

Elevations

The College of Arts and Sciences Magazine

*Prepare for
complete living. ~Spencer*



UNIVERSITY OF WYOMING

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Elevations

Volume 2: 2015

Managing Editor and Graphic Designer

Diana Marie Waggener

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Jean Garrison, director of the Center for Global Studies
Courtney Scout Madson, College of Arts and Sciences
Writing Intern
Peter Parolin, Department of English
Mark Ritchie, Department of Art
Rebecca Steele, Department of Modern and Classical Languages

Cover Image

Vertical Dance
UW Photo

College of Arts and Sciences Administration

Paula M. Lutz, Dean
Greg Brown, Associate Dean
Robert Schuhmann, Associate Dean
Audrey Shalinsky, Associate Dean

Elevations is the magazine for College of Arts and Sciences alumni, friends, and constituents. Address comments and questions to Diana Marie Waggener, Managing Editor, College of Arts and Sciences, Department 3254, 1000 East University, Laramie, WY 82071; or send email to dream@uwyo.edu.

Mailing addresses are provided by the University of Wyoming Foundation. To change your mailing address and/or contact information, please send email to foundation@uwyo.edu.



Dear Friends of the College of Arts and Sciences:

I am proud to present to you the second issue of *Elevations*, the College of Arts and Sciences magazine for alumni and constituents. I describe it as a look into the heart and soul of A&S! And there is so much to see! We strive to give you a comprehensive look at the breadth and depth of the talents and abilities of A&S faculty and the accomplishments of A&S students.

The three feature articles illustrate the wide variability of A&S disciplines and showcase some of the most exciting work taking place in the college. *The Art and Science of Movement* shows an aspect of dance that is not often considered—the biomechanics—through the work of Associate Professor Margaret Wilson, Department of Theatre and Dance. In *How about those Cowboys?*, Department of History Professor Renee Laegreid's research is featured. She looks at how iconic cowboy culture spread across the Atlantic and was interpreted in Europe.

Cold Chemistry—Not an Oxymoron Anymore explores chemical reactions at ultra-low temperatures as they occur in Department of Chemistry Professor David Anderson's laboratory—or perhaps in outer space?

In “A&S Impacts,” you'll find even more reasons to brag about the College of Arts and Sciences. A&S programs truly touch lives across Wyoming, the Mountain West, and the world. We aim to show you the results of your investment in A&S. Check out “A&S Briefs” for short news items on students and faculty, and “A&S Bookcase” proudly highlights A&S faculty and alumni books.

Please send me and Diana Marie Waggener, editor, your comments and thoughts about *Elevations*. We want to hear from you. Also, I want to invite you to join us for any A&S public event here in Laramie or around the state. Check out the Website at www.uwyo.edu/as/ for additional information about the College of Arts and Sciences. So much is going on that we can't possibly fit everything into one publication! If you find yourself in Laramie, please stop by to say hello.

Best regards,

Paula M. Lutz
Paula M. Lutz, Dean

Persons seeking admission, employment, or access to programs of the University of Wyoming shall be considered without regard to race, color, religion, sex, national origin, disability, age, veteran status, sexual orientation, or political belief.

High School Art Intensive introduces Wyoming students to their future

Professor Mark Ritchie, Department of Art

Moving from high school to a university setting can be frightening for some students. Deciding what to study, especially if one has little experience with the field of interest, can be a difficult decision. Sponsored by UW Cultural Programs and Cultural Outreach, the High School Art Intensive helps Wyoming and regional students get a taste of a university experience and,

specifically, the UW Department of Art studios where they meet UW students and faculty members and see that studying art is a viable major option. “It is important for students to see a higher level of education,” explains Allan Linde, Laramie High School art instructor. “The workshops take away the fear of education and college and provide validation that it is okay to be an artist.”

On February 27, 2015, the annual High School Art Intensive began with its usual anxious and excited clusters of high school students gathered in the lobby, and, just as they will move away from the familiar when they attend university, they quickly shifted out of those clusters of friends to mix with students from other schools. The “Art Intensive,” as it is referenced by art faculty members, consists of several two-day workshops across media that expose state and regional high school students to UW and also introduces them to materials, processes, and ideas that may not be available at their high schools. This year, just under 200 students from 15 Wyoming schools participated. In some years, a few schools from neighboring states also attend. The event serves as both a recruitment tool and community service.

Like most successful projects, the benefits extend both out to the community and back to the sponsoring organization. Kathy Hamblin, Lyman High School art teacher, stresses the importance of outreach. “We are from Lyman on the west side of the state,” she says, “and we wouldn’t have a reason to come here without an invitation.” She has participated in the workshops throughout many years and has witnessed a shift from old to new facilities. “They [students] are just excited,” she notes. “Metalsmithing is something I can’t do at school. They are seeing different techniques and media. It is perfect for one of my detail-oriented students. This is true of graphic design too. We don’t have the technology to teach these things.”

Senior undergraduate art students and recently graduated interns teach the workshops that represent all disciplines within the Department of Art. Undergraduates and interns who conduct the workshops take their instruction seriously and plan well in advance. They apply what they have learned and determine what they believe is important to

communicate about the Department of Art and about the media and processes they will learn.

“Our students become a window to and ambassadors of the strength of the UW Department of Art,” says Ricki Klages, department head. “The high school students look at the UW student-instructors and see themselves in a few years.”

Roger Davidson, Rawlins High School art instructor, reiterated a common sentiment from teachers, “To have art instruction from someone else—UW students—is good,” he says. “When they see other students making art it becomes important.”

While interaction is focused primarily on visiting students, the Art Intensive also is a time for art faculty members to get to know high school teachers who are accompanying their students. Often, art faculty members offer technical advice that concerns materials and processes or adaptations of processes to high school classrooms. Faculty also move between assisting teaching-students and meeting guest high school students.

“It is typically an eye opener for us to see what goes on in the academic world,” observes Steve Heil, Buffalo Wyoming High School art teacher. “They [high school students] get to feel a bit of campus life, and the intensity of it ends up helping them with new ideas. They can imagine themselves at UW one day.”

Teachers, like Mark Vinich, South High School in Cheyenne, see a continuation of the workshop upon their return. “It is a chance for students to start thinking about campus life,” he notes. “They draw from a model and bring the work back and talk to other kids and they all get excited.” Many of the works produced during the workshop or the follow-up work after the workshop appear at the Wyoming State Art Educators conference held each April in Casper.

Sukha Worob, a UW visiting artist and a high school art teacher at Bozeman High School, was impressed by the workshops. “Of all of the benefits that I think the students could have garnered from their experiences in the studio, the three that I think would be the most helpful for my students are the peer interaction, experience in a university studio setting, and interaction with university students,” she says. “Being able to work in a university studio setting is a great way for high school students to see if that is a good fit for them and begin to get an idea of the possibilities that an education in an art field holds.”

“Often, the most talented and driven students from my high school art classes go on to pursue an art degree in their post-secondary education,” Worob adds, “and I have seen these students go through a bit of a shock when they get to the university and realize they are no longer at the top but a part of a group of similarly dedicated students. I think this is something that scares off a lot of potential art students so I am sure that the interactions that the students have with their peers from around the state is as important to their experience as anything else.”

Participating high school students leave campus with their new art, increased confidence, a sense of their future, possibly a future at UW, and incentive for more maturity and focus as they prepare to graduate high school. A group of students beveling copper plates in an etching workshop were asked why they would come to an art workshop when they had so many weekend options at their home schools. Without a stop to the filing, they quickly responded. “We are here because we get to make artwork.” “I’m planning on studying art and will be here next year.” “It’s lots of fun.” “It’s good to know your options before your senior year.”

Learn more about the Department of Art. . .



UW Photos

Elevations ♦ Volume 2 ♦ 2015

University of Wyoming ♦ College of Arts and Sciences

Distance M.A. Program gives Wyoming English instructors a new lease on teaching

Professor Peter Parolin, head of the Department of English

In the summer of 2011, the University of Wyoming Department of English launched an innovative master's program for place-bound students across the state who wished to continue their education and develop their professional credentials. The three-year program was designed as a hybrid experience, meaning that it combined intensive classes in Laramie in the summers with distance classes, delivered through UW's Outreach Video Network, throughout the rest of the year.

The first cohort of students was made up of 16 Wyoming teachers, librarians, counselors, and corporate employees from Casper, Cheyenne, Lander, Laramie, Meeteetse, Sheridan, and Torrington. In their classes, they worked on classical texts like Chaucer and Shakespeare, encountered rhetorical theory and the new genre of video games, and grappled with contemporary literary theory, as well as the newest research methods. In their capstone thesis projects, their topics included women's modes of self-definition in eighteenth century fiction; depictions of suicide in young adult literature; film adaptations of the popular *Game of Thrones* series; contemporary political rhetoric; and dystopian visions in twentieth century fantasy novels.

After six semesters of classes and two semesters of thesis work, 12 graduates crossed the stage at UW's commencement in May, 2014, with two further students having completed the program since then. As word of this program's success spread across Wyoming, the Department of English was inundated with queries about when a second cohort of students could get underway. As a result, English started a second cohort of students in the summer of 2014. Twelve students currently are enrolled in this cohort.

Why would so many of Wyoming's teachers return to UW to pursue an M.A. in English? Their answers vary but for the most part, they return because they are passionate about continuing their intellectual development and gaining the tools they need to prepare their own students to excel in the twenty-first century.

As Brandie Reed, Casper, reports, "I am more current with the expectations of college professors; this is something I can share and teach my students." She adds that the benefits of the program flow in multiple directions.

"The Distance M.A. gives teachers and people living in other areas of Wyoming a chance to better themselves through education. In my case, I feel that my students and I both benefited from my experience."

One of the program's most attractive features is that it brings students to Laramie for a week of classes in the summer, giving members of the cohort the chance to forge bonds that remain important when they return to their communities. As Buck Tilton, Riverton, puts it: "The greatest effect of the Distance M.A. for me has been the relationships I have established with the cohort members from all over Wyoming."

These students helped each other through the program by sharing on-line forums in which they answered each other's questions, providing feedback on each other's ideas, and giving moral support when they needed it. And, of course, these students met virtually every week in class through the fall and spring semesters, connected through real-time video feeds that come close to recreating the feel of a traditional classroom. Tilton appreciated the technology. "It's almost like being in the classroom together," he says.

Cohort students respond so well to the program because it gives them time to pursue graduate-level education without leaving their jobs and families. Those outside of the educational field gain crucial skills in critical analysis and writing. The teachers in the group gain professional development, update their expertise, build new knowledge of literary texts and strategies for the classroom, and, on receiving their degree, achieve advancement in salary rank.

Perhaps most important, teachers in the program strongly believe that they repay their investment through what they offer junior high and high school students in their home communities. The M.A. helps teachers familiarize themselves with expectations in today's college classrooms so that they can better prepare their students for higher education. It also has opened professional opportunities for cohort members, giving them the qualifications necessary to teach in advanced placement and community college classes where they can reach new levels of students and enjoy greater professional satisfaction.

When Tilton was contracted to teach English at Central Wyoming College (CWC), there was a provision. "Within

five years I had to earn an M.A. in English," he says. "I am not sure I could have taught full time and earned an M.A. without the distance cohort. I am now contracted at CWC and I am a better teacher because of the distance M.A."

Brandie Reed of Casper concurs: "The M.A. cohort opened up possibilities that were regionally improbable before UW gave our group a chance."

The distance M.A. degree was consciously designed with an eye to benefitting the state of Wyoming. The members of the first cohort rate the project a success. Through providing educational opportunities to students unable to attend school full-time in Laramie, the program has opened doors and enhanced work-related satisfaction for Wyoming professionals; it has given cohort members critical thinking and writing skills that they contribute to their professional lives, as well as to the lives of their communities; and it has enriched the educational experience of Wyoming junior high and high school students who learn from the cohort members.

Reed concludes, "My students and I both benefited from my experience. Education is the key to a better future, and any opportunity to further education throughout the state is important to our community and our economy."

As Dee Brewer, Laramie, reflects on the program, she aptly summarizes what it offers individual members and Wyoming as a whole: "The distance M.A. experience is one of growth—of learning, mentoring, leadership, friendship—and has positive ripple effects across our communities and state." Brewer calls it "a program to feel proud of, continue with, and use as a template for other distance M.A. or Ph.D. degrees."

Learn more about the Department of English...

UW Photo



Department of Modern and Classical Languages hosts World Languages Day

Associate Professor Rebecca Steele, Department of Modern and Classical Languages

World Languages are vital to the education of Wyoming's students and to the growth of the University of Wyoming. In the current economic environment, world languages remain a reliable track to international careers. According to *University Plan 3*, "UW's foreign language curriculum, in particular, enhances students' awareness of international cultures and helps prepare them for careers in a global workforce."

To further this goal, in 2013, the Department of Modern and Classical Languages created World Languages Day (WLD), which introduces Wyoming junior high and high school students of world languages to the UW campus. Over the past three years, UW has hosted an increasing number of junior high and high school students, as well as world language instructors, from across the state. In 2015, World Languages Day welcomed 282 students from five junior high and 11 Wyoming high schools (see Graph 1).

The Friday Program

For many of these students, participation in this event means extended travel. Faculty and volunteers welcome students to campus with a varied program and give them a sample of student life. Upon arrival, students are given a guided tour of the campus by UW Admissions student ambassadors. This year, students were divided into country groups according to the language they were learning; thus, a group of Spanish learners from Rock Springs High School became Honduras, English as a Second Language (ESL) learners from Campbell County High School became Malta, and French and German learners from various junior high and high schools became Luxembourg for the evening. UW student volunteers served as "Country Guides" and "Country Helpers." With more than 200 students arriving Friday evening, the country groups eased organization and also were a fun incorporation of global themes.

After the tour, Country Guides led their groups to Washakie Dining Hall where student visitors had dinner and got a taste of college life. After dinner, visitors chose between various activities: folk dancing lessons under the instruction of the Snowy Range Folk Dancers, movies in Japanese, Swedish, and French, and a beading craft.

While student visitors were experiencing college life, their instructors joined UW faculty, along with Dean Paula Lutz,

for a reception and dinner at the Alice Hardy Stevens Center. In addition to networking opportunities, dinner guests were treated to a presentation, "Monstrous Folklore: Exploring the Guardian of Germany's Rhine," by UW alumna and Laramie High School English as a Second Language instructor Alysha Robison (M.A. German 2013).

World Languages Day

The main event of World Languages Day is a poetry and drama declamation contest. Junior high and high school learners of Spanish, German, French, Japanese, Chinese, and ESL competed according to their respective language levels. They performed poems, skits, songs, cultural presentations, or showed short videos. The competition was judged by Department of Modern and Classical Languages and College of Education faculty members, as well as instructors from Laramie County Community College (LCCC) and World Language Center instructors. During the competition, American Sign Language (ASL) instructors Maria Nolan (Kelly Walsh High School, Casper) and Jason Custer (UW) held a Silent Social during which ASL students had "silent" conversations using only their hands or pure ASL. Both deaf (native) and hearing individuals were present. WLD 2016 will include ASL as a competition language.

After the competition, student visitors and their instructors attended the language and resource fair, viewed and judged the art competition, and participated in language workshops. The language and resource fair had representatives from the Chinese, Japanese, Arabic, and Spanish programs. The art competition featured 31 entries, including drawings, paintings, sculptures, and even a piñata. The art competition was judged by the participants of WLD.

Language workshops are a popular part of WLD. This year, 27 different language workshops, including mini-lessons in Portuguese, Chinese, Japanese, Arabic, Indonesian, Russian, Latin, and ASL, were offered. The workshops also offered informative and interactive presentations on female gladiators in Rome, French slang, South American instruments, and Italian gestures. Visitors could choose between learning Chinese, Arabic, and Japanese calligraphy. Students also played a number of games in Spanish (Kahoot, Bingo), French (board games), and German (Stille Post, Mao Mao, Pictionary). In addition, students participated in learning songs and dances, including "Love in any Language" in ASL, "Head, Hombros, Genoux, Zehen" ("Head, Shoulders, Knees, and Toes") in English, Spanish, French, and German, as well as Troika and Salsa dances. The workshops were organized by UW and LCCC faculty, World Language Center instructors, UW student volunteers, and high school students and instructors.

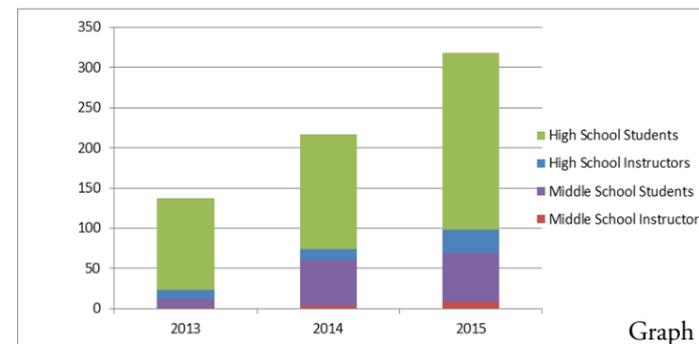
During lunch, Yan Zhang's students of Chinese presented a fashion show, skit, and choreographed dance. Accompanied by student participants from his previous workshops, LCCC Spanish instructor Ian Caldon performed a number of songs with his South American instruments.

WLD ended with an awards ceremony that celebrated performances of all participants and called attention to the first through third places in each language level.

Event Feedback

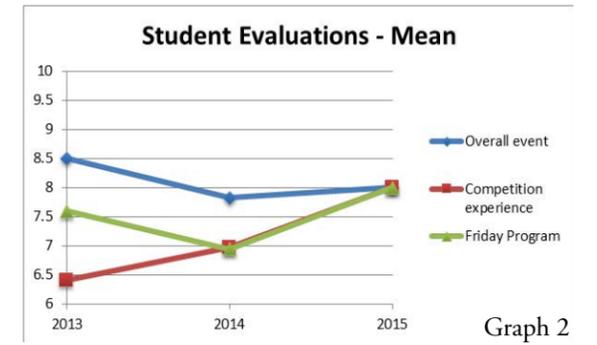
Surveys (see Graphs 2-5) completed by language instructors, volunteers, and participants show how well received WLD is and how, overall, the event continues to improve each year. On a 10-point scale with 10 being the highest, the mean evaluation of each of the categories (Overall event, Competition experience, and Friday program) increased from 6.5-8.5 in 2013 to 7-8.75 in 2015. Teachers commented on the "amazing work" their students did, appreciated the "hands on" opportunities for students, and noted that WLD was a "super awesome!" experience for their students. One student remarked: "Me gusto mucho World Language Day," while a large number said they looked forward to coming back next year; one stated: "I will definitely do this again 😊."

Teacher and Student Evaluation Surveys provide data on the overall event, the competition experience, and the Friday evening program:

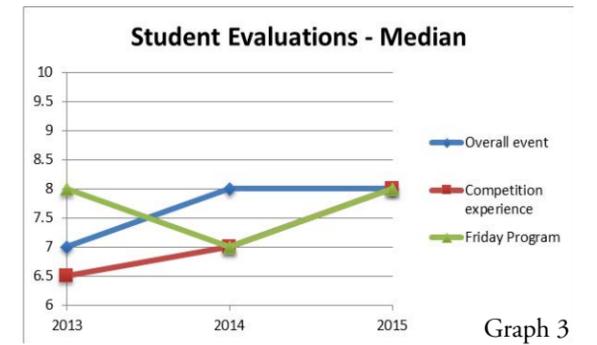


Graph 1

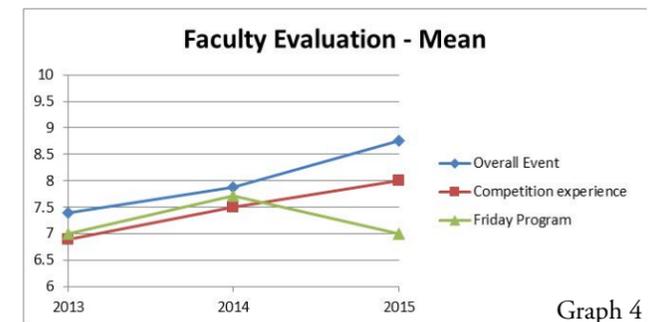
WLD is made possible by the generous support of the Friends of World Languages: Wyoming Humanities Council, Global and Area Studies, UW Admissions, The Wyoming School – University Partnership, Outreach School, International Programs, Academic Affairs, School of Business, UW Libraries, Schroll Cabinets, Wyoming Foreign Language Teachers Association, College of Education Office of Teacher Education, College of Education Secondary Education, the United Presbyterian Church of Laramie, and the University Store.



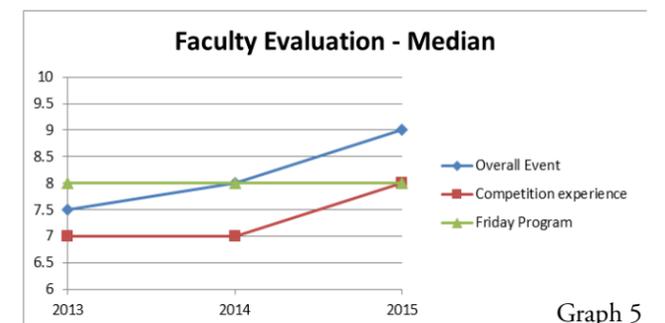
Graph 2



Graph 3



Graph 4



Graph 5



Margaret Haydon Photo



Department of Art

UW Photo

In fall 2014, the Department of Art joined the Western Cast Iron Art Alliance to hold the 4th biennial Western Cast Iron Art Conference. More than 250 participants, including Laramie High School students, professors and students from five Wyoming community colleges, and students, professors, and art professionals from 19 states, were in attendance.

Representatives from the largest working foundry in the world came from China to participate on a panel about public works and shared their casting processes and techniques. During the conference, seven coke- (a version of coal) fueled furnaces filled the Art Department parking lot, allowing participants to melt more than 10,000 pounds of molten iron, which is poured at 2,700 degrees (see above). Performance events were open to the public, and spectators watched hand-built contraptions catch and throw around molten iron for a spectacular fire-filled event. Several exhibitions that showcased cast iron included an outdoor piece created with the help of the UW Lab School's first grade class.

Associate Professor Margaret Haydon, who specializes in ceramics, has had her work exhibited across the nation, as well as internationally. Haydon's current work is based on iconic images of the great sturgeon, an ancient and endangered species. She frequently visits high school and junior high school art classes across the state to present her research and technical processes. Because her research is interdisciplinary, her visits often also include students from science courses.

At both Western Wyoming Community College (2014) and Casper College (2015) she installed exhibitions and gave presentations and workshops. Community college students worked with Haydon to install her art and learned about conceptual and technical processes of her work.

Department of Geology and Geophysics

Currently, five faculty members are working on issues, both specific and general, in oil exploration and development and CO₂ utilization and sequestration in Wyoming. Specific study areas include, but are not limited to, the Powder River, Wind River, Bighorn, and Green River basins.

Department of Political Science

Faculty members consult for and train individuals from various Wyoming organizations, including the Wyoming Association of Municipalities, Head Start, the Wyoming State Penitentiary, Casper City Government, Wyoming Department of Family Services, the Wyoming State High School Finals of "We the People: The Citizen and the Constitution," and the high school Model United Nations program.

Department of Psychology

Faculty members conduct diabetes awareness and rehabilitation training for adults with serious mental illness and comorbid diabetes served within mental health settings. They are developing interventions for youth and families with mental illness and serious emotional disturbances and those who have experienced cardio-metabolic effects of second-generation antipsychotic medications. Collaborations with community mental health administration and staff have helped to identify service models that will increase the chances of intervention adoption.

In addition, faculty members have done semi-structured interviews to understand the oral health challenges and needs of Wyoming adults with serious mental illness in order to develop effective interventions. Other work has focused on depression among American Indian youth on the Wind River Reservation, culminating in feedback provided to the community.

Wyoming Survey and Analysis Center (WYSAC)

Researchers collaborate with numerous state agencies and local organizations to study the impact of substance abuse prevention efforts. This effort includes chairing and staffing Wyoming's State Epidemiological Outcomes Workgroup (SEOW), as well as completing annual state- and county-level data profiles and other research projects that inform policy makers. The SEOW also gives data-driven recommendations to agencies and groups planning prevention efforts. Recently, WYSAC researchers worked with each Wyoming county to complete local needs assessments around alcohol, tobacco, and other drug use. WYSAC also evaluates specific substance abuse prevention efforts across the state.

Department of Zoology and Physiology

The Wyoming Cooperative Fish and Wildlife Research Unit, housed in the Department of Zoology and Physiology, conducts applied research on fish and wildlife across the state. Recent studies evaluated the influence of wolf and grizzly bear predation on migratory elk in northwest Wyoming; addressed the impact of drought, beetle kill, and invasive plants on Wyoming's most sensitive species; and provided critical information to help move Wyoming toward more sustainable energy development.



UW Photo

Dance Biomechanics

The art and science of movement

Diana Marie Waggener

“The breaking wave and the muscle as it contracts obey the same law. Delicate line gathers the body’s total strength in a bold balance.”

—Dag Hammarskjöld, Swedish diplomat and Nobel Prize recipient

For Associate Professor Margaret Wilson, Department of Theatre and Dance, balance is essential to correct form, and correct form in movement is essential to reduce injury to dancers. “Throughout my career as a dancer and teacher, I have had many questions about how to most effectively minimize injury while at the same time optimize performance,” she explains. “Looking at movement analytically helped me understand how best to teach and coach movement.”

Most of Wilson’s research focuses on dance biomechanics, the study of the structure and function of human movement that looks at forces that act on the body and the way in which the body creates movement. Biomechanics can be found in movement science programs, and most dance biomechanists work with colleagues in kinesiology and sports. “While pursuing my Ph.D. in dance at Texas Woman’s University, I had the good fortune to work in a biomechanics lab and was able to conduct research on dance movements as a part of my dissertation,” Wilson says, “and I received a minor in Biomechanics along with my doctoral degree.”

Specifically, Wilson looked at complex movement in dance, *grand rond de jambe en l’air* (great circle of the leg in the air), to understand the relationship of the moving leg to the body and to explain how dancers create the illusion of keeping the body upright while the leg creates an arc in the air from

front to back (see image on Page 12). “When the gesturing leg has full range of motion and the leg is raised to angles greater than 100 degrees, movement of the pelvis is necessary to produce this action,” explains Wilson. “The advanced dancer, however, learns how to minimize the appearance of motion by engaging muscles on the standing leg and increasing the flexion in the spine. Novice dancers tend to limit the movement in the hips so the leg does not go as high, and the dancer has not yet learned how to use the supporting leg and trunk muscles to full advantage in creating the appearance of minimal movement.” Understanding the biomechanics of this very common dance movement gives dance instructors information that helps students avoid unnecessary injury and develop aesthetically and mechanically appropriate movement patterns.

Wilson continues to work with the biomechanics lab in Texas to determine how dancers generate momentum for turns with multiple revolutions. For dancers to produce multiple turns, they must generate angular momentum to offset the friction created by standing on the floor. Many simultaneous actions contribute to this, but one of the most important elements is timing. “Many teaching strategies focus on the movement of the ‘opening arm’ and the head, but this research showed that the ‘closing arm’ is effective in turning the trunk in the direction of the turn, helping to conserve angular momentum once the turn has begun,” says Wilson. “The results of the research underscore the importance of timed actions in the body and can be important in coaching dancers’ performance.”

At Left: Margaret Wilson balances upside-down on the rope. **Above:** Wilson practices with dance student Jessie Mays to develop core strength. UW Photo.

Continued on Page 12. . .



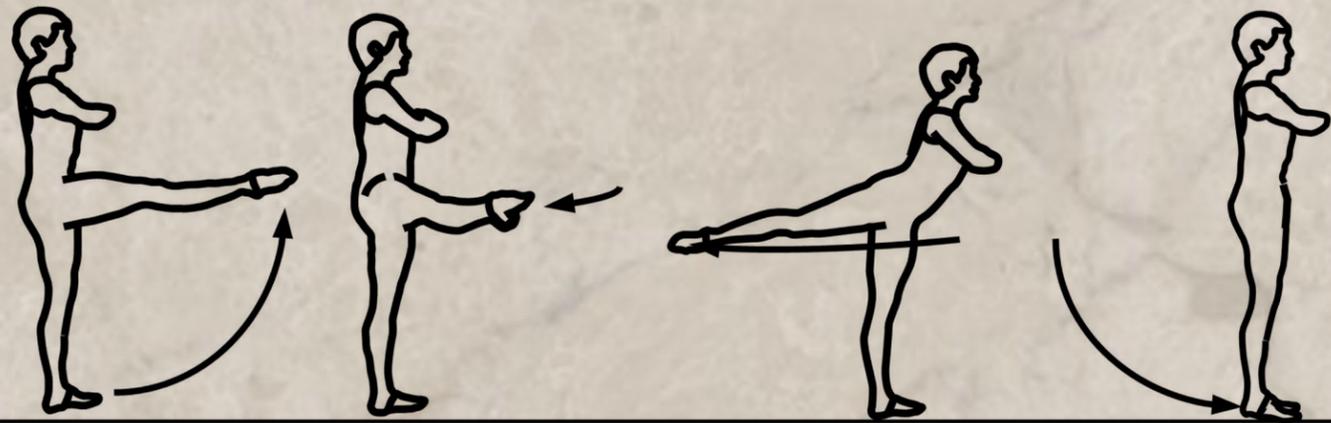


Image 1: *Grand rond de jambe en l'air.*
Courtesy of Margaret Wilson.

Wilson also teamed up with colleagues in the UK to analyze center of mass movements during a complex balancing task. Although movement of the center of mass most often is imperceptible to the human eye, motion capture technology shows these micro movements. Dancers, in seemingly static positions may make many subtle adjustments to create the illusion of stillness, but the variability in the movement of the center of mass in dancers seems to be an aspect of skilled performance. “Rather than just one pattern for the center of mass in movements that require balancing, more skilled dancers showed different patterns that reveal adaptability in their approach to movement execution,” Wilson says. “This is very important given the different demands placed on a dancer to simultaneously balance and change directions in choreography.”

At the UW campus, Wilson collaborates with Associate Professor Jennifer Deckert (Department of Theatre and Dance), Professor Neil Humphrey (Department of Geology and Geophysics, who also is an adjunct professor in the Department of Theatre and Dance), Assistant Professor Boyi Dai, and Associate Professor Arthur Zhu (College of Health Sciences).

They analyze jumping-induced fatigue with dancers by using heart rate monitors and accelerometers, as well as by using motion capture and electromyography data to estimate compressive forces on the spine in vertical dance.

Vertical dance presents Wilson with new challenges for understanding the mechanics of movement as an artist and a scientist. “Finding ways to train the dancers to develop the necessary strength, expressiveness, and flow has challenged me to develop a training program that strengthens dancers so they can develop endurance for working in this novel environment and minimize any risks for injury,” Wilson says.



Above: Wilson works with Mays to develop strength in an unstable environment. UW Photo.

Wilson and her colleagues will publish their findings in the 2015 *Journal of Dance Medicine and Science*. They discovered that with vertical dance there is no direct way to understand the forces acting on the spine. When the dancer is suspended in the air, the muscles must work differently to balance the body and control the movements. This added effort can increase trunk compression. Using electromyography to

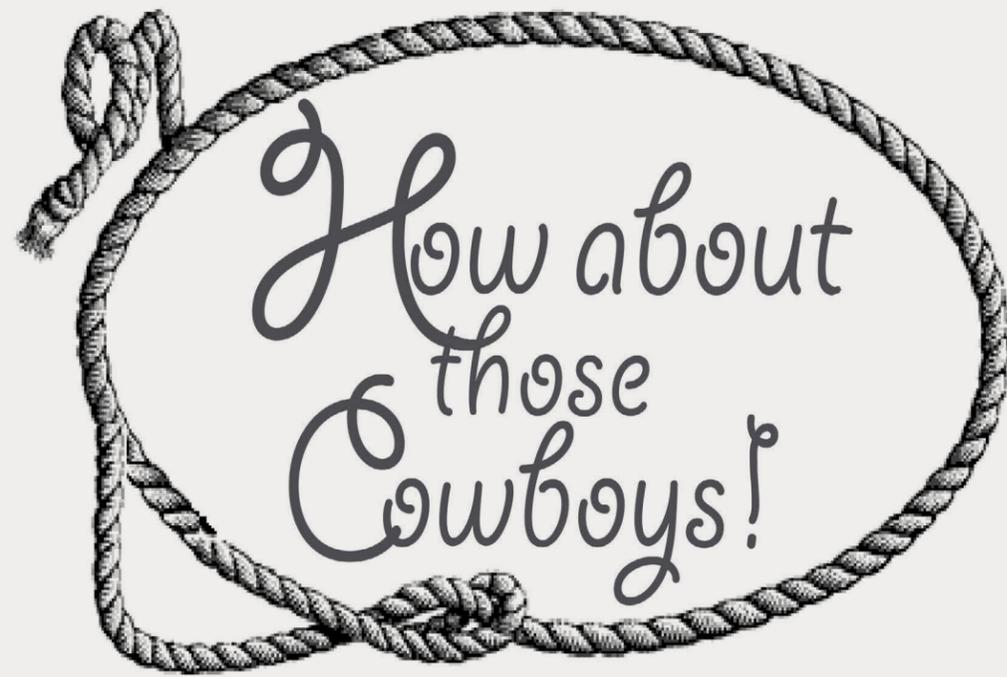
estimate the muscle activation, trunk compression values were determined for typical vertical dance movements. Trunk compression became an indicator of the strength needed for the movement and the study identified the most (and least) demanding postures in vertical dance. Understanding which movements need the most support led to the development of a training program for vertical dancers that Wilson began researching this fall. Wilson and Humphrey based this program from work done in Italy with Il Posto Vertical dance in 2013. Together, Wilson and Humphrey have been teaching, choreographing, and presenting vertical dance at the University of Wyoming since 1999, with performances in theatres and outside venues, including the Vedauwoo recreation area just east of Laramie.

“I feel fortunate to have the language and grounding in analysis of movement to aid me as a dancer, a researcher, and a teacher,” says Wilson. “Understanding what the body is capable of through the study of kinesiology and biomechanics, as well as experience as a dancer and teacher, allows me to see how the art and science are equally important in creating effortless and exquisite movement—beauty and balance in motion.”

At right: Wilson coaches Mays in her movement while working on the rope. UW Photo.

To learn more about vertical dance and Associate Professor Margaret Wilson’s research, see the video at:





OR
Way Out West in Italy

Diana Marie Waggener

Most UW alumni and Wyomingites know the lyrics to *Ragtime Cowboy Joe*—the fight song that conjures images of a “high-falutin’, rootin’, tootin’ son of a gun from old Wyoming.” We are the cowboys and cowgirls; we “live each day with courage, take pride in our work, always finish what we start, do what has to be done, are tough but fair, keep our promises, talk less and say more, remember that some things aren’t for sale, know where to draw the line, and ride for the brand”—whether or not we ever have ridden a horse or branded a cow. We understand the ethics and symbol of the American cowboy, but we may not know its origins.

At the turn of the nineteenth century, William F. “Buffalo Bill” Cody and his friend Texas Jack Omohundro began performing their Wild West shows, presenting a romanticized version of the American Old West to audiences throughout the United States and Europe. This began the elevation of cattle drovers from a rowdy—albeit necessary—part of the post-Civil War cattle industry to a national icon. Later, Theodore Roosevelt, Owen Wister, and Frederick Remington more effectively promoted the image of hero cowboys, reflecting national values, goals, and attitudes among Americans, as well as our attitudes toward other nations.



Rodeo on the Pitchfork Ranch, Wyoming, circa late 1930s. Charles Belden Collection, American Heritage Center, University of Wyoming.

While the American cowboy icon is fairly well known throughout the world, the impact the United States cowboy has had on Italy—other than the classic “spaghetti westerns” of the 1960s—is not. Few Americans realize that Italy has its own cattle drover tradition, one used by Italian intellectuals during the turn of the nineteenth century to promote a sense of national cohesion and identity in their own country, as well as to critique or embrace American values.

In her current research, Professor Renee M. Laegreid, Department of History, examines the cowboy icon from its history as working class laborers in the United States and as peasants in Italy to representative icons. She also investigates the relationship and mutual influences that developed between the two cowhand traditions and the ways in which the image has been reshaped and repackaged in The United States and Italy.

“In the U.S., the cowboy image is intimately associated with our national sense of identity,” says Laegreid, “while in Italy, the relationship is more complex since it continues its own cowhand tradition and also has adopted the U.S. cowboy.” Intellectual elites and politicians in Italy and the United States reconfigured the role of pre-industrial cowhands very differently, and these reconfigurations help illustrate political and cultural changes and differences.

Seeing the image of “our” cowboy as perceived by another country can be a bit unnerving, but it also may create an opportunity to consider the American cowboy as a reflection of national identity in a new light. “The cowboy image has not remained static in either country and my research explores the manifestations and reasons for these shifts over time,” says Laegreid. “Often the changes in the cowboy image speak to larger issues.” Laegreid investigates who is behind the image changes of the American cowboy and Italy’s embrace of the American cowboy icon.

“Ever since Buffalo Bill’s first tour in 1890,” notes Laegreid, “the Italian press has used the image of the cowboy he represented to critique the United States.” While in Italy, Buffalo Bill claimed that his cowboys were better riders than any other cowboys, leading to what is known as *La Sfida* (The Challenge) in which Onorato Caetani, fourteenth duke of Sermoneta, who lived on an estate inhabited by *buterri* (Italian cowhands), provided his own wild colts to determine whether the American Cowboys or the *buterri* were the superior riders. While the Americans fared well in the challenge, there was a dispute as to who had actually won, resulting in a second contest that was ended abruptly by Cody. The Italians interpreted his behavior as poor sportsmanship, as the *buterri* were proving themselves to be exceptional horsemen and

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Humorous Italian poster promoting *La Rana*, a political satire magazine: lithograph by Stab. Tip. Lit. A. Noe, Bologna, ca. 1902, 38.5 by 26 inches. Courtesy of Renee Laegreid.

Cody had not announced a time limit before the competition started. Cody was described by the Italian press as “a buffoon, a cheat, and a swindler.” Consequently, the American cowboy image became a familiar mechanism for criticizing the United States.

For the Italians, *La Sfida* was not simply a riding contest—it was a metaphor of or comparison between the old-world values and traditions revered by Italians and modernity—a period marked by rejecting tradition and embracing individualism, freedom, formal equality, progressive ideals, and human perfectibility. “The vast majority [of Italians] considered the contest great entertainment, and since their riders had proved their country’s superiority, they could be gracious winners,” explains Laegreid. “A small minority of radicals and intellectuals, however, found the event politically useful, connecting Cody’s role in conquering the West as a means to critique African colonization ambitions of Italian Prime



Gino Ponticelli, 1920, from *Butteri di Maremma*. Courtesy of Renee Laegreid.

Minister Francesco Crispi.” Despite Cody’s denigration by the Italian press, his shows still were met with enthusiasm, and, by the 1920s, several Italian authors were writing their own stories about Cody and the far West. In the 1940s, a weekly serial, *Buffalo Bill L’eroe Italiano della Prateria* (Buffalo Bill, the Italian Hero of the Prairie), was dedicated to Cody’s life and adventures. In the first installment, Italian readers learned that Buffalo Bill was, in fact, Italian, and his true name was Domenico Tombini—this fiction made him part of Italy’s family, and his iconic stature grew.

“Buffalo Bill was used as shorthand for acquisitive, capitalist, anti-Fascist ways by Mussolini from 1920 to 1943—school children were taught about Cody’s ‘dishonest’ claim of victory at *La Sfida* in text books,” says Laegreid. “Then, in an odd turn, Mussolini used Buffalo Bill’s patriotism, commitment to national expansion, and racial ideas to promote Italy’s colonization efforts in Africa.” Essentially, the American cowboy,

beginning with Buffalo Bill and continuing through film (including the meaner side of cowboy life in Italian Westerns) and television, has been a useful tool in moving public opinion in Italy, but another little-known connection began developing in the twentieth century.

Italians desiring to create an authentic West in their own country forged an affiliation with the American Quarter Horse Association (AQHA) in 1977. Although Italy does not have a strong equine history, Eleuteria Archese formed the Italian Quarter Horse Association with a group of friends who had grown up watching American Westerns. More recently, in the northwest region of Italy, spectators have been visiting a destination called Cowboy’s Guest Ranch to see American-style rodeo traditions, which feature both men and women in strict accordance to United States standards. “In this approximated piece of Americana,” notes Laegreid, “the origin and success of the ranch illustrates a transnational interplay influenced by the European tours of William F. ‘Buffalo Bill’ Cody, post-World War II western movies, and the Quarter Horse industry.”

As a small subculture of Italians embrace and aim to imitate the American cowboy in its positive and, for many, entertaining light, the Italian *butteri*, as a national symbol, remains a bit more complex.

Unlike American cowboys, *butteri* did not become a lasting national symbol, nor do Italians consider the working class characteristics of their cowhand worth emulating—you will not hear of *butteri etica*. “You won’t see any Italian stock brokers striding through the streets of Rome, wearing the Montello, the traditional cloak of the *butteri*, or Italian Prime Ministers doing ranch chores to make points with voters,” notes Laegreid, “but the *butteri*, as a link to traditions and values, and as heroes defying America, remain a strong undercurrent in the collective psyche of Italians, ready to be recalled when needed.”



Rodeo Italian style, circa 1920. Courtesy of Renee Laegreid.



The sign, posted on an authentic Conestoga wagon from Oklahoma, directs visitors to Cowboy’s Guest Ranch in Voghera, Italy. Renee Laegreid Photo.

Cold Chemistry

Not an Oxymoron Anymore

Diana Marie Waggener

Professor David T. Anderson, head of the Department of Chemistry, likes to keep things in his laboratory cool—real cool. He and his students study chemical reactions at -452 degrees Fahrenheit—that’s as cold as the coldest day in Antarctica times 3.5. Anderson’s group focuses on chemical reactions of atoms and molecules trapped in crystals of molecular hydrogen to test the limits of chemistry at extremely low temperatures.

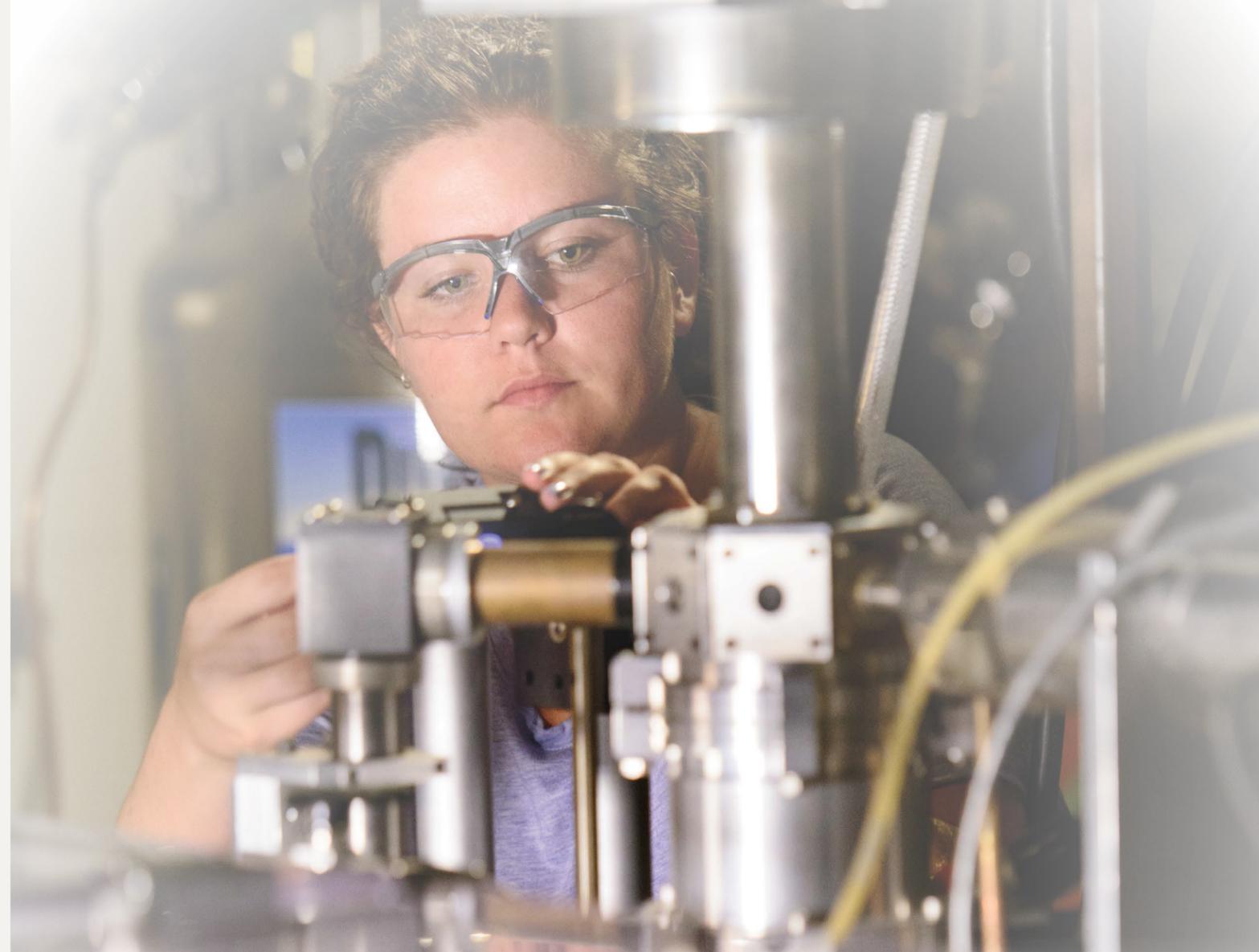
Most of us take for granted our refrigerator, but, when the power goes out, we are reminded what effect temperature generally has on chemistry; that is, many chemical reactions, like those that spoil milk, occur faster at elevated temperatures. Typically, triggering a chemical reaction requires heat and that is why chemical reactions speed up at elevated temperatures. The idea that the rates of chemical reactions speed up with increased temperature has been known since about 1889 when the Swedish scientist Svante Arrhenius developed the “Arrhenius equation,” which quantifies this basic finding. According to Arrhenius, all rate constants exponentially go to zero at low temperature, in other words, all chemistry stops at 0 K.

After Arrhenius worked out his pioneering equation, still taught in every freshman chemistry course, a new development called quantum mechanics came along and showed that at temperatures approaching 0 K not all rate constants go to zero but, rather, some stop at a finite value. “The reason for this deviation from normal experience is that at very low temperatures matter—molecules—start to behave more like waves than particles,” explains Anderson, “and reactions can occur by a process called quantum mechanical tunneling, which is nothing you will ever experience in everyday life, not even if you drink too many adult beverages! However, when you shrink down to the mass of an electron, now you are gov-

erned by the strange laws of quantum mechanics, where now you can show both properties of a particle or a wave simultaneously, and now you can get through reaction barriers not by going over them, but by tunneling through them.”

Since the beginnings of quantum mechanics, the quantum nature of electrons has been appreciated by chemists; however, even the lightest atom (hydrogen) is much more massive than an electron so the tunneling of atoms through barriers is much less important. Consequently, much of chemistry at elevated temperatures can be understood using classical mechanics, rather than quantum mechanics. When you get down to the temperatures the Anderson group studies, however, even atoms and molecules behave quantum mechanically and reactions can occur by a new mechanism—quantum mechanical tunneling.

Measuring the chemistry that occurs exclusively via quantum mechanical tunneling has become the obsession of the Anderson group. To study reactions at such low temperatures requires highly specialized equipment. Specifically, the Anderson group relies on helium. If you ever have bought a floating balloon to celebrate a birthday or graduation, you have experience with helium, one of the lightest chemical species on the periodic table. Helium contains a special property that gives it the record lowest boiling temperature; thus, liquid helium can be used to cool matter to extremely low temperatures. “In today’s world, state-of-the-art refrigerators operate with helium gas in closed-cycle loops to cool things down,” says Anderson, “but my group wants to get to even lower temperatures and, therefore, uses liquid helium directly to cool things down.” The cryostats (refrigerators) in the Anderson lab are basically the muscle cars of refrigeration. They run on liquid helium and can achieve large cooling powers.



Studying cold chemistry serves to answer several important questions. For example, chemistry in outer space occurs at extremely low temperatures, and by looking at how chemical reactions occur at these low temperatures, scientists may be able to better understand why the universe is molecular. “Going all the way back to the 1970s, scientists believed that the harsh environment of interstellar space was too extreme to support any significant chemistry,” explains Anderson. “In space you have extreme low temperatures, extreme low pressures, and there are high levels of ultraviolet radiation that break up and destroy molecules.”

Using models based on the Arrhenius equation, the predictions were that only atoms should be present in space. “In the last nearly 50 years, however, as more and more telescopes have been assembled and pointed toward space, the answer came back loud and clear that there are literally hundreds of

different types of molecules in interstellar space,” Anderson says. “We still don’t really know how all these molecules got there, but the proof that the universe is molecular is undeniable.”

Understanding cold chemistry possibly will be the key to unlock our understanding of the chemistry that produces these molecules in space. In addition, some scientists believe that certain molecules essential for life were synthesized first in outer space and then hitched a ride on a comet to collide with Earth and delivered these key molecules necessary to trigger life. After pressing Anderson to speculate further, he says, “Whoa, whoa! This is one possible ramification to the work my students and I work so hard on, but this is not what drives us.”

The idea in curiosity-based research is to find new underlying physical truths, not to solve specific problems. Many times

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curiosity-based research provides the conceptual foundation for new targeted research programs by supplying new insight. “I think there is room for both types of research at UW, more focused research on specific problems and pure fundamental research,” notes Anderson. “It is also important for our students to have a choice in the kinds of science they get involved in. You don’t have to go to MIT to study fundamental chemistry research, you can do it right here in Laramie. I want to give students the opportunity to tackle cutting-edge research problems in chemistry.”

Maybe the research the Anderson group does will change our ideas about chemical transformation, or maybe it won’t, but, in the process, the Anderson research program will rigorously train students in fundamental research, and the skills and passion this instills in students can take them anywhere.

Page 19: Morgan Balabanoff, second-year graduate student with the Anderson group, adjusts an optic that transfers a laser beam (UV laser, 193 nm) into the cryostat (vertical metal cylinder with small windows). The beam must shoot through multiple windows, so proper alignment is important. UW Photo.

At Left: Fourth-year graduate student Frederick Mutunga, originally from Kenya, fills the radiation shielding on the liquid helium cryostat with liquid nitrogen. UW Photo.

At Right: Professor David T. Anderson consults with Balabanoff prior to an experiment. They are looking at a gas cell used for calibration and diagnostic purposes. UW Photo.

To learn more about Professor David Anderson’s lab, see the video at:



“In this strange world of cold chemistry almost all the rules we teach in freshman chemistry break down,” comments Anderson. “For example, some chemical reactions only start to occur *below* a certain temperature—not above!” Anderson’s research also is aimed at quantifying how well scientists can prevent chemistry from occurring by using low temperatures to synthesize highly reactive matter with applications in chemical explosives and propulsion. “Using extremely low temperatures, we can generate chemical mixtures that normally react violently at room temperature, but at low temperature can be relatively stable,” Anderson says. “However, to best synthesize these highly reactive mixtures we must first understand how chemical reactions proceed under these extreme conditions.”

Finally, the Anderson group studies cold chemistry, as explained by graduate

student Morgan Balabanoff, “Because it’s cool.”

More possible applications to Anderson’s research program could be used in a variety of fields, but getting students excited about fundamental physical chemistry is enough for Anderson. “We may never find anything truly transformative in our research efforts,” he says, “but we will keep the bar high and see what happens.”

So next time you are scraping ice off of your windshield in the morning and cursing the weatherman, stop and take a moment to remember the Anderson group studying chemical reactions at temperatures much, much colder. This should instantly make you feel a little warmer inside knowing that Anderson and his group are working in their lab, trying to measure the limits of chemistry.



A&S Student Profile

Achieving the American Dream through education

College of Arts and Sciences Writing Intern Courtney Scout Madson

In this world, many voices can be heard, but some are more powerful than others. Before a person can control his life and claim his rights, he must become confident in his ability to communicate his needs. If anyone knows the value of an empowered voice, José Guillermo Rivas Barrera does. As a Mexican immigrant, Rivas entered America by way of California with a family member. By the age of 11, his family discovered the “Energy Capital of the Nation,” Gillette, Wyoming, and this is where his 16-year relationship with the Cowboy State began. Although Rivas’ English had improved by the time he arrived in Gillette, he was enrolled in English as a Second Language (ESL) courses for three years. Rivas was unable to travel in school-related events or sports because his family did not have insurance and their undocumented status prohibited them from obtaining school-provided insurance. While growing up as an undocumented immigrant created some obstacles, Rivas’ determination to succeed led him to seek higher education, and that is where he found his voice.

Rivas graduated from Campbell County High School in 2007, the first in his family to do so. He then attended Gillette College to study nursing; however, because of his undocumented status he couldn’t work in a hospital, so he returned to manual labor in the construction and energy fields. Two years after his decision to work full time, he had an accident that resulted in reconstructive knee surgery and a decision to return to school. After President Barack Obama passed the Deferred Action for Childhood Arrivals (DACA) in 2012, Rivas was able to continue his university education at UW.

DACA is an American immigration policy that allows eligible undocumented immigrants who entered the country before their 16th birthday and before June 2007 to receive a two-year work permit and exemption from deportation. DACA does not provide legal immigration status or a path to citizenship. Rivas’ reaction to this life-changing opportunity was similar to millions in his position. “I was brought to tears when DACA was announced, and I immediately called everyone I knew to say I finally would have the opportunity to continue my studies,” says Rivas. “Thanks to DACA, I have a voice now.”

Rivas studied criminal justice in hopes of finding a career in law enforcement; however, his interest in social justice has led to a new fascination with immigration law. This change was facilitated with the help of Assistant Professor Lilia Soto. “She challenged me to apply my experience as an immigrant student in an academic forum,” Rivas says, “which drew me to immigration law to help those in need.” A minor in the Latino Studies program has helped Rivas grow as an individual and strengthened his commitment for social justice.

Rivas’ interests are not limited to the classroom. He was cochair of the campus organization MEChA, an organization that promotes the culture and history of Chicano students. His desire to speak for the unheard voices, as well as to tell his own narrative, gave him the opportunity to speak on a panel at the 2015 Martin Luther King, Jr., Days of Dialogue. “I always supported human rights issues,” Rivas



Courtney Scout Madson Photo

says, “but never really understood the term social justice before coming to UW and strengthening the definition at the MLK, Jr., Days.”

Rivas’ support system is his family; they have been with him every step of his journey. His parents are hardworking people and have been a prime example of what a person can achieve through hard work. “My family is what drives me to complete my studies,” says Rivas. Through all of his adversities, Rivas’ family has remained as his backbone and supported him in reaching his goals.

Rivas’ college education has empowered and strengthened his once overpowered voice by giving him the knowledge to approach any situation with an academic view. He concluded by saying, “Receiving this education gives me some credentials and confidence to express my voice, and it has made me stronger.”

A&S Briefs

The Greenland Analogue Project seeks to answer hard questions



Two professors and seven graduate students camp for more than a month at the base of the Greenland glacier. Neil Humphrey Photo.

What would happen if the ice sheet that extends across 656,000 square miles of Greenland melted? The short answer may alarm you, and the long answer is yet to be determined. The short answer is: Because ice sheets, which form where snow falls in winter and does not melt entirely over the summer, contain high quantities of frozen water, if the Greenland Ice Sheet melted, some scientists estimate that the sea level would rise nearly 20 feet. Professor Neil Humphrey, Department of Geology and Geophysics, and his colleague Associate Professor of Geosciences Joel Harper, University of Montana, are searching for the long answer. “These estimates are based on very poorly understood ice dynamics,” says Humphrey, “which we hope to improve.”

For the past six years, Humphrey and his research group have been operating a major field program, involving integrated measurement and modeling, on the Greenland inland ice sheet. The objective of this project is to significantly improve scientists’ understanding of how ice flows over the landscape, and, especially, how the flow of the ice will be modified by a changing climate. “This is fundamental research aimed at improving our ability to predict sea-level rise caused by the melting of the ice in Greenland,” says Humphrey. “The time scale for that rise is hotly debated, but many estimates range at one foot or more of rise by the end of the century.”

Field work takes place at the base of the glacier, where 40 boreholes—at each of the 7 sites—are drilled to the bed, nearly 3,000

feet down. Sensors are placed both within the ice and at the bed to monitor water flow and ice motion. “The field work is labor intensive with a crew of two professors and about six or seven graduate students,” notes Humphrey. “Logistics are complicated as we need to move both personnel and equipment by helicopter in a remote and rugged environment. We camp for over a month on the ice each summer and have to endure whatever weather the ice gives us.”

The project is supported by two entities: the National Science Foundation (NSF) and Greenland Analogue Project (GAP), a consortium of northern latitude countries headed by Sweden and including Finland, Denmark, Switzerland, and Canada. GAP’s interest in this project stems from its need to have information about observed conditions at the base of a continental-sized ice sheet. Each of these countries is planning to bury nuclear waste in their own country, deep underground, and all are concerned about the fate of that waste during the next global glaciation that will cover these countries in ice sheets many

1,000s of feet thick and which will occur within the next 10,000 years.

At this point, several results already are apparent, but Humphrey points out four that are particularly significant. The research group has determined that the bed of the ice sheet is not covered in rock debris, thereby eliminating a major potential ice flow instability. Humphrey and his fellow scientists also have found that the ice mass is much warmer than expected, which implies a faster flow and quicker response to climate change than was previously expected. In addition, the pressure field under the ice is local, rather than general, indicating that one of the major predictive tools currently used, that of a generalized pressure/sliding coupling, is not plausible, and the ice deformation is much more variable than expected; in particular, elastic behavior is important. “This fourth finding is a puzzling aspect of the ice sheet flow that is not captured by our current models,” says Humphrey. “As is usual in science, our work is answering some fundamental questions, but at the same time showing us aspects of the problem that are important, unexpected, and as yet poorly understood.”

Clearly, we need to be patient to learn the long answer to the question, “what would happen if the ice sheet that extends across 656,000 square miles of Greenland melted?” We’ll update you when more results are available—stay tuned.

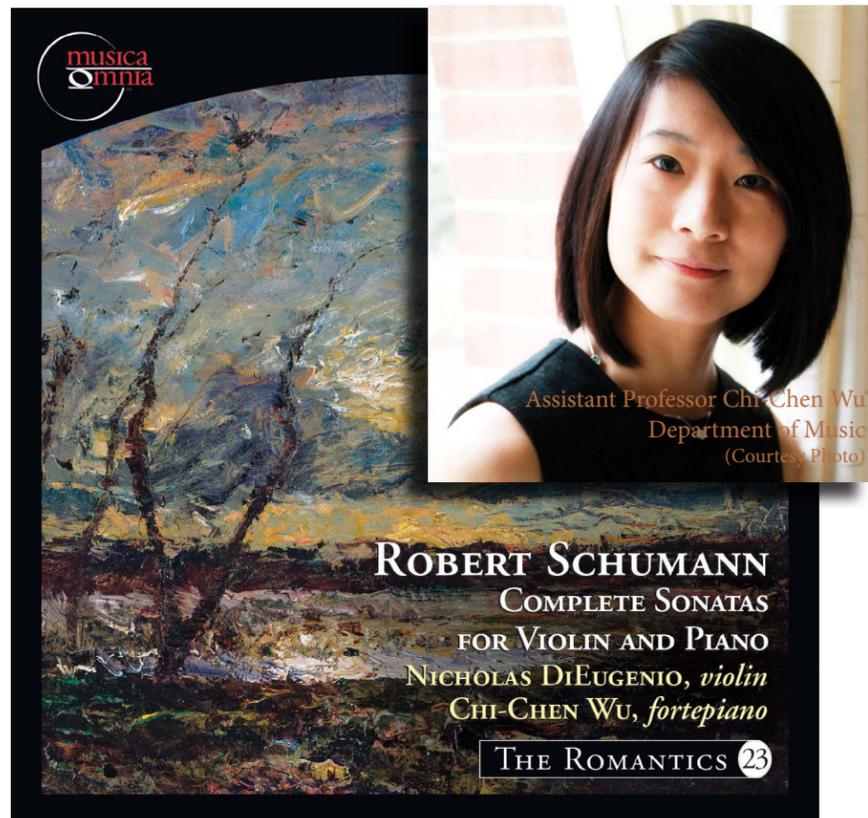
Authentically Schumann: A&S professor recreates Romantic sonatas using historically accurate instruments

Imagine a future musician in the year 2175 playing Jimmy Hendrix’s “Wild Thing” on an instrument that is not at all like an electric guitar. While listeners may enjoy that rendition, it certainly would not duplicate the sound that Hendrix achieved in 1967. Similarly, today’s musicians cannot fully recreate sounds made by instruments from time’s past. With this issue in mind, pianist Chi-Chen Wu, assistant professor in the Department of Music, recently completed a project that led to a rediscovery of the Schumann sonatas for piano and violin as they would have been played and heard during his lifetime.

Robert Schumann is widely regarded as one of the most important composers of the German Romantic era during the early nineteenth century. Schumann was given a fortepiano made by Conrad Graf in 1839 as a wedding gift, and he used this instrument to create piano solo and chamber works, including sonatas for piano and violin written in 1851 and in 1853. While these works are among the central works for the classical repertoire and are frequently performed and recorded, until Wu’s recent project, no one has recorded the pieces using the kind of instruments for which Schumann actually wrote.

The difference between the fortepiano of Schumann’s period and a modern piano are neither minor nor subtle; in fact, they are extremely different instruments. While the sound of a gut-strung violin of Schumann’s time bears a close resemblance to a metal-strung modern instrument, the differences are still significant. These variances in both the piano and violin lead to an entirely different meaning to the compositions themselves. Using historically appropriate instrumentation fundamentally changes the understanding of the repertoire for both performers and listeners.

Wu conducted research on the formal structure of these compositions and its relation with musical performance. Her research culminated with a collaboration with violinist Nicholas DiEugenio in which they recorded Schumann’s three sonatas for piano and violin using a six-and-half octave fortepiano by builder Rodney Regier, which embodies the ideal characteristics of instruments by Vienna’s greatest early nineteenth century builders, Conrad Graf and Ignaz Bösendorfer, and a violin with gut strings.



Before recording the three duo sonatas, Wu and DiEugenio discussed musical expression, character, and structure of these works to make careful interpretative decisions. In addition, they were coached by Malcolm Bilson, an internationally known fortepianist who specializes in early music, and Michael Friedmann, professor of music theory at Yale University, whose focus is on musical analysis and interpretation of compositions by Schumann.

The recording, *Robert Schumann: Complete Sonatas for Violin and Piano*, was released on the Musica Omnia label in March 2015 and received a Gold Medal at the May 2015 Global Music Awards for a classical music duo. “This recording presents an important contribution to the understanding of this repertoire,” says Wu, “using the sonic vocabulary of his own time as opposed to a palate of contemporary sonic possibilities that Schumann could never have known.”

Wyoming Trauma Treatment Telehealth Clinic offers free counseling to communities across the state



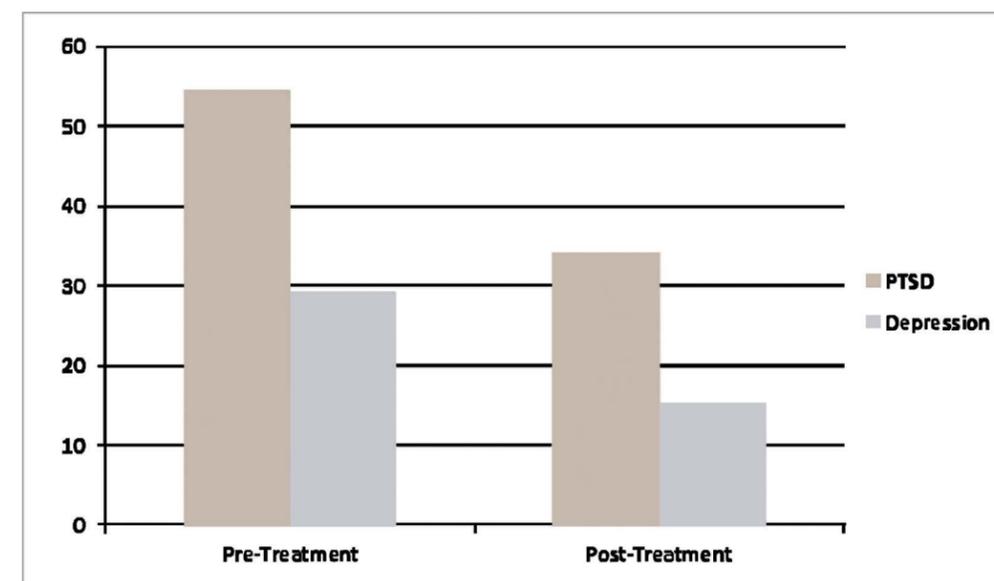
Wyoming is the second least densely populated and the 10th most wide-ranging state in the nation, and those factors, combined with challenging winter weather patterns, make it difficult for many residents to gain access to specialized mental health care. To address this issue, Professor Matt J. Gray, Department of Psychology, developed the Wyoming Trauma Treatment Telehealth Clinic (WTTTC). Through secure and encrypted videoconferencing, the clinic provides free, local counseling to survivors of assault and domestic violence who live in areas where it may be difficult to travel for treatment.

Thanks to WTTTC, when an assault or domestic violence survivor turns up at a local crisis center, staff members are able to offer a free counseling referral, as well as access to specialized, trauma-informed care by having the videoconferencing equipment available onsite. The WTTTC fosters communication among the survivors of partner and family vio-

lence, various domestic violence and sexual assault agencies, and Department of Psychology doctoral student trainees who serve as therapists, under the supervision of Gray—a licensed psychologist.

The WTTTC provides outreach-based clinical care to sexual assault and domestic violence survivors in Rawlins (Carbon County COVE), Gillette (Gillette Abuse Refuge Foundation [GARF]), and Cheyenne (Wyoming Safehouse). In addition, the clinic has occasionally been able to offer services to individuals who speak other languages such as Spanish, Mandarin, and Russian.

WTTTC clients receiving six or more sessions of therapy have exhibited, on average, large decreases in PTSD and depression symptoms. The symptom improvements reported by telehealth clients rival those of clients receiving traditional face-to-face services at UW’s Psychology Clinic, and telehealth clients generally report high satisfaction with services provided. “There are tremendous unmet mental healthcare needs in a state like Wyoming,” says Gray, “but distal technologies provide an effective and affordable means of connecting rural residents with specialized, university-based clinical services.”



University of Wyoming String Project helps young students and teachers master the art of string playing



UW Photo

UW Department of Music faculty members James Przygocki and Sherry Sinift. String Project instructors meet weekly to plan classes, critique teaching, discuss and develop pedagogical approaches, and talk about the needs of particular students.

In addition to preparing tomorrow's teachers, while offering children excellent instruction, the UW String Project serves as an excellent means for student recruitment. Leslie Fox, a graduate student who earned a bachelor's degree from Lawrence Conservatory in Wisconsin, decided to attend the University of Wyoming because of the UW String Project. "There are not many chances to get this kind of experience and to not only learn how to teach, but to put into practice what you're learning with actual students," she says. "It definitely trains us to be good teachers. We know what to do, and we know what to expect. We have a chance to improve our skills and put something really excellent on our résumé. I'm learning, and I love teaching."

Anna Fasken, a senior from Grand Junction, Colorado, recently finished her student teaching in Casper. "[The UW String Project] was crucial in shaping my future. It gave me valuable teaching experience that I wouldn't have gotten until my student teaching experience," she notes. "I know that I wouldn't have been nearly as confident without the experience of teaching with the UW String Project."

An important part of the mission of the UW String Project is to provide children access to excellent instruction, regardless of their family's income. Outside funding and support from the College of Arts and Sciences helps keep fees for the program extremely low. Students pay \$70 to \$80 per semester for instruction, and scholarship support helps those families who need assistance. The program also maintains a close relationship with public school music educators in Laramie and throughout Wyoming. All UW String Project students are required to participate in the Albany County school music program, and, as a result, both programs flourish. The UW String Project is a win-win situation for young students who participate, and the future educators leave the program with the skills and confidence that will help them to train and nurture young musicians for years to come.

This program is made possible with funding from the College of Arts and Sciences, the Department of Music, the Wyoming Arts Council, the Maggie-George Foundation of Denver, the National Endowment for the Arts, and numerous private donors.

During the school year on any given Tuesday and Friday afternoon, the UW Lab School hallways hum with the sound of excited third and fourth graders unpacking their small violin, viola, and cello cases. Enthusiastic and dissonant noises swell as five UW music students direct traffic, tune instruments, position, and prepare nearly 45 children for 50 minutes of instruction, games, and music. Across campus at the Buchanan Center for the Performing Arts, a similar scene unfolds, as approximately 45 more children—ranging from fifth graders to high school seniors—and their teachers endeavor to master the art of string playing.

The UW String Project is a member of the National String Project Consortium, an organization of 42 similar programs across the country with a mission of attracting outstanding college students to the teaching profession. For 15 years, the UW program has provided hands-on teaching experience for music majors who are preparing for careers as public school music instructors, studio teachers, and performers. Currently, 14 music students are teaching for the UW String Project, and, over the years, more than 70 have passed through the program. Many of them hold music teaching positions in Wyoming, as well as across the nation and abroad.

Recognized with an award for excellence from the American String Teachers Association, the UW String Project is modeled on a public school string program. Children begin playing in third or fourth grade and receive instruction in classes for the first two years of study. After that, they receive weekly private lessons and play in one of the String Project's ensembles. All classes and lessons are taught by UW music students, under the close supervision of master teachers and

A&S Scientist leads a NASA research team



UW Photo

Assistant Professor Hannah Jang-Condell, Department of Physics and Astronomy, is searching for life on planets outside our solar system.

Assistant Professor Hannah Jang-Condell, Department of Physics and Astronomy, is a key player in an unprecedented initiative to search for life on planets outside our solar system. The Nexus for Exoplanet System Science (NexSS) seeks to better understand the various components of exoplanets (planets around stars), as well as how planet stars and neighbor planets interact to support life. Jang-Condell's group is one of five teams chosen from NASA's Planetary Science Division of the Exoplanets Research Program.

Jang-Condell's team will explore the evolution of planet formation, modeling disks around young stars that are in the process of forming their planets. A new scientific frontier, the study of exoplanets began with the discovery of the first exoplanet around a star like our sun in 1995. Since the launch of NASA's Kepler space telescope six years ago, more than 1,000 exoplanets have been found, with thousands of additional candidates waiting to be confirmed. Scientists are developing ways to substantiate the suitability of a planet to host life.

The key to this effort is to understand how biology interacts with the atmosphere, geology, oceans, and the interior of a planet, and how these interactions are affected by the host star. This "system science" approach will help scientists better understand how to look for life on exoplanets.

Jang-Condell's computational astrophysics research focuses on the theoretical study of the origins of planet formation in our solar system and those around other stars. Specifically, her research investigates how planets form as a byproduct of the creation of stars. Her group is the first to combine the dynamics of gas flow with heating from the central star.

A&S student receives Goldwater Scholarship

Annette Estella Hein, a junior in the Department of Geology and Geophysics, became interested in science while hiking and experiencing nature in the geologic formations around Casper where she grew up. Home-schooled by her parents, who grow much of their own food and sell produce at a farmers market in Casper, Hein's curiosity about rocks and the origins of geologic formations attracted her to geology. Her interest in the field was strengthened when she took science courses at Casper College before transferring to the University of Wyoming.

This past spring, Hein was awarded a Goldwater Scholarship, a nationally competitive, merit-based award given to only 300 college juniors and seniors each year who show exceptional promise for a Ph.D. degree in a science, technology, engineering, and mathematics (STEM) research career path. Among the most prestigious undergraduate awards given in the sciences, the scholarship covers tuition, fees, books, and room and board up to a maximum of \$7,500 per year. Since 2006, only four Goldwater awards have gone to UW students.

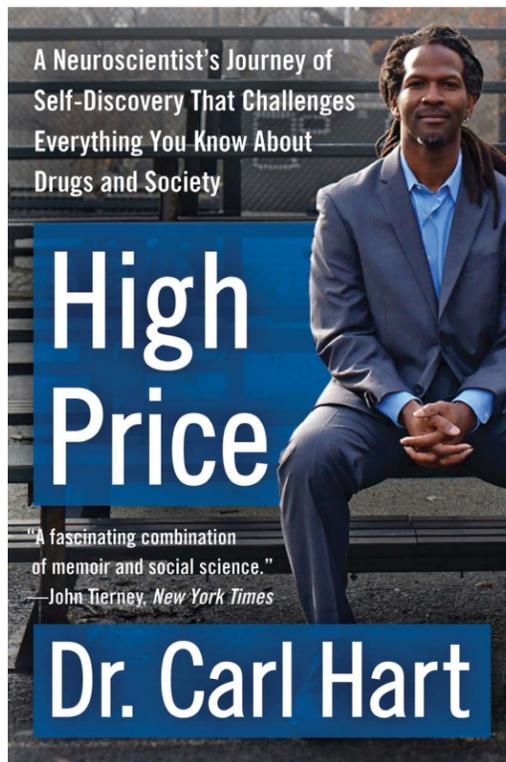
"Annette has earned such national recognition for her promise as a geoscience scholar," says her mentor, Assistant Professor Andrew Parsekian, Department of Geology and Geophysics. "Even at this early stage in her career, she's already immersed herself in geophysics research. I look forward to seeing what new discoveries she will make in the future."



UW Photo

Annette Estella Hein receives a Goldwater Scholarship.

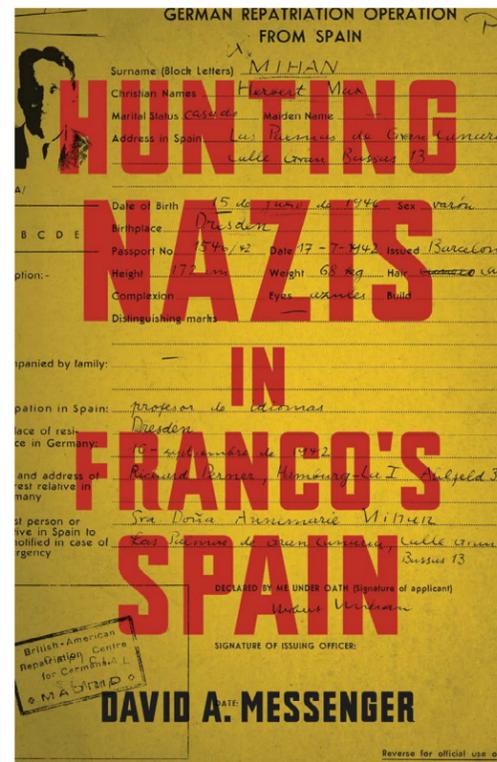
A&S Bookcase



College of Arts and Sciences 2015 Outstanding Alumnus Carl L. Hart (M.S. Psychology/Neuroscience 1994; Ph.D. Psychology/Neuroscience 1996)

High Price: A Neuroscientist's Journey of Self-Discovery that Challenges Everything You Know about Drugs and Society (Harper/Collins 2013)

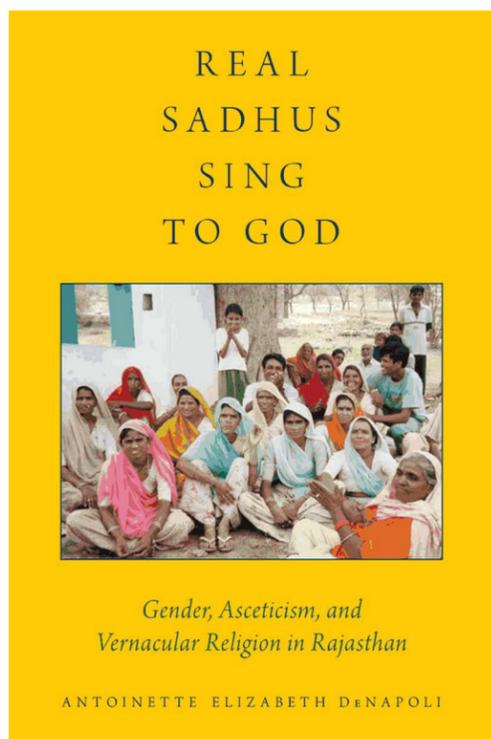
Carl L. Hart blends an inspiring memoir and scientific research in his first trade book, *High Price: A Neuroscientist's Journey of Self-Discovery that Challenges Everything You Know about Drugs and Society*. He takes the reader on an excursion that begins in one of Miami's toughest neighborhoods and culminates with Hart becoming the first tenured African American professor in the sciences at Columbia University. By using physical science and social analysis as evidence, Hart argues that the so-called War on Drugs in the United States has been misguided. Hart received a PEN/E.O. Wilson Literary Science Writing award in 2014 for *High Price*, and the award judges noted, "In drawing on such a broad range of resources, neuroscientist Carl Hart demonstrates how personal experience and scientific study can inform and validate each other for a deeper understanding of human behavior and addiction." This book is a fascinating read for those interested in the human experience and an unconventional look at race, poverty, and drug policy.



Professor David A. Messenger, director of Global and Area Studies

Hunting Nazis in Franco's Spain (Louisiana State University Press 2014)

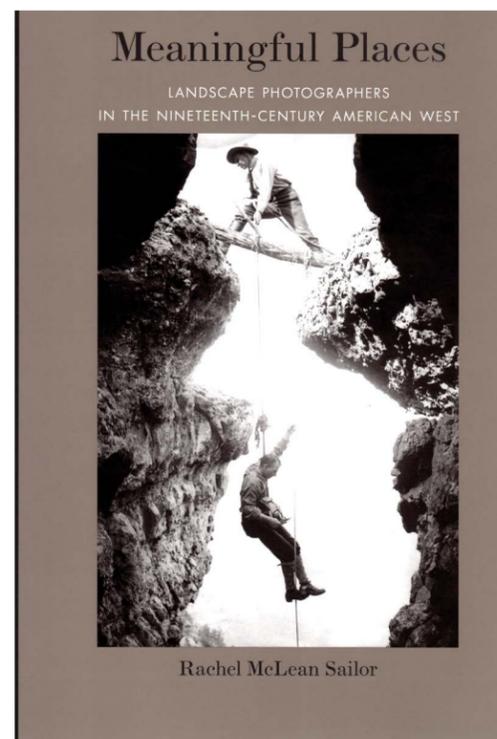
David A. Messenger specializes in twentieth century international/global and European studies. In his recent book, *Hunting Nazis in Franco's Spain*, Messenger outlines the development and execution of the Allied repatriation scheme and provides an analysis of Allied, Spanish, and expatriated Germans' responses. By April 1946, British and American embassy staff in Madrid had compiled a census of nearly 10,000 Germans residing in Spain and had drawn up three lists of 1,677 men and women targeted for repatriation to occupied Germany. While the Spanish government did round up and turn over some Germans to the Allies, many of them were intentionally overlooked. By mid-1947, Franco's regime had forced only 265 people to leave Spain; most Germans managed to evade repatriation by moving from Spain to Argentina or by solidifying their ties to the Franco regime and Spanish life. By 1948, the program was effectively over. Messenger used records in American, British, and Spanish archives to tell the story of this dramatic chapter in the history of post-World War II Europe.



Assistant Professor Antoinette E. DeNapoli, Department of Religious Studies

Real Sadhus Sing to God: Gender, Asceticism, and Vernacular Religion in Rajasthan (Oxford University Press 2014)

Antoinette E. DeNapoli draws on ethnographic research, which spans more than ten years, to offer a new perspective on the practice of asceticism in modern India. Her work brings to light the little-known and often marginalized lives of female Hindu ascetics (sadhus) in the North Indian state of Rajasthan. Examining the everyday religious worlds and practices of the mostly unlettered female sadhus, who come from a number of castes, *Real Sadhus Sing to God* illustrates that these women experience asceticism in relational and celebratory ways. They construct their lives as paths of singing to God, which, DeNapoli suggests, serves as the female way of being an ascetic. Those interested in religious and women's studies will find this book enthralling.



Assistant Professor Rachel M. Sailor, Department of Art

Meaningful Landscapes: Landscape Photographers in the Nineteenth-Century American West (University of New Mexico Press 2014)

Rachel M. Sailor teaches nineteenth- and twentieth-century European art, American art, American Modernism, and American photography. In her book, *Meaningful Landscapes*, Sailor explores the cultural complexity of regional landscape photography, Western places, and local sociopolitical concerns. She claims that the rich history of Western photography cannot be understood by focusing solely on the handful of well-known photographers whose work has come to define the era, and she points out that most photographers in the West were engaged in producing images for their local communities. These pictures didn't just entertain the settlers but gave them a way to understand their new home. Photographs often helped settlers adjust to their new circumstances by recording the development of a place—revealing domestication, alteration, and improvement.

A&S alumna retires after a successful career in law enforcement

After 27 years with the United States Border Patrol and the United States Customs and Border Protection, Laramie native Shavon T. Theis (B.S. Administrative Justice 1986) retired as a watch commander at the Three Points Border Patrol Station, Tucson Sector, in 2014. The United States Border Patrol is the primary law enforcement organization responsible for preventing terrorists and their weapons from entering the United States between official Customs and Border Protection ports of entry. The Border Patrol also is responsible for preventing the illicit trafficking of people and contraband between the official ports of entry.

“I was inspired to join law enforcement by my step-father, Donald Miller,” says Theis. “He was a campus police officer with the University of Wyoming for 39 years, and he retired as chief in 1986.” Theis saw the influences and services he provided to the community, and she chose to follow in his footsteps.

Watch Commander Theis began her career with the U.S. Border Patrol on December 6, 1987, and her first duty assignment as a border patrol agent was at the Tucson Border Patrol Station in Arizona. “This assignment was rewarding and interesting because of the variety of responsibilities that included patrolling the international border, city patrol operations, conducting traffic check and transportation check operations, and anti-smuggling investigations,” notes Theis. “Tucson Sector agents were the primary drug-interdicting agency along the southwest border.”

Certified as a physical techniques instructor, Theis was sent to the Physical Training Department at the Federal Law Enforcement Training Academy in Glynco, Georgia, in 1992, where she taught at the academy from 1992-1993 and 1995-1996, at which time she was promoted to supervisory border patrol agent at the Tucson Station. In 1998, she transferred to the Casa Grande Station, which at that time had only 50 agents. Eventually, that station grew to a 600-agent station, and Theis oversaw daily operations of her patrol group and supervised nearly 200 agents, including the Horse Patrol, ATV/Motorcycle Patrol, and Disrupt Units.

In 2006, Theis was promoted to field operations supervisor at the Casa Grande Station, and in 2007, she served as the Tucson Sector coordinator for Operation Jump Start, the National Guard initiative for the deployment of troops to the border. “I was the liaison officer between the National Guard and the Border Patrol,” she explains. “I was responsible for assigning the National Guard troops to the border to assist with surveillance, installing fences, and other support roles as needed.”



Theis was assigned to the Three Points Satellite Facility as acting assistant patrol agent to help with the opening of a new satellite Border Patrol Station. Again, she was promoted as watch commander at the Three Points Border Patrol Station in June 2013, and the Tucson Sector led the nation in both drug seizures and apprehensions under Theis' supervision.

A profession punctuated by constant change and 18 out of 27 years serving in a supervisory role offered Theis interesting challenges and opportunities for growth. Initially, when she was hired, Theis worked under the Immigration and Nationality Service (I&NS), under the Department of Justice. “The primary focus was directed at preventing illegal immigration” Theis says. “In the year 2000, more than 616,000 illegal aliens were apprehended by the Border Patrol. After the September 11th attacks, the government elevated efforts to control our nation's borders, and in 2003, the Department of Homeland Security was established.” With this transformation, came an increase in technology, training, and infrastructure.

Theis is dedicated to the agency and the United States of America, and she served our nation with honor. She credits her UW College of Arts and Sciences degree with preparing her well for her stellar career in law enforcement. “My career may have never been a reality if it weren't for the University of Wyoming and the College of Arts and Sciences,” says Theis. “While I was enrolled in the Administration of Justice program, the department hosted recruiters from the United States Border Patrol, and I had the opportunity to learn more about career options at that recruiting event. The education I received was right on target and prepared me for a challenging and rewarding career.”

Former A&S faculty member establishes generous study abroad scholarship

Professor Jean Garrison, director of the Center for Global Studies

A generous donation from Professor Emeritus Walter Langlois, Department of Modern and Classical Languages, gives College of Arts and Sciences students an opportunity to support their intensive study abroad for a semester or a year. Professor Langlois came to UW in 1974 and continued to teach for many years after his retirement in 1996.

The Sheila Langlois Memorial Fellowship for Study Abroad in Art History and the Humanities, in honor of Professor Langlois' artist wife Sheila Langlois, provides one or two fellowships per year of up to \$10,000 to support study abroad for students in disciplines within the humanities, including, but not exclusive to, art history, history, literature, philosophy, religious studies, modern/classical languages, international studies, or interdisciplinary fields. The scholarship may support study abroad around the globe but is designed to preference intensive study at the undergraduate level or research initiated at the graduate level. Professor Jean Garrison, director of the Center for Global Studies, works with a faculty committee that includes representatives from the Departments of Art, History, English, Modern and Classical Languages, and other humanities departments to shepherd this new scholarship.

The first recipient of the Sheila Langlois Memorial Fellowship for Study Abroad in Art History and the Humanities is Jordyn Patrias, a junior who is working toward a bachelor's degree in art history with a minor in museum studies. Patrias attended the University College Utrecht, in The Netherlands, during spring semester 2015 where she focused on the Northern Renaissance and Dutch Masters. She took courses that



Professor Emeritus Walter Langlois, Department of Modern and Classical Languages, poses with Jordyn Patrias, a junior majoring in art history.

apply directly to her UW degree. “Attending the University College Utrecht has broadened my horizons, expanded my knowledge, and given me a unique opportunity for personal growth by submerging myself into Dutch history and culture,” says Patrias. When she finishes her undergraduate degree, Patrias plans to attend graduate school and eventually work as a museum curator.

“All of us are thrilled by Dr. Langlois' generous gift and to have had the opportunity to support Jordyn Patrias who is on the verge of entering a life-changing experience,” says Garrison. “I am particularly pleased that Dr. Langlois has had the opportunity to meet Jordyn and learn about her course of study and study abroad plans.”

The College of Arts and Sciences is appreciative of all gifts!

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2015 College of Arts and Sciences Faculty Award Winners

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George Duke Humphrey Distinguished Faculty Award

Bruce Parkinson, Department of Chemistry
Alexander von Humboldt Foundation Research Award

Bruce Richardson, Department of English
John P. Ellbogen Lifetime Teaching Award

Tyler Fall, Department of Religious Studies
Henry “Chip” Kobulnicky, Department of Physics and Astronomy
John P. Ellbogen Meritorious Classroom Teaching Award

Eric Sandeen, American Studies
A&S Exemplary Faculty Award

Mary Keller, Department of Religious Studies
Hollon Family Award for Teaching Excellence in Off-Campus Programs

Mark Lyford, Life Sciences Program
UW Alumni Association Outstanding Faculty Member

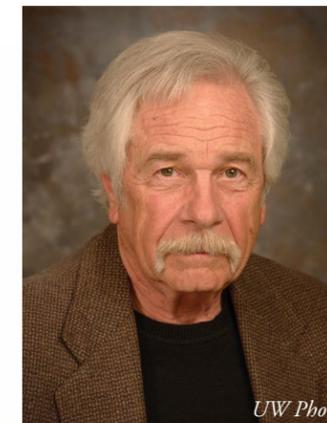
2015 College of Arts and Sciences Outstanding Alumni and Former Faculty



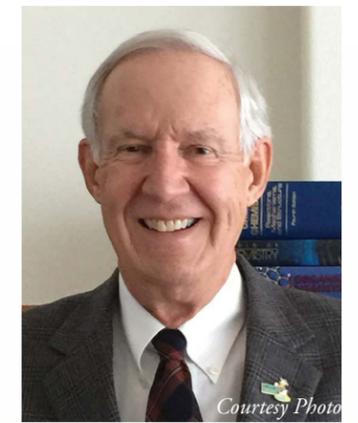
Thomas Michael Golden
B.A. History 1964
J.D. UW College of Law
1967



Carl L. Hart
M.S. 1994; Ph.D. 1996
Psychology/Neuroscience



George W. Gill
Department of
Anthropology



David Jaeger
Department of
Chemistry

2015 Extraordinary Merit Award Recipients

Associate Academic Professional David Anton
Department of Mathematics

Assistant Professor Michael Dillon
Department of Zoology and Physiology

Assistant Professor Conxita Domenech
Department of Modern and Classical Languages

Associate Academic Professional Rick Fisher
Department of English

Assistant Professor Jacob Goheen
Department of Zoology and Physiology

Professor Henry “Chip” Kobulnicky
Department of Physics and Astronomy

Assistant Academic Professional Barbara Logan
Department of History/Gender and Women’s Studies

Assistant Professor Adam Myers
Department of Physics and Astronomy

Professor Ken Sims
Department of Geology and Geophysics

Associate Professor Todd Surovell
Department of Anthropology

2015 Top Ten Teachers

Mike Brown
Department of Communication and Journalism

William Missouri Downs
Department of Theatre and Dance

Tyler Fall
Department of Religious Studies

Isadora Helfgott
Department of History

Richard Machalek
Department of Sociology

J.J. Shinker
Department of Geography

Donal Skinner
Department of Zoology and Physiology

Ken Sims
Department of Geology and Geophysics

Ben Wilkowski
Department of Psychology

Eric Wodahl
Department of Criminal Justice

To learn more about these Outstanding Alumni and Former faculty, go to:
www.uwyo.edu/as/alumni%20and%20friends/luncheon.html



2015 Outstanding Graduates

Callie Merissa Berman

Monica J. Bockman

Christian Savage Bopp

Mackenzie J. Cory

Stanley Bryan DeVore

Kyle D. Duffee

Aaron J. Enriquez

Chandler Ron Harris

Ashley R. Hildebrandt

Andy J. Kulikowski, II

Leslie A. Logan

Susan Manown

Molly E. Markow

Mathias Gabriel McCormick

Nicole E. Meyer

Drew C. Newman

Alex C. Rickert

Jessica L. Roberts

Stephanie L. Strasbaugh

Lora Anne Waeckerle

2015 Graduate Student Awards

John P. Ellbogen Outstanding Graduate Assistant Teaching Award

Elizabeth Bell

Department of Philosophy

Alisa Estey

Department of Psychology

Rachel Jennings

Department of Mathematics

Earl Wood

Department of Physics and Astronomy

UW Outstanding Dissertation Award

Michael Tabak

Department of Zoology and Physiology Program in Ecology

UW Outstanding Thesis Award

Matthew Hethcoat

Department of Zoology and Physiology

Outstanding graduates are chosen from among many students who are nominated by faculty members. The College of Arts and Sciences Scholarship Committee determines the finalists. Selection is based on a student's range of interests, independent scholarship, extracurricular activities, as well as extraordinary life circumstances.

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