected them, and ignited my interest in doing work from within cultures and practices.”

As part of her liberal arts major, Unbehaun studied abroad in Beijing and Shanghai, China, and Chang Mai, Thailand, where she interned at a primary care clinic for six weeks. She saw firsthand the impacts that public health programs and people can have. “They did workshops and hosted a mobile clinic,” says Unbehaun. “They taught about farmer safety, diabetes and offered an expectant mothers class, we did home visits to help the elderly and we even scouted areas that might pose problems for dengue fever.”

“What impressed me most was how closely tied the nurses and staff were to the surrounding community; the work was intensive and more personal,” says Unbehaun. “This is where I learned that prevention and education were as important as treatment.”

Unbehaun’s experiences within the water polo community proved to be intensive and personal.

“Our water polo workouts averaged 20 coached hours of practice a week – that includes water time, weight training and conditioning. In the spring we would play two to four games each weekend, with Fridays as travel days,” says Unbehaun.

“It sounds like a lot, but I also regularly made the honors list,” she adds. “Student athletes at ASU have all the resources that they could ever need or want to help them achieve academically,” says Unbehaun. “Our academic advisors really keep us on track. There are tutors and mentors, a computer lab and printing facilities – all out at the athletic facility.”

“While on the road, since we’re all balancing demands of practice, travel and academics, our teammates are very understanding when you have work to do,” she adds. “People often



get together to do group study and you really learn to get things done during the week.”

Unbehaun graduated in December of 2011 and then moved to Australia to compete with the Drummoyne Devils, a semiprofessional water polo club, for the spring semester.

“Australia is a great option for water polo players after they finish college. It’s a great experience to live and play water polo in another country,” says Clapper, whose leadership has brought ASU women’s water polo into the No. 4 slot nationally.” We encourage all of our players to continue to play after they finish here if it’s possible.”

Unbehaun served as the team’s graduate manager this last year organizing the logistics for the women’s team.

“It’s hard watching from afar, being a fly on the wall,” says Unbehaun about her upcoming departure from ASU. “The seniors this year were sophomores when I played. It feels very weird to not be part of the team...like I’ve lost part of who I have been for a long time. You see people like wrestler Anthony Robles achieving great things as students. You’re one of these achievers. It pushes you to be more.”

Unbehaun plans for one more season down under with the water polo circuit in Australia, but ultimately will pursue a graduate degree in public health and return to work in Thailand.

“I loved being part of a team and two small, strong academic communities in the liberal arts and sciences. These offered me very rich experiences that will strengthen every step I take in the future.” ■



## Juggling academics and sports

# Keeping your eye on the ball

by Margaret Coulombe

**W**hat's it like to live life as a student-athlete? A challenge, but one that Arizona State University graduate student Amanda Young fully embraced.

“Being an athlete definitely impacted my approach to my studies. I really had to schedule everything. Do things ahead of time. No procrastinating allowed. But the busier I am, the more productive I am – so it kind of just fits me,” said Young about her daily pursuit of water polo and an undergraduate degree in anthropology at ASU.

“You discover that you can push through anything to get it done,” said Young. “You do it every day. You have a sense of pride for everything that you do and you learn a sense of accountability.”

Young was one of the 20-member water polo team that pushed ASU into the No. 4 slot in the U.S. in 2013.

“I really enjoyed the team aspect of playing sports. A bunch of the girls are my really good friends now. There is Brighty – she is from Australia. There is Netty and Bella from New Zealand. There is Sierra from

Malibu, Calif. People I never would have met here otherwise – best friends from all over the world.”

Young completed her undergraduate studies in May 2012, earning a degree in anthropology from the School of Human Evolution and Social Change (SHESC). That year, more than 129 of ASU's roughly 525 student-athletes pursued degrees in liberal arts and sciences. Young says that her anthropology program offered her some of the same benefits found in her sport.



“I wanted a nationally-ranked program in anthropology, the school is tight knit and the faculty members had diverse interests and strengths,” said Young. “I took a lot of cultural and archeological classes on pre-colonial Africa with Aribidesi Usman – a professor in African and African American Studies. I loved him. He is a great professor.”

One particularly pivotal person for Young was her undergraduate research advisor Michael E. Smith (SHESC/School of Geographical Sciences and Urban Planning). Smith specializes in Aztecs of central Mexico and urbanization in ancient cities. “I took one

of his classes and then approached him to ask about doing research in his lab. We just got word that a paper that we wrote on that work will be published in the Journal of Urbanism...very exciting!”

The title of their article is “Neighborhood formation in semi-urban settlements.” The article examines gatherings of people, from festivals to refugee camps. Young's part of the study was centered on analysis of military neighborhoods, specifically neighborhoods found in Roman forts.

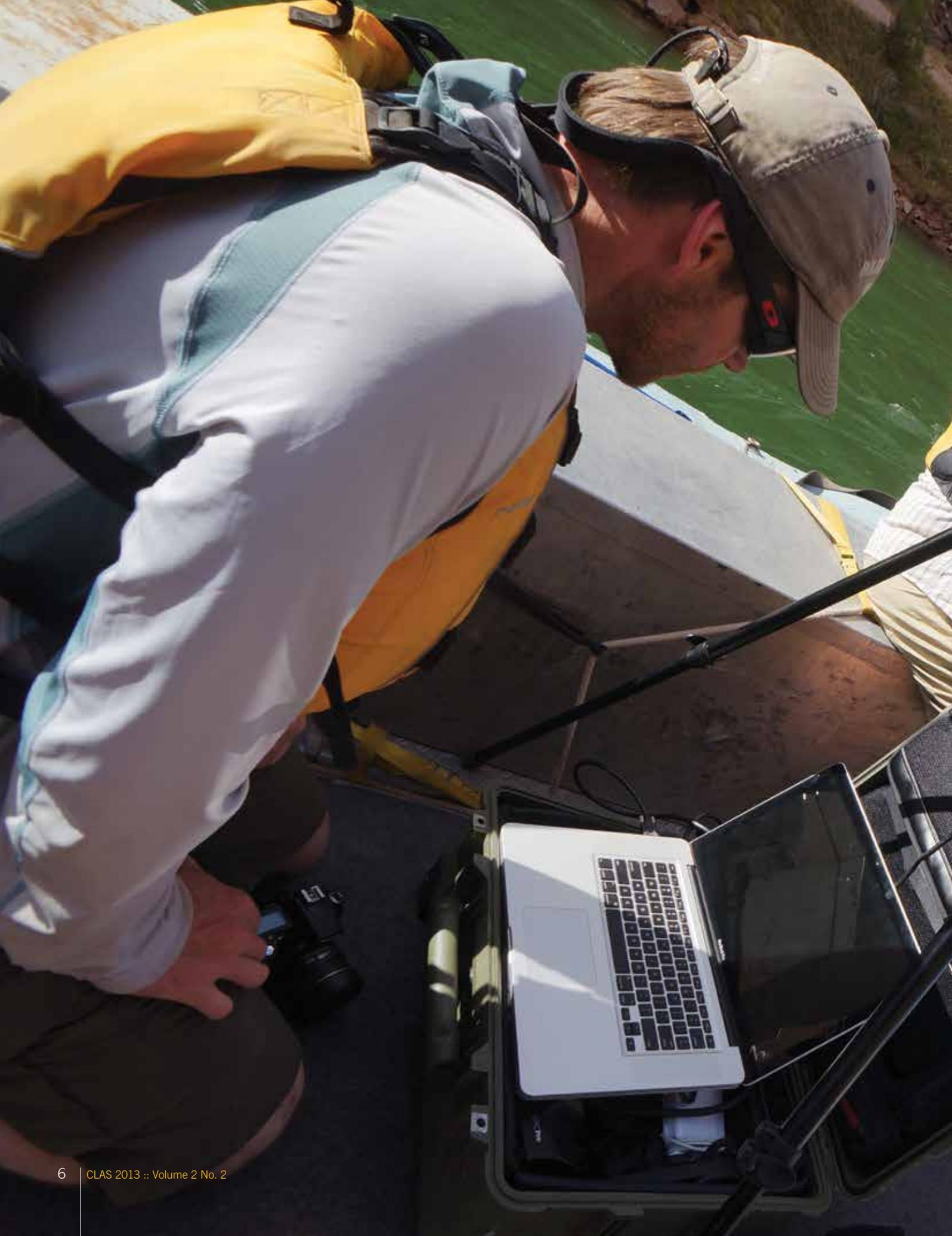
Young is presently in the second year of her master's degree in the ASU museum studies program, which she will complete in 2014. The program covers both the practical and theoretical approaches for the design of exhibits, development and shaping of visitor experiences and management of collections.

“I like the idea that something was used by people, that it was part of their everyday life” said Young, who got to put theory into practice by working at ASU's Museum of Anthropology and with the museum director Peter Banko. “And while ultimately I might like to pursue a doctorate in classical studies or classical archeology, I'm really interested in collections and how people experience and learn from museums.”

What's next for Young? A trip to Macedonia – the first time Young will study abroad; the completion of a grad certificate in nonprofit management and leadership; and a position with ASU's Archaeological Research Institute. In addition, she will have one last stint with the ASU water polo team – this time as the graduate manager for an upcoming generation of ASU water polo players.

“Water polo is a sport that is really fun, competitive and different. No one really knows what it takes to play it. My friends would go to one of my games or practices and go, ‘Oh my gosh. Wow. That is crazy’,” said Young. “I'm a competitive person, so...water polo and ASU perfectly suit my personality.” ■

Photos: ASU Athletics





# Creating a virtual 360 on the world

*by Margaret Coulombe*

While you're reading this story, did you know you could also be coasting along Australia's Shark Bay, touring the Mesoamerican pyramids of Teotihuacan or exploring an impact crater near Moab, Utah? A few keystrokes can take you there, through Arizona State University's virtual field trip (VFT) portal.

Rafting expedition at the Grand Canyon river.  
Photo: Ariel Anbar

For example, a trip to Panama's Barro Colorado Island offers entry to a location-based spherical 360-degree environment, a full-surround rainforest canopy where howler monkeys call. Zooming down to the forest floor, you find Professor David Pearson of ASU's School of Life Sciences talking about biodiversity, beetles and birds. Another path leads you to Smithsonian Institution behavioral ecologist Rachel Page mist netting bats. Throughout the exotic VFT locales, videos, photo galleries, and interactive educational lessons invite you to visually experience the environment "around" you.

The unique algorithms for seeing the world as an immersive multimedia experience were developed by Geoffrey Bruce, ASU staff member and doctoral candidate in Exploration Systems Design. Bruce studies with Steve Semken, a professor of geoscience education, and geochemist Ariel Anbar with ASU's School of Earth and Space Exploration. Anbar is also the director of ASU's Astrobiology Program and a professor in ASU's Department of Chemistry and Biochemistry.

Setting up underwater camera at Shark Bay, Western Australia. Photo: Ariel Anbar



"I want to help students experience remote locations that are scientifically significant and offer opportunities that can't usually be provided by classrooms," says Bruce, whose doctoral project with Anbar and Semken blends technology development, education and assessment.

"The goal is more than just a look-and-see tour. We are now integrating an intelligent system – an adaptive e-learning platform – that provides interactivity, instant feedback, and tracks student performance," Bruce adds. "The aim is a fully engaged classroom-like experience."

The VFTs are an outgrowth of ASU's Astrobiology Program, which is funded by a grant from NASA's Astrobiology Institute and investments by ASU Online and ASU's Mary Lou Fulton Teachers College. Designed as a flagship education outreach activity, the first virtual trips are already in use in some ASU courses. The Teotihuacan VFT, designed by ASU Professor Ben Nelson, is part of the curriculum in ASU's School of Human Evolution and Social Change. The VFTs to key astrobiological locations in Australia are used in *Habitable Worlds*, a course taught by Anbar. Still other VFTs are being developed with other liberal arts and sciences' curricula in mind.

As part of his thesis work, supported by Anbar and Sempken's National Science Foundation education grant, Bruce will use VFTs to see how such virtual experiences might impact the phenomena of "novelty space" – the distractions to learning that arise when students or researchers encounter novelties in field-based education activities. Could a VFT of a field site shorten the novelty space and enhance onsite learning?

The project's ability to test such questions grows from the support the team receives from a talented group of collaborators in the astrobiology research community at Arizona State University, Massachusetts Institute of Technology, University of Hawai'i and the Australian Centre for Astrobiology, to name a few. In fact, Bruce's initial seed for science-based virtual field trips came in 2004, after a chance meeting with Carol Oliver. Oliver, now the Associate Director of the Australian Centre for Astrobiology at the University

of New South Wales, was then a doctoral student with ASU Professor Paul Davies in Australia. Together the two built a virtual trip of the ancient terrains of Western Australia, which was featured in Cosmos Magazine and distributed by CD-ROM, the cutting-edge technology of that era.

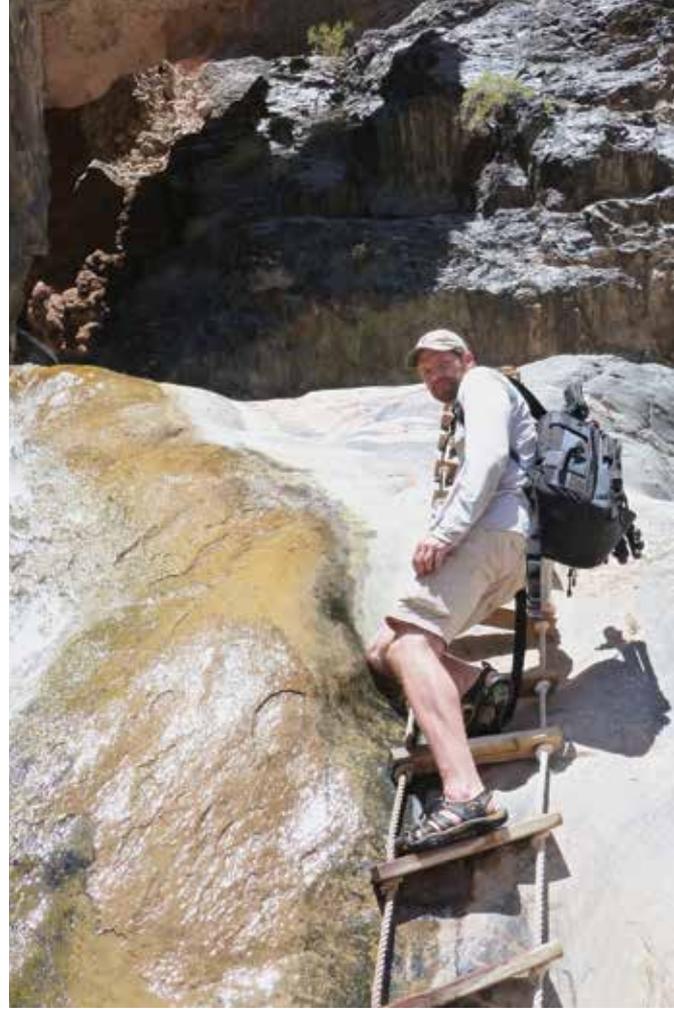
Advances in computer power, Internet bandwidth and imaging technologies over the subsequent decade fueled Bruce's reinvention of VFTs as an online experience. In addition, the team incorporated tools such as an autonomous helicopter drone, or quadcopter, equipped with a GoPro camera, an e-learning platform developed by Smart Sparrow and Gigapan imaging technology.

"The Gigapan is a robotic unit that attaches to a camera to capture hundreds of carefully aligned high-resolution images which are stitched into a super high resolution panorama," says Anbar. "It allows students to virtually explore a site at a variety of scales, zooming in and out in a seamless way."

All these elements are embedded in a 360-degree spherical environment that gives users a sense of place. "It's not exactly like being there," says Bruce, "but it is a big step forward from a website full of photos."

"Yes, I get to play with cool toys and technology, which has really allowed us to bring the content to the end-user," explains Bruce, who recently flew a quadcopter along the spectacular ancient rock formations in the Grand Canyon and above the unusual microbial mats of Shark Bay to obtain aerial perspectives. "But then it's back to the 12-hour days to process all of the data. Honestly, we're talking limited time to play!"

Before joining ASU, Bruce spent 12 years at NASA's Ames Research Center where he was the technical director of research and development for education technology. He's received numerous awards for his creative wizardry, including four Telly Awards, four Absolute Excellence in Media Awards, two Omni Awards, a Silicon Valley Joey Award, and a Macromedia e-Learning Innovations award for technical achievement, among others. This spring the VFT team won the 2013 Communicator Award of Excellence Award for Interactive Multimedia-Education



Grand Canyon at Travertine Grotto. Photo: Ariel Anbar

(Academic) given by the select International Academy of Visual Arts.

"Higher education is changing. How can new technologies be effectively used? What are the best approaches? These are open questions," says Anbar. "With the VFTs, we are searching for the sweet spot in this changing landscape. We want to use technology to teach field-based science concepts in a way that is cutting edge, effective and practical for wide-spread adoption."

"There is very little good research on these educational technologies," notes Bruce. "Being at ASU means that I can develop the technology, do the assessments, and then build and refine these VFT experiences to maximize learning."

What's next for his virtual trips? 360-degree video, says Bruce, whose online gateway to the world will no doubt continue to rotate heads as one of the most innovative emerging educational tools online. ■



# Communicating across the war zone vet engagement at ASU

*By Sean Cohmer*

**“I wanted to tell my story and the stories of other veterans...because the real stories are much more complex and help us get past stereotypes”**

— **Michael Biggs**

*former Sergeant in the U.S. Army and veteran of both the Iraq and Afghanistan wars*



(Left) Michael Biggs, former U.S. Army Sergeant, veteran of the Iraq and Afghanistan conflicts.  
(Right) Professor Mark von Hagen, Dean's Fellow for Veteran's Engagement. Photos: Anthony Costello

It's no secret that Arizona State University has positioned itself over the last decade to become the New American University. However, did you know that along with the launch of the Pat Tillman Center in 2011, professors and groups have been working hard to develop initiatives to engage returning veterans in college life and make them feel part of a larger community?

Mark von Hagen, the Dean's Fellow for Veteran's Engagement and professor in the School of Historical, Philosophical and Religious Studies, is one of these service-oriented innovators. Von Hagen, a historian, is the creator of an oral history course designed to record the personal stories about the two most recent wars from those who experienced them. The course, listed as HST 494 Oral History: America's Most Recent Wars in ASU's course catalog, launched this spring and is part of a much larger ASU-wide veteran engagement project headed by von Hagen which seeks to organize veteran engagement efforts across the university.

Arizona State has chosen an ideal time to emphasize educating America's veteran workforce. In 2009, the year that I finished serving in the Army and started at ASU, the Post 9/11 Veteran's Education Assistance Act went into effect. This law revised the

existing Montgomery GI Bill so that veterans who served in the years following Sept. 11, 2001, would receive comprehensive education benefits. The new benefits pay tuition, fees, housing and \$1,000 per academic year for books.

A few years after this new GI Bill went into effect, the Arizona State Legislature passed a law that considers all returning veterans "residents for tuition purposes," making it even more desirable for veterans to attend college within Arizona. Now with the wars ending in Iraq and Afghanistan, a generation of highly disciplined soldiers, sailors, airmen and marines may come home to start scholarly pursuits and join the work force. The Department of Veterans Affairs reports show that in 2011 just under 924,000 veterans received education program benefits, of which about 555,000 took advantage of the new GI Bill.

In 2012, journalist Tom Brokaw gave the graduation commencement address to a packed Sun Devil Stadium in Tempe, Ariz. In his speech, he said we should do more for our returning veterans. He advised, "...We can begin to heal their wounds and to honor their service by welcoming them back to our peaceful lives in large ways and small. First, by seeking them out and offering our thanks

and by establishing a model so that when – if we have to go to war again – we do not create two societies; one in uniform, and one not.”

Veterans of the two modern wars have incredible stories to tell; stories that capture personal reflections that often go untold. This realization is what spurred von Hagen to start his oral history course with focus on the two wars in Afghanistan and Iraq, which asks his students to listen to and record stories from ex-service members before they are lost forever.

Von Hagen believes that students have much to learn from their peers who have served: “War and even peace, the opposite of war, is missing from any kind of forum in higher education. One way in which this project shows the power of the humanities in people’s lives is by emphasizing such stories.”

A self-described “Air Force brat,” von Hagen takes his task to engage and empower veterans personally. He says that the younger generation of students is less likely to have parents that served. Many don’t get to hear the stories that fathers and grandfathers tell about war or understand what service in the military entails. “Most of the non-veteran students who were in the class have not faced death, killing or the threat of being killed on a regular basis,” said von Hagen.

I spoke with one of von Hagen’s students, Michael Biggs, a former Sergeant in the U.S. Army and veteran of both the Iraq and Afghanistan wars. Coincidentally, Biggs and I both deployed from Fort Bragg, N.C., to Afghanistan at the same time from late 2002 to the spring of 2003, but we never crossed paths until this summer at ASU. As part of the oral history project, Biggs interviewed his Marine Corps buddy Ian Carefoot. The two met in 2004 while working for an Arizona National Guard program called ChalleNGe, which provides educational opportunities for high-school dropouts in the area.

Carefoot, a former Lance Corporal in the United States Marine Corps and veteran, was deployed to the Syrian border of Iraq in 2004. Described as your typical “grunt” - which is military slang for an infantryman known for their machismo and tough exterior, Biggs

recalled that when Carefoot talked about losing a member of his unit in Iraq, the tough exterior disintegrated and he started to cry. “It kind of brought back memories from losing my friends...the last week of the semester was emotionally draining, both doing the interview and being interviewed,” said Biggs.

Biggs was motivated to take this course from von Hagen because he wanted to, “tell the real story.” “I wanted to tell my story and the stories of other veterans...because the real stories are much more complex and help us get past stereotypes,” said Biggs.

Overall, Biggs says that he’s satisfied with how the course went. Though he wasn’t sure at first how his buddy would respond to being interviewed, Biggs added, “Ian said at the end ‘that was really therapeutic, I’ve never had someone want to listen to my story from beginning to end’.”

“The class, besides a handful of veterans, was made up of about half history majors and the rest seemed to be education majors,” Biggs recalls. He also remembers a student of Arab descent relating her story about the difference one day made in her life. As Biggs retells her story, “On Sept. 9, 2001, I’m everyone’s friend...the morning of Sept. 12, 2001, I’m the enemy.” Another enthusiastic student, motivated in part by his experience in the course, graduated this year in May and immediately enlisted in the Air Force.

“Many of the veterans that my students interviewed mentioned that no one has really been interested enough to sit down and hear their story from beginning to end,” notes von Hagen. “Death and war are part of humanity. They are things that history, literature and even drama and music can help express.”

Von Hagen plans to offer more courses through the humanities to build on the success of this first oral history class. They range from poetry to teaching veterans to play guitar and write songs about their experiences. Erika Hughes, a professor with ASU’s School of Theatre and Film, is planning a stage performance exhibiting veteran stories this fall. Von Hagen adds, “One of the really humanizing things that students learn is that veterans are not all alike.” ■

# Perception

## using bias to fuel discovery

By Viviane Callier

If you're Arizona State University's newest football tight end, Grant Martinez, catching a football is what made you a top recruit to the Sun Devil team. But how do great ball players figure out where to run to catch a moving ball? The rule – according to Mike McBeath, a cognitive psychologist in the Department of Psychology – is a simple geometric one; so simple that a robot can be programmed to do it.

“Catching a ball involves perception,” says McBeath, “So whether you are a dog or a human being or a robot, if you move your body so that a ball appears to be moving at a constant angle upwards, you eventually cross its path.”

While knowing this interesting fact might simply better one's sports game, the analysis of animal and human motion and the perceptual basis for it have become important research areas in robotics, bioengineering and other disciplines, says McBeath. “Understanding perceptual biases, and the natural regularities that people pay attention to, is important for designing everything – from traffic lights to robots that rehabilitate stroke patients,” says McBeath.

Such perceptual biases have strong ecological and functional bases, meaning that they have often evolved to serve as a cognitive shortcut for a specific purpose, such as preventing us from falling. According to McBeath, these shortcuts compress information about the



world that would otherwise overwhelm us. Because we're all limited by the amount of information we can take in and process about the world, noticing natural regularities and compressing that information is critical for orienting ourselves and moving through a complex world.

### Psycho-gineer

Born in Istanbul and a sometime-resident in many different regions of the world, McBeath has a long-standing interest in the diverse ways in which people perceive the world, and how this affects the way they interact with the physical reality around them. To pursue this interest, he earned undergraduate degrees in electrical engineering and psychology. He then worked as a hardware engineer, was awarded a master's degree in electronic instrumentation, and completed his doctoral study at Stanford University where he wrote a dissertation in cognitive psychology and minored in electrical engineering.

One of his first positions was with the Human Factors Group at NASA, an applied setting where knowledge of human perceptual biases is used to design better equipment for helicopter pilots and air traffic control.

Engineering has always been the easy part, says McBeath, in the sense that “if you understand a few principles, engineering is fairly straightforward, but it feels like only playing with toys.” Psychology, however, he found was compelling “more complicated and closer to pursuit of ‘the real thing’.”

McBeath brought his unique blend of theory and application, engineering and psychology to ASU in 1998. Since that time, he’s collaborated with researchers in many different fields, particularly with engineers and computer scientists. So be forewarned, if you enter the McBeath laboratory, you may find yourself tapped to become a human-guinea pig.



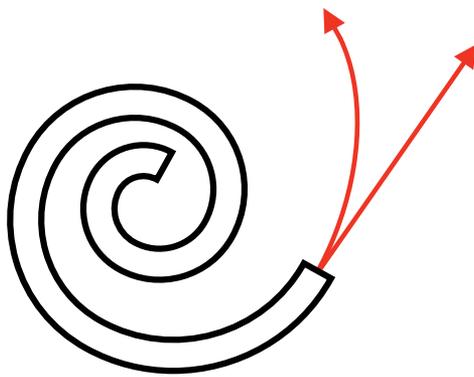
### Off-tilter

Take for example, the Aerotrim, a visually arresting device reminiscent of a gigantic gyroscope. Volunteers mount the device, are tilted from 0 to 180 degrees, and asked to report back to what degree they are dangling from. Easy, right?

Not so, says McBeath: “My studies in tilt perception show that people are not very good at estimating their actual tilt angle. What they care about most is simply how close they are to falling over – a functionally important thing to worry about. When people have biases, they are usually functional.”

This belief is borne out in McBeath’s other studies. In these, ASU students are called upon to estimate the slant of a hill that they stand on – for example “A” Mountain. One group of students is asked to look at the hill and make a guess, while another group runs up and down the hill and then makes a guess. Both groups see the hill as steeper than reality, however the tired group adds an additional 10 degrees in their estimates. “When evaluating the steepness of the hill, people are not really estimating the physical reality so much as the effort it takes to get up the hill,” McBeath explains.



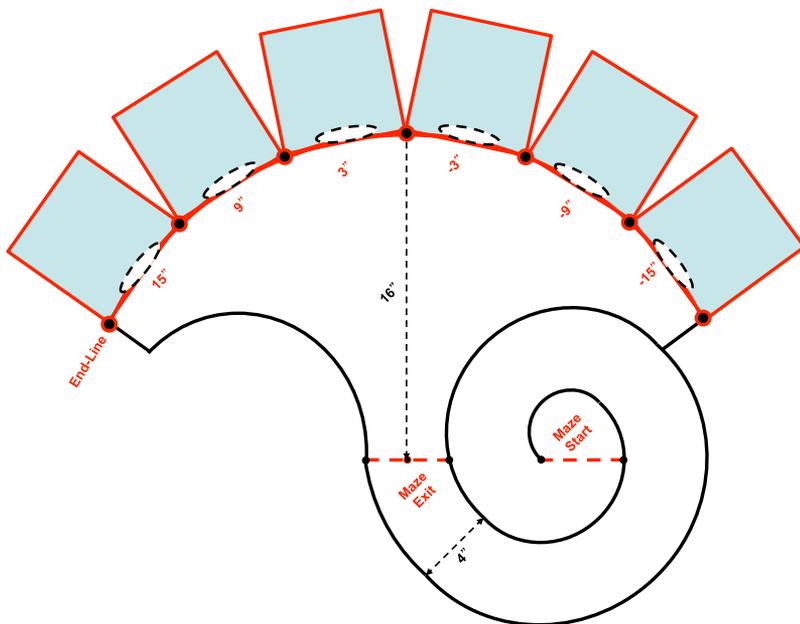


### Of Mice and Men

One particularly thought-provoking test that McBeath developed involves how human perception impacts a person's ability to project the paths of non-human objects. Say, for example, what path is predicted for a ball that comes spinning out of a spiral? Seems straight forward, right? Not exactly. A ball commonly leaves a spiral straight along the dotted line in the figure below. However, humans and rodents exiting a spiral tend to continue along the curving trajectory instead of coming out straight like a ball would.

### Spiral maze

When asked, test subjects routinely predict that the ball will leave the spiral along a spiral trajectory as does a person or rodent, rather than the straight path of a physical object. Why would such a bias arise? McBeath explains that it might reflect a case where the test subject is thinking, "Where would I go?"



### Biomimetic-biomedicine

Why is it important to understand such perceptual biases? McBeath believes that understanding how biology solves certain problems can lead engineers to use the same solutions in designing equipment. For example, a robot that McBeath programmed to catch balls uses an algorithm that biological creatures use to navigate. This work led to a grant from the National Science Foundation to support the design of micro-robots; small machines that are ingested to take pictures of the digestive tract or bloodstream. These robots require a control algorithm for navigation, and McBeath hopes that an algorithm similar to that of the ball-catching robot allows these micro-robots to pilot their way inside of the body.

"One way to look at all these biases is that humans are stupid and don't perceive the environment correctly. But another way to view them is that we live in a complex world where things are constantly changing, and we need to be able to respond rapidly," says McBeath. "We take perceptual and cognitive shortcuts to predict how things are going to happen because these shortcuts are functionally adaptive most of the time. We don't care about physical reality in and of itself; we care about functionally and ecologically important quantities, like how likely it is that I will fall or how much effort it will take to get up a hill."

McBeath adds: "The more we understand about our biases, the wider understanding we can bring to our discovery, designs and applications, from biomedicine to security and defense." ■





American Indian Policy Institute Senior Management Research Analyst Fonda Walters (standing) at a meeting with the U.S. Patent and Trademark Office. Photo: Andy DeLisle

## American Indian Policy Institute promoting partnership and student success

*By Julie Newberg*

**T**he American Indian Policy Institute transcends disciplines at Arizona State University, serving as a resource for research, partnerships and entrepreneurial endeavors that involve Arizona's 22 Native American tribes and tribal nations throughout the United States.

“One of the reasons we were founded was to provide a place for faculty who did not have much experience working with tribes to go for assistance,” said Pat Mariella, director of the American Indian Policy Institute (AIPI) in the College of Liberal Arts and Sciences. “Similarly, when tribes come to the university, they have a place to go to assist them in building partnerships with researchers.”

Created in the spirit of the New American University and President Michael Crow's American Indian Initiative, AIPI embraces community embeddedness and represents an entity that is accessible to all of the university's departments to aid in coordination on matters that involve American Indians and tribal nations.

"Tribes and the university have a greater chance of success when they form partnerships early in the process and approach projects from more than one discipline," said Eddie Brown, professor and executive director of the AIPI in the College of Liberal Arts and Sciences. "It allows for a much more holistic approach. You truly move beyond the disciplinary categories and think about things in new ways."

These collaborations have resulted in many successful endeavors since the institute opened in 2006. A few examples include co-sponsoring two Navajo Nation presidential debates, major presentations to the National Congress of American Indians Annual Conferences and the Legacy of the Inter Tribal Council of Arizona project. Additional award-winning endeavors include:



Pat Mariella, director of the American Indian Policy Institute.  
Photo: Andy DeLisle

## Air toxics assessment

A prime example of the institute's approach to projects is illustrated with the Joint Air Toxics Assessment Project, an extensive research endeavor among the American Indian Policy Institute and Ira A. Fulton Schools of Engineering at Arizona State University, Salt River Pima – Maricopa Indian Community, Gila River Indian Community, the Arizona Department of Environmental Quality and the Environmental Protection Agency (Region 9).

Awarded a 2013 National Environmental Excellence Award for Partnerships by the National Association of Environmental Professionals, this was the first major research project that all the regulatory jurisdictions in the Phoenix metropolitan air shed participated in fully and collaboratively to assess the health consequences of 200 hazardous air pollutants. "Air pollution doesn't recognize political boundaries," Mariella said.

## First Innovations

Among the many programs that the policy institute has spearheaded is First Innovations, a collaboration that began with Venture Catalyst and American Indian Studies and which continues to expand through partnerships. First Innovations combines an intensive summer field internship with classes focused on developing innovation and entrepreneurial skills for American Indian sustainability. The initiative received the ASU 2011 Presidential Award for Innovation for its ground-breaking approach and growing national recognition.

"Rekindling the innate American Indian innovation and entrepreneurial spirit as a driver to creating tribal economies is a critical focus of the First Innovations courses and internship experience," said Fonda Walters, First Innovations lead and AIPI Senior Management Research Analyst.

Many tribal leaders express the desire for true sustainability where tribes practice innovation and entrepreneurship in a manner that is a cultural match to their traditions and values. First Innovations courses focus on developing a product or service with a sustainable for-profit or non-profit business model in a tribal context.

John Takamura, associate professor of Industrial Design at The Design School in the ASU Herberger Institute for Design and the Arts, is a collaborating First Innovations faculty member.

“I contribute to the design and branding of student team ideas for start up businesses that benefit tribal communities, not only financially but also spiritually, culturally and socially,” said Takamura.

In turn, the institute aided Takamura in his work with indigenous tribes in Mexico. “I feel that my experiences at AIPI have been very educational regarding American Indian historical, cultural and social perspectives,” Takamura said.

### **Tribal Indicators project**

The institute is spearheading a new project that is gathering, preparing and analyzing American Indian census data in a partnership between tribes, American Indian Studies and the Center for Population Dynamics at the university.

“The American Indian population is incredibly diverse and undergoing many important transitions. Yet, there is limited understanding or documentation of this population overall because data are so limited,” said Jennifer Glick, director of

the Center for Population Dynamics and T. Denny Sanford School of Social and Family Dynamics professor. “We are particularly interested in the extent to which changes in the census questionnaire in 2000, which allowed people to select more than one racial or ethnic group for the first time, impacting the count of American Indian individuals.”

Researchers will analyze data from the U.S. Census and the relatively new American Community Survey that replaced the census long form that included socio-economic characteristics of the U.S. population. ASU is the only academic institution conducting or providing analysis of tribal scale data from U.S. Census and American Community Survey data, according to ASU social scientists.

One of the best uses for the data is in planning to meet the goals of a vibrant American Indian population. The project researchers are examining population and socio-economic information and analyzing accuracy, trends and policy implications, in coordination with tribes.

### **Tribal Financial Manager Certification**

American Indians learn complex budgetary and financial management skills unique to tribal governments through the Tribal

Financial Manager Certificate program that is available in a classroom and distance learning formats through the institute.

The program began as a partnership between AIPI and the Native American Finance Officers Association. The Arizona Board of Regents provided seed funding for the program through an Arizona Regents Reach Out grant. Mariella said that the program continues to grow in response to requests from tribal gaming enterprises for a new curriculum for their financial managers, who work in one of the most highly regulated and audited industries.

Managing finances for tribal governments and enterprises is a complicated skill. Tribes operate the full range of governmental functions, including responsibilities that are conducted by municipal, state and federal governments in jurisdictions outside of tribal lands. Historically, these programs were run by the Bureau of Indian Affairs and other federal agencies.

“Tribes are responsible for running programs and applying financial resources appropriately and effectively. That gets very complex,” Brown said.

### **Student success**

The institute enables student success through mentoring and internships. When a tribe contacts the institute for a project, student interns are hired who receive academic credit and are often paid to work on the projects.

“Oftentimes, they are gaining knowledge about their own tribal communities. Almost all of the project interns have gone on to graduate programs or have been hired in high-level administrative positions with tribal governments,” Mariella said.

### **Invaluable resource**

Sandra Day O’Connor College of Law Regents Professor Rebecca Tsosie works with the institute on initiatives such as program and policy statements as well as implementation of research protocols and meeting with students and tribal communities. Tsosie says the institute’s role is invaluable to the university as they are able to take academic work that is accomplished at ASU and successfully translate it to the tribal communities that they serve.

“They do an excellent job with community-based research and they are very effective on environmental issues” she said. “I view them as my colleagues on many different levels because we serve the same students and communities. I think that they are a terrific group of people and they have the interests of the tribal communities at heart.” ■



# ASU receives Hugh Downs Collection

by Margaret Coulombe

**B**roadcaster Hugh Downs is one of the most familiar American figures in the history of television. His work on “The Today Show,” “20/20,” as a reporter, anchor and game show host for “Concentration” made him a household name. He holds the Guinness world record for the most hours of network airtime in the 20th century (10,637 hours from 1951-1999).

What might be less understood about Downs are his roles as devoted husband, artist and adventurer. Among his dozen books is “Pure Gold: a lifetime of love and marriage,” reflecting on his 69-year relationship with his wife, Ruth. He also wrote a concerto for cello composed for musician YoYo Ma. Ma played his piece during “Live From Lincoln Center: YoYo Ma in Concert,” a PBS show Downs hosted for 10 years (and received an Emmy for). Downs has flown planes, visited both of the Earth’s poles and charted the Pacific by starlight, navigating a sailboat 3,400 miles out of shipping lanes using a sextant. He was one of the first civilians tossed skyward by an orca killer whale at Sea World (breaking two ribs) and one of the first to serve as vice president, president and chair of the Board of Governors of the National Space Society.

This spring, Downs donated more than 650 of his personal and professional items – from Lifetime Achievement Awards and Emmys to his prized sextant and his mother’s poetry book – to ASU and the Hugh Downs School of Human Communication. The Hugh Downs Collection is intended to promote the pursuit of undergraduate and graduate studies related to the field of human communication, promote constructive dialog and scholarly research related to life and career of the school’s distinguished namesake, and generally promote the effective communication between individuals in all aspects of life.

Please join us in extending thanks to Mr. Downs for his desire to share his intellectual curiosity, value for humanist and naturalistic approaches to knowledge and science, and the multiple ways of knowing with ASU and the public. ■



Hugh Downs  
Photo: Iris Krondorff



## Comedy in film and media

# No laughing matter

By *Natasha Karaczan*

**B**ambi Haggins, associate professor in film and media studies with the Department of English at Arizona State University, has taken her work from the classroom to the big screen with a documentary titled “Why We Laugh: Funny Women from CodeBlack Entertainment, a Lionsgate Company.”

Haggins, whose research explores representations of class, ethnicity, gender, race and region, worked directly with “Why We Laugh” series producer Quincy Newell to develop a treatment for the project. The series features several well-known women in the comedic industry including Kathy Griffin, Tig Notaro, Joan Rivers and Whoopi Goldberg. Haggins’ goal was to delve into the experience of being a woman in the male-dominated field of comedy, and how that is impacted by social, political and cultural change. The series premiered on Showtime on March 21 to rave reviews.

“It was a great feeling to have been a part of this project, but what is really important is that these comics were finally getting the kind of attention they deserve,” she said.

On Sept. 18, ASU’s Project Humanities will provide a free screening of “Why We Laugh: Funny Women,” and host a discussion afterward starring Haggins.

The comedy aficionado also served as a historical consultant in Whoopi Goldberg’s documentary titled “I Got Somethin’ to Tell You,” a story about the life of actress Jackie “Moms” Mabley. Haggins says the process reinforced her passion for filmmaking and desire to one day create her own masterpiece. She is currently working on an idea for a web series and for a documentary.

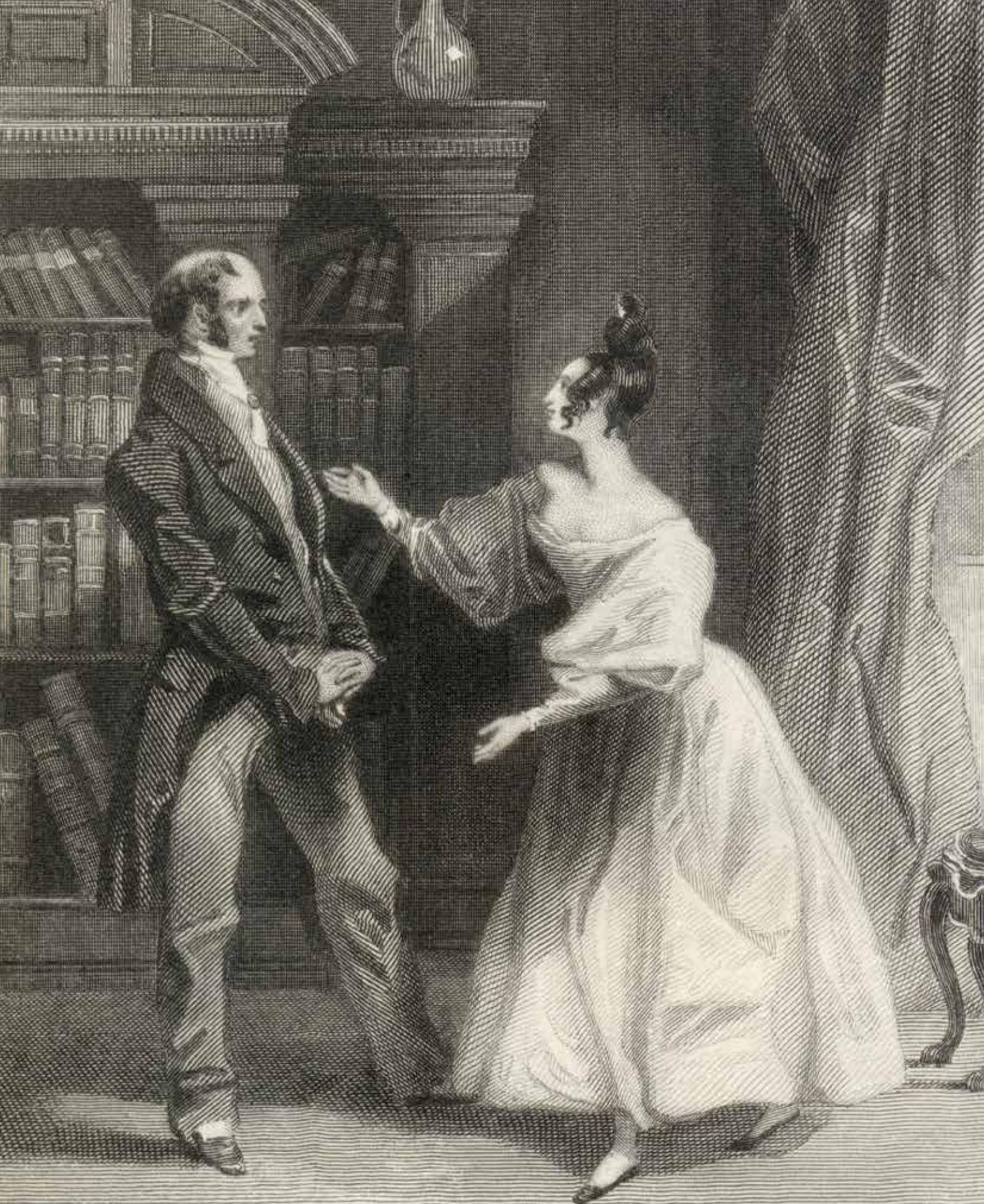
In the classroom she instills the same themes she deems important in comedic documentaries. Her course – FMS490: Comedy as Social Discourse – examines how comic conventions, sensibilities and personae in standup respond to social and political sensibilities at specific historical moments.

“My goal is to get students thinking critically about the media they are consuming. Standup is a great platform to get people talking and thinking about a variety of human experiences in a different way,” she said.

Haggins holds a bachelor’s and master’s degree from Stanford and a masters and doctorate from UCLA School of Film, Television and Digital Media. She was awarded the Katherine Singer Kovacs Book Award from the Society for Cinema and Media Studies in 2007. She joined ASU in 2009. ■



Bambi Haggins with her book, "Laughing Mad: The Black Comic Persona in Post-Soul America"  
Photo: Andy DeLisle



# Of Justice and Janeites

By Anthony Costello

English novelist Jane Austen's work, published between 1811-1818, remains a pervasive influence throughout American culture – from pop culture hits such as the 1990s film “Clueless,” with characters inspired by Austen's “Emma,” to genre-bending adaptations such as Seth Grahame-Smith's 2009 ode to the popular zombie craze, “Pride and Prejudice and Zombies.” In fact, Austen's books still resonate so strongly with readers that they have their own fandom known as “Janeites,” similar to Trekkies and Potterheads, which includes Arizona State University's very own new Dean of Humanities, George Justice.

Although the term carries a negative connotation amongst academics, the former dean of University of Missouri's Graduate School disagrees. “I embrace the fact there are people who identify with Jane Austen, because I do so myself; so to be honest I see myself as a Janeite!” said Justice. “For people to love these magnificent works of art enough to identify with them deeply, and to understand them in some ways as well as professors understand them, is a great thing.”

The self-professed Janeite initially disliked Austen's work after reading Austen's “Emma,” for a class in his sophomore year of college. However, after reading Austen's “Mansfield Park,” in graduate school, he found himself hooked. “It's an unbelievable depiction of personality, society, human relations and all the things that still remain important in life,” said Justice. Looking back on “Emma”



George Justice, Dean of Humanities,  
College of Liberal Arts and Sciences

now, Justice calls it “a wonderful rendition of human psychology.” “I think she understood conflict and human emotions better than Sigmund Freud,” said Justice. From that point on, Justice not only held presentations for Janeites highlighting the human aspects and emotional themes of Austen's literary work, but participated in regency balls and other Janeite functions.

During an annual meeting of the Jane Austen Society of Northern America, he danced with the great (five greats!) grandniece of Jane Austen. “I have to say it was one of the highlights of my life,” said Justice. The enthusiasm Justice brings to the Janeite world is one he hopes to transfer to his students and the things they're passionate about.

A chance meeting at the American Society of 18th Century Studies introduced Justice to the love of his life, Devoney Looser. “A friend of mine introduced me to Devoney, and I liked her immediately; our first conversation was about Jane Austen,” said Justice. The two hit it off immediately as they discussed their favorite Austen books. “I said mine was ‘Mansfield Park’, and Devoney said ‘Pride and Prejudice’,” said Justice, “and Devoney said, ‘Oh, I hate ‘Mansfield Park’, I’m too much like Fanny Price, and she’s boring.’ Something clicked and I decided this is the person I wanted to marry.” Unlike the muddled course of true love in Austen’s “Pride and Prejudice”, three

**”We’re going to prove the humanities is not just an academic discipline, but a force for good in the world”**

— **George Justice**  
*Dean of Humanities,  
College of Liberal Arts and Sciences*

weeks later Justice proposed to Looser, who accepted. The two married the following year.

When the opportunity to come to ASU emerged, Justice found himself drawn to the College of Liberal Arts and Sciences because of three factors. “It was an opportunity to be a dean at a school with outstanding programs, it’s the single most public innovator in the nation and it’s inclusive,” said Justice. “President Crow makes us rethink what we do in ways that benefit our students and community,” said Justice. Justice and Looser, with whom he is currently co-editing a collection of the literary great Samuel Richardson’s letters, moved to Arizona with their two sons last month.

Justice says he recognizes the upcoming difficulties of reconciling the needs of students and the various departments of the university. “It’s a sort of dance bringing all these things together to create that magic that happens in the very best schools and departments both here and across the country,” said Justice. “I can’t claim that I’m the only person who can do this, or that I’m necessarily the best person in the country, but I do have both some experience and skills working with people and an understanding of vision for where the humanities are going that I hope to be able to bring to the university.”

Justice’s vision is to accomplish these goals while stressing the importance of the humanities and what literary research, like the research he’s done on Austen and other writers through his research on the history of publication, can do for ASU students and what it means to study literary form. “What it means is that it attunes students toward literary style, the importance of writing, and how literary forms work,” said Justice, “We experience life in ways that are not totally dissimilar from the way a reader reads a novel.” “We all experience the world differently and by understanding the novel, a unique genre that encompasses all of human experiences in literary form, we can better understand and more ably move through the world around us.”

In agreement with ASU’s College of Liberal Arts and Sciences motto, “Come to CLAS, go anywhere,” Justice wants graduates from the liberal arts to leave the university with two distinct things; skills in self-presentation and, above all, a lifelong appreciation of culture. “Very few students come away from the experience regretting their decision,” said Justice, “It’s a gift.” Ultimately Justice wants to take the humanities even further than before – with his students leading the charge. “We’re going to prove the humanities is not just an academic discipline, but a force for good in the world,” said Justice. ■



## Alberto Ríos

**R**egents' Professor Alberto Ríos is the Katharine C. Turner Chair in Arizona State University's Department of English and the award-winning author of 10 books and chapbooks, with poems in more than 300 national and international literary anthologies. Ríos' words also rise from the printed page to grace public works. Six hundred of his "Words over Water" punctuate the walls of Tempe Town Lake and echo a traditional form of phrasing called *gregueria*, which conveys an idea with a dash of humor: "Water is gravity's dog, following it everywhere."

His poem "Border Lines/Líneas Fronterizas" was written at the behest of Arizona's former Governor Janet Napolitano to commemorate the visit of former President Vicente Fox of Mexico to Arizona in 2003. The poem, which has since achieved some attention, was recently selected to be inscribed on the border wall of the new Nogales-Mariposa Arizona Port of Entry that is scheduled to open in 2014. ■



Hearts and Scholars event. Top right (from left to right): Regina Bidstrup, Martha Keeney, Ha Vi Song Nguyen, Yesenia Pinales, Jaclyn Dairman. Bottom right: Litzia Cortes in between Olive & Ed Kennedy seated. Photos: Tim Trumble

### Dear Fellow Sun Devils –

The College of Liberal Arts and Sciences experienced a great academic year in many regards, but one of the most impactful events for me was our college's "Hearts and Scholars" scholarship reception held in February. More than 200 scholarship recipients and their scholarship donors spent an afternoon enjoying each other's company, hosted by Vice Provost and Dean Robert E. Page. It was amazing to hear how different, yet equally beneficial, the scholarship experience is for each donor and their recipient. As a scholarship donor myself, it was gratifying to hear from students how their scholarships provided not only needed monetary support, but how much emotional support they received from an unknown, and sometimes unnamed, proponent of educational success. After the speakers that day, not a dry eye was to be found in the crowd and everyone left inspired by the quality of our students and generosity of our donors.

Another equally impactful event was the CLAS' Golden Reunion. Members of the Class of 1963 gathered in Tempe for a two-day reunion in May, the highlight of which was participating in gold robes in the commencement ceremony. It was great to hear the stories about life on campus 50 years ago and see the joy of classmates reuniting. Golden Reunion 2014 will take place May 13-14, 2014. So, all alums from the Class of 1964 start marking your calendar now!

I encourage you to get involved by donating to a scholarship fund or create your own scholarship endowment; attending a class reunion; offering an internship to a student; attending a college public lecture; or rooting for ASU at a football game – like the showdown with Notre Dame at Texas Stadium in Dallas on Oct. 5! If you want to find a way to get involved feel free to contact me at **480-965-7546** or **bill.kavan@asu.edu**.

### Go Devils!

Bill Kavan '92, *Director of Development, College of Liberal Arts and Sciences*



## Ice-tronauts: ASU scientists' meteoric discoveries in Antarctica

Unlike the warming path taken by snowbirds on their trek to Phoenix each winter, two School of Earth and Space Exploration professors, Meenakshi Wadhwa (shown right) and Tom Sharp, headed due south– to McMurdo Station in Antarctica. The ASU experts were among 12 individuals participating in the Antarctic Search for Meteorites (ANSMET) field season. Wadhwa and Sharp's eight-person team took 25,000 pounds of gear – including tents, snow mobiles, meteorite collection equipment, solar panels, cooking stoves, fuel and food – for six weeks of remote field camping. The group traveled to the Grosvenor Mountain region of the Transantarctic Mountains to survey ice fields near Mount Bumstead, the Larkman Nuntaks and areas around Mount Cecily, Emily and Rayma.

Photo: Tom Sharp

# A CLOSER LOOK

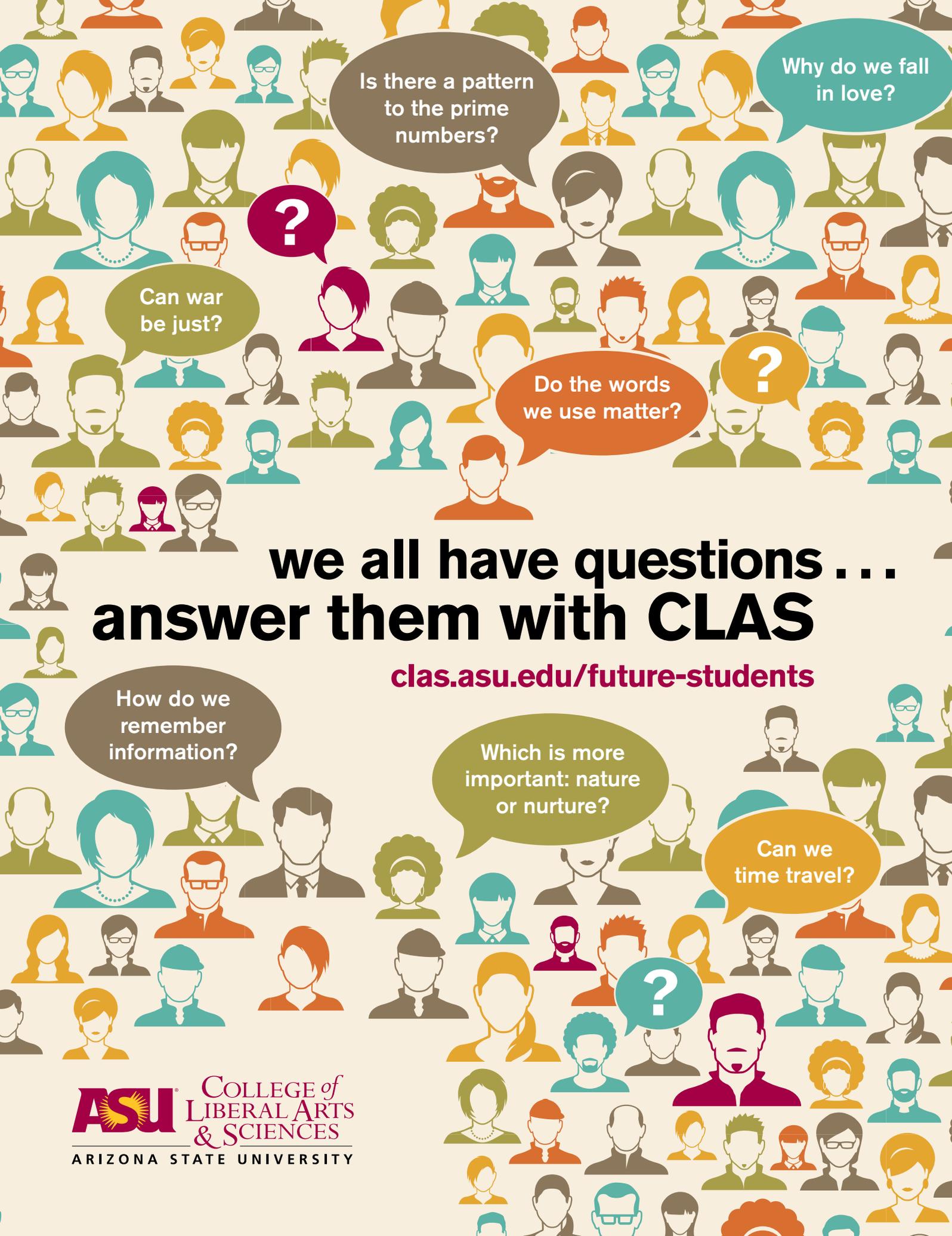
## Top 10 new species

An amazing glow-in-the-dark cockroach, a harp-shaped carnivorous sponge and the smallest vertebrate on Earth are just three of the newly discovered top 10 species selected by the International Institute for Species Exploration at Arizona State University. A global committee of taxonomists – scientists responsible for species exploration and classification – announced its list of top 10 species to coincide with the anniversary of the birth of Carolus Linnaeus – the 18th century Swedish botanist responsible for the modern system of scientific names and classifications.

“We have identified only about two million of an estimated 10 to 12 million living species and that does not count most of the microbial world,” said Quentin Wheeler, founding director of the institute, professor in ASU's School of Life Sciences and co-author of “What on Earth? 100 of our Planet's Most Amazing New Species.”

To read more about this year's top 10:  
[https://asunews.asu.edu/20130523\\_top10newspecies2013](https://asunews.asu.edu/20130523_top10newspecies2013)





Is there a pattern  
to the prime  
numbers?

Why do we fall  
in love?

?

Can war  
be just?

Do the words  
we use matter?

?

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How do we  
remember  
information?

Which is more  
important: nature  
or nurture?

Can we  
time travel?

?

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