

{ *Navigation tools* }



COVER / BACK PAGE



ENLARGE QUADRANT



RETURN TO SPREAD VIEW



PREVIOUS / NEXT PAGE



TABLE OF CONTENTS
CLICK ON TITLES TO GO TO STORY



SCROLL PAGE
(IN ENLARGED VIEW)



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CLICK HERE TO EXIT
OR USE `ctrl/cmd-Q`

FALL 2014

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Jim Dine's prints at WSU

ALSO: FOR THE HEALTH OF A CITY :: LET FOOD BE THY MEDICINE :: THINGS THAT FLY IN THE SKY



WASHINGTON STATE
m a g a z i n e

FALL 2014

FEATURES

24 :: For the Health of a City

In just two decades, an ailing industrial area has been transformed into a vibrant campus for health education. Now WSU Spokane is primed to train more doctors and other medical professionals to meet growing demands for health care.

by Hannelore Sudermann

32 :: Let Food Be Thy Medicine

What we eat can help us fight infection, combat cancer, and address disease. A number of Washington State University scientists explore the medical benefits of a cornucopia of crops. by Eric Sorensen

38 :: Things that Fly in the Sky

Over fields, over airstrips, and across WSU, drones are appearing in projects for engineering students, precision agriculture research, and general efforts to improve farming. by Nicholas Deshais

PANORAMAS

8 Where the heart is :: **10** The ultimate DIY source :: **11** Nasty epidemic, neat science :: **12** Oso—a view from inside a disaster :: **17** Talking trash :: **19** Mission accomplished :: **20** Follow the red brick road

DEPARTMENTS

3 FIRST WORDS :: **6** POSTS :: **WHAT'S NEW?** :: **14** SPORTS: Cougar Football: A new home at the core of campus :: **22** IN SEASON: The Brussels sprout :: **44** CLASS NOTES :: **48** IN MEMORIAM :: **54** NEW MEDIA
56 LAST WORDS

TRACKING

45 Chip Hanauer '76—The boat guy :: **47** Jaclyn Phillips '10—Tripping the towers :: **48** Mark Paxton '76—Shaping smiles :: **51** Pam Nolan-Beasley '88—Physics for five-year-olds :: **53** Alumni News: Cougar I

Cover: The Orange Birthday Robe by Jim Dine, 2010. Lithograph, woodcut, copperplate etching, and rubber stamp on paper. Read about the Museum of Art's acquisition of more than 200 Dine prints, page 8.



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first words

As we started assembling this issue, we sought to provide a sweeping view of campus and its environs from architecture to the archives. And then, as it usually happens, a few themes surfaced: anniversaries, hearts and health, and, well, garbage. We discovered subtle ties between the stories, ties that may not be so obvious to the reader, but as we have written, edited, and designed this issue, have lingered in our minds.

First, along with campus maps and Cougar cards, Washington State's freshmen this month are sharing a book, *Garbology: Our Dirty Love Affair with Trash*—a selection from the now eight-year-old and widely successful Common Reading Program. Over the next few months, faculty from across the university will incorporate the book and its subject matter into their classes, and a series of special events and presentations will take place throughout the semester, including a lecture from the book's author, Pulitzer Prize winning journalist Edward Humes.

Garbology also generated a story for us. In writing about it, Nicholas Deshais uses the theme to dig up some details about the toxic waste research of one of our sociologists. He also dives into Whitman County's own historic trash heap buried out in the Palouse. The subject of dump sites reappears in our feature section where a story about the fast-growing WSU Spokane campus notes that the campus location was once a place for the city to dump its municipal waste. Today the campus has become a health center for the inland region, a training ground for medical professionals including nurses, pharmacists, and doctors.

The book was selected by Dan Bernardo '85 PhD, WSU's newly appointed provost. He had four finalists to choose from and picked this one because, in his words, "I found myself constantly putting down the other books and returning to *Garbology* ... The book is a relatively easy read, and provides an interesting perspective on one of our society's most challenging, and underpublicized, problems ... the generation of incredible amounts of trash and the resulting long-term consequences on the environment. The book also does an excellent job of connecting the trash problem to another important social issue—the consequences of a consumption-driven society."

In a wholly different take on consumption, science writer Eric Sorensen looks at what we eat and what medical benefits our food might provide. His story surveys the work of a number of WSU's scientists. That, too, pairs nicely with our In Season piece in which we highlight Brussels sprouts, a once-maligned vegetable that in recent years has enjoyed increased popularity. Now we find out the Brussels is not only delicious, but cancer fighting, too.

We should mention that 2014 is the anniversary of the Smith-Lever Act, the federal creation of the cooperative extension services. Washington State's own extension programs are planted in communities throughout the state—helping small business, working with children through 4-H, and bringing resources to farmers and rural towns. We have scattered bits of WSU's extension and agriculture story throughout this issue. A century of extension bulletins are now available online, and before there were extension offices in every county, our school's earliest professors and extension agents took their expertise from town to town on a train.

The WSU Museum of Art does the reverse, bringing the world to campus. Larry Clark writes about one of the museum's most significant acquisitions as world-famous American artist Jim Dine donates a large body of his print works, including a number of his iconic robe and heart prints, to the Pullman museum.

So we find the themes of history, hearts, and health—our own, and our land's—as we explore how we eat, what we throw away, how we live, and how, after all, everything is connected.

Hannelore Sudermann, Content Editor



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I am:

John Kempf, a 2014 graduate in kinesiology, personal trainer, and yoga instructor.

On scholarships:

Scholarships mean opportunity and faith. They enabled me to do something no one in my family has ever done—go to college.

On education:

Education has opened my eyes to the world and has stirred in me an energy and curiosity I always knew was there but didn't know how to tap. It's given me the confidence to go out into the world and create a positive impact.

On the future:

I just want to help change lives and do good things through writing and coaching. I want to inspire athletes and the general population alike to dream big and lead healthy lives.

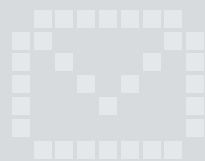
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posts

The scoop on Ferdinand's

We enjoyed your article "The scoop on Ferdinand's murals" in your Summer 2014 issue.

Our recollection is that the middle name of its original manager, Rune Ferdinand Goranson '41 of Edmonds, determined the naming of the dairy department creamery's ice cream shop. It is likely that his middle name also contributed to a decision to decorate the shop with Disney's Ferdinand motif.

Having been off-campus married students during the early 1950s, living on a limited budget, we have fond memories of Troy Hall. The shop's inexpensive scraps from Cougar Gold rounds enabled us often to subsist on cheese sandwiches.

*Barbara (Ferree) '56 & Walter '61 Yeager
Edmonds*

I can appreciate the space limitations for the Scoop on Ferdinand's Murals article (Summer 2014), but it would have been nice to see those recently found older plywood paintings some of us remember from the Troy Hall location, since you referred to them so extensively. I'm on the East Coast so cannot see them in their new location. Thanks for the updates though ... I do miss going in for a quick treat!

*William B. Ciaccia '90
Baltimore, Maryland*



Murals from the old Troy Hall Ferdinand's ice cream shoppe now grace the walls of the Food Science Building. Photo Robert Hubner

Editor: Actually, in this case it wasn't space limitations but rather that the photographs weren't available until after the printing of the issue. We have them now and you can view them online at wsm.wsu.edu/extra/ferdinands-murals.

Lost highway

The WSM Summer 2014 article "Lost Highway" made reference to Col. Edward Steptoe.

Southwest of Tekoa, Washington, is a mountain or butte jutting up out of the Palouse prairie, and was locally known in my youth as Steptoe Butte.

I worked on a wheat ranch between Tekoa and Tensed, Idaho, abutting the Washington/Idaho border. One of the local weather guides or signs was Steptoe Butte. If it disappeared behind clouds we had just enough time to shelter the combine or harvesting equipment before the rain hit.

*Luther E. Brede '50
Springfield, Ohio*

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What's New?

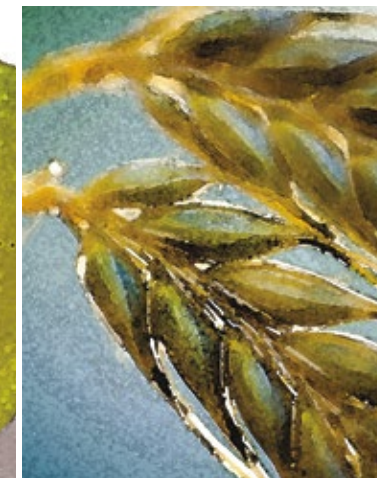


The Residence Inn Marriott Pullman opened its doors in May adjacent to the Student Recreation Center and up Fairway Drive from Bailey-Brayton Baseball Field and Beasley Coliseum. The new hotel features 131 rooms, extended-stay suites, fitness center, swimming pool, conference rooms, and business center. Stonebridge Companies, whose CEO Navin Dimond is a 1985 alumnus, will manage the property. The hotel will employ WSU students and hotel management classes might occur on site. Photo Robert Hubner

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THE TECHNICOLOR HEART, 2004, PHOTO ZACH MAZUR

Where the heart is

by Larry Clark '94 :: Ten years ago, artist Jim Dine left his heart in Pullman. The 12-foot-tall painted bronze sculpture called *The Technicolor Heart*—a blue beacon covered with ordinary items like hammers, shoes, clamps, and flashlights—has stirred conversation and controversy.

Now the world-famous sculptor and printmaker is giving Washington State University a whole collection of more than 200 prints representing his work from 1967 to 2011. Valued at over \$1.8 million, this print donation will be the largest university museum collection of Dine prints in the world and one of the largest collections of his prints ever assembled.

Cincinnati native Dine grew up around his grandfather's hardware store and his

father's painting supply store in the late 1940s. The experience informed his development as an artist and his adoption of tools and other everyday items in his work. He broke into the New York art scene in 1960 with performance art that combined installations, paintings, and himself. Dine was connected with emerging modern artists of the time like Jasper Johns, Claes Oldenburg, and Andy Warhol, even though his themes were less about mass media and more personal, particularly as he moved into painting.

Sculpture, painting, and performance art are all meaningful to Dine, but printmaking showcases his impressive draftsmanship and drawing. During a stint in France in 1973, Dine honed his expertise with printmaker

Aldo Crommelynck, who had worked with Picasso.

"Printmaking has been integral to his artistic practice," says Kevin Haas, a WSU Fine Arts professor who teaches printmaking and digital media. A printmaker himself, Haas became aware of Dine's work in the '80s. "He can draw incredibly well. Printmaking is suited to capturing what the artist does with drawing. It's an ideal medium for him to work in."

"You've got to care about prints," Dine wrote in 2013. "You've got to care about woodcuts, lithographs and etchings. You can't care about whether they sell or whether anyone feels the way you do about your images. I love printmaking so much I try not to care about anything beyond my ego. I keep going

because, like the woman who swallowed the knives and nails, I can't stop. I've put my life into it."

The prints, and much of Dine's work, offer recurring themes and images. Hearts. Bathrobes and neckties. Hammers, scissors, and saws. Venus de Milo and Pinocchio. These mundane and familiar objects become infused

personal resonance. They spoke to me. And when I made them mine, it gave me license to do within it what I wanted to do."

Haas says Dine continues the traditions of printmaking while being innovative in his methods and equipment. "With etchings and woodcuts, he'll use a lot of power tools. He'll get drills with wire brushes and use them on

Students can use that inspiration as they create their own works in WSU's print studio, which is set up to do all print processes: drawing on lithographic stones, etching on copper plates, and carving woodblocks.

Visitors to campus will also have a chance to see Dine's print collection in a fall 2015 exhibition.



A selection of Jim Dine's prints at the Wright Exhibition Space in Seattle, which are among the more than 200 prints donated to the WSU Museum of Art. Photo Zach Mazur

with Dine's personal meaning through bright colors and textures. In the prints they evoke memory, emotion, and a palpable sense of being part of the daily world and yet of transcending it.

"With the robes and the Venus and the heart, they fluctuate between being universal and personal," says Haas. "They are fairly iconic and have a certain significance to him, but the imagery is open enough that we place ourselves in there and think about what the meanings might be for us."

In 2012, Dine said of his recurring themes in *Jim Dine Printmaker: Leaving My Tracks*, "I chose them [each image, such as the tools, or robes, or hearts] because of their

the metal plates. Those marks get scarred into the metal and they hold ink," he says.

Some of the prints coming to WSU also have an impressive physicality, measuring over 11 feet long and 7 feet tall. "You can't get a sense of how large they are unless you see them in person," says Haas.

WSU students will gain the most from having the prints on campus. Haas says visiting the works in person just steps from their classrooms will inspire and educate students far more than textbooks and slides. "One of the biggest challenges for students and for us teaching in fine arts is getting students to see artwork first hand," he says. "Having these prints here makes that possible."

Dine's prints mean more than an educational and cultural opportunity for the University. This impressive collection is his personal gift to the region. In 1987, he began working with the foundry in Walla Walla to create bronze sculptures, and cemented his connection to Washington. "I am a neighbor of WSU and feel strongly about what the state has given me vis-à-vis life in the wheat fields," says the artist. "My move to the Palouse changed my vision of the narrowness of the internal landscape. My life has been a creative dream in Walla Walla."

View some of the recently acquired Jim Dine prints at wsm.wsu.edu/gallery.

» panoramas

The ultimate DIY source

by *Hannelore Sudermann* :: Maybe you're wondering how to build a wooden hoop silo; perhaps you're curious about canning meat or making wine at home; how about pruning a pear tree?

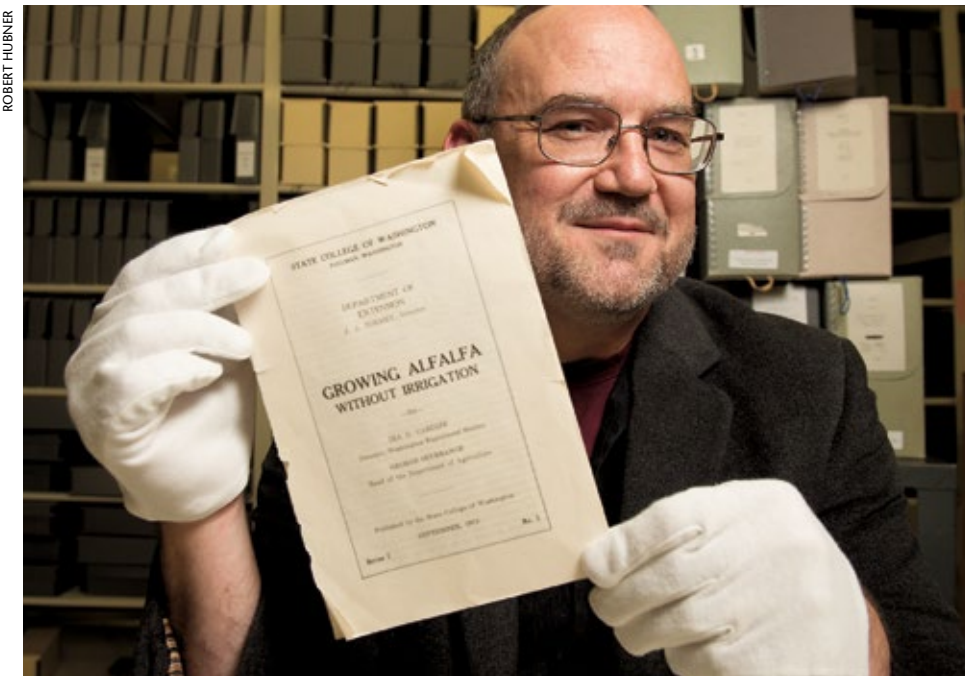
There's a state college bulletin that says just how to do it.

Since 1892, our land-grant school has been advising Washingtonians on topics ranging from canning jams to breeding cattle. Thousands of paper bulletins have carried the expertise of faculty and extension agents to the far corners of our state. They tackled everything imaginable: talking to your teen, creating a budget for your farm, or figuring annual losses from ground squirrels. The earliest editions delivered essential

information to the state's settlers as they carved new lives out of the rugged landscape.

The project of digitizing these treasures fell to Mark O'English, the WSU archivist in charge of University history, and a team of students. Last October, with more than 50 boxes full, they scanned and cataloged every page of the approximately 1,000 bulletins. "It's something we've been looking at doing for a long time," says O'English. "But we only recently found money to make it happen."

By no means great works of literature, these little flyers capture a time, a trade, a turn of history. The information in some—like the use of certain pesticides that are now illegal or recommending covered buttons for a woman's basic suit—is obsolete. But others may still be relevant. "Backyard Rabbit Raising for Meat Production" offers essential tips on managing the furry creatures. The 1943 piece by Extension poultryman F.W. Frasier notes that three or four



Archivist Mark O'English with the first WSC Extension bulletin, "Growing alfalfa without irrigation," September 1913.

To view the recently cataloged bulletins online go to content.libraries.wsu.edu/cdm/landingpage/collection/ext.

A sampling of Extension bulletin advice through the years:

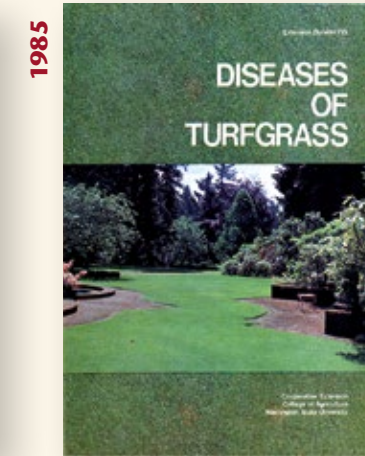
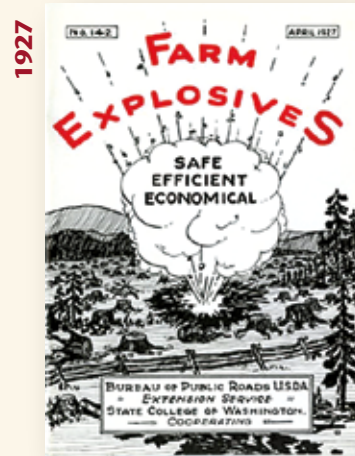
"The careful man keeps his tools together." *Farm Explosives: Safe Efficient Economical* 1927

"Personal appearance effects ones efficiency. If you are neatly, attractively and comfortably dressed, your job will be much more pleasant." *Housecleaning methods* 1936

does and a buck will produce enough meat for an average family. The bulletin offers practical advice on selecting breeds, how to build and clean a convenient hutch, and even how to carry your animal without harming it.

Imbued with the charm of yesteryear, a 1950s pamphlet on 4-H breakfasts offers advice like "start the day with fruits" and "wear a fresh apron or washable dress" while you prepare the meal. A detailed lesson on washing dishes: start with the glassware and end with the pots and pans. The era-appropriate drawings of a boy and a girl washing dishes enhance its appeal.

"Besides being utterly beautiful, they're so interesting," says O'English. One of his favorites, a 1927 "Farm Explosives" flyer, features a cleverly-drawn cover with the title exploding out of a stump. The booklet tells the reader how to



"A comfortable bed will not sag or sway from side to side. It must give a feeling of security and not one of sinking into a bottomless cavity." *Better Buying Springs and Mattresses* 1941

"Always wear your gloves or put them in your purse. Don't be a dangler." *A Coordinated Closetful—A Basic Wardrobe* 1946

"Live by your own plan, not the neighbors'." *A Guide for Planning Family Spending* 1961

"One goal of parents is to help their teenagers become more gracious and socially at ease." *Why Talk About the Teen Years. Section I: The teenager: his image and his world* 1969

BULLETIN COVERS COURTESY WSU MANUSCRIPTS, ARCHIVES, AND SPECIAL COLLECTIONS

store, handle, and use a slow acting dynamite for land clearing. "I just find it so fun to see how we viewed it then and now," says O'English, adding that nowadays we'd never imagine advising farmers to use explosives, let alone sell it to them.

One flyer titled "A Coordinated Closetful—A Basic Wardrobe" by textile and clothing instructor Leila Claire Sturgis offers some well-worn advice—"develop a basic wardrobe with which every piece of wearing apparel is coordinated in line, mood, and color." Adorned with black and white photographs of a woman looking stylish, if somewhat stoic, in her "red georgette dickey and matching belt," the piece suggests "a more feminine touch" could be obtained with a lacy collar and pin.

Maybe you're wondering, what is Extension and whom were these bulletins for? "This is

Extension," a 1946 bulletin, gives the answers: "Extension knows the problems of farm people. It brings to farm people answers from experimental laboratories. It takes the problems from the homes and farms to guide the research work of the future."

To be sure, some of the bulletins are more ordinary like "Wintering Bees in Western Washington" and "Diseases of Turfgrass." But others are utterly entertaining. "Yellow Jackets and Paper Wasps," explains that these are beneficial insects that kill houseflies and insects that damage our shade trees and crops. This colorful piece had a creative suggestion for handling yellow jackets intruding at a picnic: hang a fish over a bucket of water.

Alas, it doesn't say what kind of fish, or what to do with it after the picnic.

Nasty epidemic, neat science

by *Eric Sorensen* :: Dennis Garcia had good reason to be nervous.

Flu season was just a few months away, and in the summer of 2009, outbreaks of the H1N1 virus known as "swine flu" were popping up around the world. It was a novel virus, so rare that humans had yet to start developing immunity to it. A similar scenario was in place for the Spanish flu of 1918, an H1N1 outbreak more deadly than the Black Death bubonic plague.

By late August, as the first wave of students returned to Washington State University's Pullman campus, the World Health Organization had seen the virus in scores of countries, with nearly 3,000 deaths worldwide.

"We were really worried about it because we knew it was coming, we knew we weren't going to have a vaccine, with the previous novel infection killed thousands of people during World War I," says Garcia, who was serving as assistant director of the WSU Health and Wellness Services medical clinic at the time. "Being the optimist that I am, I said, 'Well, we're dealing with 18- to 24-year-olds, they're healthy, and modern medicine is leaps and bounds ahead of what it was in 1918. Hopefully we'll be OK.'"

The fall semester hadn't even started when the first cases came in—11 one day, and just two days later, 47. Not two weeks later, the clinic's doctors and nurses saw 164 H1N1 patients, attending to a total of nearly 1,000 sick people, plus hundreds more by phone. They ran out of Tamiflu, an antiviral medication. Garcia set aside an area in the clinic just for the flu cases. At one point, school officials considered cancelling the first home football game, against Stanford.

But as game day approached, Garcia noticed the flu wasn't as intense as he feared. One young man was hospitalized with bilateral pneumonia, but for the most part people felt awful for three

W a s h i n g t o n S t a t e U n i v e r s i t y

1881 :: The Washington state legislature passes an act creating experiment stations and provides for demonstrations to carry the results of the experiments to the farmers.

1894 :: The State College of Washington breaks ground on its first experiment station, the Western Washington Experiment Station in Puyallup.

1895 :: A winter school for farmers is established at the state college. They travel to Pullman to learn about farming and farm building directly from the instructors.

1908 :: The legislature provides money for travelling schools to take the information out to the farming communities.

1912 :: The first county agent starts work in Wahkiakum County.

E X T E N S I O N e a r l y t i m e l i n e

1913 :: The state legislature passes an act enabling counties to hire agents and sets up the office of the director of Extension at the State College.

1914 :: The Federal Smith-Lever Act establishes a cooperative extension service at land-grant universities and provides federal funds for extension activities.

1918 :: The state's first home demonstration agent starts work in Spokane County.

Source: "What is Extension"—a WSU extension bulletin from 1946

A brief online history of WSU Extension can be found at ext100.wsu.edu/anniversary/a-brief-history-of-wsu-extension. For anecdotes about Extension's impact on people's lives, visit ext100.wsu.edu/anniversary/storyproject.

» panoramas

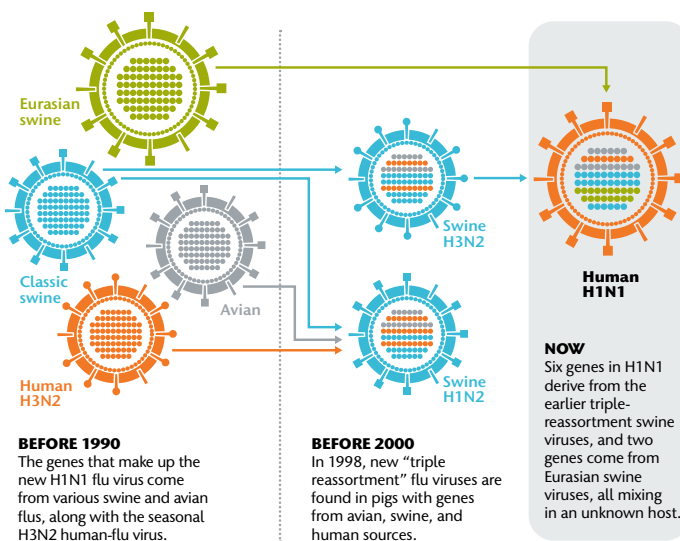
or four days and were close to normal within a week. No one died. The Stanford game went on, with the spectators warned of the Pullman outbreak ahead of time.

Still, WSU took on an unwanted national distinction as having had one of the largest H1N1 outbreaks at an American college. In retrospect, Garcia sees some circumstances that made College Hill an ideal environment for passing germs.

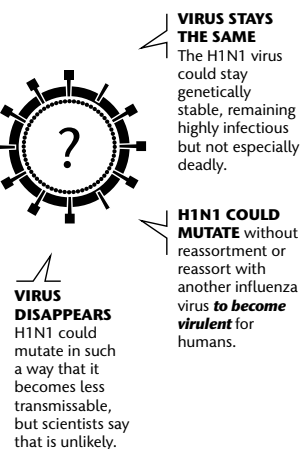
they're on campus, in close proximity to more people. With the exception of semester breaks and the occasional road trip, they rarely leave.

"We thought, 'Oh, if we can get data on this, then that will be real live data, not simulated data, on the actual number of infections in this community,'" Schwartz says. "And it turned out that the Health and Wellness Services was tracking it, which was great."

How the H1N1 virus evolved...



...and what it could become next



SOURCES: NEW ENGLAND JOURNAL OF MEDICINE; NATURE; WHO; CDC | COURTESY TIME

"All of the freshmen females that want to be in a sorority are here on campus and they're all in groups of 40—close, tight—going from one sorority house to another," Garcia recalls. It's a hugely social occasion. The women are shaking hands, hugging, "and they're provided refreshments as they walk into the door that are hand-poured and hand-delivered. The opportunity for spread was optimal. And it spread."

The Pullman epidemic also served up something of an ideal phenomenon for scientific study. At the time, Elissa Schwartz, an assistant professor of both math and biological sciences, was teaching students about the behavior of epidemics in a closed population. Right here in Pullman, she realized, was a living example. "The students didn't like it at all at first because they were so sick of hearing about swine flu," she says.

She had her students search the scientific literature looking for studies that tracked actual epidemics in closed populations, which have no movement in or out. They found very few. They had a fairly closed population in Pullman, more specifically, College Hill, where many students live, often in shared housing. When they do leave the house,

To analyze the numbers, Schwartz used a computer model called FluTE, which can simulate the transmission of an influenza virus across a population and tease out things like how many become infected, how many symptoms-free carriers first had it, and what strategies would make the biggest difference in containing its spread.

Transmissibility is measured by the R_0 , or R naught, the average number of people infected by one person in a fully susceptible population. Schwartz pegged the R naught for the Pullman outbreak at 2.2, meaning one sick person ended up passing his or her infection on to roughly two others. That's close to the rate attributed to the 1918 pandemic.

Schwartz's analysis also suggests the outbreak was started by as few as 20 people initially infected by the virus. It's a remarkably low number of people given the number of people who ultimately got sick.

"But given that it was spreading as fast as it was," Schwartz says, "and people were living in close proximity as they were, which means the contact rate is really high, then perhaps it wasn't low."

Finally, Schwartz wondered what strategy might have worked best to contain the outbreak, from vaccinations to isolation and quarantines, or all of the above. Sick people were asked to isolate themselves from others, but that is difficult, Schwartz says. A sick person can still share a bathroom with others. But a quarantine, which would contain both sick and potentially exposed people, might be hard to enforce if people felt the symptoms were mild enough.

"I think what this does say is vaccination, to say the obvious, is probably the best way to control these types of infection," says Schwartz, whose study was published last year in the *Journal of Biological Systems*.

Garcia agrees, for more anecdotal reasons. For some four decades of flu seasons, he figures, he was vaccinated regularly. While flu strains tend to vary from year to year, antibodies created in response to one vaccine can often provide what's called a cross-protection to other, similar strains, including novel viruses. As it happened, some 40 Health and Wellness workers were in the trenches helping sick students. Only two—young people with fewer vaccines under their belt—got sick, says Garcia.

"I often tell my students now, 'This is why you should get the flu shot,'" he says. "It will protect you when you're 40 in the event that something like this ever happens again. And it will, because this influenza virus mutates every year."

Oso—a view from inside a disaster

by Eric Sorensen :: On a Saturday afternoon last March, Matt Carroll got a curious Facebook message from the stepdaughter of his best friend, Tom Durnell. There had been a landslide near Tom's home. His wife, Debbie, was at work. They couldn't get in touch with Tom.

"At first it didn't sound that ominous," says Carroll, a professor in Washington State University's School of the Environment, "like maybe the cell tower went out or something."

Still, Carroll raised his wife from an afternoon nap and told her something was going on at Tom and Debbie's.

"Her initial instinct," says Carroll, "was start packing bags."

Thus began a deeply personal journey into Carroll's academic specialty, the human dimension of natural resource disasters. For

15 years, Carroll has studied the reactions of rural communities to wildfires—what works, what doesn't work, how residents react to their losses and disruptions and the official response. He has interviewed hundreds of people, penning sociologically focused papers like, "Fire as a Galvanizing and Fragmenting Influence on Communities" and "Why Are Natural Disasters Not 'Natural' for Victims?"

Now he was driving into the emotional ground zero of one of the deadliest natural disasters in state history. The Oso mudslide engulfed 49 homes, changed the course of a river, and killed more than 40 people. Among them: Durnell, a retired carpenter with whom Carroll had made annual visits to the Pendleton Roundup and shared a love of country, western swing, and Appalachian music. Together the two men had collected thousands of recordings. Durnell's home was carried 1,000 or so yards by the square-mile slide, which one geologist estimates moved as fast as 60 mph.

In some ways, Carroll had a rough outline of what to expect: the slow realization of the disaster's magnitude, the anger of locals at both their loss and the slowness of the official response. Spending almost all his time in a shelter in Arlington's Post Middle School, Carroll also felt the survivors' isolation, their desire to know more, and frustration with outsiders' view of the situation.

"One thing that I had not fully realized in my research was how isolating those shelters are," he says. "They come and give you a briefing a couple times a day but it's still a very isolating experience to be in that shelter."

There's never enough information, he says, and what information there is can be maddeningly incomplete, if not outright wrong.

"The national coverage you see or whatever media you might have available to you frustrates you, because they're not getting it right," he says. "They're not being site-specific enough or they're



Volunteers arriving after the Oso mudslide. Below: One of the few items recovered from the wreckage of Durnell's home—a photo of Tom Durnell on Matt Carroll's horse.

only seeing part of the picture. There's always frustration on the part of local people with the way these stories are portrayed in the national media."

Sadness pervaded the shelter. But no sooner would he return to Pullman to teach some classes than Carroll and his wife would be driving back over to Oso, like characters in the TV show *Lost* struggling to get back to the island they escaped.

"People outside the circle of this disaster could listen with great empathy," he says, "but they don't get it. They're not living the same emotions that you're living. There's something comforting about going back in that shelter knowing you can hug anybody in that room and no one would question why you would do it. We all had a shared experience. No matter how many words you put on it to people outside that circle, no matter how empathetic people outside that circle were, you didn't feel completely understood."

On the slide's first day, says Carroll, "it occurred to me that it looked like I lost my best friend." That became even more apparent as the week unfolded and no new survivors were located.

At 10:37 a.m. on March 29, exactly a week after the mudslide, rescue workers, residents, and volunteers held a moment of silence at the site. Moments later, workers found Durnell's body. Soon after, a friend surreptitiously visited the friends and family and recounted the scene.

"It was very healing in some ways," says Carroll. "The way he told the story about treating the body with such gentleness and respect. How when the crew discovered that, yes, here's

a body, they literally dug it out with their hands. They didn't use any tools at that point. It was very helpful. And of course, Debbie didn't get notified for four more days. By the time that she was notified, they already knew that she knew, because it's a small town."

Embedded as he was in the tragedy, Carroll found himself wrestling with the lack of information and slow response as both a participant and professional observer.

"The process of sorting through it was challenging for me," he says. "I found myself thinking differently about it when I was in the stands with people than when I would go away from the situation and think about it afterwards."

He is continuing to wrestle with a classic conundrum of countless researchers: How much value should one place on detached observation and thought? Does objective thought miss the value of being intimately familiar with a situation?

"Both things are needed," he says. He recalls his dissertation research, for which he worked and lived as a logger in rural California, and how a member of his dissertation committee would occasionally encourage him to step back from the situation.

Sometimes, says Carroll, "you have to back away and think about what you heard a little differently than when you were in the immersion. This was another very poignant example of that. I wasn't doing research, but my mind was still thinking like a researcher, at least some of the of the time."



TOM DURNELL COURTESY MATT CARROLL

AP PHOTO/THE HERALD, MARK MULLIGAN



A new home at the core of campus



From top: Cougar football fans visit the heritage hall. The expansive, sunlit weight room. Photos Robert Hubner

by Larry Clark '94 :: Mike Leach walks into the new Cougar Football Complex towering between the west end zone of Martin Stadium and Rogers Practice Field for a final tour in May before the program moves in. Looking up, the head coach says, "Where did you get the four-story football player?"

The tour's leader, WSU Athletic Director Bill Moos '73, laughs. A huge image of a Cougar football player stretches from the bottom of the open staircase to the top level of the new building. The figure will be even more visible when it's lit up at night, he says.

It's a grand entrance for the newest athletic building, a home for Cougar football players, coaches, staff, and former team members, as well as a place for students, alumni, and fans to experience the history of WSU football as they traverse the north side of the building on a walkway connecting the gyms and residence halls to the CUB and the classroom buildings.

"It's in the middle of campus and that's what is unique about Martin Stadium and our athletic facilities," says John Johnson, senior associate director of athletics in charge of facilities.

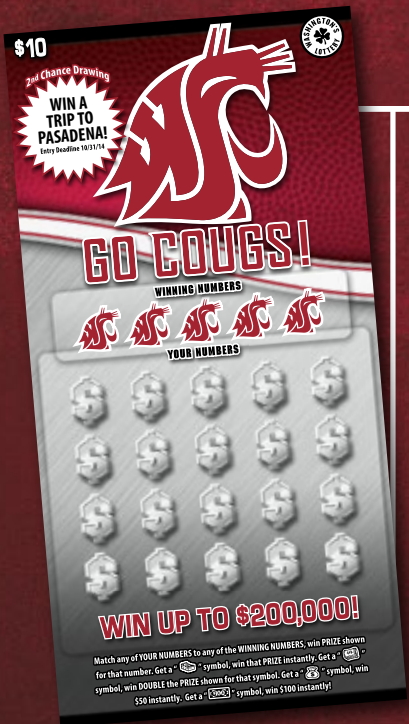
"Every day, students will walk back and forth along the heritage hallway. It will have photos of famous players and audio talking about the great moments of Cougar football."

The \$61 million structure was funded with a combination of money saved in the remodeling of the south side of the stadium in 2012 and \$46 million in general revenue bonds, covered entirely by payments from the Pac-12 television contract. It took 18 months to complete.

Inside the ground floor, the expansive locker room stretches across the building. Leach walks in the wide spaces between the vented lockers, stepping over a large Cougar logo on the carpet. Leach says he has seen a lot of locker rooms in his 25 years of coaching, but "we're going to have the best locker room in the conference and very possibly the best locker room in the country."

Johnson points to the many Cougar touches in the room. "In all our facilities we have the fight song somewhere. Here you can see it above the lockers," he says.

A large garage-style door opens straight onto the field at Martin Stadium, and players will pour out of it at the start of the games.



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Upstairs, the tour group enters a weight training room that spans almost the entire length of the building. Windows face Rogers Field to the west and Martin Stadium to the east, providing natural light and views to inspire. The floor floats on large springs, which will keep noise muffled if heavy objects, like barbells, are dropped.

The next level holds a large physical rehabilitation room with massage tables (sporting Cougar logos, of course). Off to one side sit hydrotherapy pools and the other side leads to two medical examination rooms.

The tour follows Moos into the large classroom on the next floor, where stadium seating embroidered with Cougar head logos face whiteboards and a large sound system. Leach sits in one of the larger seats in the front, custom-built to suit a 6-foot-5, 300-pound lineman. He stretches out his legs and says he wishes airplanes had this kind of room.

Meeting rooms for each position on the team, outfitted with giant murals of outstanding Cougar football players at those positions, fill the rest of that floor.

On the fourth floor, Moos leads the way into the “Legends Lounge,” a dining room for student athletes and former Cougar letterwinners. The

room can seat 130 for a meal and hold 150 on game days.

Moos emphasizes the significance of a good diet for the athletes, a personal interest of his, and says that the kitchen, dining lounge, and chefs will fill that need.

A mural on one long wall shows every first-team All-American football player in school history, from 1930 teammates Glen “Turk” Edwards, Mel Hein, and Harold Ahlskog, to the most recent All-American and first-round NFL draft pick, safety Deone Bucannon.

“We spent a lot of time on the design of this mural. We looked at 2,000 photos, with tons of help from Mark O’English in Manuscripts and Archives,” says Johnson.

The coaches’ offices and locker room, staff offices, and areas to meet recruits fill out the top level with great views of Martin Stadium and campus. Moos and Leach look out on the field and reflect on the new facility.

“This building is going to be fabulous for football and allows us to get more elbow room in Bohler Gym for other programs,” says Moos. “It goes without saying the advantages we have for recruiting. This will attract, and already has attracted, players.” <<



Above: A Cougar football player towers over players and fans. **Below:** Athletic Director Bill Moos describes features of the new building. Photos Robert Hubner



Talking trash

by *Nicholas Deshaïs* :: One of the green, rolling hills in the Palouse isn’t quite like the others.

Aside from a PVC pipe sticking out of its ridge, it looks—and smells—no different than any other mound. But instead of having a loamy center riddled with earthworms, it’s made of garbage. Tens of thousands of tons of it, though no one really knows how much.

The trash was collected throughout Whitman County over about 30 years until 1993, when the county sealed the landfill, built a transfer station next to it, and began shipping garbage elsewhere. Since then, four to six 18-wheelers leave the transfer station just north of Pullman every day to drive all that garbage to Spokane, where the trailers are loaded on to a train and hauled to the regional landfill in Roosevelt, Washington, 210 miles away.

Our relationship with waste is anything but simple, as one WSU sociologist is finding as he investigates some of the country’s industrial waste sites, and as many WSU students will

discover when they read *Garbology: Our Dirty Love Affair with Garbage*, this year’s Common Reading Program selection. Pulitzer Prize-winning journalist Edward Humes makes no bones about it: Americans create more trash



Edward Humes. Photo Sean Teegarden

than anyone else on Earth. On average, each of us is responsible for 7.1 pounds of trash every day—from the day we’re born to the day we die.

“Each of our bodies may occupy only one cemetery plot when we’re done with this world,”


he writes, “but a single person’s 102-ton trash legacy will require the equivalent of 1,100 graves.”

Humes takes us to Puente Hills, the mountain of decades’ worth of Los Angeles trash. We sail to the Pacific Garbage Patch, where bottles, bottle caps, wrappers, and other plastic fragments so densely infiltrate hundreds of miles of ocean, visitors say it’s like a sea of plastic chowder. We learn how pigs were fed municipal waste until as recently as 1970, and many cities still burn trash and turn it into energy.

The thought of it all is staggering. At the landfill, David Nails, Whitman County’s solid waste operations manager, points out the different piles of waste. A small hill of crushed glass that will be used in local road building. A garage filled with hazardous household waste like brake fluid, aerosols, and pesticides. A pallet piled with car batteries.


In one of the many 1,000-pound bales of crushed aluminum cans, a plastic Mountain Dew bottle peaks out. Nails tries to tug it loose. “Won’t budge,” he says. He knew it wouldn’t, and while he’s very supportive of reusing our trash, his action highlights the inefficient ways we deal with garbage.

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In *Garbology*, Humes tells the story of the “trash trackers,” who planted GPS transmitters in random pieces of Seattle garbage and watched where they went. A shoe traveled 337 miles to the Columbia Ridge Landfill in Arlington, Oregon, which also took in Pullman’s garbage from 1993 to 2012. A cardboard box made it only 3.3 miles to a recycling center. Unbelievably, a printer ink cartridge first went to Chicago before coming back west to be recycled in California—a journey of 4,000 miles.

Recycling has long been “a way of making it okay to waste” because we’re reusing everything, writes Humes. But the “meandering, inefficient and sometimes purposeless paths for our garbage” shows this isn’t true. The



A former brownfield: Esplanade Park in Tacoma.
Courtesy Washington State Department of Ecology

journey of the ink cartridge “creates a footprint that’s more environmental disaster than savior.”

While Humes focusses on individual waste, WSU sociologist Scott Frickel and a colleague at the University of Oregon specialize in industrial waste. They have devised a way of documenting potential “relict industrial waste” sites, often called brownfields. These former industrial or commercial sites have been buried, forgotten, and redeveloped. The infamous Love Canal, a New York subdivision built on 22,000 tons of toxic waste in the mid-1970s, led to the Superfund act, which helps identify, manage, and clean up hazardous sites nationwide. Currently, the government has identified more than 100,000 hazardous sites. Of those, the most egregious 1,300 are on the Superfund list, including eight in the Spokane area and dozens in and around Puget Sound.

Frickel’s research shows the vast majority of former industrial sites are not listed or even known about, simply because they closed before any environmental regulation existed. To conduct their study, Frickel and his Oregon coauthor, James Elliott, focused on Portland, Oregon, and New Orleans. Sifting through the earliest available government data of industrial sites and state manufacturing directories, and visiting potential waste sites, they uncovered 215 historic sites of hazardous manufacturing in New Orleans, and 716 in Portland.

Their results are particularly surprising for Portland. The city is smaller in size,

meaning the density of these waste sites is six times greater than in New Orleans. In a place that prides itself on being “green,” 81 percent of the sites they identified were converted to some other use by 2006, most commonly as bars, night clubs, restaurants, grocery stores, and professional offices. Think about that next time you’re sipping a beer in some hip, new Portland pub.

But it’s probably better to think about throwing away less, which is Humes’ concluding argument. Composting more, reusing more, bringing our own bags to the grocery store, are among many small actions that may help. All of this, however, does little to impact the vast amount of waste we produce, as Humes bluntly illustrates. The only way we can truly lessen our waste, he says, is simple. We just have to buy less stuff.

Author and Pulitzer Prize winning journalist Edward Humes will speak in Pullman on Tuesday, October 7, in the CUB Senior Ballroom.

Mission accomplished

by Tina Hilding :: It was 2 a.m. on February 24, 2009, and six years of George Mount’s work had just launched toward space.

Mount, then a physicist in the WSU Department of Civil and Environmental Engineering, had been part of a team led by NASA’s Jet Propulsion Laboratory to develop the Orbiting Carbon Observatory (OCO), a sophisticated instrument to measure carbon dioxide from space.

It looked like a picture-perfect launch. The researchers had boarded buses from the launch site and were riding back to their hotel when they learned the news: The rocket carrying their satellite had failed to reach orbit. Instead, the rocket and its payload burned up as it fell back to earth in pieces, landing in the ocean near Antarctica.

Five years later, Mount recalls the moment. But he wasn’t discouraged for long. Even after retirement in 2012, he stayed involved with the project, which relaunched successfully on July 2, 2014.

Nowadays, more than a decade after starting work on the OCO, Mount sets his own schedule, takes vacations, and avoids faculty meetings. Still, the emeritus professor is drawn to continue the work that he loves.

He seems to have endless energy when it comes to creating spectrometers or the science of measuring missing carbon dioxide in the atmosphere and its relation to climate change, all reasons he threw his efforts into helping rebuild the OCO project. “Everyone’s excited about the new instrument. It’s going to be great,” he says. “The science is still there to be done.”

Currently, high precision carbon dioxide measurements are made from the ground at only a handful of locations around the world. The measurements are important because increasing levels of carbon dioxide in the atmosphere from human emissions of fossil fuels are contributing to global warming. Scientists have an excellent understanding of the levels of global carbon emissions, which total about eight gigatons per year. But only half of the carbon dioxide that is emitted stays in the atmosphere. The rest is taken up by oceans or biomass, and nobody understands exactly where it is going and why the amount that stays in the atmosphere varies dramatically year to year.

The orbiting observatory will use three infrared grating spectrometers to measure carbon

dioxide levels throughout the global atmosphere. It will be like a pencil that draws a line around the world. While the earth rotates under it, the OCO will precisely measure the carbon dioxide column in its 10-kilometer-wide pencil line. The cycle will repeat every 16 days.

In 2003 Mount joined a review board for the project. The board oversees everything



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from plans and schedules to instrument construction, testing, calibration, and software. Mount's contribution was in the science for the satellite as well as the instrument's optical design and testing.

The first instrument that the Jet Propulsion Laboratory built, recalls Mount, was a beauty—although there were plenty of challenges. “I spent quite a bit of time in the trenches once the instrument was ready for characterization in the thermal/vacuum environment” he says. “It was a wonderful experience.”

To calibrate it, the researchers made careful measurements with the instrument cold and in a vacuum, as it would be in space. They also took geophysical measurements of the atmosphere from the vacuum chamber, and compared them with results from a high resolution, ground-based system. It's important to do geophysical measurements of the real atmosphere, so the researchers took measurements of carbon dioxide levels in Los Angeles. At JPL, the researchers cut a hole in the roof—just so their instrument in its vacuum chamber could see the sun and measure the atmospheric CO₂ content between the roof and the sun.

“The OCO measurement system worked out even better than we all had hoped,” says Mount.

Five years later, the project was ready to be sent into orbit and put to work. But the launch failed. Within a few months, JPL researchers submitted a proposal to rebuild the instrument. The project would cost less because the engineering had already been



The OCO-2 spacecraft is moved into a thermal vacuum testing chamber.

done, and the researchers had quite a few spare parts from the previous effort.

Even though they were rebuilding an instrument, the process was still meticulous and lengthy. After receiving funding in 2010, NASA needed two years to complete the construction and characterization. The instrument itself then had to be installed in a satellite ‘bus,’ which holds the satellite navigation instrumentation, power sources, and radio equipment. Integration testing and replacement of a failed major part of the bus system occurred in 2012 and 2013, with final testing in late 2013 and into 2014. Last May, the instrument, now sitting cozily in

its bus, was shipped to Vandenberg Air Force base in California, for final tests and installation on top of a Boeing Delta II rocket ready to be launched in early July.

Relishing the success of the second, successful, launch effort, Mount is looking forward to even more science. He's still getting data daily from a Dutch space-based instrument launched in 2004 aboard a NASA satellite that globally measures atmospheric trace gases. There are also ongoing grants and a commitment to JPL until 2017 to continue with OCO projects, including scanning of targeted urban areas.

COURTESY ORBITAL SCIENCES CORPORATION/NASA/JPL-CALTECH

Follow the red brick road

by Bailey Badger '14 :: In the early 1910s the town of Pullman saw its first automobiles, the city's women were being instructed on how to exercise their new state-approved right to vote, and the Northern Pacific Railway had a busy depot along the South Fork of the Palouse River.

It was time to improve the precarious dirt roads from downtown to the Washington State campus.

A century later, a group of architecture students tackled a project to get those early paved roads formally recognized as a vital and worthy piece of history, not just for the community, but for the state's University as well.

In a 1913 article in the *Pullman Herald*, English Professor Albert Egge described arriving in Pullman years earlier when it was a “whiskey soaked mudhole.” Improvements like street lights and wooden sidewalks helped transform the town. In 1911, the Chamber of Commerce voted to pave the road between town and the college to “make the route to college one of the best improved roads of the state.” By 1913, the project up College Hill was underway. While much of the route was paved with macadam, broken stone bonded with cement, the steepest portions were paved with vitrified red brick.

The brick roads today are still in use, and are a remarkable sight. The long, narrow bricks run perpendicular to the length of the street, except at the curb, where they change direction and run five rows deep. These often overlooked roads cover a block of Maple Street and Palouse Street. Once called the Star Route, they were part of an old postal route from the railroad depot to campus.

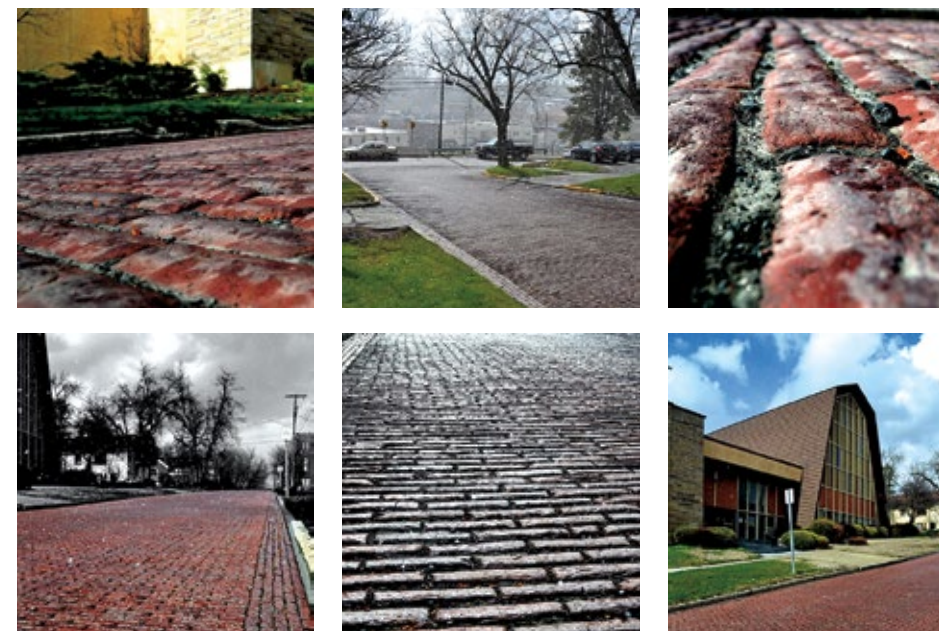
Phil Gruen, an associate professor of architecture, teaches classes in historic preservation. His students explore the region for streets and structures worth preserving. By the time each course ends, the class has at least created a Wikipedia page and a written report with images, photos, sketches, and creative work that could be submitted to a historic register.

In October of 2012, Allison Munch-Rotolo, chair of the College Hill Association, a nonprofit neighborhood improvement association, approached Gruen with the notion of recognizing and preserving Pullman's remaining red brick roads.

“I was intrigued but I was also hesitant because I knew that something like this would require the full involvement and investment of everybody in the class,” says Gruen. He soon warmed to the idea, though he knew it was going to be a challenge helping the students to not only recognize the basics of historic preservation but, “I had to get them thinking that something as mundane as a road could be significant.”

Throughout the course of a few weeks, the students dug into the city's archives, found newspaper stories, and hunted for old photographs. One of the highlights of the project came when undergraduate Jared Blakeman discovered an article in the WSU archives describing the specific history of these brick roads.

The outcome was more than the preservation team could have hoped. Now on the Washington Heritage Register and the National Register of Historical Places, the Star Route and Palouse Street brick road proves that something so seemingly



Red brick roads project photos from the historic preservation class Facebook page. Courtesy Phil Gruen

ordinary can be significant. “It was really a wonderful culminating experience watching the students take ownership of this project,” says Munch-Rotolo. “Being architecture students, they had a vision.”

“It was a fulfilling moment of my teaching career,” Gruen says, “because it resonates beyond the classroom, the University, and the world of academia. This tangible project matters to the community, it can resonate with those who interact with the road every day.”

Historic preservation teaches far more than ethics and rules; it teaches the importance of a place, the students found. It tells an important story.

Heather Field, a graduate student who lives along one of the roads, sees beyond the simplicity of this site as just a street. One reason this preservation project became important to her was that it could get people to think beyond what they see. “You never really think how important it is to consider these things until you acknowledge and learn the history of that particular place,” she says. “The way things are going, it will be easy for people to lose their sense of place. Preservation can re-spark that reminder of where you are, where you've come from, where you could go, and the culture and identity of a place.” <<

Read more about the historic red brick roads preservation project at wsm.wsu.edu/extra/red-brick-roads.

Featured Events
Roger Shimomura Exhibit, WSU Museum of Art, Sept. 19-Dec. 13
 Documentary screening *Witness: The Legacy of Heart Mountain*, inspired by the George and Frank C. Hirahara Photo Collection at WSU, Oct. 15
Within the Silence, Living Voices Theater, Nov. 13
 Detailed information at museum.wsu.edu

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:: by Hannelore Sudermann ::

THE BRUSSELS SPROUT is like a tiny cabbage. It is a brassica. It matures just as summer ends and the weather turns cold. It has a tight head made up of a multitude of leaves. And a touch of frost just before harvest really sweetens it up.

It also travels in the same circles as its much larger cousin—adorned holiday plates, a happy companion to all roasts and really any kind of pork, or just delicious braised with butter and dressed with salt and pepper.

But the two vegetables are yet quite different. Where cabbage is hardy and easy to grow, the Brussels sprout is not.

“It’s a finicky crop,” says Chris Benedict, an Extension agent in Whatcom County who works with a number of small farms that grow Brussels sprouts. Benedict also plants them in his own garden. “They’re not as finicky as cauliflower [another member of the cold season brassica clan], but still pretty demanding.”

Too much rain makes them rot. Strong wind can blow over the top-heavy stalks. They’re substantial feeders, which means they need consistent fertilizer and a lot of it. And they’re easy prey for grasshoppers and cabbage worms.

“I’ve always thought of the Brussels sprout as the prima donna of the farm,” says Anna Martin, who grows organic vegetables and birds with her husband Geoff at Osprey Hill Farm in Acme, a little community in the North Cascades foothills. The plant requires space, time, and plenty of water and soil nutrients. “They’re kinda moody.” To top it off, she says, they aren’t ready for harvest until the weather turns sour. “Twisting tiny cabbage-like balls off in the biting cold and sideways rain is not my idea of a good time.”

Their first few years with the crop, the Martins harvested as much disappointment as they did vegetable. There were tricks of timing—putting it into the field too late meant there weren’t enough days for it to mature before the days shortened. Too early, and harvest happens when the weather is warm, and no one wants wilted sprouts. And the insects of late summer seemed to devour them.

At one point, the Martins were ready to drop the crop entirely. Though they had mastered the timing and the nutrients, the Brussels were suffering damage from October’s wind and rain.

But a few years ago they came upon an alternative called Flower Sprouts, which crossed the Brussels with kale. They were rewarded with



Whatcom County farmers Anna and Geoff Martin say the difficult Brussels sprout is worth the effort. After years of struggling with the “prima donna of the farm,” they found a delicious variety that does well in their climate. The Martins willingly share what they’ve learned, welcoming WSU Small Farms program tours to their Osprey Hill Farm. *Courtesy Osprey Hill Farm*

green and purple buds, with leaves slightly looser than the traditional Brussels, and great cold hardiness and insect resistance.

Along with Brussels sprouts and their brassica relatives, the Martins grow potatoes, a collection of carrots and berries, and organic turkeys, ducks, and chickens. They sell most of what their farm yields through food co-ops in Bellingham and the San Juan Islands, and provide boxes of fresh produce, eggs, and poultry directly to subscribing customers in Whatcom and Skagit counties. In the fall, they have a stand at the Bellingham farmer’s market where, if you’re lucky, you can find their blemish-free Brussels sprouts.

A turn up the Martin’s drive, past the neighbor’s field of frolicking lambs, takes you to the first greenhouse where the Martins spend hours every day both tending plants throughout the winter and in the early spring starting seeds for the vegetables they will transplant to their fields. To hit the field in May, a Brussels sprout plant must be started sometime in March. Once it moves outside, it’s another five months, at least, before it’s ready for harvest.

Out in the field, the sprouts look odd, if not prehistoric. First the plants put up broad leaves and then their long stalks push more than two feet out of the ground, elevating the leaves. Dozens of tiny heads develop along the length of the stalk. You may have seen them still on the stalk in the grocery store.

It’s not really better to buy them like that, says WSU’s Benedict. “Well, it saves the farmers some labor,” he says. “It’s not amazingly flavorful, but it can be put into a vegetable broth and it does have an earthy aroma.”

But it’s not necessarily a treat for consumers. The sprouts at the bottom of the stalk may have had a month or more to mature than the sprouts at the top. Their sizes are different and they will cook differently, says Benedict. While the tender small sprouts are a good for quick steaming or frying, the larger ones are much better for roasting and braising.

“My favorite, and simplest, preparation is to caramelize them and then to finish with chopped garlic, chili flake, and olive oil,” says Executive Chef Jason Brzozowy, the chef de cuisine at Tilth, an organic restaurant in Seattle’s Wallingford neighborhood. The restaurant was created by Chef Maria Hines in 2006 to feature organic and sustainable food from our region. It is among the nation’s first restaurants to be certified organic.

Tilth and its sister Hines restaurants, the Golden Beetle and Agrodolce, often make room for local Brussels on their menus. Brzozowy approaches



Brussels sprouts are increasingly popular, in part because we’re finding better ways to prepare them. But something else is at work, says WSU Extension agent Chris Benedict. The sprouts we have today are far less bitter than what our parents ate. That bitterness, brought to us by glucosinolates, has been selectively bred out of them. This may not be an entirely good thing. The glucosinolates, naturally-occurring compounds, have done the plant a service by repelling the insects that would infest them. They may also bring a cancer-fighting component to people who eat them by stimulating the body’s antioxidant system.

the vegetable with playfulness and aplomb, using it in ways both elegant and comforting. At the Golden Beetle, the Brussels come roasted and then tossed with macaroni and cheese. At Tilth, the chef separates the leaves and blanches them in salty water. “They look pretty, and it’s a lighter way to serve them as opposed to whole or halved,” he says.

“One of our favorite uses so far has been featuring them in a caponata at Agrodolce [the Italian-themed restaurant in Fremont], along with onions, garlic, capers, and golden raisins,” he says. “It’s a perfect interpretation of a Sicilian favorite using Northwest ingredients.” <<

Brussels sprout caponata (serves 4)

Courtesy Agrodolce Restaurant

3 tbsp	canola oil
1 lb	Brussels sprouts, quartered
1	red onion, julienned
½ cup	golden raisins
3 tbsp	capers, chopped
3 tbsp	pine nuts, toasted
2 tbsp	sugar
2 tbsp	red wine vinegar
salt and fresh black pepper to taste	

Method: In a large, heavy bottom pan, heat canola oil over medium high heat. Add Brussels sprouts in a single layer and cook until slightly caramelized, stirring once. Add red onion and capers and cook until onion is translucent. Add golden raisins, pine nuts and sugar, then deglaze with red wine vinegar. Adjust seasoning with salt and black pepper.

For the HEALTH...

For nearly a century, this rail yard and warehouse district on the Spokane River was plagued by waste and neglect. In the 1980s, city leaders imagined transforming 50 of its acres into a site for higher education.


Just blocks from downtown, it was an ideal urban location for Spokane college students. At the same time, the city leaders realized, developing the land would benefit the local economy and beautify the city.

COURTESY WASHINGTON STATE ARCHIVES, EASTERN REGION COLLECTIONS



The Riverpoint Campus has become a lively urban setting for WSU, Eastern Washington University, and University of Washington programs. A health sciences focus has drawn hundreds of pharmacy, nursing, and medical students to its classrooms, laboratories, and library.

Now, with the goal of meeting the growing demand for rural healthcare providers, WSU is exploring the creation of a second medical school for Washington on the site.

 View additional photos of the U-District transformation at wsm.wsu.edu.

... of a CITY

ISAACSON AERIAL PHOTOGRAPHY

{ For the HEALTH of a CITY }

:: by Hannelore Sudermann ::

For decades the fifty acres at the bend of the Spokane River just east of downtown was a forgotten freight yard, a pocket of blight. Originally an industrial complex dotted with warehouses and laced with train tracks, the city made it a dumping ground for incinerator waste.

By the 1980s, Spokane was also in the weeds. The mining and timber industries that had built the city and sustained it for more than a century were collapsing. Commodity agriculture, the third leg of the city's economic stool, wasn't much better.

"This was having a terrible impact on our economy," says Dave Clack, former chairman of Old National Bank who served on an assortment of regional boards and committees. Every business, every sector was in the same predicament.

"We decided to have a retreat and air it out," says Clack. In 1987, a hundred business people and ten elected officials holed up at the Red Lion Hotel in the Spokane Valley. For two and half days they brainstormed, argued, and tried to think their way out of the economic slump. With the help of a trained facilitator and five executive secretaries perched at electric typewriters, the participants broke into groups and boiled down their ideas for saving the city. Their thoughts were quickly edited, condensed, and disseminated back into the meeting.

In the end, "we came up with ten strategies," says Clack. "A main one was to develop the equivalent of a research university on a piece of property as close to downtown Spokane as possible."

Twenty-seven years later that scarred acreage on the east side of downtown has blossomed into a park-like campus. The river gurgles nearby and sidewalks crisscross from red brick building to red brick building. Washington State University nursing students in scrubs cross paths with their white jacketed counterparts in the pharmacy program as well as with Eastern Washington University's occupational and physical therapy majors. Up above in the newest of the eight brick and glass structures, researchers are investigating genes, cancer, diabetes, sleep, diet, and pharmacotherapies.

This dream of a research campus, a home for WSU and EWU's urban education efforts as well as a collaboration with the area's community colleges and a connection with Spokane's two private universities, not only came to life, it came together much more quickly than expected. And now the dream goes further—to make the site a full-blown college of medical sciences with a medical school all its own.

FROM CALAMITY TO CAMPUS Spokane leaders called their brainstorming endeavor "Momentum '87." Turning it into a nonprofit, over the next decade they managed to find about \$12 million to make their list a reality.

Meanwhile, across the state, the legislature debated, discussed, and finally approved the development of branch campuses, because the four-year schools and graduate programs did not fully meet the needs of the state. Five branch campuses, three to be operated by WSU, and two to be operated by the University of Washington were to be built in growing urban areas. Their mission would be to serve place-bound students, offer graduate programs, and promote economic development, responding to the needs of local business and supporting the region through research.

In 1989, WSU set up its first Spokane office and started offering classes. It moved to a downtown bank building where Eastern Washington University was also offering classes. But to fulfill the state's direction and build an urban campus, the two schools needed more space.

"Every business association and community had its own ideas about where a campus should be," says Bill Gray, WSU Spokane's first chancellor. In spite of some environmental cleanup issues, the area just east of downtown, across the river from Gonzaga University's gleaming grounds, trumped the others. A siting study confirmed that and the legislature authorized first the purchase of 2.5 acres, then 7.5. Later the remaining 40 acres were acquired, with help from the Momentum endeavor.

Gray, who had attended Portland State University, knew a few things about an urban campus in a tight location. "We wanted to build something that was not as compressed, in a space where we could scale it up appropriately," he says. "The site fit the needs of the community, but it also fit the needs of the University's research community."

But building a campus from scratch meant many outings to Olympia "hat in hand" to ask the legislature for money, says Gray. He recalls one particularly disheartening trip he made with William H. Cowles III, *The Spokesman-Review* newspaper publisher. "We came back empty handed," says Gray. "But Bill said, 'Don't worry. We're going to pull this off if we have to bring these dollars back one at a time.'"

That's pretty much what they did, and the University sold properties in other parts of the state to purchase adjacent land. Settling the Phase 1 building in 1996, WSU got to work absorbing, adapting, and aligning its teaching and research for the new campus. At first it was called the Riverpoint Campus. Then the notion broadened into "University District," a term which included the surrounding neighborhoods and Gonzaga and encompassed the programs offered by WSU, EWU, Gonzaga and Whitworth. Now, most know it as WSU Spokane, once a branch of Pullman-based WSU and now an "urban campus" all its own.

Since 1978 EWU had been offering undergraduate courses in downtown Spokane, first leasing space in the Bon Marché building and then buying a former Farm Credit Bank building. By the early 1990s, both state schools offered undergraduate and graduate classes. WSU was trying to build its profile and Eastern was struggling with a drop in overall enroll-

ment. At one point, turf wars over who did what devolved into discussions of merging the two schools. A senior administrator at Eastern, Elson S. Floyd had a clear view of the needs of Spokane and the concerns of both schools. From the day he interviewed for the job as WSU's next president, he knew it was something he would have to address.

HEALTHY HEART OF THE CITY Lisa Brown's view over WSU Spokane looks west—over downtown. In the far distance is Eastern's main campus in Cheney where she once taught economics, and just over the river is Gonzaga where she taught organizational leadership. Until two years ago, Brown worked in Olympia as the state's Senate majority leader. "This is the right place to be," she says, describing the campus location, and maybe also her relatively new post as chancellor of WSU Spokane.

Pointing south to the city's medical complex, west to downtown, north toward Gonzaga, and all around at the river, the Centennial Trail, the neighborhoods nearby, she describes a lively urban campus and a city changing around it. Students and faculty are moving into the area, and Spokane's businesses are serving them as they come, go, and stay to study. "The location is ideal," she says.

Instead of looking at how to divide up the territory, a few years ago WSU and the community started considering how to make it all work together, with a specific focus. A survey of the community's strengths revealed health care as Spokane's leading industry. The city has 35,000 health care workers in a \$6 billion industry serving patients from Eastern Washington, Montana, Idaho, Eastern Oregon, and Canada.

For years, WSU had been locating programs in Spokane that might mesh with what the city could offer: an applied sciences laboratory, a veterinary teaching clinic, and graduate studies in criminal justice. In 1998 WSU's interdisciplinary design institute offered architecture, design, and landscape architecture students an opportunity to attend classes in a city where they might find internships. But "realignment" in 2011, among other things, moved the institute back to Pullman.

The University is more deliberately focusing its urban campuses on the specific needs of their regions, Floyd recently told community leaders in Everett. For Spokane it's creating "an academic health center," he says, "in the heart of Spokane."

As senator, Brown was skeptical of WSU's effort to be the lead institution at the Spokane site. "I wasn't sure at that point in time what the University's investments would be in the community." But President Floyd's focus overcame her concerns. In 2010, the WSU Board of Regents declared the Spokane campus as the health science campus for the University. "It crystallized the vision for our higher education partners," she says. And it ended much of the territorial squabbling between the region's higher education institutions. "As a state senator, I saw an amazingly aligned community," says Brown. The schools were working together and business and civic leaders wanted medical education here in Spokane. The regional intercollegiate nursing school moved to campus in 2009 and became the WSU College of Nursing. It shares the site with the College of Pharmacy, the recently established College of Medical Sciences, Eastern's dental hygiene students, occupational therapy, physical therapy, and behavioral sciences programs, and with the University of Washington's physician assistant program and UW's joint effort with WSU and Eastern to train first-year medical and dental students, respectively.

"We took a different approach," says Floyd. "We sought collaborative partnerships." Listing medical training, WSU and EWU's health professional schools, and an affiliated relationship with a teaching hospital health

system, "we have all of that right here," he says. "If we do it appropriately we can become a model for health centers across the country."

In May, the WSU Board of Regents approved the creation of a new College of Medical Sciences. This comes in the wake of EWU creating its own College of Health Science and Public Health. The next step is building a \$15 million primary care clinic operated by WSU, Providence Health Care, and Empire Health Foundation.

"We're all bringing something to the table," says Brown. The University is providing the faculty and funding for a new clinic building. Empire offers community resources, and Providence brings accredited medical residencies. Spokane citizens will have a walk-in clinic and students from nursing, pharmacy, physical therapy, and other programs can learn a team-based health approach. And a certain number of the new residents will be out working in rural and underserved areas. With WSU leading



the effort, and pending approval next month from the WSU Board of Regents, the newest addition is slated to be operating by early 2016, says Brown. "This is about Spokane reaching its potential as a health care city."

In May, the WSU Board of Regents approved the creation of a new College of Medical Sciences, which comes in the wake of Eastern creating its own College of Health Science and Public Health. This fall, a study on the feasibility of a WSU-led community-based medical school will be released.

On a mid-week spring afternoon, the chancellor's offices are buzzing. Brown just scheduled an on-campus meeting for a UW task force to look at the future of the UW's medical education program, with the possibility of adding more medical students in Spokane.

And she'll soon be in an interview on the subject with an Associated Press reporter about WSU's efforts to create a second medical school in the state. This is a complex issue. But need, says Brown, dictates that our state should have a second medical school. The UW admits about 220 students to its first year medical program, with 120 coming from Washington. The school turns away hundreds more. They go to other regions of the country to study medicine, and may not come back to the Northwest. When Brown took the job as chancellor at WSU

PHOTO: BRUCE ANDRE

Spokane, she knew that the health services were evolving on campus, “but I didn’t realize how much potential there was,” she says. “I also didn’t realize how great the need was for primary care physicians.”

The shortage is a lingering complaint. In 1971, the UW created a multi-state program to address the need, training physicians from Washington and neighboring states that didn’t have their own medical schools. They named it WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) and provided medical training to all first- and second-year students. The Washington students can either spend their first year in Seattle or stay in a small group setting and train in eastern Washington.

But WWAMI hasn’t done enough, say its participating states. Seven years ago, the state of Idaho commissioned a study because Idaho was, in the words of the study, “extremely low in physicians per capita.” In fact, it ranks 49th out of 50 states. Change “Idaho” to “Eastern Washington,” or “outside of King County,” says Brown, and the number of primary care physicians per 10,000 patients is significantly lower than the national average. Even though the state has grown, “There really hasn’t been any expansion to the Washington class,” she says. That is one of the reasons, she says, WSU is exploring the idea of a second medical school.

The University of Washington has some of the world’s leading doctors and researchers in a number of specialties, including HIV treatment, cancer treatment, and cardiovascular disease. It owns or operates four large medical centers, nine medical clinics, and partners with three other hospitals. It is consistently ranked by *U.S. News and World Report* as one of the top primary-care medical schools in the country and ranks in the top 10 in bringing in research dollars from the National Institutes of Health.

For its part, says Brown, WSU Spokane is exploring a complementary medical school alternative: a community-based model. From their first day on campus, students at WSU Spokane are working and taking classes together whether they’re from the nursing school, EWU’s physical therapy program, the pharmacy school, or medicine. Here they can find deeper rural connections, they can reach communities with limited medical resources. With Spokane’s multiple hospitals and clinics, the students have many opportunities to work with medical providers. Lastly, a second medical school would offer more room for medical students.

A pair of students in crimson scrubs cross our path as Scott Hippe leads me up a new sidewalk to the building where the second year medical student and WSU Spokane student body president spends most of his days. We enter the Pharmaceutical and Biomedical Sciences Building—a modern-style monument of brick and glass with an interior of wood detailing offering a touch of Northwest warmth. “Yes, it still has that new car smell,” he quips. This year Hippe and his Spokane classmates studied ethics, hematology, pharmacology, and genetics, a basic science curriculum identical to that in Seattle. But here, they have more opportunities to interact with students and faculty from different disciplines, he says.

The \$80 million structure—the newest building—is a heady combination of laboratories, classrooms, and offices for the doctors who train the medical students and health scientists. On the upper levels pharmacy scientists explore ways to kill cancer cells, address chronic pain, identify genes involved in leukemia, and perform liver regeneration.

Relocating the pharmacy program to Spokane in 2013 has expanded research efforts like the Department of Pharmacotherapy’s clinical trials team.

The news about an evolving health campus and efforts to build a second medical school is just a sidelight to the first and second year WWAMI medical students based in Spokane, says Hippe. Their real focus is the first two very intense years of their medical training.



Opposite, from top: Students and light fill the stairwell of the WSU Spokane Academic Center. The Pharmaceutical and Biomedical Sciences building, left, opened in 2013 and houses the College of Pharmacy and the Medical Sciences/Medical Education program. The WSU Spokane campus is transected by Spokane

Falls Boulevard. The West Main neighborhood sits between downtown and WSU Spokane. **This page, from top:** The WSU College of Nursing building, completed in 2008. Students often use WSU Spokane’s outdoor public spaces for meeting, studying, and socializing—including the 2006 art installation *Light Reading* by Peter Reiquam. Photos Zach Mazur

Hippe can see the benefits of expanding health education, whether it’s through medical training or by offering more health services in general. “It’s the biggest city east of Seattle, and the medical community here serves so much of the West.”

CHANGING THE CITY Slowly. Quietly. Civilizing forces have been working their way from downtown toward the new campus.

Nearly 15 years ago, back when the Spokane campus was a single classroom building and a business incubator, Jim Sheehan, an attorney and philanthropist, came upon this neighborhood while looking for a building for his nonprofit law firm. “The block was pretty rough,” he says. Sheehan got out of his car and approached the owner of the multi-story Longbotham Building. “He said he didn’t want to sell, but that the guy across the street did.”

“So I bought that building,” says Sheehan. “And then the one next door. And the one next door to that. And the one next door to that.” The Main Market Co-op just two blocks from campus opened in 2010. Instead of using one of the century-old buildings, Sheehan modified the large Goodyear Tire Store and transformed the busy corner to one frequented by families and hungry students. “We’re a viable, energized area right now,” he says. Along Main Street, vacant buildings, pawn shops, and bars where you could drink at 8 a.m. have been transformed into an art house theater, gastro pubs, a yoga studio, a food co-op, and boutiques. Even on nights and weekends, when many cities’ neighborhoods empty out, West Main is alive.

Whether there was a budding campus at the edge or not, Sheehan says he would have invested in the neighborhood because he wanted to bring it back to life, save the buildings, and change the local culture. When he started buying buildings, “the University District was more a rumor than it was a reality.” But now that it’s there and growing, the campus is feeding the change. Sheehan believes “there is a healthy synergy between our block and the University District.”

The beauty of the architecture in the old neighborhood is “soul building,” says Sheehan. It’s a character found in areas like Seattle’s Pioneer Square and Portland’s Pearl District. “I think it has been a really good thing both for us and for Spokane. You just need a little bit of vision and some political will to get things done.”

From that 1987 meeting of city leaders several other ideas emerged: Build a new arena to replace the very dated and deteriorating 1950s coliseum, and expand the convention center that was built for the Expo ’74 between the downtown businesses and the Spokane River. Both endeavors would bring money, visitors, and jobs. A more distant dream was to aggressively engage the 1,200 doctors working in the community at that time and to build on their work and knowledge in an effort, “that in time might rise to the level of providing four years of medical education in Spokane,” says Clack.

Momentum ’87 seems to have worked. “The Convention Center and the Arena have really transformed downtown, drawing visitors to the city’s core,” he adds. But the University is doing something different—bringing people to stay. Students, employees, and health workers are coming into the city and through the neighborhood every day.

“When we bought the property, we hired a planner to design what the campus would look like. He proposed a 50-year build-out plan. It’s just a major change in the economics, the building, and the physical plan and architecture of the city,” says Clack. “We thought we’d never live to see it. But it all happened in 25 years.” ☒

{ LET FOOD *Be Thy* MEDICINE }

:: by Eric Sorensen ::

BACK IN THE '90s, scientists for two major cancer-research organizations reviewed thousands of studies and saw armies of broccoli, cabbage, Brussels sprouts, onions, tomatoes, garlic, carrots, and citrus fruits turning the tide on various cancers. Then, just a decade later, the same scientists said the evidence had since become “somewhat less impressive.”

It was a classic case of science coming off as, well, fickle. One minute, chocolate and beer are good for you. The next minute, science says “sorry” and snatches them from your hand.

“It goes back and forth,” says Gary Meadows, a Washington State University pharmacy professor with nearly four decades researching nutrition and cancer. “Right now,” he adds, offering an example, “coffee is OK.”

For the consumer looking for food that might prevent disease, it's a bewildering world. A quick scan of recent studies can turn up a trove of findings that are ambiguous, if not outright strange. You can eat flowers



to reduce your cancer and heart disease risk. You can get more out of fiber, but that will depend on the type of bacteria in your gut. Are you a woman who mostly or always eats organic foods? Sorry, you have the same chance of developing cancer as other women.

To be sure, research on food and disease is often confounding for good reason. Living organisms are complicated, as are the hard-to-isolate effects of different food compounds over the time it takes for a disease to develop. What might seem striking in a petri dish or lab animal may play out differently in a human, if you can shoulder the massive expense of a human clinical trial.

Also, as Meadows explains, a disease like cancer can take many forms—and treatments.

Two people might both have prostate cancer, but one person's cancer could be different from the other. The cancers have some gene defects in common, but not all. So while some nutrients might work on one of the cancers, they might not on the other. “And nutrients will work in some people,” says Meadows, “but not other people, because we're all different.”

Still, amidst such devilish details and the high signal-to-noise ratio of solid findings and hype, WSU researchers are distilling a lot of new insights about food and health. This past December, *Today Show* host Matt Lauer noted that a study by WSU scientists “found out that organic milk contains a better balance of fatty acids that help keep our heart strong... One professor said all milk is good for us. It's just that organic milk is better.”

He was referring to Chuck Benbrook, who led a team that documented how regular servings of mostly full-fat dairy products could dramatically improve one's ratio of healthy and unhealthy omega-6 and omega-3 fatty acids.





LEFT TO RIGHT: JOHN REGANOLD, PRESTON ANDREWS BY ROBERT HUBNER

Also on the organic front, in 2010 John Reganold and Preston Andrews found organic strawberries had more antioxidants, which may help the body prevent cell damage.

And two years ago, WSU researchers opened a new front against *Campylobacter*, one of the most common bacterial causes of food-borne illness in the United States and a major culprit in the rare paralyzing disorder Guillain-Barré syndrome. While their work was preliminary and removed from actual applications, they found that the compound diallyl sulfide was 100 times more effective in killing the bacterium than erythromycin and ciprofloxacin, two popular antibiotics. The source of this wonder drug: garlic.

The list of foods and beneficial food compounds under study at WSU runs the gastronomic gamut from staples like wheat, apples, and Cougar Gold cheese to exotic imports like purple Andean potatoes and quinoa. There has always been a connection between food and health—“you need to eat to stay alive,” says Meadows, noting the obvious. Now he and his colleagues are finding even more ways food can keep us going.

For Giuliana Noratto, the connection between food and health goes back to her home country of Peru.

“In our culture we believe that there are many foods that can help you prevent diseases,” says the food scientist. “Every Andean crop has a history behind it and it’s something that is going to help you.”

Among the bounty: *maca*, a tuber credited for, among other things, helping people stay sexually active into their 80s and 90s. “So it’s known as the Peruvian Viagra,” she says.

But there is a big difference between the claims of folk wisdom and verified science. Starting at the Universidad Nacional Agraria in Lima, Noratto has spent more than a decade investigating a variety of bioactive compounds as possible players in preventing and treating diseases like cancer and obesity.

She started with maca and the fellow tubers *mashwa* and *oca*, all regular parts of the rural Peruvian diet.

“All of those products have bioactive compounds,” she says. “And they are in a combination that apparently works well.”

Maca and mashwa have glucosinolates, sulfur-containing compounds that are also found in broccoli, which studies have shown can help prevent prostate cancer. Compared to a suite of potatoes acquired from the Lima-based International Potato Center, Noratto found “mashwa was the

star of the group,” with twice the antioxidants of a purple potato, also no slouch in the antioxidant department. For her master’s work, she looked at *vacón*, a tuber eaten raw, and saw how it encourages good bacteria in the colon while lowering pathogenic ones.

She also tested the locally held belief that mashwa’s nutritional value improved if it was left out after harvest. It didn’t.

For her doctoral degree at Texas A&M, Noratto demonstrated that compounds in peaches slowed the growth of human breast cancers grafted on to mice. The tumors exposed to the compounds also lacked a lot of the blood vessel formation that helps cancer cells spread to other parts of the body. Scaled to a human, the peach polyphenol extract given the mice could be ingested by eating two or three peaches a day.

At WSU, Noratto has taken on an industrious portfolio of foods and compounds with a potential role in preventing obesity-related disease. One project involves examining apple compounds that go undigested high up in the digestive system. When they make it to the colon, they can serve as food for beneficial bacteria. She’s particularly interested in communities of bacteria found in lean mammals, with recent studies suggesting that different types of fecal bacteria can play a role in obesity.

So she cultured mouse feces, taking samples from obese and lean mice and fermenting them in extracts high in fiber and antioxidant phenolics from Washington-grown Granny Smith apples. The resulting bacterial communities looked more like those found in lean mice, suggesting that the apple compounds can help an obese animal get the healthier gut of a lean one.

Working with whole wheat, Noratto fed one group of obese mice a diet of whole wheat while feeding a control group the same calories, carbohydrate, protein, and fat in a diet of starch and protein. They ended up weighing the same, but the mice fed whole wheat had 18 percent less fat around their abdomen, one-third less fat under their skin, and even less in their hearts. They were also more active.

GIULIANA NORATTO BY ROBERT HUBNER (PHOTOILLUSTRATION)



{ LET FOOD *Be Thy* MEDICINE }

BOON CHEW BY ROBERT HUBNER



“There are trends basically relating a gluten-free diet to a healthier diet,” says Noratto, “but people are overlooking the fact that whole wheat contains other compounds that are beneficial and they can be depriving themselves of these good compounds.”

Boon Chew is something of a Renaissance man, with a bookshelf that includes a history of Procter & Gamble. Clownfish and damselfish mill about in a tropical aquarium on his desk. He’s long had diverse tastes in research, too, dating to his undergraduate days when he wrote a paper on the effects of nutrition on reproduction.

“Even from graduate school days, I always believed in a cross-disciplinary type of approach,” he says.

Three or four decades ago, that ran against science’s trend toward ever-finer degrees of specialization. But it happens to be one of the better ways to explore nutrition and its effects on physiology, where one needs to understand not just a food but its active compounds and their path from the fork to a specific set of changes in the body.

“We now understand how interconnected our systems are,” says Chew, a WSU food science professor. “Before, nutritionists didn’t even talk to physiologists. Now you know nutrition affects so many aspects, whether it has to do with the immune system, neurodegeneration, brain health, gut health.

“I have this grand picture,” he adds, “and this grand picture is foods and health. What we now call functional foods. But to get there, I have to show specific active compounds—bioactives, we call them—that could eventually drive what foods we study for promoting health.”

Case in point: cranberry juice.

For years, cranberry juice has been a popular home remedy for urinary tract infection. Its value is so commonly accepted that when Chew asks a class, “What comes to your mind when I say cranberries?” several students invariably say, “urinary tract infection,” if not, “UTI.”

But seven years ago, Chew could find no studies directly addressing the claim. Infecting people with harmful bacteria was not ethical or possible. So with funding from Ocean Spray, the juice cooperative, Chew led a randomized, double-blind study in which people drank cranberry juice or a placebo—Boon and his team of researchers didn’t know who had what. The study participants then gave samples of urine that the researchers used to treat infected urinary tract cells.

In an infection, bacteria need to stick to the cells they’re infecting. In the petri dishes of infected urinary tract cells, Chew and his team saw fewer sticky bacteria when they’d been exposed to cranberry-juice laden urine.

He saw visible changes in the bacteria as well. Fingerlike projections called villi help bacteria hook on to a cell. Using electron microscopes, Chew could see that bacteria exposed to cranberry-tainted urine had fewer, thicker villi, giving them less grip on a cell’s membrane.

He has since expanded his research to see if cranberry juice might also reduce inflammation, which is often associated with a host of problems, from gut health to cancer to rheumatoid arthritis. He had overweight but otherwise healthy people drink a cranberry beverage once a day for eight weeks, then analyzed their blood. They had less oxidative damage, better blood vessel function—an indicator of cardiovascular health—and less C-reactive protein, a marker of inflammation routinely used as an indicator of heart disease.

“We showed definitely that consumption of the beverage decreased inflammation,” says Chew.

While working on his doctorate in pharmacology, Gary Meadows isolated a yeast enzyme that metabolized tyrosine, an amino acid needed for tumors to grow. It got him thinking. Instead of giving mice the enzyme, he could give them a food—in this case, crystalline amino acids low in tyrosine.

It had a “profound effect” on reducing the spread of cancer, or metastasis, and prompted Meadows to look at nutritional approaches to cancer. He also started reviewing grant proposals in the field.

{ LET FOOD *Be Thy* MEDICINE }

GARY MEADOWS BY ROBERT HUBNER (PHOTOILLUSTRATION)

“That broadened my horizons,” he says one morning over a cup of antioxidant-rich green tea in his home on Pullman’s Sunnyside Hill. “I started seeing all sorts of different nutrients and constituents and people looking at their effects on cancer.”

Just a few years ago, after a career that includes being named a fellow of the American Association for the Advancement of Science, editors of the journal *Cancer and Metastasis Reviews* asked Meadows to search for foods that might play a role in reducing metastasis. Cancer kills, yes. But what really kills, he says, is its spread to other organs, overwhelming the body.

He spent months searching the medical literature, looking in particular for studies naming certain foods and known metastasis-suppressor genes. Oftentimes, the original researchers didn’t make the connection between

suppression. It was a shopping list of cancer fighters, most of them available in the local grocery store, and they influenced gene expression in many cancers, including breast, colorectal, prostate, skin, and lung cancer.

“I know that there are a lot more things out there that will have an effect on metastasis suppressor genes,” he says. “They just haven’t been studied. And I think this is just a small list compared to what I feel will probably be a stronger list of compounds, but people haven’t specifically looked for those effects.”

That will take time. Meanwhile, Meadows understands the challenge consumers face as they undertake their own, less scientific sorting of information about healthy foods and habits.

“There are a lot of claims that are not backed up by strong clinical trials and evidence,” he says. “And those studies are very expensive and they’re long term studies, so we don’t get answers very rapidly.”

But there is a solid scientific basis to undertake a few good habits, he says. Statistics suggest that between one-fourth and one-third of cancers are diet related. Both high-calorie foods and a high-calorie diet increase the risk of certain cancers, as well as diabetes, heart disease, and other problems. In his search of metastasis-suppressor genes, Meadows saw weight loss also having a positive role. He also suggests eating less red meat, especially smoked meats, and more leafy vegetables and fruits.

“Then exercise is a real important component to the anti-cancer story,” he says. “Some of the strongest evidence we have in cancer prevention, at least in some cancers, particularly colon cancer, is exercise.”

And just because a food is good for you nutritionally, he cautions against nutritional supplements used in high doses for a pharmacological effect, which can be harmful. High doses of beta carotene for lung cancer, he says, can actually promote lung cancer.

“Now vitamin E has gotten a bad rap in terms of that as well,” he says.

“The best approach and the safe approach is to consume a variety of different foods—vegetables and fruits—that contain these anti-cancer compounds,” he says. “There’s a variety of compounds in these fruits and vegetables that work in a variety of different ways or mechanisms to impact either the initiation of cancer or progression. You need to attack cancer from every possible direction, the same way we use multiple drug therapies now.”

Meadows himself does what he can. Combined with other nutrients, that green tea he’s drinking increases the expression of a metastasis suppressor gene in certain prostate cancer cells. He puts turmeric on eggs for breakfast, has a thing for blueberries, and walks two to three miles a day. It’s not a marathon, but as he puts it, “You don’t have to be a marathon runner to get the benefits of exercise.”

Amid all his science, he is not above the adage: Everything in moderation.

“It seems to work,” he says. ☒

See the overview of plant-based compounds that could slow the spread of cancer at wsm.wsu.edu/extra/food-medicine.

» Eat well *and* fight cancer

Fatty acids in fish oil appear to decrease breast and bone cancer metastasis. The highest amounts are found in sardines, wild salmon, albacore tuna, mussels, and rainbow trout.

Flavones from various fruits, vegetables, and spices may fight prostate, colon, and breast cancer cells. The flavonoid luteolin can be found in fresh Italian or curly parsley, thyme, celery hearts, oregano, and chili peppers.

Curcumin, a major component of turmeric, aids metastasis suppression in lung, melanoma, and squamous-cell cancers.

STAFF PHOTOILLUSTRATION

the foods and the genes, but Meadows did, having acquired something of an encyclopedic knowledge of the genes and how they work.

He found more than 40 plant-based compounds that could slow the spread of cancer by turning on suppressor genes. Amino acids, vitamin D, ethanol, ginseng extract, the tomato carotenoid lycopene, the turmeric component curcumin, pomegranate juice, fish oil, and more all triggered



by Nicholas Deshais



THINGS

that FLY in the
SKY

A slight breeze comes from the north, but it's not enough to stir the sun-faded windsock above the tarmac near Mann Lake in Lewiston, Idaho. The sudden and unexpected gusts of wind, however, do. It's a brisk 48 degrees, but of more concern is the smeared cloud taking up the southwestern horizon, out of place among its more defined, cumulus neighbors mottling the blue canvas above.

"We have about ten minutes," says Chris Chaney, who earned a doctorate in mechanical engineering from WSU this year. "We're going to have to time this right. This is probably one of the most dangerous flights we've done."

Chaney, rangy and serious, has no plans to leave the ground. Instead, a controller dangles around his neck and the only thing that faces any sort of danger is Genii, an unmanned aerial vehicle with an 18-foot wingspan, the fruition of his thesis project. He designed it, he built it, and for the last year he's flown it.

We've already spent the better part of two hours out here with other radio-controlled aircraft enthusiasts, and a little rain and wind isn't going to stop Chaney and Patrick Gavin, a fellow student on the Genii team, from flying and collecting data.

For now, Genii runs on battery power and only size differentiates it from the other hobby aircraft. But this is the last planned test flight before the real one, the one with the liquid hydrogen fuel, the one that has to take place somewhere within restricted airspace, the one in which Gov. Jay Inslee has shown personal interest. The big one. Today's the day when Genii must heft her biggest payload yet, 22 pounds of ballast representing exactly how much the hydrogen fuel, the plumbing, all of it, will

THINGS THAT FLY IN THE SKY



Jacob Leachman, left, and the student group that designed and built the pilotless aircraft Genii, which they flank. *Courtesy WSU HYPER Lab*

add when Genii takes that big flight. And when she does, it will be the world's first university-built, liquid hydrogen-fueled, unmanned aerial vehicle (UAV) to fly—done primarily by WSU students.

For now, Chaney, Gavin, and a couple of other students are methodically hurrying through pre-flight. Josh Zoellick, an electrical engineering undergrad, vocalizes an inspection checklist as Chaney scrutinizes the craft with eyes and hands. Ryan Brooks, another electrical engineering undergrad, plugs his MacBook Pro into the craft, initializing the process that will collect Genii's altitude, ground speed, yaw, vertical speed, distance from runway, and just about any other data point the guys can think of. The hardware "brain" the laptop is talking to is housed inside one of those plastic food containers you can buy at any grocery store. It's kind of strange, seeing a sophisticated craft outfitted with simple, slapdash housing.

But such improvisation, and affordability, is why a number of researchers at WSU are taking advantage of the inexpensive, autonomous, and increasingly ubiquitous technology of UAVs. In fact, drones are prized on campus as more than a platform for testing an alternative fuel source. Perhaps more immediate, and more immediately lucrative, is the potential for a farm enabled with UAVs checking for water stress, nutrient levels, and pests—which could become a reality thanks to WSU researchers. Beyond that, many expect UAVs will be used in almost every aspect of twenty-first century life: search and rescue, mail delivery, law enforcement, telecommunications, and wildlife management, to name a few.

"They're going to become incredible parts of our daily life, in a lot of good ways," Jacob Leachman says, though he's not a fan of the word "drone" or its predatory, servile connotations. Leachman, a mechanical engineering professor, works with the student group that designed and built Genii to test his research on liquid hydrogen fuel technology. "Everybody worries about the weapons and surveillance stuff. You can weapon-ize a paper clip if you're clever enough. But the side of drones we haven't seen is the humanitarian side. The benefit. And that's what we're going to see in the coming years."

Perhaps even sooner. Leachman is one of the faculty advisors for a student group that won a U.S. Department of Energy contest to design a "drop-in" hydrogen fueling station. The idea was to create afford-

able, easily built infrastructure that could be put in any existing gas station, in preparation for the coming hydrogen-fueled vehicle boom. Hydrogen is touted as the solution to our energy-hungry world's pollution problem, and rightfully so. It's almost three times more energetic than gasoline, but weighs virtually nothing. Unlike fossil fuels, the only waste product is water.

"So things that fly in the sky like rockets and airplanes really want to fly with hydrogen if at all possible," Leachman says.

Before any airliner is powered with the first element, unrestricted airspace must be found for testing. Right now, it looks like a hydrogen-powered Genii will fly at NASA's Armstrong Flight Research Center in California. Why not just test fly it here, in the middle of Nowhere, Idaho? The reason: the Federal Aviation Administration.

Even though you'd have bigger problems from puncturing a gas tank than a hydrogen fuel cell, the Genii group operates under strict regulations from the FAA. It's the same for every other drone researcher on campus. When interviewed about UAVs, every researcher talked carefully about how they used them or, more importantly, why they were prevented from using them.

First and foremost, the FAA is concerned with safety. Singularly focused on safety, to the point where many scientists say the federal body is squelching innovation and limiting research right at the time it's needed, while the technology is new, untested, and full of potential.

Most Americans, however, probably support this caution. According to a recent poll by the Pew Research Center and *Smithsonian Magazine*, 63 percent of those surveyed did not support personal or commercial drones in U.S. airspace. Yet the same survey found that six out of ten people believed technology would have a positive net impact over the next half century.

Leachman says simply that the FAA "has to relax because they're really holding back innovation," the type of innovation, he points out, that's occurring in countries with far more relaxed regulations like Canada. That's why he knows the FAA's rules back and forth. Which is why he has kept the student group at arm's length.

"We have to be very careful," Leachman says. Though he praises the innovative and imaginative work that can come from a student group

liberated from a professor, the fact is the FAA wouldn't allow the drone to fly if he had any real part in its development, he says.

"If you're doing anything for commercial purposes right now, that would cross a line," he says. "If the University is using it as selling point to attract students here, if students are paying to participate in a class that used it, that would cross a line we have to be very careful not to cross."

That line will only exist for another year or so, when the FAA has said it will release rules allowing for the commercial use of drones. Researchers are skeptical of the federal body making a quick decision.

Though the concept of pilotless aircraft is nothing new, drones weren't in the everyday lexicon even ten years ago. It was around that time the U.S. military and CIA ramped up their use of predatory drones, which quickly became the primary example of a UAV for most Americans.

So we can thank American counterterrorism measures for popularizing UAVs. But more importantly, we should thank our cell phones. UAVs have infiltrated the hobbyist market because the technology inside of them has gotten increasingly smaller, lighter, and cheaper. It's no coincidence that the smartphone in your pocket is more powerful than the building-sized computers from 60 years ago.

More directly, we can credit the development in 2005 of a tiny microprocessor called the Arduino by an Italian professor and his graduate students for the UAV boom. Arduino is cheap, less than \$30, and easily programmed. In the new "maker" culture, where words like "hack" and "DIY" are bandied about, Arduino is the touchstone technology. *Make*: and *Wired* magazines regularly feature projects utilizing Arduino. Everyone from elementary school students learning computer code to artists creating interactive exhibits use it. As do hobbyists building their own drones.

And it's Genii's "brain," the little computer that helps manage the sophisticated aircraft. Ten years ago, Chaney and Gavin wouldn't have been able to build Genii. The hardware and software simply wouldn't have been available.

UAV technology takes wing

From big to small, from entertaining to predatory, the diversity of drones expands continuously. Here are a few of the notable models.

Drone videos and stories at
wsm.wsu.edu/extra/drones.

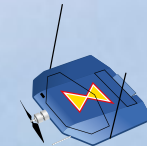
ILLUSTRATIONS BY AARON ASHLEY



NANO QUAD DRONE
rotor span 1.8 inches
Billed as the smallest consumer available drone, it can be charged via USB cable and has a range of just over 150 feet.



PROXDYNAMICS BLACK HORNET
rotor span 4.6 inches
This microdrone is currently being used by British forces in Afghanistan, primarily for surveillance.



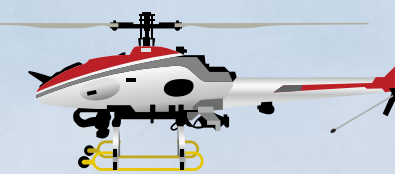
AEROVIRONMENT BLACK WIDOW
wingspan 6 inches
Weighing just three ounces, this vehicle was the first operating small drone, built in 1998.



WSU BSE COPTER
rotor span 28 inches
This German built copter is used to test agricultural sensors by WSU researchers.



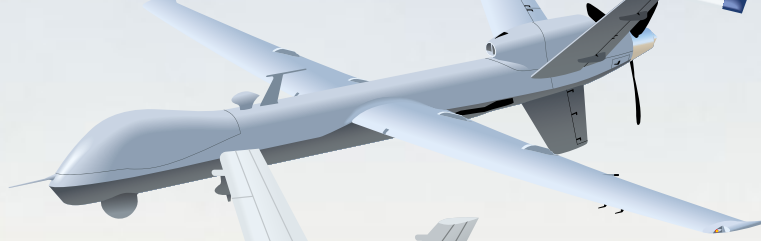
WSU HYPER LAB GENII
length 10 feet
Genii was designed and built primarily by WSU students to test a professor's research on hydrogen fuel technology.



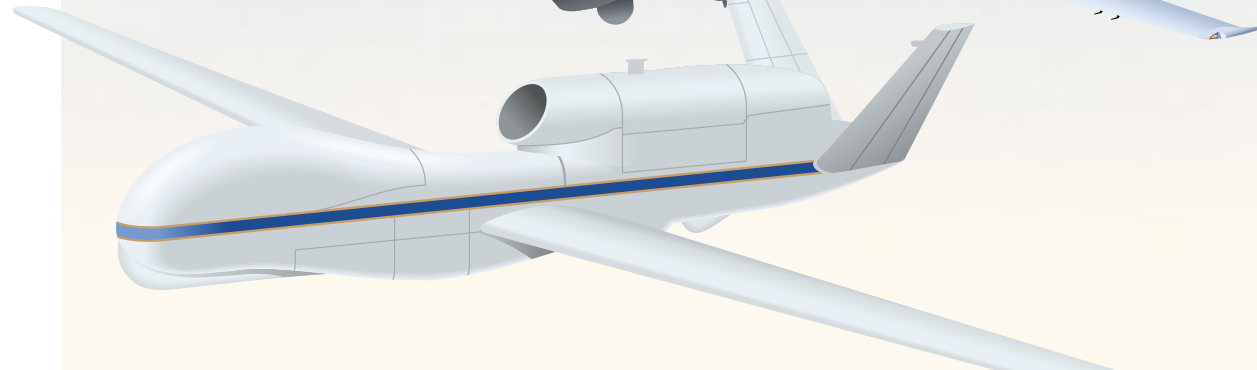
YAMAHA RMAX
rotor span 12 feet
The RMAX debuted in Japan in 1998 for agricultural uses. Still used today, the vehicle can fly for only an hour at a time.



BOEING X-45A
length 26 feet
A prototype is in Smithsonian and Air Force museums. The full size version can fly almost 600 mph.



GENERAL ATOMICS PREDATOR B (REAPER)
length 36 feet
Described as a "hunter-killer" by a military official, the Reaper can fly almost 300 mph at 50,000 feet.



NORTHROP-GRUMMAN GLOBAL HAWK
length 48 feet
At \$220 million per vehicle, this craft is a key part of the U.S. military's combat and surveillance fleet.

THINGS THAT FLY IN THE SKY

In 1919, Prosser became home to an experiment. Washington State College obtained 200 acres and set out to turn this parched center of Washington, which gets about eight inches of precipitation all year, into fertile farmland. If the geometric network of paved irrigation creeks and verdant fields emanating away from the station are any clue, the experiment worked.

Nowadays, the state college is WSU, the experiment is called the Irrigated Agriculture Research and Extension Center, and it does more than find novel ways to water a desert. The center houses AgWeatherNet, the central nervous system for WSU's 154 automated weather stations, as well as the Grape Virology and Stone Fruit Physiology programs.

It's also home to the Center for Precision and Automated Agricultural Systems, where Manoj Karkee toils. Karkee's office is beyond rows of greenhouses, just south of the USDA building, and right at the edge of field upon field. He's a scientist, and he is preoccupied with how food is produced, but don't call him a food scientist. He studies production agriculture. More precisely, he's an engineer.

Which gets us to the point of why Karkee brought his wife, Rojee, and son, Roshis, from their native Nepal to this dry spot between Yakima and the Tri-Cities.

His work attempts to deal with a simple truth that humans face in the coming century: Our population is booming while the amount of arable land remains static. That is, the old Malthusian equation of humans outgrowing our ability to feed ourselves keeps him gainfully employed.

"One of the most widely accepted models predicts that in 2050 or 2060 we'll have 10 billion people. That brings a lot of questions, and a need to provide a lot more fiber, food, and fuel," he says. "You will not have enough water to produce food if you use the same amount of water you use today. It is the same for other resources, such as fertilizer and minerals. There is a fixed deposit in the Earth. Another issue is labor. It's not just in the U.S.—China and South America face the same. Even as the population is increasing, labor is declining because there are other economic activities going on. Now we have to produce much more food with less water, less nutrients, less number of people available to work."

Though he's not alone, Karkee's solution is clear: The robots will be farming.

Robots, obviously, will do much of the work for us. But they'll also take us toward solving the water, nutrient, and chemical puzzles. Simply put, farming is an input-output enterprise. If we can reduce what we put in—water, nutrients—while we increase, or at least maintain, what comes out—food—the future may not be as dire as Karkee suggests. Data-driven agriculture will provide a more precise, smarter, and more efficient way of raising our crops.

On a quick tour of the Prosser station, you can watch a mechanized arm shake an apple tree, part of the center's work to crack into Washington's harvest of 17 billion apples every year, each one handpicked. You can look through the eyes of a machine to judge an apple's ripeness. Unlike human eyes, which see a spectrum of just 300 nanometers covering visible light, these mechanized eyes see a much wider spectrum, everything from the ultraviolet to the near infrared to even thermal variations. Among other things, with a glance they can determine the sugar content of the apple and call it fit for picking.

Work at the center, much of which Karkee is involved in, includes automated hop twining, pruning, pest detection, chemical application, apple crop load estimation, cherry harvesting, and more.

If automation is the future of agriculture, then the future of automated agriculture includes drones. In this respect, this summer a few new robots moved to the farm. They're small, and one is a fixed-wing airplane, the other a quadcopter. They chase birds off grapes, cherries, and blueberries. Scarecrows of the future. Karkee's hypothesis is the drones will be much cheaper and just as effective as throwing a net over the whole field, which is currently the most effective, and most expensive, way to stop birds from decimating up to 50 percent of a crop. Other measures, like paying someone to chase the birds away or spraying on chemicals, aren't as effective.

"We'll fly first using remote controls," he says, noting that FAA approval is still outstanding. "If effective, we'll add intelligence to the machines, give them a certain pattern over the field. More than that, we would like to use sensors, like a camera, to find where the birds are, whether they're coming into a field or not. Based on that, the UAVs can make decisions in real time on where to go."

Lav Khot and Sindhuja Sankaran are colleagues of Karkee in WSU's Biological Systems Engineering department. They're both originally from India, but came to Pullman last year from the University of Florida, where they used drones to count crops and monitor orchard trees for disease. The married couple was excited to come to Washington because "there are a lot more crops to work with," says Sankaran.

Like Karkee, Sankaran specializes in sensors. Her research focuses on trying to find which sensors and cameras work best to distinguish nutrient deficiencies, water stress, and disease on differing varieties of crops. A wall in her office in L.J. Smith Hall is pinned with a large poster of different aerial photos showing what these drones can see. There are images in a montage of red, green, and blue. Others are in near and visible infrared.

"The point is to eliminate the noise," she says. The human eye sees everything in the visible spectrum. The drones, equipped with specialized cameras, look for specific disturbances or variations. "For instance, we can delete the soil or remove the soil and just look at the plant itself by manipulating the images."

Beyond its superhuman sight, the advantages of a UAV are many. "In fields where you have acres and acres of continuous wheat or lentil, it's difficult to go to each corner and look into symptoms. It gives that advantage of better access," says Khot. "You don't need a guy sitting in a truck, going down each and every row, looking and checking."

Like Karkee, they say the goal is not just to increase productivity and efficiency, but also to reduce the resources needed to grow crops.

Khot's latest project, which was recently funded with a \$74,000 emerging research issues grant from WSU's College of Agricultural, Human, and Natural Resource Sciences, looks into using a helicopter-style UAV to remove rainwater from cherries.

"If you're producing cherries for the fresh market, the last four weeks of production are critical. When cherries are ripening, the sugar contained in the fruit is increasing and the skin is getting thinner. If there is rainwater, then the fruit will crack," Khot says.

Currently in sweet cherry production, manned helicopters fly low over a field to blow the rainwater off plant canopies. This is quite expensive and inherently dangerous. While a helicopter can easily cost more than \$100,000, a drone can be had for less than \$1,000. And if it crashes, no one is hurt.

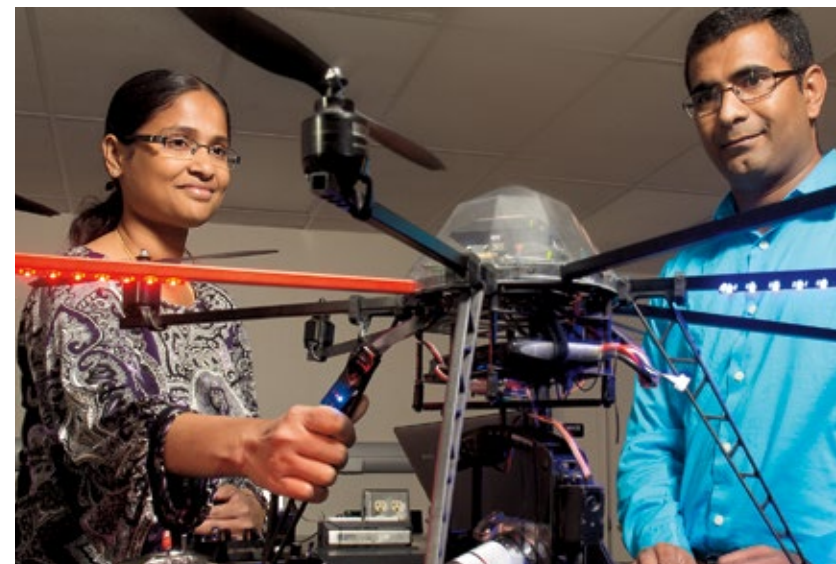
All of this research is exciting, but untried. Like Leachman and his liquid hydrogen-fueled drone, Khot and Sankaran have faced challenges while testing their ideas. They've had to pass pilot ground school and each new UAV requires FAA certification. They report to the FAA when they are doing research, at what altitude, how far it is from any airport, what will they do if it crashes, if there are houses around.

While arduous, the FAA restrictions are ultimately good for researchers, says Khot. Since commercial enterprises can't use the technology on their own, they must collaborate with universities.

"Two to five years from now, it will be used commercially," he says of UAV technology. "By then they'll have figured out an established protocol of how high to fly, et cetera. If we waited until then to test the technology, it would be too late."



Above: Manoj Karkee works with a sensory glove to study how robotics could pick some of the 17 billion apples harvested in Washington state annually. **Below:** Sindhuja Sankaran and Lav Khot have worked and studied in India, Thailand, Iowa, and Florida, but like Washington because of the productive farmland. Photos Robert Hubner



Too late, perhaps. But one way or the other the technology will definitely be lucrative. According to a recent report by the Association for Unmanned Vehicle Systems International, UAVs will have a major economic impact in the United States, much of it in agriculture.

While there are many potential uses of UAVs, precision agriculture and public safety are anticipated to comprise 90 percent of their use, according to the report. Washington state is behind only California in predicted economic benefits from drones, which could amount to \$82 billion in the decade following 2015. In fact, Washington could see \$1.3 billion in economic impact before 2018, and then rake in another \$6.5 billion in the seven years after.

And it goes beyond uses being tried by Karkee, Sankaran, and Khot, who all readily concede their work is just the beginning.

In the near future, a farm could have a small army of UAVs. Each one won't have a specific purpose. Rather, they'll be modular and ready to look for disease, chase birds, blow the rainwater off cherries, spray chemicals in a precise location, and tasks no one's even thought of yet.

Their presence will have many ramifications, extending to the role of the farmer. "There's going to be a lot of data, but how can you make sense of that data?" Khot says. "That's the challenge. That's when the next generation workforce will be needed." In other words, farmers may need to be good at bailing hay, but better at crunching data.

Beyond the farm, Leachman sees drones working everywhere, from de-icing power lines and knocking icicles off eaves, to bringing you popcorn in Beasley Coliseum after you order it on your smartphone. They may even infiltrate postal delivery. "Eighty percent of the packages are less than five pounds. Imagine if UPS didn't have to drive around everywhere," says Leachman. "Everybody says they're going to blacken the sky. I don't think they're going to blacken the sky any more than bees do, to be honest. You might end up seeing them around, and in a lot of ways it'll be better that you see them around."

"Whether it's search and rescue, or anything else. Think about a UAV that's hovering over someone who got separated from his boat and is floating in the ocean. If that was a manned vehicle running low on fuel, it goes back. The robotic drone stays. Until the very end. It will never give up."

Such fortitude thrives among the students at Mann Lake, testing the hydrogen-powered Genii. Chaney, the drone's designer, recently started work at Scaled Composites, Burt Rutan's company that built SpaceShipOne. That ship, which was financed by former WSU student and Microsoft co-founder Paul Allen, won the \$10 million X Prize in 2004 for being the first privately funded, manned aircraft to reach space. Gavin finished his undergrad degree this spring and left for Blue Origin, which is Amazon.com owner Jeff Bezos' effort to reach space without government assistance.

Still, before diplomas were in hand and their jobs began, the two regularly trekked to Mann Lake with Genii. On this spring day, a brief window without rain or wind has opened and the time has finally come for Genii to lift all that ballast. Genii has flown a dozen times without incident, but she's never lifted such a load.

"That's the biggest danger, the weight of the vehicle," Chaney says.

Gavin grabs Genii's tail and rolls her down the tarmac as Chaney walks close by, silent and thoughtful, the controller dangling around his neck. They step away from the craft and, without pomp, she barrels down the tarmac, her wheels chattering against the pavement as she builds speed.

And just like that, Genii flies. ☒



Three Great Ways to Belong to One Great Organization.

There are over twice as many members of the WSU Alumni Association (WSUAA) today than there were just a few short years ago. They joined to support student scholarships, take advantage of all the incredible member benefits, and connect with other Cougars. We extend our thanks to all the alumni, students, friends, faculty, and staff whose membership has helped the WSUAA claim its rightful place among the finest and fastest-growing alumni associations in the country. We salute our Annual, Life, and now Platinum Life Members.

New: Platinum Life Membership.

Platinum Life Membership is the newest way to belong to the WSUAA. It was suggested by and created for Cougs who want to help the WSUAA do even more for WSU. Platinum Life Members enjoy all the same great benefits and services as Annual and Life Members, plus a growing suite of extras.

If you have not yet joined, or you are a current member interested in one of the other membership types, please sign up today. Your membership—regardless of which type—is vital to the continued success of the WSUAA and WSU.



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Class notes
are also online



wsu.wsu.edu/mystory

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» CLASS NOTES

1940s

Daniel Ogden ('44 Poli. Sci.) was honored with the Washington State University Alumni Achievement Award for his 50-year career in academia, the federal government, and his local community.

1950s

Wey Simpson ('50 Speech) was inducted into the Hall of Fame of the National Association of Farm Broadcasters.

1970s

John Mraz ('70 Fine Arts) received the Lifetime Achievement Award from the American Advertising Federation-Spokane (AAF) at the annual ADDY Awards & Gala at the Davenport Hotel on March 8, 2014.

Kirk Mayer ('72 Business Admin.), manager of the Washington Growers Clearing House Association, has been named "Apple Citizen of the Year" by the Washington State Apple Blossom Festival.

Kathy Herrick ('74 Ed.) retired as a high school counselor in the Beaverton School District in Oregon after 40 years in education. While in Beaverton, Kathy wrote and implemented the "Safe and Drug Free Schools" grant and the Carol M. White grant for physical education. She also served on the board of directors for the Oregon Partnership for a Drug Free America.

Richard Fulton ('75 PhD English) married Debra Lee in Kaneohe, Hawaii, on September 7, 2013.

Thomas Lumpkin ('76 Agronomy) received the 2014 Outstanding Alumnus Award from the University of Hawaii at Manoa's College of Tropical Agriculture for his work to reduce poverty and improve food security worldwide.

Craig Williamson ('76 BS Pol. Sci. and Admin.) was recently appointed to serve on the Insurance Fraud Advisory Board for the Washington Office of the Insurance Commissioner Special Investigations Unit.

Dan Berentson ('77 Comm.) was appointed public works director by the Skagit County Board of Commissioners.

Joan Consani ('77 Comm.) was hired as director of finance for the Blue Mountain Community Foundation.

Bertha Lynn ('77 Comm.) was inducted into the Murrow Hall of Achievement. For 37 years she was



Chip Hanauer piloting the Boeing U-787 biofueled hydroplane at Seafair in 2009. Photo Jason Fortenbacher

Chip Hanauer '76

The boat guy

by **Larry Clark '94** :: As long as he can remember, Chip Hanauer has loved motorsports. "There wasn't even much in the media back then," says the hydroplane pilot from his perch at a coffee shop near Green Lake. "There was *Wide World of Sports* and they would run the Monte Carlo and the Daytona 500. I looked forward to those more than Christmas."

During a weekend trip to Crescent Bar in central Washington, a 9-year-old Hanauer saw a notice for outboard hydroplane races for kids ages 9 to 12. He went home, got a paper route, babysat, mowed lawns, and saved \$250. "I found a classified ad in *The Seattle Times* for a small outboard. I showed my dad the money and the ad and that was it."

He threw himself into racing. After his mother died on his twelfth birthday, he did so

even more. His father Stan devoted himself to helping. They started out traveling to races with a boat on top of their car and the motor in the trunk. By high school, Hanauer was driving limited inboards, boats with smaller engines.

By then, racing was all that mattered to Hanauer. As a high school senior, he found sponsors and raced all over the country. Pointing across the street to the glistening lake, he says, "My first national championship was won right there. It was heaven for a kid like me."

Although school wasn't a priority, and his grades showed that, he knew he needed a backup plan. His brother Scott Hanauer '73 was already at WSU when Chip announced he would go to college there, too. His brother and father doubted he would be up to it. "They were correct, but it pissed me off," says Hanauer. So he threw himself into college.

He remembers his first test in Anthropology 101. "It was the first time I studied hard for anything. I was scared to death. And I aced it," says Hanauer. "I remember going back to the fourth

floor of Goldsworthy Hall and staring at this anthropology test with an A on it."

His degree in special education came cum laude and led to a job in Port Townsend working with children with behavioral problems. "It was the hardest job I've ever done," he says. "I had an individual program for each kid for each hour of the day. At the end of the day I would be exhausted."

But racing wanted him back. One day the school secretary announced over intercom, "Chip, there's a man coming to see you and he's wearing a suit. He drives a Cadillac."

Bob Steil, owner of Seattle's Squire Shop, was starting an unlimited hydroplane team and he wanted Hanauer to be his pilot. Even with an untested racing team and a boat less powerful than his competitors', Hanauer won races, and grew famous. He even bested hydroplane legend Bill Muncey.

In 1981 Muncey died when his boat flipped in the final heat of a race in Acapulco. "That rattled all of our cages," says Hanauer. "Back

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then the sport was incredibly lethal. The sport basically shut down for months.”

Then Muncey’s sponsor, Atlas Van Lines, called Hanauer. “They said the Muncey family decided Bill would have wanted us to continue with me as the driver,” says Hanauer. “For a kid who always wanted to race, it was shocking to get a call to replace the greatest racer ever.”



CHIP HANAUER COURTESY HYDROPAGE.COM

Their biggest competitor was Budweiser, with a boat with a much bigger engine. In 100 days, the Atlas engineers built a smaller, lighter boat, which was both exciting and frightening. “The higher you can get in the air, the faster you will go. But the window for going upside down is tight. That boat was almost undriveable,” says Hanauer.

A few races into the year, Hanauer and his team won a come-from-behind victory against Budweiser in the 1982 Gold Cup in Detroit. They went on to have a great season, but another top driver, Dean Chenoweth, died in a qualifying heat on the Columbia River.

Hanauer was ready to leave the danger of the sport and return to teaching, but the Atlas team convinced him to stay with a promise to re-engineer the boat with a safer cockpit. “It changed the sport and we eventually got to a canopy,” says Hanauer. “I would never have survived my crashes without the canopy.”

By the 1990s he was driving for the best team in the world, sponsored by Anheuser-Busch, and had won multiple national championships in the powerful boats. But he faced his greatest challenge when he lost his voice.

“I noticed it was getting to be an effort to talk. At first I thought it was a cold. I could feel my vocal cords slamming shut,” he says. Finally,

he couldn’t speak. At a time when Hanauer should have been relishing his victories, “I went into a depression I never want to see ever again.”

He could still race and win, but “I would come home every night, shut the door, and sob myself to sleep,” he says.

Hanauer went to multiple doctors, who couldn’t find a reason for the condition. One day in an airport a man came up and said, “You don’t know what you have, do you?” He said it was likely spasmodic dysphonia, and he knew a doctor who could treat the symptoms. Hanauer flew to New York City for injections of Botox into the muscles around his larynx.

That night he requested a wakeup call at the hotel. “At six, they called. And I said, ‘Thank you.’ [Then] I called the front desk up just to talk to someone,” says Hanauer.

The depression faded, but he had learned from it. “In depression, nothing looks good. Now I have so much joy in things I never realized.”

Hanauer retired from hydroplane racing in 1996, but returned for the 1999 season. He ended with 11 Gold Cups and 61 victories, one short of Muncey’s record. He was inducted into the Motorsports Hall of Fame in 1995, the International Motorized Vehicles Hall of Fame in 2005, and the Washington Sports Hall of Fame this year.

Now Hanauer, 60, mentors young drivers for NASCAR, speaks at corporate events, volunteers with veterans, and works hard at flamenco guitar. A few years back he walked into a music shop. “I asked the salesperson, ‘What are the odds of a 55-year-old guy learning to play flamenco guitar?’ ‘Not good,’ was her response,” says Hanauer with a grin.

He tried it anyway. “The more uncomfortable I am about doing something, that’s the key I need to do it. If it’s playing guitar in front of an audience, if it’s driving a raceboat in front of 100,000 people, I better do it,” he says.

When NASCAR videographer Sam Bisset approached Hanauer to do a video series about boating, Hanauer declined. But then he reconsidered. “This makes me horribly uncomfortable. So I need to do this.”

They took the first video to KIRO TV in Seattle, the producers loved it and asked for more. “The Boat Guy” was born, and Hanauer and Bisset continue to film more episodes of the lighthearted series on boating and life in the Pacific Northwest.

Watch “The Boat Guy” videos with Chip Hanauer at wsm.wsu.edu/extra/boat-guy.

a fixture on Denver’s television news at KMGH-TV 7 and KUSA-TV 9. She is a multiple Emmy Award winner and has also been inducted into the National Academy of Television Arts and Sciences Heartland Chapter Silver Circle, the Broadcast Professionals of Colorado Hall of Fame, and the Denver Press Club Hall of Fame.

Kerry Brock (’79 Comm.) was inducted into the Murrow Hall of Achievement. She was an anchor and reporter for KOMO TV in Seattle and a media analyst for CNN, Fox, *Time*, *Washington Post*, and the *Los Angeles Times*.

Jere Dick (’79 DVM) was selected to be an associate administrator of the Animal and Plant Health Inspection Services (APHIS) for the U.S. Department of Agriculture in Washington, D.C.

Frank V. Paladino (’79 PhD Zoophysiology) received the Archie Carr Lifetime Achievement Award from the International Sea Turtle Society at their annual meeting in New Orleans on April 18, 2014.

Beth Tuura (’79 Comm.) was inducted into the Murrow Hall of Achievement. From 2002 through 2014 she has worked as a technical director for every Olympics for NBC. Currently she is a freelance technical manager for CBS Sports and NBC Sports.

1980s

Charles B. Kastner’s (’81 MA History) new book, *The 1929 Bunion Derby: Johnny Salo and the Great Footrace Across America*, was published by Syracuse University Press.

John L. Martins III (’82 Gen. Studies) won the grand prize for his screenplay, *Aktion T-4*, at the third annual Act One Screenwriting Competition in Hollywood. The script details the exploits of two religious laymen who struggled against the Nazi forced-euthanasia program known as “Aktion T-4.”

Craig Soehren (’83 Business Admin.) was awarded the Commercial Realtor of the Year Award by the Washington Association of Realtors.

Mark McMaster (’85 BS Mech. Eng.) has joined intellectual property services firm Kilpatrick Townsend & Stockton in Seattle as an associate with the patent team.

Dwight Dozier (’86 Social Sci.) joined George Washington University as senior associate vice president of development.

Darin Rasmussen (’86 Ani. Sci.) has been appointed director of public safety and chief of police at Western Washington University.

Steve Card (’87 Fin.) was hired as Western Washington University’s athletics director.

Paul Drumheller (’87 Chem. Eng.) became a fellow of the American Institute for Medical and Biological Engineering.

1990s

Tyler Jones (’92 HBM) was hired as director of golf operations at Sun Valley Resort. In the past, he has managed Olympia Country and Golf Club, Palouse Ridge Golf Club, and Poppy Hills Golf Course in Pebble Beach, California.

2000s

John “Ibby” Ibsen (’00 Comm.) was inducted into the Murrow Hall of Achievement. Ibsen is senior vice president of creative film services for Walt Disney Studios.

Steve Maxwell (’00 Bus. Admin.) has joined Kitsap Bank as executive vice president and chief lending officer.

Laura Watson (’00 Elec. Eng.) earned the prestigious Federal Engineer of the Year award for the Naval Undersea Warfare Center Division in Keyport.

Seth Anderson’s (’02 Arch.) business, Ascent Architecture & Interiors, is one of six finalists for the Charrette Venture Group’s national architecture business plan competition.

Kelli Collins (’02 Agribusiness) and **Kendra Myers** (’05 Acc.) opened Joseph’s Grainery in Colfax after four years of building their family business.

Jason Gesser (’02 Comm.) has taken a position with the Cougar Athletic Fund as assistant director of development.

Jaime Radcliff (’04 Ed.) founded GunBoxLive, a device that provides security alerts when a gun is moved, accessed, tampered with, or stolen.

Ray Gibler (’08 MAC) has been awarded tenure and promoted to associate professor at Northwestern College for the 2014-15 school year.

Daniel Pederson (’08 Comp. Eng. and Bioeng.), a doctoral student at Purdue University, received the National Science Foundation (NSF) Graduate Research Fellowship to continue his work with implantable medical devices.

Seth Green (’09 PhD Counseling Psych.), a lieutenant commander with the U.S. Public Health Service, was recognized as the Public Health Service junior officer of the year for 2013.

2010s

Casey Graika (’10 Comp. Sci.), and his brother, **Skylar Graika’s** (’12 Comp. Sci.) business Footmarks has been selected as the only provider of beacons—devices that communicate with shoppers’ smartphones in the hopes of improving the retail experience—for Microsoft’s Retail Innovation Center.

Rikki King (’10 Pol. Sci.) was awarded with “New Journalist of the Year” from the Society of Professional Journalists—Western Washington.

Christina Turner (’12 Comm.) was hired as a Cougar Athletic Fund (CAF) program assistant.

Manuel Lamson (’14 Kinesiology) became a 2nd Lieutenant in the United States Air Force after graduating in May.



Engineer Jaclyn Phillips takes her expertise to Central America. Courtesy Jaclyn Phillips

Jaclyn Phillips ’10

Tripping the towers

by Hannelore Sudermann :: Jaclyn Phillips ’10 spent her first two days in Nicaragua twenty feet in the air, atop a scaffolding she helped build.

In a remote village as part of a volunteer team, Phillips was helping build a 115-foot suspension footbridge across the El Limón River, which floods during the rainy season from June through November. “The village is very remote,” says Phillips. “The villagers have to cross two rivers to get to school, health care, and jobs. Farmers need to cross them to sell their crops.”

Whether high in the air stringing cross-beams or sleeping in a tent in a schoolyard, Phillips relished her two weeks there, from the challenge of figuring out how to lift, or trip, the two 900-pound bridge towers by hand to the experience of living and working among the Nicaraguan villagers.

Growing up in the Tri-Cities, Phillips loved math and science, but it wasn’t until she attended a Young Women in Science program one weekend that she found her calling. One of the hands-on activities involved assembling a building using pre-cut pieces of paper and guided by specifications and building codes like hallway width.

She had to get all the pieces to fit. It was a huge, challenging puzzle. “It was problem solving, too,” she says. “When I walked out that day I knew I wanted to be an engineer.”

At WSU she focused on civil engineering and signed up for Engineers Without Borders. During her senior year, Phillips traveled to Concepción, Chile, where WSU professor J. Daniel Dolan led WSU and Chilean students in developing plans to clean up Lake Las Tres Pascualas. “It was in a great location,” says Phillips. “It had a lot of potential as far as parks.” But 60 homes had sewer systems discharging into the 13-acre lake and the surrounding neighborhoods produced additional contamination. The municipality and a private university planned to purchase and tear down the houses and turn the lake into a park, using the students’ study to determine how to do so.

During her summers, Phillips interned for Kiewit, a major construction company with projects throughout the United States and Canada. Her internship kept her closer to home, rehabilitating the 1961 Hood Canal Bridge. The project, among other things, replaced the east half of the floating structure, widened part of the deck, replaced pontoons, and built new bridge approaches both on the Olympic Peninsula and Port Gamble sides. “The internship was great. It was really just one big interview,” says Phillips. “I was offered a job on my second-to-last day.”

Now she’s a registered professional engineer working for Kiewit and building segments for

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the Honolulu Transit Kamehameha Guideway in Hawaii. The 20-mile elevated rail line will connect the city center of Honolulu to neighborhoods in two directions.

Phillips moved to Hawaii when the project started three years ago. "It's great, even though I'm three thousand miles from home," she says. "I can't snowboard right now. But the outdoor life here offers a lot."

In July 2013, her company announced a search for volunteers for a Bridges to Prosperity project in Nicaragua. "The second I heard about this, I knew this was a trip for me." She submitted her application and was thrilled to be one of nine employees selected for the two week trip last February to Cinta Verde, an agricultural village of about 300 people. While volunteers from another company designed the plans for the bridge, the villagers provided the labor, and working alongside them, "we provided the expertise," she says.

The volunteers could have done the entire project themselves, but bringing the villagers in to work helped them understand how it was built and how it might be repaired. "We needed to make this bridge their bridge," says Phillips. The men helped build and the women provided everyone with breakfast, lunch, and dinner. "We had a lot of rice and beans," says Phillips. "Though one day they made us tamales. That was a treat."



A "Bridge to Prosperity" in Cinta Verde, Nicaragua.

Lifting up and setting the bridge's two towers on their piers became her biggest challenge. They managed to do it with ropes, pulleys, and the collective strength of the volunteers and villagers. "We jumped up on the scaffolding to help trip the towers. We did it all by hand," she says. "I didn't learn until later that it was the first time it had been done like that."

Back home in Hawaii, Phillips continues helping Kiewit finish its 20-mile rail transit

project. But she's still looking to volunteer her engineering skills. "It's not the last time I do something like this."

Mark Paxton '76

Shaping smiles

by Christine Rushton '14 :: Sweat trickled down his face as Mark Paxton '76 threaded the surgical needle through the roof of his patient's open mouth. In 95-degree heat and no air conditioning, the doctors in the Guatemalan operating room used white cloths to wipe away the moisture.

The oral surgeon put down his tools and stepped back. After 23 years of performing cleft lip and palate surgeries on medical mission trips to Zacapa, Guatemala, he has grown used to the intense and muggy conditions.

His 10-day trip with a group of about 100 Washington State University students and volunteers last March focused on construction, providing general medical and dental clinics, and cleft surgeries.

"It's not that cleft lip and cleft palate happen more frequently [in Guatemala] than in the United States, it just doesn't get fixed," says Paxton. "The need is very acute in Central America from managing not just cleft lip and cleft palate; they need basic medical care, basic dental care."

Paxton started traveling on charitable missions as a WSU student. After completing his doctorate at the University of Washington in 1980, he joined the U.S. Air Force for his residency in oral surgery.

Operating on cases ranging from gunshot wounds to cleft palate repairs in the military, Paxton realized the impact his work could have on a person. "It changes how they look, how they're perceived, how they act, how their social life will be, and their potential going forward in the rest of their life," he says.

Paxton set up his practice in Spokane, but he wanted to continue traveling and using his medical skills where they were needed in Latin America. He joined the nonprofit mission organization Hearts in Motion (H.I.M.) and now makes regular trips to Guatemala. He performs about 60 major surgeries per trip in local hospitals.

Karen Sheeringa-Parra, founder and executive director of H.I.M., coordinates about two dozen missions a year with teams of dentists, surgeons, volunteers, and students. She says many come in expecting to share their education and leave with a greater perspective about their own lives.

Zach Nielsen ('14 Public Affairs) and his wife, **Kendall Nielsen** ('14 Ed.) graduated from WSU Vancouver in May. Zach was hired as a police officer in Mount Vernon.

IN MEMORIAM

1930s

Virginia F. Bigelow ('35 Elem. Ed.), 100, April 8, 2014, Seattle.

Ferber R. Schleif ('35 Elec. Eng.), 101, April 9, 2014, Baltimore, Maryland.

Paul Bernard Hansen ('37 Chem. Eng.), 100, May 4, 2014, Menasha, Wisconsin.

Roberta Stinson Abel ('38 Home Econ.), 97, February 21, 2014, Cincinnati, Ohio.

Lucille Joy Olsen (x'38), 100, April 23, 2014, Pasco.

Leonard N. Purdy Jr. ('38 Business Admin.), 96, April 16, 2014, Pico, Idaho.

1940s

Beverly Arlene Long ('40 Fine Arts), 96, April 23, 2014, Rochester, New York.

Leona Marie Runyan ('41 Home Econ.), 93, November 6, 2013, Sunnyside.

Theodore Earl Larson ('42 Business Admin.), 91, January 20, 2012, Bellingham.

Norma Elizabeth Beckley ('43 Physical Ed.), 92, March 27, 2014, Colfax.

Betty J. Shaub (x'43), 90, February 23, 2014, Tacoma.

Dean Clark Daughtry (x'45), 91, February 5, 2014, Tacoma.

E. Pauline Elikor ('46 Home Econ.), 90, February 11, 2014, Ventura, California.

Fay Judy (x'46 Sciences), 90, March 16, 2014, Eureka, California.

Valeria Munson Ogden ('46 Socio.), 90, April 9, 2014, Vancouver.

Donald William Moos ('47 Ani. Sci.), 90, February 28, 2014, Wenatchee.

Parmalee B. Moos ('47 Psych., Chi Omega), 88, March 13, 2013, Wenatchee.

James A. Vander Stoep ('47 General Studies), 88, March 8, 2014, Chehalis.

Dale Francis Brannon ('48 Speech Comm., '54 MA Ed.), 93, March 8, 2014, Spokane.

Leonard W. Otto ('48 Hort., Alpha Gamma Rho), 84, November 24, 2011, Spokane.

Norma Lee Stearns ('48 General Studies), 87, May 2, 2014, Eugene, Oregon.

Patricia Lea Stickle ('48 Office Admin.), 88, April 8, 2014, Camarillo, California.

Bert E. Brown ('49 Physics), 88, April 12, 2014, Tacoma.

Jerome Charles Brown ('49 MA Fine Arts), 90, March 17, 2014, San Jose, California.

James H. Burgess ('49 Chem., '51 MS Physics), 85, April 2014, Bellingham.

Dale Clifford Gough ('49 Business Admin., Alpha Kappa Psi), 91, February 23, 2014, Spokane.

Edward Earl Springer ('49 Physical Ed., '53 MA Ed., Lambda Chi Alpha), 89, April 23, 2014, Tacoma.

Johnny L. Vaninetti ('49 Ag.), 91, March 17, 2014, Santa Fe, New Mexico.

W. Carolyn Warman ('49 Socio.), 87, March 24, 2014, Cashmere.

Thomas Woodrow Yoder ('49 Pol. Sci.), 87, April 2, 2014, Fort Wayne, Indiana.

1950s

Carl Buford Betten ('50 Elec. Eng.), 89, March 23, 2014, Seattle.

Herbert Carter Johnston ('50 Forestry and Range Mgmt.), 89, December 11, 2013, Shelton.

Nancy Margaret MacGregor ('50 Pharm.), 85, April 8, 2014, Spokane.

Donald Neil Noteboom ('50 Ani. Sci.), 84, January 12, 2014, Lynden.

Margaret "Peggy" Sorensen ('50 Pol. Sci.), 85, February 10, 2014, Spokane.

George D. Tomlinson ('50 Elec. Eng.), 89, May 3, 2014, Seattle.

Warren G. Wehmeyer ('50 Elec. Eng.), 85, July 19, 2013, Seattle.

Perry Baker Wilson ('50 BS, '52 MS Physics), 86, November 30, 2013, Redwood City, California.

John Houston Foss ('51 Ani. Sci.), 88, May 6, 2014, New Bern, North Carolina.

Donald R. Haworth ('51 Business Admin.), 87, March 1, 2014.

Gerald Merrill Korte ('51, '55 MA Social Studies), 84, March 31, 2014, California.

Mary Jane Larimer ('51 Physical Ed., '58 MAT), 84, February 12, 2014, Snohomish.

Oliver Anton Nelson ('51 Elec. Eng.), 91, March 25, 2014, California.

Norman David Brunton ('52 Ag.), 84, January 16, 2014.

Florence M. DeFeyer ('52 Home Econ.), 83, January 8, 2014, Spokane.

William B. Johnson ('52 Business Admin.), 83, February 28, 2014, Walla Walla.

John Philip "Phil" Largent ('52 Business), 83, February 24, 2014, Colfax.

Donald Lester Smith ('52 Ag.), 84, June 15, 2013, Chehalis.

Louis L. Wellman ('52 Physical Ed.), 86, March 15, 2014, Brush Prairie.

Janet Mortensen ('53 Home Econ.), 82, May 9, 2014, Lacey.

Frederick Winton Wefer ('53 Forest and Range Mgmt.), 87, April 7, 2014, Bellingham.

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"I'm really convinced that people want to help to make the world a better place, but don't know how to do it, don't know how to start," she says. "We give them this venue to learn about another lifestyle."

The 40-some WSU students who traveled with Paxton in March saw the number of lives the doctors could change in a week. Joel Alvarez,

the states," says Chris Woodard. "You get good exposure and practice."

Paxton has helped lead several volunteer groups on H.I.M. missions, and says he values the organization that the nonprofit provides.

Paxton has not experienced a surgery-related death during his 23 years in the country. However, in a country with more limited medical resources,



Paxton and fellow volunteers perform palate surgery in Guatemala. Courtesy Mark Paxton

a WSU chemistry student, grew up in a family that did not have the resources to prioritize health care. With the potential of diabetes and related health issues for his relatives, he decided to learn about medicine to care for them and others with limited resources.

Seeing the clinics and surgeries in Guatemala reinforced his interest in working with underserved communities. "I think it is worth it to come and say, 'Hey, we are here for you,'" he says. "Anything I attempt to do ... or help someone else do, it's still going to be worth it."

Alvarez and his classmates in pharmacy, dentistry, speech and hearing, and surgery assisted the volunteer doctors and worked directly with the Guatemalans.

Spokane dentist Steve Woodard '83 and his son Chris have traveled to Guatemala with the WSU team for the last four years. The younger Woodward, a WSU student who hopes to someday have his own dentistry practice, was eager to watch his father and Paxton at work. "You get to do a lot of observation that you wouldn't get in



the potential exists. In March, his operating team had to save the life of a 28-year-old patient who started bleeding out after a procedure.

"There is no blood bank there," Paxton said. "That's Guatemala. That's the challenge of third-world surgery."

The team has also had to turn away some patients due to a lack of equipment. In the more

Jack Lawrence Albright ('54 MS, '58 PhD Dairy Sci.), 83, February, 26, 2014, Pullman.

John Richard Allen ('54 Pol. Sci.), 84, February 27, 2014, Seattle.

Roy Jacob Keller ('55 MS Physical Ed.), 83, April 26, 2014, Wisconsin Rapids, Wisconsin.

Myron W. Lancaster ('55 Ag.), 79, July 25, 2013, Lynden.

David W. Orahood ('55 Ani. Sci., Phi Kappa Tau), 81, March 25, 2014, Spokane.

Lloyd Edwin Berry ('56 General Studies), 80, April 15, 2013, Olympia.

Donna Mae Eikum (x'56 Liberal Arts), 79, June 3, 2013, Enumclaw.

Michael L. McBain ('56 Pharm.), 82, February 20, 2014.

Clemens A. Schaller ('56 Arch. Eng.), 93, April 20, 2014, Pullman.

Bonnie Kae Blair ('57 Home Econ.), 79, March 11, 2014, Bellevue.

Judith L. Bury ('57 General Studies), 77, August 20, 2013, Whitefish, Montana.

Donald Neale Harkness ('57 Animal Sci.), 79, March 7, 2014, Richland.

Glen George Langdon ('57 Elec. Eng.), 77, March 11, 2014, Santa Cruz, California.

Joelene Rita Osborn ('57 Ed.), 78, October 31, 2013, Shoreline.

Mary Alice Pool ('57 Ed.), 78, March 20, 2014, Lafayette, California.

Donald Oakley Burns ('58 Speech Comm.), 77, April 19, 2014, Newton, Massachusetts.

Ted J. Flier ('58 Social Studies, '62 MED Ed., Theta Xi), 78, April 14, 2014, Zillah.

Glenn A. Rodeman ('58 Elec. Eng.), 85, December 31, 2013, Seattle.

Richard Edward Ginnold ('59 Econ., '62 MA Econ.), 76, April 28, 2014, Springfield, Oregon.

Linda R. Meriwether ('59 Pol. Sci.), 76, January 8, 2014, Seattle.

Daniel Wallenmeyer ('59 Ag.), 81, April 12, 2014, Hood River, Oregon.

1960s

Kenneth A. Graybeal ('60 Acc., Alpha Gamma Rho), 83, April 30, 2014, Buckley.

Sister Mary McGreevy ('60 General Studies), 76, February 20, 2014, Phoenix, Arizona.

Walter Lee Roys ('60 Ag., '66 MS Ag. Ed.), 74, July 31, 2013, Brewster.

Patsy M. Small ('60 Social Studies), 76, March 10, 2014, Spokane.

Peter Byron Weitz ('60 Physical Science, '65 MAT), 79, February 12, 2014, Airway Heights.

Franc Gaither (x'62), 82, December 28, 2013, Albany, Oregon.

Merle Frank Piece ('62 DVM), 85, May 2014, Seattle.

Kenneth Ray Ahlf ('63 Pol. Sci.), 73, January 6, 2014, Lacey.

Cecil Lloyd Allison ('63, '64 MS Elec. Eng.), 84, April 19, 2014, Apple Valley, California.

Jane (Littleton) Collins ('63 Foreign Languages), 73, March 1, 2014, Woodstock, Illinois.

Jack Charles Granger ('63 Civil Eng.), 74, March 13, 2014, White Salmon.

Kay Ellen Cook ('64 Ed.), 71, February 21, 2014, Yakima.

Douglas Dean Delong ('64 MA Math.), 75, March 20, 2014, Havre, Montana.

Paul Edwin Humes ('64 Ani. Sci.), 71, March 9, 2014, Baton Rouge, Louisiana.

David N. Larsen ('64 Forest and Range Mgmt.), 75, February 20, 2014, Olympia.

Duane F. Wiedrich ('64 Police Sci.), 72, March 29, 2014, Spokane.

J. Meredith Neil ('66 PhD American Studies), 76, February 24, 2014, Boise, Idaho.

Jerry Richard Barrow ('67 PhD Horticulture), 76, August 21, 2013, Las Cruces, New Mexico.

Donald J. Kees ('67 PhD Ed.), 87, March 1, 2014, Moscow, Idaho.

Robert Edward Hull ('68 Arch.), 69, April 7, 2014, Port Elizabeth, South Africa.

Laurie Morton Niven ('68 Ed.), 67, April 11, 2014, Edmonds.

Ferruccio Freschet ('69 Ed.), 86, December 28, 2013, Ronan, Montana.

Steven Carter Haskins ('69 DVM), 69, April 26, 2014, Arizona.

Norman Wesley Herdrich ('69 Ag.), 71, March 18, 2014, Spokane.

Noel Diane Welker ('69 English), 67, March 27, 2014, Vancouver.

1970s

Noel D. (Roberts) Welker ('70 English), 67, March 27, 2014, Vancouver.

Joy Annette Wulke ('70 BA Arch.), 65, February 24, 2014, Branford, Connecticut.

Jan Miriam Gable ('71 Elem. Ed., Kappa Kappa Gamma), 65, March 4, 2014, Mercer Island.

Richard Clark Powell ('71 MAT Bio.), 77, March 2, 2014, Bellevue.

Richard "Rick" David Anda ('73 Acc.), 62, February 17, 2014, Spokane.

Lynne Katryniuk Sanders ('73 English), 62, February 6, 2014, Spokane.

Alan G. Douglas ('74 Building Theory and Practice), 63, March 24, 2014, Spokane.

Patricia Joan (Kinney) Young ('76 Fine Arts), 60, March 8, 2014, Spokane.

serious cases, they try to raise money and work with hospitals back home like Providence Sacred Heart Medical Center in Spokane. Paxton is currently campaigning to raise at least \$80,000 to help Victoria, a 14-year-old Guatemalan girl who was born with severe cleft fractures in her skull. Her dysfunctional left eye is located on her left temple, and her nose is skewed left.

Paxton wants to collaborate with three other Spokane surgeons to change Victoria's face and give her the opportunity for a more normal life back in Guatemala. The doctors will donate their time and expertise, and donations will pay for the operating room, support staff, and Victoria's transportation and recovery.

Pam Nolan-Beasley '88

Physics for five-year-olds

by *Hannelore Sudermann* :: "People don't realize how much you can teach science at a kindergarten age," says Pam Nolan-Beasley, a teacher at Waitsburg Elementary. But these kids are inquisitive little sponges, ever curious and energetic, she adds: "It's a perfect time for science."

Nolan-Beasley's success at getting five- and six-year-olds—and their families—interested in science recently garnered her the Presidential Award in Mathematics and Science Teaching, an honor for the nation's top math and science teachers provided through the National Science Foundation. One of two teachers in Washington

to earn the honor, she was nominated by her superintendent who also credited her with convincing the school board to make kindergarten a full-day program.

Nolan-Beasley grew up in Colfax, with great memories of visiting her grandparents on their farm up the road in Dusty, where her own curiosity led her into meaningful learning experiences. "I grew up on that farm," she says. She and the other children in her family made boats in their grandpa's shop, collected eggs from the chickens, and rode horses through the wheat fields. "Out there," she says. "You made your own fun."

Now she helps her community's youngest residents create their own fun. Using tools like paper cups and popsicle sticks, she concocts projects and experiments that give the children the fundamentals for scientific inquiry. She finds opportunities for teaching science nearly everywhere: in a song, in a writing assignment, even turning an ant invasion of her classroom into a little lesson in biology.

Science wasn't Nolan-Beasley's first forte. "In rural schools you do just a little bit of everything," says the 30-year teaching veteran. Nolan-Beasley went to Eastern Washington University for college and later enrolled at WSU for her master's in foreign language. Specializing in Spanish, she worked with high school students, teaching them Spanish online and in person in Walla Walla. A job as a reading specialist brought her back to work in Waitsburg nearly two decades ago.

In a small community like hers, which has a population of about 1,200, Nolan-Beasley has had many opportunities to encourage children

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- Raised Garden Beds



Pam Nolan-Beasley '88 received national recognition for her efforts to teach science to young children.

and their families. "And there is a greater awareness of individual children and their needs," she says. The thing that made her happiest as a reading specialist was finding children at home reading with their siblings and parents. "Reading at home is the number one indicator that a child will succeed at school," she says.

While rural children don't have resources like museums, zoos, theaters, and science centers that a child in a city might, they're still taking field trips to windfarms and creek banks, and learning about

natural resources up close. With the area's rangers and ecologists, "there are many experts around," she says. "We just have so much right here."

Growing up in Washington, Nolan-Beasley developed a strong attachment to the landscape. "My family and I did a lot of camping around the state," she says. "We didn't have a lot of money for big trips to Disneyland. Instead we pretty much went out where other people weren't."

This exploration is a habit she and her husband continued with their sons, often setting out for Lyons Ferry and the lakes around Cheney. "And we have the Blues right here. People can ski and there are all kinds of trails."

Once their boys started college, Nolan-Beasley and her husband Ken took up kayaking.

Nolan-Beasley shares her expertise with other science teachers through the state's Leadership and Assistance for Science Education and Reform program.

Her national teaching award, which was announced last December, provided her \$10,000 and a trip to Washington, D.C. <<

While Nolan-Beasley took the Presidential Award for science, Nancy Pfaff '76, '80 was honored for her work with math. She works in the Lake Washington School District and last year moved from Horace Mann Elementary to Blackwell Elementary and Thoreau Elementary schools to teach an enrichment program for gifted students.

Neil Preston Gallup ('77 Acc. and Comp. Sci.), 59, April 4, 2014, Spokane.

John Louis Silva ('77 PhD Psych.), 83, April 27, 2014, Ellensburg.

David M. Levine ('78 Business), 58, March 6, 2014, Spokane.

Mary Ellen Gorham ('79 General Studies), 72, March 8, 2014, Pullman.

Timothy C. Hamilton ('79 Mktg.), 57, March 13, 2014, Sumner.

1980s

Peter Anson Schneider ('80 DVM), 70, October 6, 2013, Los Angeles, California.

John Edward Crock ('81 MS Entomology, '98 PhD Biochem.), 58, April 28, 2014, Moscow, Idaho.

Robert George Putzker ('82 Forest and Range Mgmt.), 61, April 19, 2014, Great Falls, Montana.

Terry M. Thompson ('83 Wildlife Bio.), 57, May 1, 2014, Spokane.

Tom Douglas Fryxell ('84 MA History), 55, February 12, 2014, Pullman.

Ronald Lee Davis ('86 Social Studies, '89 MED), 55, March 2014, Pullman.

Roger W. Pettenger ('87 PhD History), 81, April 14, 2014, Spokane.

1990s

Jonathan Edward Preston ('90 Physical Sci.), 46, May 5, 2014, Morrisville, North Carolina.

Sharon Anne Crist ('91 Ed.), 71, April 8, 2014, Kennewick.

Jacquelyn Louise Schneider ('92 MED Ed.), 62, April 8, 2014, Pasco.

Trudy Arlene Adkins ('93 Acc. Fin.), 43, March 15, 2014, Chehalis.

Melissa Eileen Preston ('95 App. Des., Merch., Textiles), 43, May 5, 2014, Morrisville, North Carolina.

Scott Wade Cunningham ('97 Social Science, Delta Tau Delta), 45, May 2, 2014, Lubbock, Texas.

2000s

Cathryn Marie Styer ('03 DVM), 59, March 28, 2014, Vashon.

Jody Amelia Vantine ('04 Social Science), 36, April 28, 2013, Spring Branch, Texas.

Joseph Patrick Northrup ('05 Comm.), 32, March 3, 2014, Tarzana, California.

Amanda Blythe Lennick ('06 Nursing), 31, March 22, 2014, Oso.

2010s

Kathleen Fiona Higgins ('12 Comm.), 24, May 5, 2014, Boise, Idaho.

Faculty and Staff

Naom Barr, 97, Housing and Food Service, 1972-1980, April 7, 2014, Pullman.

Ernest L. Bunch, 89, Housing and Food Service, 1950-1973, March 28, 2014, Moscow, Idaho.

Edna M. Douglas, 95, Business Administration, 1958-1984, March 31, 2014.

Norma Ellsworth, 87, Agronomy, 1948-1975, May 15, 2014, Pullman.

Jane Harris Ericson, 95, Physical Education 1952-1977, March 11, 2014, Pullman.

Larry G. Gardner, 76, Housing Services, 1996-2002, February 28, 2014, Spokane.

Carl W. Hall, 89, Mechanical Engineering, 1970-1987, April 18, 2014, Falls Church, Virginia.

Alfred R. Halvorson, 93, Cooperative Extension, 1957-1986, March 23, 2014, Pullman.

Millard Hastay, 97, Econ., 1958-1981, March 28, 2014, Forest Grove, Oregon.

Melvin Hatley, 78, Receiving and Delivery, 1970-1987, April 25, 2014, Spokane.

Gerald W. Hord, 73, Facilities Operations, 1983-2006, April 12, 2014, Troy, Idaho.

Edward Ray Ladd, 70, Engineering and Technology, 1988-2012, May 21, 2014, Kendrick, Idaho.

Wilma J. Literal, 86, Home Econ., 1965-1982, March 29, 2014, Bellingham.

Everett W. Lyon, 91, Receiving and Delivery, 1965-1985, February 27, 2014, Moscow, Idaho.

Evelyn C. Markham, 94, Housing and Food Service, 1962-1974, April 16, 2014, Bend, Oregon.

Martha McLain, 93, Food Service, 1967-1983, May 10, 2014, Lewiston, Idaho.

Gregory Alan Pernu, 58, CAHNRS/Extension, WSU Puyallup, 1990-2014, April 18, 2014, Puyallup.

Daniel F. Pope, 42, Nursing, 2013-2014, April 29, 2014, Spokane.

Dorothy E. Renner, 89, Housing Services, 1969-1987, February 28, 2014, Silverton, Idaho.

Theodore R. Saldin, 93, Acc. and Business Law, 1947-1987, April 13, 2014, Los Angeles, California.

Jeffrey Lynn Smith, 62, USDA Agricultural Research Service and Department of Crop and Soil Sci., 1986-2013, January 25, 2014, Pullman.

Charles Sulzbach, 88, Botany, 1965-1986, May 10, 2014, Pullman.

Akihisa G. Wright, 54, Northwest Public Radio, 2010-2014, April 26, 2014, Lakewood.

WSU Alumni Association News

Cougar I

A PROMISING PAIRING of alumni and wine lands this October when the WSU Alumni Association unveils its limited edition Cougar I (pronounced Cougar One) wine.

Joining up with Gordon Estates Winery, the Alumni Association is offering bottles of a rich red blend to members of the Wine-By-Cougars club, those who attend a special release event in the Tri-Cities, and the lucky few who can find it at their grocery stores and wine shops.

Only about 300 cases are available, and the WSUAA expects the wine will go fast.

Gordon Estates is a Washington-rooted, Cougar-run operation. Founder/owners Jeff '71 and Vicki Gordon, and their daughter Katie '98 and her husband Marc Nelson '98 make critically acclaimed wines at their Pasco-based winery from the grapes they grow in the Columbia Valley.

On October 12, the Gordons are hosting a special Cougar I release event at their wine bar in Pasco, where visitors can sample and purchase the 2010 vintage Cabernet Sauvignon-Merlot-Syrah blend. The wine sells for \$30 a bottle and the proceeds will support WSUAA initiatives, particularly scholarships for students in the Viticulture and Enology program.

Wine-By-Cougars members are guaranteed a bottle in the fall delivery of wine in early October. The remainder will be distributed to wine shops and grocery stores throughout Washington to be released for sale on October 13.

The Alumni Association plans this fall's release to be the first of many, with the idea that collectors, aficionados, and Coug fans may all look forward to next year's Cougar II and 2016's Cougar III.

To join Wine-By-Cougars or find more information about the Cougar I release, visit the WSUAA website alumni.wsu.edu or call 1-800-258-6978.



PHOTO SHELLEY HANKS

PHOTO COURTESY WASHINGTON STATE UNIVERSITY

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Asian American Women's Popular Literature by **Pamela Thoma**

TEMPLE UNIVERSITY PRESS, 2013 ::

Review by **Crystal Parikh** :: Since Nathaniel Hawthorne famously complained about the “damned mob of scribbling women” in 1855, much has changed in American literary and popular culture, not least the nation’s racial demographics, which now include substantial numbers of Asian Americans, as well as other people of color. And yet, the significance of women’s popular fiction continues to be overlooked, if not derided outright, by many social and cultural critics. Fortunately, feminist scholars have sought to rectify this state of affairs, and *Asian American Women’s Popular Literature* by WSU associate professor Pamela Thoma is a lucid, convincing, and original contribution to the field.

Despite the remarkable commercial success and cultural visibility of Asian American women’s popular fiction, Thoma’s is the first critical study of genres such as the ones she considers, for example, Asian American women’s “labor lit” or the Asian American female detective novel. As such, Thoma also challenges the commonplace lament regarding the relative *invisibility* of Asian Americans in popular culture. Instead, by considering a range of authors, including Amy Chua (of the infamous “Tiger Mother” debates), Sonia Singh, Suki Kim, and Ruth Ozeki—to name only a few—Thoma follows more recent scholarship in Asian American studies that carefully considers representations and cultural politics deemed to “accommodate” or to be “complicit with structures of power,” in order to understand what they might tell us

about racial, national, gender, and class formations in the current historical juncture.

In this study of “feminizing genres and neoliberal belonging,” Thoma examines how contemporary novels, authored by Asian American women, negotiate conditions of cultural and political belonging under what political economists call “neoliberalism.” Thoma perceptively describes citizenship, in particular “cultural citizenship,” as an object of contest, transformed by political struggle, cultural production, and economic activity. While Asian American women are permitted to pursue belonging according to the exacting, market- and consumption-oriented mandates of neoliberal ideology, she argues, they also participate in a critique and remaking of the terms by which cultural citizenship is granted.

Finally, an especially appealing aspect of *Asian American Women’s Popular Literature* is the strong case it makes for the ongoing study of print culture and the novel form in its many permutations. At a moment when scholars of popular culture seem increasingly to forego such literary forms for other media, Thoma reminds us that “the book is now more socially influential than it has been for some time.” There is much critical pleasure to be had in Thoma’s serious treatment of novels that are often dismissed as (only) pleasure reading. ☒

Crystal Parikh is associate professor of English in the Department of Social and Cultural Analysis at New York University and author of An Ethics of Betrayal: The Politics of Otherness in Emergent U.S. Literature and Culture.

Island Queens and Mission Wives: How Gender and Empire Remade Hawai’i’s Pacific World by **Jennifer Thigpen**

UNIVERSITY OF NORTH CAROLINA PRESS, 2014 ::

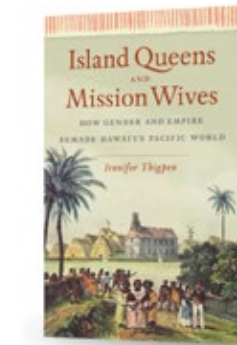
Review by **Hannelore Sudermann** :: When white missionaries landed on the sunlit shores of Hawai’i in the late eighteenth century, they believed they were bringing God, culture, and civilization. They failed to realize that instead they were pulled into a sophisticated and long-standing system of Hawaiian diplomacy.

The missionaries’ relationship with the ruling families of Hawai’i has long been the subject of study. But Thigpen, an assistant professor of history at WSU, offers a different take. A specialist in nineteenth century U.S. history, women and gender, and colonialism, Thigpen explores the relationship of exchange between two cultures. She looks deeply into the interactions between the missionary wives and the ruling Hawaiian women and discovers that they set a

foundation for alliances that would form Hawai’i’s political future.

To the Hawaiians the shape of the relationship was obvious. It started with gift items exchanged between Hawaiian women and American missionaries and created a hierarchy based on obligation. Among other things, the ruling Hawaiians offered the newcomers fresh food, shelter, and permission to establish their missions. The missionaries mistook the gifts as tokens of gratitude for bringing their religion and culture to the islands. And they did not properly express their own appreciation for the Hawaiians’ generosity, crediting God instead.

By contrast, the Hawaiians saw themselves as “benefactors to a befuddled group of guests,” notes Thigpen. Eventually the missionaries would have to reciprocate. One opportunity to do so came when the ruling Hawaiians requested Western clothes. The missionary wives would visit the Hawaiians in their homes, measuring them and making clothes for them,



creating a more intimate exchange than that of offering food and supplies.

Eventually the missionaries, both men and women, grew to understand that the Hawaiian women had a prominent role in their culture, more prominent than the Western women did in theirs, and that providing Western-style garments for the elite families was a step toward satisfying their obligations and key to supporting the interests of the mission.

The missionaries also came to see how central the relationships between the Hawaiian women and the missionary wives would be to bringing Christianity to the islands. They finally understood Hawai’i’s culture of reciprocal obligation—even between classes. The high-ranking families provided the land and the commoners repaid that with labor.

While the Western perspective suggests that the missionaries strongly influenced the Hawaiians—from the Hawaiian perspective, they were just

one group of many visitors from overseas with whom they had to establish a relationship. The Hawaiian’s long-standing diplomacy with missionaries and other visitors was central to, in Thigpen’s words, the “creation and evolution of a multiethnic, global community in the Pacific.”

Using the journals written by the missionaries themselves, resources from the Hawaiian Historical Society, and a number of books and scholarly works about the colonization of Hawai’i, particularly those that looked at the history of the eighteenth and early nineteenth centuries from the Hawaiian’s perspective, Thigpen provides a deeper look into the early days of colonialism in Hawai’i and a richer understanding of Hawaiian culture and diplomacy. ☒

Races of Mankind: The Sculptures of Malvina Hoffman by **Marianne Kinkel**

UNIVERSITY OF ILLINOIS PRESS, 2011 ::

Review by **Jessica Schloss '14** :: In the struggle to find out what makes



people unique, artists of the twentieth century entered the field of physical anthropology. In 1930, Chicago’s Field Museum of Natural History commissioned sculptor Malvina Hoffman to research and create sculptures of all races of mankind, of which there were believed to be more than 160.

Marianne Kinkel, an associate professor of fine arts at Washington State University, explores Hoffman’s journey to complete the Races of Mankind project.

Kinkel breaks this effort into reasonable, chronological pieces. Before Hoffman, several artists attempted to represent the races of the world through their sculpture, but it was Hoffman’s work that had the greatest impact. Little in art and science had been done when it came to understanding races and how ethnographic sculpture had become a popular niche.

The author looks at the steps Hoffman took in order to create a gallery appealing to the viewers, whether their interests were in art or science. She examines the sculptor’s journey around the world, and her commitment to creating works that were scientifically accurate as well as full of life. This was what Hoffman was praised for the most: her ability to put motion into her sculptures.

Hoffman’s exhibit remained in the museum for almost 40 years, and in the meantime she worked on other anthropological pieces incorporating her sculptures. Once genetics was introduced into the world of anthropology, Hoffman’s work as a study of races was challenged. The sculptures transitioned into solely being works of art when they were integrated in other displays like the one put up in Malcolm X College.

Kinkel presents the history and Hoffman’s processes in a readable fashion. The author’s choice of structuring the content chronologically provides the reader a framework for exploring this significant study. ☒

new & noteworthy

Said & Done by **Elder Crow**

2014 :: Tyler Morgan ’03 and his band crank up some old-school rock and roll in their debut album. The Vancouver, Washington, group blends lyrics of social justice and civil rights with roaring guitars and solid drumming straight out of the ’60s and ’70s. Morgan, a high school history teacher in Camas, sings lead and plays rhythm guitar alongside drummer Eddie Esparza, bassist Eric Fernandez, and lead guitarist Ray Yurkewycz. ☒

Mending God’s Creatures by **Jim Roloff**

’74 DVM TATE PUBLISHING, 2014 :: Veterinarian Roloff recounts his experiences and adventures as a veterinarian in Enumclaw and Medical Lake for almost 40 years. ☒

The 5th by **Chris Guenther**

’03 PLAQUATO PUBLISHING (BMI), 2013 :: Chehalis-based country musician Guenther gives listeners some solid tunes reminiscent of George Strait and Merle Haggard in this album, his fifth foray into traditional country territory. ☒

For more than a century, Washington State's college has been extending its expertise to farm families and rural communities on subjects including growing and preserving food, creating a business budget, and building barns.

Opposite: In the early years of Extension, the college delivered its expertise by train. Often entire towns, like the people of Waitsburg in this photograph, would turn out to welcome the agents and the Washington State College train. *Courtesy WSU Manuscripts, Archives, and Special Collections*



THE SMITH-LEVER ACT OF 1914 provided a system of extension services supplied in cooperation by the land-grant universities around the country. It was a very good idea. So good, in fact, that Washington state had already thought of it. A year earlier ...

In 1913, Washington's legislature passed an act enabling counties to hire agents and established an office of the director of extension at the State College (now WSU). Even prior to that, the college's faculty would travel out to some of the state's more remote communities like Omak, Waitsburg, and Fairfield in a train with cars filled with demonstration materials, visual aids, even animals. Entire towns would turn out to welcome them.

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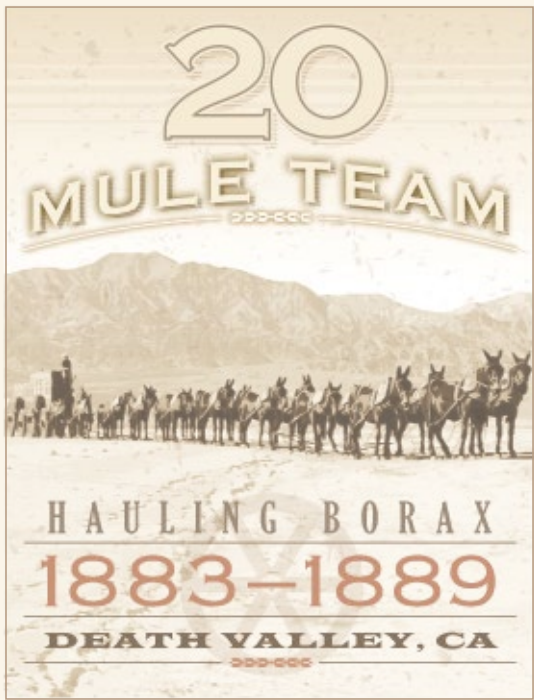
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