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COVER PHOTO: BY ROBERT HUBNER

CORRECTION: The summer 2015 story on the WSU Bread Lab, “Billions to Be Served,” mischaracterized a request for Stephen Jones to breed a certain kind of wheat. He was asked to use traditional breeding methods to give wheat private genetic traits resulting from conventional chemical mutagenesis. He was never assigned by CAHNRS, nor asked by the Washington Grain Commission, to breed GMO wheat.
Memories of Bobo. A player and coach larger than life in every way. IN MEMORIAM

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INSPIRING ACHIEVEMENT

Honors student Bree Berg discovered a world of possibilities at Washington State University. Here, the biochemistry major was inspired to excel in the classroom, immerse herself in prostate cancer research, and tutor dozens of classmates. Joining a medical mission trip abroad is on her to-do list. Recently, the future medical practitioner was one of just 10 students nationwide selected for the Bardos science award, recognizing exceptional prospective scientists.

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IN MEMORIAM

Memories of Bobo. A player and coach larger than life in every way.
FIRSTWORDS

“We the universe is transformation; our life is what our thoughts make it.”
—Marcus Aurelius

WE LOST AN EXCEPTIONAL LEADER THIS SUMMER IN OUR TENTH PRESIDENT, ELSON S. FLOYD. His vision in just eight years transformed the University, and elevated WSU in research, student achievement, and land-grant service. This short space can’t begin to list his accomplishments, so I encourage you to read his story in the special tribute supplement at the center of this issue. President Floyd will surely be missed, but it’s imperative for us to continue his legacy.

In the spirit of transformation, we began a redesign of this magazine over a year ago. While the devotion to telling WSU’s stories remains, we worked to create a new look and feel that both innovates and honors our 125-year-old land-grant mission.

The most obvious change you’ll notice is the size and paper. In the land of Bigfoot, we decided to have a smaller footprint. The magazine production will waste less paper in printing because of its slightly slimmer form. Even the paper itself is an innovation. We are among the first university magazines in the nation to use 100 percent recycled paper, which uses less water and chemicals in manufacturing, in line with WSU’s commitment to sustainability.

We also improved the digital side of the magazine. When you visit magazine.wsu.edu, you will find a mobile- and story-friendly look that better serves our readers. We will have more video and other online content to enhance the stories.

The web’s great for another thing: having a conversation. I want to hear your stories, opinions, ideas, and updates, whether it’s through an email, letter, or a connection on social media.

MANAGING EDITOR: Larry Clark ’94

SCIENCE WRITER: Rebecca E. Phillips ’76, ’81 DVM  ART DIRECTOR: John W. Paxson  INTERN: Amika Tonath


VSIU INTERIM PRESIDENT: Daniel J. Bernardo ’85 PhD

ADVERTISING: Contact Advertising Manager Jeff Koch at 509-335-1882 or jeff.koch@wsu.edu.

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Restoring chaos

WSU researchers seek to prove that an untamed tangle of nature is a prerequisite for long-term salmon survival

The darling, hatch-sided fry are welcome evidence that salmon habitat restoration efforts are beginning to pay off in the Pacific Northwest. It is especially encouraging in the Tucannon River, one of the last breeding grounds for southeast Washington’s wild steelhead and spring Chinook salmon. After ten years of intensive stream channel reconstruction, the river has emerged as a role model for the recovery of fish populations in the Columbia River Basin watershed and beyond.

Washington State University associate professor Alex Fremier and former graduate student Joe Parzych ‘15 MS are leading a study to document environmental improvements from the use of manmade logjams in the Tucannon. Anecdotal evidence suggests the logjams have successfully slowed the river’s currents, creating deeper, cooler flows enriched with the oxygen vital for fish survival.

I join members of the Washington Department of Fish and Wildlife (WDFW) and the Snake River Salmon Recovery Board as they pull on waders and prepare to validate these reports.

While the pristine waters of the Pacific Northwest historically teemed with salmon and trout species, the numbers dwindled as habitat was lost to beaver trapping, logging, and dam construction. Riparian trees were cut to make way for agriculture, and well-intentioned wildlife managers removed deadwood from stream channels. The untamed tangle of nature slowly gave way to a more domesticated tableau. But nature prefers the chaos.

“Look at all these fish!” says wildlife officer David Karl. My eyes adjust to the dappled sunlight as I bend toward the water. Shadows and leaves float in the stream, and beneath them tiny Chinook salmon undulate in the current, safe in a side channel that Karl calls a nursery.

“Intuition says the large wood doubles water flows, it will have huge implications for rivers throughout the Pacific Northwest,” WDFW officer Karl wades over to an eddy behind a large tree trunk and points out two round steelhead nests along the bank. By all appearances, the river is a jumbled mess and difficult to navigate on foot, but it is pure paradise for Chinook salmon.

The human penchant for order—lands-use planners and “compliant river channels”—where meandering streams became swift, straight currents devoid of sediment, says Parzych. To the detriment of the fish, the altered streams also grew warm, shallow, and muddy. Juvenile salmon, with no escape, were suffocated in the silt.

Parmel says almost all native trout and salmon species in Washington have experienced a steep decline over the last century. In the Tucannon, Chinook salmon, steelhead, and bull trout are all listed as threatened under the Endangered Species Act.

On the hillside above the river, blackened spires stand as reminders of the 2005 School Fire, which consumed the watershed and destroyed forests that had protected the stream banks and floodplains. It was the fire that finally opened the door to fish restoration efforts on the river.

“Round steelhead nests along the river for 100 years and now we’re putting it back in,” says Fremier. Repurposing the timber, the WDFW began an intensive, collaborative effort to rebuild the Tucannon. Five-farmed trees were flown in by helicopter and arranged like pick-up sticks in the water. To my eyes, the scene is a jumbled mess and difficult to navigate on foot, but it is pure paradise for Chinook salmon.

Technically called “large pieces of wood,” the logs create eddies and side channels where fish can safely hide and feed.

In the river, Parzych demonstrates the use of a device called a piezometer. First pounding a stake into the streambed and then threading a long white PVC tube down into the hole. This simple apparatus is a tool for measuring water level as well as the interaction between stream water and groundwater, called hyporheic exchange. In the hyporheic zone, the two water sources constantly intermix, regulating oxygen levels in the streambed gravel where salmon make their nests.

Parzych’s research provides compelling evidence that the logjams are indeed making an impact. Where water levels were once uniform, the Tucannon is now a composite of deep pools and shallow reaches. The pressure differences lead to enhanced hyporheic exchange, he says.

“One sign of this is a healthy increase in downwelling, or the movement of streamwater into the groundwater. “There is more recycling and less time for oxygen to be removed,” says Parzych.

“The more water moving through the hyporheic zone, the better it is for the fish and incubating eggs.”

Steve Martin, director of the Snake River Salmon Recovery Board, says that over the last ten years, water temperatures in the Tucannon have dropped dramatically and water flows are nearly double. Stream sediments have decreased from 63 percent of the streambed to 1 percent.

“Intuition says the large wood is in the changes, but we need Joe Parzych’s data to prove it,” says Martin. “Precipitation and snowpack are part of the variables involved, but all the other streams in the Blue Mountains are flat or have base flows that are dropping. If we document that large wood doubles water flows, it will have huge implications for rivers throughout the Pacific Northwest.”

WDFW officer Karl wades over to an eddy behind a large tree trunk and points out two round steelhead nests along the bank. By all appearances, the restoration efforts have significantly boosted fish populations in the Tucannon, but Fremier says they’ll know for sure in a few years. Young salmon will return from the ocean as adults ready to spawn in the river’s cold, clear waters.

[Image of young salmon and steelhead nests]
Recycling Passion

Engineers at Washington State University take upcycling to a whole new level

BY EMILY SMUDE ‘12

At the Composite Material and Engineering Center, they turn waste—from wood to carpet fiber to wind turbine blades—into composite materials strong enough for new buildings and bridges.

“My passion is the recycling aspect,” says Karl Englund, an associate research professor and Extension specialist with CMEC. “I enjoy figuring out how to deal with trash and turn it into something good.”

A composite material combines two or more materials for an added benefit, such as flexibility, strength, waterproofing, or durability.

“A cake is a composite material,” Englund explains. “You mix things together, like eggs, sugar, and flour, to create something new.”

However, more goes into a composite building material than into a birthday cake, Englund says. The engineer has to consider the science of making the composite, the economics, potential end uses, and the public benefit of the new composite.

Often Englund and other CMEC researchers are approached by industry or government to make something better. Vik Yadama, also an associate professor and Extension specialist with CMEC, is studying how the United States Forest Service could make new building material from the small trees it removes from forests.

Researchers have to be methodical and understand every step that goes into adding benefits. “You have to look at the big picture. You can’t just jump in the middle of the process,” says Yadama.

After identifying the material, the researcher figures out how to process it, says Englund. “How are you going to break down the material and how will you form it into a final composite? And how does this affect the properties?”

In the case of wood, grinding it up gives the engineer more freedom to reshape it, but it could potentially lose its strength. For Yadama’s timber, the best option is to break the wood down into flakes called “strands” and fuse the strands together. This process converts up to 90 percent of the timber into lumber and keeps its structural strength.

A composite also needs to be easy to use, affordable, and marketable. “A lot of people have had really great ideas, but the economics just weren’t there,” Englund says.

Although Englund admits this mentality can be stifling, it’s realistic. When creating new composites, Englund and Yadama have to consider where this composite will be manufactured, how much energy goes into manufacturing it, transportation and work costs, and of course what the material will look like.

“If the material doesn’t look right, it won’t sell,” Englund explains. “Nobody wants to buy off-white toilet paper, for example.”

Once the engineers create the composite, it’s time to figure out if the material works. That’s where CMEC director Don Bender comes in. Bender analyzes the architectural and end-use properties of the composite to ensure that when it goes to market, it’s safe for public use.

“Building codes require products to undergo extensive testing at accredited laboratories such as ours,” Bender says. “If a product hasn’t gone through this rigorous process, then the local building official or inspector can reject its use in buildings for their jurisdictions.”

Once testing has confirmed that the composite product is safe, the client has the green light to take the product to market.

“We generally wouldn’t bring the product to market,” Englund says. “We would definitely patent the material or the process, but we would need a commercial entity or a faculty member would have to start their own company to market the material.”
Tea traditions

Whether it’s the tail end of the nineteenth century or the middle of the twenty-first, the women of Stevens Hall will sip tea on any given Sunday afternoon. For the past 120 years, thousands of women have called Stevens home at Washington State University and embraced its unique traditions.

“It’s an interesting feeling knowing you’re living in a place where so many people have lived before,” says second-year Stevens resident and senior wildlife ecology student Margaret Kreder. “You have a sense of community with people you haven’t even met.”

In the foyer, it’s impossible to overlook the myriad of tea cups placed in glass cases. The impressive collection is one of the greatest treasures of Stevens Hall.

Traditionally, women contribute a tea cup after big events in their lives such as marriage and graduation. Visitors may also offer a cup. Helen Keller and her teacher Anne Sullivan allegedly stopped by for a cup of tea during their 1916 visit. Jacqueline Kennedy may have visited when John F. Kennedy came to WSU as a presidential candidate in 1960.

The tea parties were once a formal affair, but have now adapted to the laidback lifestyle of today’s residents. “I love the old photos of the ladies at tea in their puffy-sleeved gowns,” says junior biochemistry major Michelle Minton. “And then there’s us today in jeans and t-shirts,” adds Kreder.

Stevens Hall was built in the heart of the small Pullman campus in 1895. The college’s first hall for women was named in honor of Isaac I. Stevens, Washington’s first territorial governor. Only the original Ferry Hall, which burned down in 1897, preceded it as a residence. To ensure that Stevens Hall won’t be demolished, it entered the National Register of Historic Places on March 12, 1979.

“We can look around and see the tubing where the wiring was added later on. Or be reminded that the fireplace was once used for heat, rather than just being a nice touch,” says Minton. “We’ve even found pictures of when Stevens first got running water.”

The brick portion of the exterior was molded in a clay pit behind the building, and has endured the Palouse winters for well over a century. Despite obligatory procedures to keep the building up to code and a few modern touches such as TVs and a kitchen, the picturesque building with the columned entrance maintains its original elegance.

Some of the furniture is still there from long before I was even there,” says Linda Seal ’73. “There are couches that are the most uncomfortable things in the world but it is tradition after all. You don’t just throw them out and get new ones. It’s part of the charm.”

“If the carpet gets replaced, it has to be the exact same carpet as before,” explains Kreder.

The building is filled with memorable and quaint parts. A hand-carved cherry grandfather clock was given to the women by the men of Old Ferry Hall in the late 1800s as an apology for a “panty-raid,” in the parlance of the time, which damaged some of the women’s furniture. Just around the corner from the clock sits a baby grand piano that was donated many years ago under the condition that jazz never be played on it, as it was the provocative music of the time—and still jazz may only be played on the piano in the basement.

A small replica of Alexandros of Antioch’s famous Venus de Milo is bolted down to a set of drawers in the entryway because it was once stolen by a group of men. The ladies secured the statue to ensure it will never be taken again. Now the small figure is adorned for special events. “After all she is naked lady, and could use some decorations,” Seal laughs.

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BY KATELYN ORUM ’15

STEVENS HALL TEACUPS (PHOTO SHELLY HANKS)

Stevens Hall memorabilia: magazine.wsu.edu/gallery
From above, forests unroll like truck carpets of maple or pine. Beneath the leafy canopy, however, one might find ginseng root, mushrooms, blueberries, hazelnuts, flower greenery, or even ducks. For millennia, indigenous cultures thrived on sustainable tree-based agriculture, and today these ancient agricultural practices are embracing the tradition through forest farming.

In their book Farming the Woods, Ken Mudge ’80 PhD and Steve Gabriel offer a detailed look at multilayered, multipurpose forest production. A Cornell University professor specializing in agroforestry, Mudge says that healthy forests can produce a valuable range of food, medicinal, and other non-timber products. Coffee and chocolate, for example, are grown under the protective cover of tropical rainforests. Shade-loving ginseng root—selling for up to $600 per pound—is grown in U.S. forests, as are mushrooms, which are often cultivated in log.

Forest farming is also a form of protective conservation, says Mudge, providing erosion control, nutrient recycling, shade, clean air and water, and wildlife habitat. Additionally, trees help buffer extreme temperature and weather events, an additional reason for owning property in the country. Beyond the value of growing trees, forest farming can be a type of mental health therapy.

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IN AN EXAM ROOM AT HIS YAKIMA MEDICAL PRACTICE, FORMER SEATTLE SEAHAWKS RUNNING BACK DAN DOORNINK ‘78 HUNCHES HIS SHOULDERS AND HARDENS HIS BROW AS HE RE-ENACTS A KEY 1979 PLAY AGAINST THE THEN-REIGNING WORLD CHAMPION PITTSBURGH STEELERS. EXPECTING A BLITZ, DOORNINK SAYS, HE LOCKED EYES WITH AN OPPOSING DEFENDER AND THEN GLANCED TO THE SIDELINE.

“Smart guys like him learn how to read the eyes of the receivers,” Doornink explains.

With the snap, the Pittsburgh defender bolted for the sideline, but Doornink broke toward midfield, caught the ball and ran about 50 yards for a touch-down. Doornink says that his hours of studying film, subtle strategizing, and hard practice paid off at that crucial moment.

“This whole play was made by me going like that,” he says, flicking his eyes to one side. “It was all done before it even got started.”

A black-and-white photo from the play now hangs on the exam room wall. Doornink, 59, grew up in nearby Wapato, where the high school football field bears his name, before playing with WSU and the Seahawks. He returned to central Washington 25 years ago to join his brother’s practice at Memorial Cornerstone Medicine.

Broad-shouldered and square-jawed, Doornink still moves with the heavy grace of the gridiron. He cruises the bright corridors of the clinic, noting the practice had moved into the new facility in December.

Doornink says most of his patients rely on Medicare. He manages their treatment to keep them out of the hospital as much as possible.

“In a day, I might see eight patients who have 80 birthdays or more,” he says. “They were a population that worked hard, didn’t look for a handout. There was no safety net. You just did what you had to do. So they’re sort of a fun group to work with.”

Doornink says early work in the nearby orchards and playing sports against other regional farm boys helped toughen him up for his football career. He received a scholarship to WSU where he soon started at tailback while also balancing his demanding pre-med studies.

He says his time at WSU reinforced a sense of hard work and humility that helped carry him through graduation, his eight-season career with the NFL, and medical school at the University of Washington. He notes that he thinks a WSU medical school would certainly benefit rural communities.

“I used the same philosophy in medical school that I used in football,” he says. “I’m not the smartest kid on the block, but if you’re not a brilliant person, what do you do? You study more than everybody else.”

Doornink credits his steady work ethic and strong faith for his successes. He has a comfortable patient load. He and his wife live just minutes from the clinic.

“But he says he will never forget those small, glorious moments on the field: The fake-out against the Steelers in ’79, his first WSU start on national TV against Stanford, and maybe his greatest—rushing 126 yards against the defending champion Los Angeles Raiders in 1984.

Doornink tilts back his head and closes his eyes. A grin spreads across his face as his right hand grips the empty air, like he can almost feel the ball and hear the cheering fans again.

“I can see it in my vision,” he says, “where the guy was and the moves I had to make. It’s still sort of exciting to think about those times.”

WSU reinforced a sense of hard work and humility that carried him through graduation, his NFL career, and medical school.

BY JACOB JONES ’07
had all escaped the limits of their previous lives in Latin America by

Nobel Prize for Literature. Márquez published the bestselling

screen of most Americans. That began to change in 1970, when García

than Borges, Latin American literature was not really on the radar

English translation, of his landmark book

Borges, already known among American literati from the appearance

Julio Cortázar. Their forefather was the Argentine master Jorge Luis

before arriving in Pullman, he had been a member of a jet-setting

Peruvian writer to have spent time teaching and writing. Right

man, of the 2010 Nobel Laureate of Literature Mario Vargas Llosa.

was the almost secret presence in the fall of 1968, when I was a fresh-

and early 1970s. For me, one of the most precious of these anomalies

I always remember as being a little quirky, but in the same positive way that the young man wearing the shirt seemed to appreciate the “weirdness” of Austin. For example, I’m proud to have studied at WSU at the same time as cartoonist Gary Larson. And let’s face it: Gary Larson must be a little weird, or if he is not, at least those hilarious Far Side comics most definitely are. I like Mike Leach, too, even though he might not be the most typical football coach.

During a recent visit to the WSU Honors College, I was reminded of how anomalous the campus was when I was there in the late 1960s and early 1970s. For me, one of the most precious of these anomalies was the almost secret presence in the fall of 1968, when I was a fresh-

man, of the 2010 Nobel Laureate of Literature Mario Vargas Llosa.

There was hardly a more unlikely place for the young and radical Peruvian writer to have spent time teaching and writing. Right

before arriving in Pullman, he had been a member of a jet-setting

group of writers that included 1982 Nobel Laureate Gabriel García Márquez, Mexican writer Carlos Fuentes, and the Argentine writer Julio Cortázar. Their forefather was the Argentine master Jorge Luis

Borges, already known among American literati from the appearance

of his stories in The New Yorker in the 1960s, and the publication, in

English translation, of his landmark book Ficciones in 1982. Other

than Borges, Latin American literature was not really on the radar

screen of most Americans. That began to change in 1970, when Garcia

Márquez published the bestselling One Hundred Years of Solitude in

English translation, and in 1971, when poet Pablo Neruda won the

Nobel Prize for Literature.

These were writers who highly valued being cosmopolitan. They had all escaped the limits of their previous lives in Latin America by

finding refuge in the city that they considered the cultural capital of the West—Paris. When they were not in Paris, they lived and worked in large and vibrant European cities such as Barcelona and London. Today, Vargas Llosa lives most of the time in Madrid. In this context, then, his presence in Pullman was an anomaly in his otherwise lifelong commitment to urban life.

Why was this upstart Peruvian writer in Pullman? It had ev-

erything to do with something of an anomaly on the WSU faculty: Wolfgang A. Luchting, a professor of German nationality who had completed a degree in American studies in Germany, learned Spanish in Peru, and taught an unlikely combination of German and Peruvian literature in the Department of Foreign Languages. Luchting was also

Vargas Llosa’s translator into German. Vargas Llosa was considering the possibility of an academic career, so he accepted the invitation to WSU. When the author was in Pullman, he worked on two very lengthy books: the novel that eventually was published under the title Conversación en El Catedral and a book-length critical study of the work of Gabriel García Márquez.

Most students and faculty who were reading Vargas Llosa’s novel The Green House, attending his four public lectures, or hosting him in Pullman for his semester-long stay in 1968 are no longer living near WSU. To a large degree, the fact that a future Nobel Laureate taught a literature class in Spanish on campus has been forgotten. Never-

theless, even though the Nobel Prize is awarded on the basis of each writer’s total work, one could reasonably argue that the centerpiece for his Nobel recognition was actually written in Pullman. That ar-

gument, which I personally would defend, is that his most complex and ambitious novel, Conversación en La Catedral, was the key piece of his Nobel Prize.

As a freshman, I was not among the rarefied American literati who had read Vargas Llosa’s two extant books in English transla-
tion—The Time of the Hero and The Green House. I just happened to be in a Spanish advanced grammar class and attended the writer’s four public lectures upon the recommendation of my Spanish professor Billy Weaver. The truth is, I was an anomaly myself; a first-generation college student of a working-class Scandinavian family from Tacoma, I became fascinated with the work of Vargas Llosa, then Chilean culture, and then Latin American literature. Since completing my doctorate in Latin American literature, I have published several books on this literature as part of an academic career that has as much to do with Vargas Llosa, Luchting, and the WSU Honors Program as has my graduate training.

It was really the special anomalies of the place that made all the difference for me. Only recently have I realized just how important those formative years were for me at WSU. Today, I am proud to be associated with the Vargas Llosas, as well as the unorthodox Gary Larsons and Mike Leaches of this unique institution.

Recently on the streets of Panama, a t-shirt with the phrase ‘Keep Austin Weird’ caught my attention. Pullman, unlike Austin, has never struck me as a particularly weird college town. The experience of being at Washington State University, neverthe-

less, has something that

our story.

The unexpected

presence of Mario

Vargas Llosa

BY RAYMOND L. WILLIAMS ’72


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A 1972 WSU graduate, Raymond L. Williams is the author of fifteen books and currently holds the title of Distinguished Professor at the University of California, Riverside, where he teaches Latin American literature. His book Mario Vargas Llosa: A Life in Writing was published by the University of Texas Press in December 2014.
Did a story inspire you or stir a memory? What’s your own story? Do you have a photo to share?

We’d love to hear about your life, your thoughts about the magazine, and your WSU experiences.

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Traveling ecologist Rexford F. Daubenmire

In a spiral-bound notebook, now yellowed after nearly seven decades, blue ink in a neat hand sprawls across page after page listing plant after plant from grasses to trees. Buried within Washington State University’s Manuscripts, Archives, and Special Collections lie this and myriad artifacts of WSU botanist Rexford F. Daubenmire’s scientific life. Daubenmire devoted his life’s work to answering one of ecology’s central questions: Did plant communities exist as discrete, predictable entities, or were they more or less random configurations of plants?

A field trip guided by Daubenmire reveals the practice of ecology and the region’s community of science in the middle of the twentieth century. In 1948, shortly after coming to Pullman from the University of Idaho, Daubenmire developed a six-week summer field course that surveyed the northern Rockies. He opened the course to students in botany or forest and range management, as well as inviting professionals from other regions who wanted an intensive ecological introduction to “the finest scenery in North America,” as a course advertisement put it. For $25 tuition and $0.97 per day for food, students received six credits in field ecology in the northern Rockies.

Seven students with various experience from universities in Idaho, Michigan, Montana, and Tennessee joined Daubenmire. His wife, Joan, assisted him as an instructor, part of a lifelong professional partnership that included co-authoring a seminal work on regional ecology published in 1968 through WSU Extension, Forest Vegetation of Eastern Washington and Northern Idaho.

From July 11 to August 12, the party drove more than 3,000 miles. They first headed west through the Palouse to the rugged seashore of Palouse Falls before venturing north toward Spokane. They then crossed Lookout Pass to Montana where they circled clockwise from Missoula toward Billings, to Great Falls, and on to Glacier National Park before returning to Pullman. They often camped in the woods and plains off the beaten path. Most of the six weeks and 3,000 miles passed uneventfully. Rain delayed them on occasion. They forgot supplies once and retraced their path. Another time, a landowner at a dude ranch refused the party passage. And there were casual days, going fishing—successful.

Throughout their travels, these peri-patric ecologists met other researchers at nurseries and experimental research stations. Part of the larger scientific community, these experts knew the local areas intimately and directed the party toward particular sites to see specific ecological processes. These often remote locales, Daubenmire and his colleagues found and categorized plants, work that contributed to Daubenmire’s lifelong project, in the best tradition of the land-grant system, the WSU botanist consistently sought practical applications. Ecologists like Daubenmire believed that if plants existed in communities, experts could predict their behavior better and thus manage forest and range more effectively. So, he and students sought out relatively undisturbed landscapes—climates in ecology’s jargon—to study plant associations in natural settings. They gathered and plotted data, hypothesized along the way, and built toward conclusions Daubenmire used in subsequent publications.

In the Palouse corridor, travelling ecologists did not simply serve as the eyes and ears of the WSU botanist. Rather, these students, along with others from across the United States, expanded their horizons, developed new skills, and formed a sense of community. The tradition of the land-grant university asks its students to be free to follow their interests and curiosity. Daubenmire’s work demonstrates one man’s place in communities—natural and scientific—and shows an abiding concern about the fate of the Northwest’s forest and rangelands, an interest in the practical and theoretical rooted in this place where he traveled wide and deep.

Adam M. Sowards is an environmental historian and professor at the University of Idaho.
Birth of a medical school

BY DOUG NADVORNICK

Like the best athletes, sometimes a university has to run full speed then shift directions. For months beginning last summer, WSU representatives pushed hard for a new medical school. The legislature approved the authority for the University to create a WSU College of Medicine this spring. Now the work begins to build the medical school.

After the governor’s signature, College of Medical Sciences Acting Dean Ken Roberts and his team pushed into action. They began the search for the new school's founding dean. Teams of WSU faculty and local physicians are writing the curriculum, and staff members are developing the school’s student support infrastructure.

If preliminary accreditation is granted, the university could begin recruiting students in the fall of 2016 and the first class of students could begin in the fall of 2017.

Those students will spend their first two years of academic studies on the Spokane campus. For their third and fourth years, students will work in community settings at clinical campuses in Spokane, the Tri-Cities, Vancouver, and Everett, with an emphasis on primary care.

“We believe that by sending students to one of those places for two years, they will develop relationships with health care providers, patients, and the community, all factors that increase the likelihood that these students will return to practice in these communities,” Roberts says.

The school will go through three accreditation rounds before full accreditation, perhaps by 2020. By 2021, the University hopes to increase the size of its class to 120 students.

Follow the medical school progress: medicalsciences.wsu.edu

Essential health sciences degrees.
 Relevant life sciences research.
 Crucial medical school formation.
 Same WSU quality and experience!
Tomatoes: A Fruit of Myths and Legends

By Larry Clark

A fruit of myths and legends

For a staple found in backyard gardens and farmer’s markets everywhere, the tomato certainly carries its share of myths. The rich, acidic fruit that we often call a vegetable has been considered a poison and an aphrodisiac. Even in late Renaissance Italy, a botanist connected the tomato to the golden apples of Greek mythology.

Despite its rep, gardeners grow tomatoes by the bucketful all over the state, often with help from Washington State University researchers and Master Gardener volunteers.

Tomatoes were no mystery to the South American cultures who first ate them. The first known varieties were cultivated in the highlands of Peru, Ecuador, and northern Chile. It was later cultivated in Central America where it looked similar to a plant the Aztecs called “tomatli.” Spanish explorers took the plant to Europe and beyond, calling it “tomate,” and farmers have grown it similar to a plant the Aztecs called “tomatl.” Spanish explorers took the plant to Europe and beyond, calling it “tomate,” and farmers have grown it similar to a plant the Aztecs called “tomatl.” Spanish explorers took the plant to Europe and beyond, calling it “tomate.”

Italian herbalsist Pietro Andrea Mattioli in 1544 included a plant guide to a yellow tomato, which he called melocoton, the “golden apple.” In 1553, Swiss naturalist Conrad Gesner painted a watercolor of a red pomme amorous, “a love apple,” named for the tomato’s alleged aphrodisiac qualities.

The smelly leaves and stalks of the tomato plant, or its nightshade cousins, may have led English writers to decry the toxicity of tomatoes in the 1590s. However, as Andrew F. Smith writes in *The Tomato in America*, the English may have succumbed to the disease of blackleg, the most serious fungal disease of tomato.

By the mid-1800s, many tomatoes were cultivated all over the continent, including the Pacific Northwest, where they were introduced by missionaries. In 1839, a visitor reported tomatoes growing on the banks of the Walla Walla River. Historian Sidney Warren claimed that Oregon and Washington pioneers boiled them with sugar until thick, added honey, and put them on hotcakes.

The misconception of lethal in poisonous tomatoes spread in apocryphal tales of farmers who ate them anyway, according to Smith. His historical research found few early American accounts about the risks of tomatoes. They were sometimes not eaten because of polluted water used to wash vegetables. Others didn’t like the smell or the taste. Even the tomato’s pests earned mythic notoriety. The fat, three-inch- long green tomato hornworm definitely wasn’t a cute, cute, cute tomato, but “a rattlesnake that could spout poison three feet at unsuspecting farmers.”

Pests still exist for the tomato, as most gardeners know, but Carol Miles, a WSU vegetable specialist at the Mount Vernon Research Center, says the major concern in western Washington is late blight. The fungal disease, which can cause a tomato to shrivel, spin off downy and powdery mildews. Because of the short-growing season, many tomatoes are cultivated in long, tall protective structures called high tunnels. They can capture moisture that leads to infection. Sometimes Ms. Miles and her colleagues discovered a well-ventilated tunnel will reduce the risk.

“As long as the tunnel has good ventilation and the plants are well-managed, there’s not enough moisture to allow the spores to germinate and infect the plant,” she says.

Ms. Miles, with the help of west and side of Washington. About five years ago, she joined other vegetable experts in the Northwest to deal with an odd condition where leaves began to curl up all over Oregon, Idaho, and Washington.

“Everyone immediately thought ‘virus’ because that’s a pretty common mode of plant illness,” Ms. Miles says.

After their labs determined it was physiological and not caused by a dry environment, Miles and others saved a lot of tomato plants, by responding within a week.

Over on the east side of the state, at the WSU Extension office in Spokane County, Master Gardener volunteer Laren Sunde dispenses advice to tomato gardeners daily when she works from May through July. She says a bug problem is eagerness.

“In our neck of the woods everyone wants to put out their tomatoes the first of July,” says Sunde. “That’s way too early.”

Instead, she says, “if you want to have tomatoes in July, the best thing is to start seeds in the house in late February or early March. Harden them off outside during the month of April and early May. Then put them in mid-May.”

Sunde also encourages gardeners to water regularly, not sporadically, especially in dry summers.

For western Washington tomato fans, Miles’ main growing advice is to prune heavily, one or two main stems to open up the plant. “If you don’t prune, you get a lot of green tomatoes. If you prune, you get fewer tomatoes but they are bigger,” she says.

And you definitely want ripe tomatoes. There’s nothing quite like a juicy, savory, and flavorful tomato right out of the garden.

Miles says her favorite way of eating them fresh is sliced in a vinaigrette and served salads. For a real treat, she roasts tomatoes and serves them with red onions, cucumbers, oil and vinegar, salt and pepper. “Top it with feta cheese if I’m feeling adventurous,” she says.

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Out the hack door

SIMULATING CYBERSECURITY ATTACKS TO PROTECT THE SMART GRID

Hackers had a banner year in 2014. They stole hundreds of millions of passwords and other pieces of confidential information from banks, retailers, credit card companies, even film company Sony Pictures. A record number of computer breaches affected more than half of all American adults, costing businesses up to $500 billion, and fueling increased attention to the security of Internet interactions. But the financial consequences of those attacks pale in comparison to the possibility of intrusion and disruption of the electric power system.

From hospitals’ life support machines to nuclear reactors to home heating during bitter cold winters, keeping the power flowing can be a matter of survival. Increasingly the power grid is a smart one, an inter-connected system of electric power generation, distribution, advanced home meters and appliances, and computer control centers. The system can increase efficiency, reduce outages, and possibly lower costs. But with more and faster communication across the system comes greater vulnerability.

At Washington State University, a combination of power engineers, computer scientists, and their industry partners simulate holes and weaknesses in the smart grid, then work out ways to manage the risk of hackers interrupting and subverting the electric power system. Their key to successfully securing the grid is understanding that the threats are both cyber and physical.

“What is the nightmare scenario of an attack on the power grid? If you’re an IT manager alone, you can’t imagine that,” says Chen-Ching Liu, electrical engineering professor and director of WSU’s Energy Systems Innovation Center (ESIC). “We have to bring the two sides together, much like our group of computer scientists and engineers. You have to know enough about the power grid to see what kind of cyberattack would take control and do enough damage to the grid to create that nightmare scenario.”

Liu says a successful attack could cause not just a power outage, but create a tremendous expense for utilities as they replace blown transformers worth millions of dollars each. The threat is not just theoretical; in 2007, Idaho National Laboratory ran an experiment where a cyber attack physically destroyed its Aurora Generator, causing it to explode after rapidly opening and closing circuits.

Even President Barack Obama and Congress agree that cybersecurity is a national priority. “No foreign nation, no hacker, should be able to shut down our networks, steal our trade secrets, or invade the privacy of American families,” said Obama in his 2015 State of the Union, to rare bipartisan applause.

“If you think of the big threat, it’s not just the cyber part. The power grid is always a target, whether it’s terrorists or others,” says Anjan Bose, an electrical engineering professor and former dean of the Voiland College of Engineering and Architecture, with more than 35 years of experience in the field.

“What has been added is that now you might be able to get to the power grid through the cyber systems. That is what worries people.”
He explains that this WSU test bed enables the way data flows from real equipment to control centers, and how different actions such as cyber attacks may impact the physical system. It also helps in analyzing advanced communication technologies in a smart grid. "In the past, you used to get snapshots of the grid, like a picture which would come every four seconds. Now you’re looking at more like a video of the grid with fast sensors," he says. That immediately means more control ability to isolate problems and maneuverability to bring back the power system in case of trouble. Srivastava says the test bed can help analyze responses to both hackers and damage from storms, accidents, or direct physical attacks by humans.

"A big concern is how to survive big storms like Hurricane Sandy. Turns out some of the techniques you need to survive cyber attacks are the same kinds of technology and processes," says Bose. "We build systems to take into account temperature and other environmental factors. Cybersecurity is just another thing we need to do so we can make sure the system is robust and reliable," he says. "Not that the sky is falling. It’s really preventive medicine.”

"Is Pullman a dangerous place? No, but I’m still locking the door on my house. It’s just prudent behavior."

After he graduated from WSU, Whitehead worked on submarines in Connecticut, and then returned to Pullman and the expanding company in 1994. Whitehead says security has always been built right into the company’s electric relays and other equipment. Edmund O. Schweitzer III, PhD, started the company in his basement in 1982, with an industry-changing digital protective relay—a device that monitors power lines and systems for problems. Since Schweitzer, also a former WSU faculty member, had introduced the world’s first microprocessor-based relay, he recognized the potential for misuse through the increase in electronic communications. The relay was now passing more information than ever to an electric utility’s control centers through dialup modems. Even in the early 1980s, Schweitzer required two passwords to use the relay, one for technicians to evaluate problems and another for engineers to actually change settings.

“Essentially it’s the same on both the two-part access at SEL’s offices, where a person might need both an electronic badge and a password. We take data security very seriously in our headquarters and apply it to substations out in the middle of nowhere,” says Whitehead. “It’s a layered approach.”

He says there are advantages to securing the grid, as opposed to guarding strictly online transactions. When it comes to cybersecurity, the challenge for Target or banks is abstract; it is money, but it’s a handful of bytes in a computer, says Whitehead. “When you take the money from my account, or give me a whole bunch, there’s no connection to the physical universe. I don’t tell all of a sudden a $1 million dollars sitting in my wallet.” For the electric power system, the cyber part really does connect back to some physical thing, whether it’s a electrical current or an open circuit breaker.

Another advantage is that power systems are overmeasured, “so if something is able to spoof one location, we have another location that essentially measures the same thing,” he says. If something is wrong or values don’t match, the attack can be identified and isolated. When they complete new products, Whitehead’s research team at SEL works in a similar way to the WSU scientists, and sometimes with them. “Our cybersecurity team has a text bed where they put in equipment, and then start poking holes in it or attacking it.”

PUT ON THE HACKER HAT

Adam Hahn, a computer scientist at WSU, says researchers must consider the worst ways to break the power system if they want to mitigate against attacks.

“How can you defend against something you don’t know? You have to know what an attack is going to do before you can defend against it,” says Hahn. “In other engineering fields you try to design a system that meets some functional requirements. Here we try to figure out how we can violate whatever assumptions they made.”

“Instead of making a system work, we’re trying to make a system fail.”

Hahn came to WSU in 2014 after working in the private sector on cybersecurity, primarily for the federal government. He says cybersecurity really came to the forefront after the 2010 revelation of Stuxnet, the powerful computer “worm” that could propagate and infect computers to control machinery and industrial processes. Stuxnet was a magnitude of order worse than anyone imagined, says Hahn. It pushed into high gear the research into cybersecurity of physical systems like the power grid. Hahn and WSU computer scientist Carl Hauser work with students to infuse the security mindset—in effect, to think like a hacker. Hauser says students will often come up with good security ideas, but don’t necessarily think about how their ideas might be circumvented.

“Having built this thing, it’s hard for some people to ask, ‘Where are the holes?’ You don’t want to admit there are holes,” says Hahn. They teach their students to apply the same kind of security concern to attacks and defensive games on the operational systems, called red team-blue team competitions. Hahn isn’t worried that they’re teaching students to be hackers. “You protect yourself and adversary and attack the system. As a security person that’s what you really need to focus on,” says Hahn.

To Hauser, invasion is inevitable. Experience shows us that computer security will be breached, just not very often, he says. When there’s only one line of defense, it reduces planning for the attack that makes it through.

The sensor helps in monitoring the simulated power grid using the same hardware as a substations, says assistant professor Srivastava. In the field, he uses a Raspberry Pi, an open-source computer device, to control the large computer monitors as yellow squares and lines representing electricity flow. He is able to simulate cyber attacks on the smart grid, shown on large computer monitors as yellow squares and lines representing electricity flow. He is able to simulate cyber attacks on the smart grid.
It becomes an arms race over the security of computer systems, and focusing 100 percent of their research on the power grid,” says Bose. “There are other parts of fields.

This is a very rare group in terms of our combination of power engineers and computer scientists,” says Hauser. “In turn he and the other computer experts learn from engineers and other short-lived products, power equipment lasts up to 30 years. That makes it tough to build computer security systems that can block out hackers of the future, perhaps even armed with the capabilities of ultrafast quantum computers.

Hamlin and Webb took the knapsack code and introduced complex number systems beyond binary and encryption method in the 1970s, but it was cracked easily.

The trick is to find the right combination of objects to fill the knapsack. It was originally tested as an encryption scheme and exposed data.

One alternative comes from WSU mathematician Nathan Hamlin’s doctoral work with his advisor Bill White, an associate mathematics professor. They took a math puzzle from the 1800s and the knapsack code and revised it to make it a much harder problem.

With advances in computing power possible leading to very powerful quantum computers, hackers could solve quickly through existing encryption. “Basically, a quantum computer could perform multiple calculations simultaneously making it a threat to the encryption scheme and expose data,” says Hamlin.

Quantum cryptography

A smart grid, or any computer system, guards against attacks by encrypting its data for communication. Contemporary encryption is designed around complex mathematical number theory and small prime numbers. RSA, an acronym from the names of its inventors, rests on which the product of two large prime numbers is factored to make an encryption key.

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The original knapsack problem begins with a large group of things (knapsacks) and small number of objects. Someone picks the right combination of it and takes it home.

In quantum cryptography, the problem is solved differently. It has become a scale problem, says Whitehead. “How do we secure all that data, as the data rates get faster and faster and the volumes get larger and larger?”

Hahn also points out that, unlike smartphones, home computers, and other short-lived products, power equipment lasts up to 30 years. That makes it tough to build computer security systems that can block out hackers of the future, perhaps even armed with the capabilities of ultrafast quantum computers.

Moreover, he says, the “Internet of Things,” with its interconnected devices from refrigerators to light bulbs to smart meters, can exacerbate security concerns when they get picked up quickly by consumers. “We don’t think about the risk before we do the adoption. From a security perspective, we’re always chasing the problem,” says Hahn.

Despite these challenges, the WSU engineers and industry researchers realize most people just want the electricity to work. “My expectation when I go home is that I hit that light switch and the lights come on. I think it’s the same for all consumers,” says Whitehead.

Protecting power transmission and distribution from hackers or storms keeps the TV on and businesses running. This is something the smart grid can do well, as long as it’s secure.

That’s not helpful. It doesn’t lead you to doing the things you should be doing to make the system resilient,” says Hauser. Instead he recommends that people look at computer security as risk management. That makes it easier to talk about how to contain damage in the rare instances when attacks succeed.

Hauser has worked with power engineering faculty for over 10 years on how to secure the communications that take place in the power grid and understanding the risks associated with different types of cybersecurity failures.

In turn he and the other computer experts learn from engineers about how to build control systems that fail gracefully and rebound after problems, just like the power grid itself. Their collaboration doesn’t end with research. WSU’s graduate students take courses taught by the two disciplines, a unique combination that benefits both fields.

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Family and Education Intersect at WSU Pullman

Thinking of going to graduate school to enhance your career? It’s a big decision—particularly if you have children. Life can quickly become complicated when you are considering the well-being of your family and the stress of a graduate program.

Washington State University is attuned to all the issues graduate students face, from housing to health insurance and the quality of childcare and public schools. By providing a friendly, welcoming environment for graduate students and their families, WSU and the surrounding community are committed to making your graduate experience successful.

When deciding where to attend graduate school, Chyneecce Temple of Tacoma, Washington, looked for a quality graduate program that would also be a good fit for her daughter. Assuring that her 4-year-old daughter, Conniece, would be in a safe environment that values quality childcare and public school education was important to her. When she visited WSU, she knew it was a good fit. Chyneecce is now in the second year of the counseling psychology doctoral program at WSU. Her daughter is learning the alphabet at a local community childcare center.

“My daughter feels completely at home here,” said Chyneecce. “I love the same time, as a single parent I am determined to be a good role model for her, which includes pursuing an education and a meaningful career for myself.

In addition to a family-friendly environment, WSU had the program in counseling psychology that fit Chyneecce’s career goals. “When I found out that WSU had the program I wanted, I came to visit and had such a positive experience,” she said. “All of the people in the department and the faculty were so nice. I knew this was where I wanted to study. I’ve really grown here. ‘I’ve learned to become more independent and motivated, and my daughter has also grown exponentially.”

Chyneecce was awarded an assistantship and free waiver from her department to help pay costs, as do many graduate students at WSU. Including students who receive scholarships, the majority of graduate students at WSU receive some form of financial assistance—and many finish their degree programs with no student loan debt. That’s a good place to start for young families embarking on new career paths.

“Chyneecce’s research at WSU is focusing on intra-group racism based on skin tone, particularly friendship formation and friend selection among African American women based on skin color. Her heart is in empowering women of color, and her doctorate from WSU will help facilitate that passion. When she graduates in 2017, she hopes to find work in a community mental health facility.”

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On a cool evening last April, at exactly 8:01 p.m., the International Space Station traced a bright silver arc over Pullman. Inside, astronauts went about their routine while a small sensor scanned the air for hazardous vapors and relayed the data to flight controllers in Houston.

Meanwhile, 200 miles below in the rocky Syrian desert, soldiers searched through rubble carrying a handheld device that sounds an alarm in the presence of chemical warfare agents. At airport security gates and customs stations all over the world, similar devices sniff out explosives and narcotics.
The technology behind those detectors is finding its way into the medical field as a rapid, ultrasensitive method to diagnose disease. It is also helping scientists probe the obscure workings of metabolism and complex conditions involving cancer and the immune system.

That technology is called ion mobility spectrometry or IMS. While it may be unfamiliar, IMS is emerging as one of society’s most powerful workhorses, able to detect virtually any substance based on the speed of its molecules as they shoot through a cylinder. IMS is emerging as one of society’s most powerful workhorses, able to detect virtually any substance based on the speed of its molecules as they shoot through a cylinder. IMS is a method to identify the chemical makeup of an unknown sample by measuring its mobility through a gas-filled cylinder. A charged particle is introduced into a tube that contains a gas, and the particle’s speed is measured as it moves through the gas.

The door opens behind me and Bill Siems ‘74 PhD comes in with a cup of coffee. Research professor and master of the mandolin, Siems has played a pivotal role in many of the Hill lab breakthroughs.

Dr. Brian Haack and Jessica Tufarollo follow behind. I listen as they chat with Hill about the progress of their dissertation projects. Haack is refining IMS for national security measures and Tufarollo is building what could be the first marijuana breathalyzer. Within a year or so, their faces will be featured in the row of red frames—the last students to join the Hill legacy at WSU.

Hill grew up in Helena, Arkansas, a town on the Mississippi and birthplace of the Delta blues. It was the 1950s and KFFA,公共广播 radio station that Hill grew up listening to, had just ushered in the first Earth Day along with acclaim for Rachel Carson’s clarion call, *Silent Spring*. It was the 1950s and KFFA, public broadcasting radio station that Hill grew up listening to, had just ushered in the first Earth Day along with acclaim for Rachel Carson’s clarion call, *Silent Spring*. Hill entered graduate school at the University of Missouri and was taken under the wing of a dynamic young professor named Walter Aue. There, collaborating faculty members studied moon rocks retrieved from the first lunar landing and Hill’s best friend was conducting the organic analyses.

There were looking for traces of life on the moon—searching for amino acids,” says Hill who was thrilled by the research. In the end, the scientists found no evidence of lunar life forms but the experience sparked Hill’s interest in the field of trace organic analysis. He soon found himself immersed in the lab for hours on end, tuning out tiny concentrations of pesticides and heavy metals contaminating the environment.

As often happens when living through historic times, Hill and his fellow graduate students were only vaguely aware of the revolution unfolding around them. The early 1970s with its black power rallies and anti-war protests, or VOCs, or organic vapor compounds, was almost too much to bear. Hill had to put it on the back burner. “There were problems with the technique and people had decided it wasn’t going to be a useful analytical tool anyhing,” he says.

Hill had his mind on other projects until 1982 when he received tenure and felt free to gamble a little. “I understood why ion mobility didn’t work well,” he says, “I wanted to try building an instrument the way I knew it should have been done.”

He recruited graduate student Mike Baim ‘84 PhD and the two of them built IMS USE ON SPACE STATION BEGINS

1990s: ENVIRONMENTAL AUGMENTATION

2001: IMS USE ON SPACE STATION BEGINS

2005: FOOD QUALITY AND METABOLIC APPLICATIONS

2011: QUANTUM MEASUREMENTS LOOKING TOWARDS ENHANCED DETECTION

1982: FIRST COMPUTER-CONTROLLED IMS

1980s: CHEMICAL MINE CLEARING AGENTS, CBW DETECTION

The air of excitement continued as Hill followed Kaufer to Nova Scotia in 1973 when the professor was hired to run a trace analysis center at Dalhousie University. “It was because Karasek had an exciting new tool called ion mobility and had just started using it for analytical work,” he says.

In Karasek’s lab, Hill and the other students were free to test a wide range of compounds including narcotics and explosives. They learned the basic mechanics of IMS but had yet to discover its full potential.

“We thought it was just a rapid method of separating and analyzing volatile organic compounds, or VOCs, or organic vapor compounds,” says Hill. This alone was impressive as it gave the chemist a new tool capable of identifying substance in milliseconds.

In 1976, Hill joined Washington State University as an assistant professor. Though eager to continue his work with ion mobility, he had to put it on the back burner. “There were problems with the technique and people had decided it wasn’t going to be a useful analytical tool,” he says.

Hill decided to put his time with other projects until 1982 when he received tenure and felt free to gamble a little. “I understood why ion mobility didn’t work well,” he says, “I wanted to try building an instrument the way I knew it should have been done.”

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Buried by their success, Hill took Baum to his backyard to test soil near dandelions that had been sprayed with the herbicide 2,4-D. “The sample about blew the instrument,” he says. Hill and Shumate collected and tested samples from across Pullman and found traces of 2,4-D in each one. “We never could find any proof of 2,4-D in them,” he says.

Hill was about to accuse poor Baum of being a sloppy chemist but instead took a horseback trip into Idaho’s pristine Gospel Hump Wilderness to search for uncontrolled soil samples. “When I came back and tested them, every one of the samples still had traces of 2,4-D,” he says. Baum was vindicated but Hill was mystified.

One day, Hill heard about a company in Utah that sought to sweep “all the neutrals” out of an ion mobility spectrometer to commercialize it. Hill was ready for a new challenge. At that time, IM could only identify volatile organic compounds, yet a world of nonvolatile molecules remained. “How can we get compounds like large proteins into IMS detectors to measure them?” asked Hill. They tried a number of new laboratory techniques, but it wasn’t coming together.

The answer arrived through another of Hill’s grad students, Chris Shumate ’89 PhD, who heard about electrospray technology at a conference in 1985. Electrospray uses high voltage electricity to turn liquids into an aerosol of ions. It is especially useful for ionizing proteins and other large molecules. Setting another milestone for the lab, Hill and Shumate built their first electrospray mobility spectrometry unit in 1986.

The discovery broadened the use of ion mobility spectrometry and set the stage for future work in the field of medicine. In 1995, Hill, Siems, and graduate student Ching Wu ’97 PhD, advanced it yet further when they successfully coupled an IMS to a mass spectrometer, which can be likened to a tiny scale for weighing molecules. “The combination gave us a complex array of mass and mobility information never before possible,” Hill says. “It allowed us to identify molecules in a much more comprehensive way.”

With ion mobility-mass spectrometry, or IMMS, Hill and his graduate students eventually found the key to mapping the chemical processes involved in health and disease. IMMS can measure hundreds of metabolites, physiological byproducts called metabolites, of using IMMS as a tool for mapping the chemical processes involved in health and disease. IMMS can measure hundreds of metabolites, physiological byproducts called metabolites, and can be used to monitor physiological changes using saliva or breath instead of drawing blood, which is problematic in space,” he says. Several versions of IM have also been used for monitoring air quality on the space station since 2001.

Hill’s cell phone rings playing Muddy Waters’ “Bad to the Bone.” While he tends to the call, Hauck and Tufariello invite me to the lab to see the ion mobility instruments. Hauck is polite and articulate. “This instrument is currently the most accurate IMS in the world,” he says, introducing me to a large machine bridging with x-ray projections. Hauck explains that his doctoral project involves fine-tuning the accuracy of IM instruments for national security purposes. His goal is to eliminate the number of false positives that occur while searching for drugs, explosives, or chemical weapons agents, yet not err on the side of false negatives, which could result in disasters. “The government wants to set a standard for 0 percent false negatives,” he says.

Tufariello is a freckled former art student from New Jersey who came to WSU on a whim. I watch as she tinkers with several small instruments, one of which will become a marijuana breathalyzer for detecting THC in human breath. The idea for a marijuana breathalyzer grew out of a longtime friendship between Hill and Nick Lovrich, WSU Regents Professor Emeritus in political science. The two have neighboring cabins in North Idaho’s Selkirk Mountains where they’ve spent vacations since 1977. One night in 2009, the two were seated at the same table at a WSU fundraiser. Their usual conversation revolved around fishing, barbeques, and the like, but that night Lovrich finally asked Hill, “Just what kind of work do you do?” Hill replied that he was an analytical chemist and explained the concept of ion mobility. “What do you do?” Hill asked in

From left: doctoral students Brian Hauck and Jessica Tufariello. Below: Brian Clowers.
return. Lovrich said he worked with law enforcement and was trying to help control impaired driving due to illegal or prescription drugs. “Why don’t you use a breathalyzer to detect drugs in the breath?” asked Hill. “No such thing exists,” said Lovrich. “Interesting,” said Hill. “I think it’s possible.”

The two obtained funding and Tufariello volunteered to tackle the project with the intention of studying an array of drugs. Soon after in 2012, Washington state voters approved Initiative 502, which allowed the legal use of recreational marijuana. Hill and Tufariello changed their focus to the detection of the cannabinoid THC in human breath. “I believe it will work,” says Hill, “but we have only just begun the study in breath and how it correlates to blood levels of THC.”

Though the marijuana breathalyzer is still under development, the initial prototype is so encouraging that the National Highway Traffic Safety Administration and the United Nations Office on Drugs and Crime are interested in the technology.

When Tufariello’s project is completed, Hill and Siems will slowly begin to close up shop. Brian Clowers ’05 PhD, who not long ago took notes in Hill’s classes, will carry on the ion mobility work in his own laboratory across the hall.

“There is still a lot of research to be done in the realm of IMS,” says Clowers, particularly in glycomics, the study of the body’s sugar molecules. The work promises to shed new light on immune system function as well as how cells recognize bacteria and viruses and whether or not a cancer develops.

In mid-April, Hill took a preliminary step away from the chemistry lab and planted 600 young fir trees near his daughter’s house outside of Pullman. “I’m going to have a U-Cut Christmas tree farm,” he says—no doubt, where wandering customers will hear holiday blues drifting through the grove.

Hill will eventually transition to the role of consultant for academic and industrial research. He’s happy with the way things have turned out. “I feel great,” he says. “To be one of the earliest people in ion mobility ... and to have said that it could be used for everything, and being it turn out to be true. It’s been a lot of fun.”

CHEMICAL WARFARE AGENTS

The military uses ion mobility spectrometry (IMS) for detecting chemical warfare agents like mustard gas or the nerve agents VX and sarin. More than 150,000 handheld units are currently deployed worldwide to help soldiers monitor the disposal of chemical weapons as well as warn of their accidental release. IMS is also used in a forensic manner to determine if chemical agents—banned for warfare by the Chemical Weapons Convention of 1993—have been used for combat or to attack civilians, such as those documented in the ongoing Syrian civil war.

FOOD SAFETY

The safety of our national food supply relies on the use of accurate screening methods to detect chemicals, bacteria, or other contaminants as food travels from farm and processing plant to local markets. Ideally, detection methods should be fast, sensitive, and portable—all characteristics of IMS, which is gaining ground as an analytical tool of choice for the food industry. IMS can detect traces of pesticide residue on food as well as identify mold and bacteria. IMS is also used to monitor quality during the production of cheese, beer, wine, and pharmaceuticals.

GLYCOMICS

Glycomics is the study of the body’s sugar molecules, or carbohydrates. Assistant Professor Brian Clowers is developing innovative IMS techniques to identify the various forms of carbohydrates, which can be turned into novel therapeutic drugs like Herceptin®, an FDA-approved treatment for breast cancer. “There are a range of carbohydrates in a biological system which appear in different states for healthy and diseased tissue,” says Clowers. “We don’t have fast, sensitive tools to differentiate them right now, but we are developing them.” Clowers expects many more drugs like Herceptin® to be developed in the future.
**Cuba, adiós**

A secretive telegram — wired to Santiago, Cuba, in April of 1962 — forever reset the course of Lorenzo Pablo Martínez’s life, stripping away his teenage hopes for a prestigious musical scholarship in Europe and exiling him to an unfamiliar culture as a political refugee in eastern Washington.

Martínez ’67 recalls a surge of outrage and confusion as he watched his mother pack bags for him and his 14-year-old brother. Both would depart for America in less than three days, leaving behind their parents and sisters, their home and dreams, everything they had ever known.

“I’m not going anywhere!” he remembers defiantly telling his mother.

Neatly folding another outfit, she ignored his outburst and continued packing their suitcases for the trip to Havana and then Miami. The family had traded many favors and risked imprisonment for his freedom. He should be thankful.

“You’ll have a rainbow of opportunities,” she said.

Despite his protests, Martínez and his brother would join more than 14,000 unaccompanied Cuban children expropriated from Castro’s communist regime under the “Operation Pedro Pan” relocation effort between 1960 and 1962. Children went to temporary shelters or foster families in 30 states around the country — settling into asylum and paving a way for other family members.

As Martínez made his way in a new society, the universal language of music would continue to define his future. In a recent memoir, Cuba, adiós: A Young Man’s Journey to Freedom, Martínez recounts his first days in a Florida boy’s camp, his musical studies at the University of New York at Fredonia School of Music. As he pursued his master’s degree in musicology at WSU, finding his artistic self in New York, and working on a mystery novel for young adults, Martínez notes many of those children were part of a sailboat crew exploring Mayan ruins and history in southern Mexico.

Martínez translated into Spanish all 12 episodes of the 1968-1969 children’s show The Secret Voyage of the Mini, which starred a young Ben Affleck as part of a sailboat crew exploring Mayan ruins and history in southern Mexico.

Martínez published a picture book, The Ballerina and the Peanut Butter and Jelly Sandwich, in 2010, and has written two bilingual books for children that are awaiting publication. He’s currently working on a mystery novel for young adults.

Nearby, other young exiles hoped for similar reunions, including 63 Pedro Pan children placed with families in Colfax. Martínez notes many of these children were much younger than him.

After graduation, Martínez set his sights on New York and the Manhattan School of Music. As he pursued his master’s degree in piano performance, Martínez also found a place in the city’s thriving gay scene. Moving to New York, he says, felt like immigrating to a foreign country all over again.

“I am so glad that I went to New York,” he says, “but that was very traumatic.”
Ultimately, the city would prove an inviting fit. Martinez spent several years teaching piano, composing arrangements, writing music for the TV show Captain Kangaroo, and publishing children’s songs. He says he later devoted himself to working with international nonprofits.

Cuba has haunted Martinez ever since he left. Throughout the embargo, he had watched the people and places he once loved wither under Fidel Castro’s rule. He says he still longed to return though, despite what he might find.

“Thad always been afraid of going back,” he says. “But at some point the urge to go back was stronger than my fear.”

In 2002, Martinez again walked the streets of Santiago. He saw his childhood home stripped and broken. Oppression continued.

Yet Martinez says he also found inspiration and an intense musical rhythm he had explored before in the Havana airport, and later revisiting his family in Cuba. He channeled that energy into his writing, collecting scenes and moments for his second full-length collection of poems, she says Martínez, “but at some point the urge to go back was stronger than my fear.”

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The Yakima Chamber of Commerce gave their community service award to radio broadcaster RON KING (’67 Comm.) for his work in Yakima. In addition to more than 58 years of broadcast and sales work, Ron has served with the Japanese school boards, Boy Scouts, Chamber of Commerce, and numerous other organizations. The Burien City Council named former Highline Times editor ERIC MATHISON (’89 Comm., Pol. Sci.) a citizen of the year, in recognition of his journalism and volunteer activities.

BUD WITHERS (’70 Comm.) retired from The Seattle Times. TONY BAKER (’72 Comm.) stepped back from day-to-day oversight as editor and publisher of The Register-Guard in Eugene, Oregon. He will remain on the board of directors. The University of North Carolina Board of Trustees voted to extend the term of President JUDITH BENCE (’72 PhD Anth.). She has been president of 1,000 since 2009. ARTHUR BOGAN (’72 Anth.) received the freshwater Mollusk Conservation Society Lifetime Achievement Award. The Bureau of Land Management appointed JULIE WEIKEL (’72 DVM) to the National Wild Horse and Burro Advisory Board.

After many years working as an environmental scientist at Pacific Northwest National Laboratory and serving his community, WAYNE J. MARTIN received the Washington State University Alumni Association Alumni Achievement Award on May 22, 2015.

Martin graduated from WSU in 1978 with a bachelor’s degree in radiological sciences from the University of Washington, and returned to WSU to earn a doctorate in environmental and natural resources sciences in 1996.

The environmental scientist recently retired from Pacific Northwest National Laboratory as acting chief operations officer for the national security directorate. Martin oversee more than 50 research projects for chemical, biological, and nuclear safety at the laboratory. While at PNNL, Martin mentored graduate students and supported intern involvement. He sits on the Kadlec Health Systems board of directors and has chaired the board of trustees at Columbia Basin College. Martin has advocated for education on the WSU Tri-Cities campus and quality departments.

The Burien City Council named former Highline Times editor ERIC MATHISON (’89 Comm., Pol. Sci.) a citizen of the year, in recognition of his journalism and volunteer activities.

Randy Finn (’76 Music) retired as Spokane’s Mead High School choir director after 32 years. BCC Wealth Management awarded Tri-Cities branch executive BRAD FISHER (’79 Bus. Admin.) with its Dick McFarland Volunteer of the Year Award. He focuses on children’s literacy projects.

Mike Churchill (’82 B.S. Eng.) took on the role of vice president of operations at Aspen Antibiotics, where he will lead Aspen’s manufacturing, supply chain, and quality departments. Penn State University awarded AMY FREEMAN (’82 Const. Mgmt.), assistant dean of engineering diversity, with the 2015 Council of College Multicultural Leadership Way Power Award. KATIE KNIGHT (’82 Comm.) retired from her position as Merrier Island’s city attorney after 10 years serving the city. UW Hospitality Advisors appointed MARK LUKENS (’82 B.A.) as managing director. JAY POWER (’82 Ag.) was appointed senior vice president and chief lending officer for Malvern Bancorp in Pennsylvania. MICHAEL KUZMIN (’83 Soc. Sci.) was hired by Envy Montgomery as their regional vice president in Northern, California and Nevada. Vesselon, a predictive stage therapeutics company, announced JON SERBOUSEK (’83 Mech. Eng.) as chairman of their board of directors. MICHAEL BAUM (’84 Ph.D-Chem.) joined Q Laboratories as pharmaceutical and food chemistry laboratory supervisor.

MARTEN (’85 Ag. Econ.) is the senior attorney in their California office. PACIFIC LUTHERAN University appointed ALLAN BESTON (’78 Bus. Admin.) as their new vice president of finance and administration. After 10 years in the Air Force, KEVIN MARTIN (’76 Comm.) joins Acomb Enterprises and Associates in Florida as director of new business development. ALISON REEVES HELFEN (’99 Inst. and Restaurant Admin.) is celebrating the tenth anniversary of her and her husband’s wine shop, The Wine Alley in Renton. The U.S. Forest Service named LEANNE MARTIN (’90 B.S. Sci.) as forester for the northern region, which spans five states. ANTHONY LAROSE (’92 MA Crimin.) published a mystery novel, Cathedral of Salt, inspired by a research trip to study police in Colombia.
He will donate all royalties to wounded veterans, with a goal to raise a total of $10,000. **[BURL BATTERSBY ’12, MBA](#)** had been in Japan a day and a half. He was an exchange student from Arizona. Someone handed him a book and asked him to read it to a classroom of 14-year-olds to improve their English pronunciation. “I think the book was Greek fables,” he says. “I had trouble saying some of the names.” When he finished, Batterbsey heard the desks shuffling. “Three thoughts went through his mind: 1) This is great, I really like teaching English; 2) This is an earthquake! This must be the Japanese version of applause; 3) This is my basement cafeteria.” Three thoughts went through Batterbsey’s mind: 1) Wow, this is great, I really like teaching English; 2) It’s an earthquake! This must be the Japanese version of applause; 3) It’s an earthquake! This must be the Japanese version of applause.

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Ryan will be in charge of supporting sales in the Northwest.

**RYAN MCKINNNY** (’08 Educ.) will join the Pendleton County School District next year in as a Middle School Assistant Principal for the group’s middle school and is excited to return. **JESSICA NUGS** (’08 Soc. Sci.) joined Mark Taylor Rosseter in Scottsdale, Arizona, in 2008 and has quickly moved up in the company. She has recently been promoted to director of sales and training. **Former WSU basketball standout TAYLOR ROCHESTIE** (’09) received the Alphonso Ford Top Trophy at the 2015 International Basketball Hall of Fame Basketball Awards, which recognizes a basketball player who best personifies the spirit of basketball and is an example to their front office team as an account executive.

**CHRISTOPHER MOREHEAD** (’10), who was appointed director of the Bandana, South Dakota, police department while serving as a Pullman Crimson Girls assistant and an assistant digital media strategist in Pullman, is also now a Pullman Crimson Girls assistant coach. He graduated from the University of Washington in 2010 with a bachelor of arts degree in English. He is also a graduate of the University of Idaho in 2015 with a master of business administration degree in sports management.

MEMORIES OF BOBO

I visited the WSU campus in Pullman and saw a baseball game with Buck Bailey in his final year as the Cougars baseball coach. The next year when I joined the freshman class in 1961, I was part of the first group of players recruited to the incredible 13-year BOBO BRAYTON baseball era at WSU. Within one year I had just two more credit courses to complete at WSU and was able to help the Cougars win two conference championships and one league championship. Of course, I don’t know if any of us were able to have a group of our favorite players in the halls of the University of Washington’s School of Medicine. He received WSU’s highest academic honor, the Sigma Alpha Epsilon Distinguished Alumnus Award, in 2011.

**JOHN E. OLEHR** ’65

John E. Oelrich is professor emeritus of dermatology at the University of Washington’s School of Medicine. As a life member of the Cougars baseball team, he was a member of the Cougars baseball team in the fall of 1964. He was a member of the Cougars baseball team in the fall of 1965. He was a member of the Cougars baseball team in the fall of 1966.

**RICHARD NEIL HART** ’66

Richard Neil Hart is a life member of the Cougars baseball team. He was a member of the Cougars baseball team in the fall of 1967. He was a member of the Cougars baseball team in the fall of 1968.

**HERBERT C. BOBCIC** ’67

Herbert C. Bobbic is a life member of the Cougars baseball team. He was a member of the Cougars baseball team in the fall of 1969.

**GEORGE G. MAIN** ’67

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MA-Ma.), 72, March 3, 2015, Modesto, California. LOYD THOMAS SWAIN (71 Cwms.), 66, March 30, 2015, Richland.


DEBORAH SUE WILLIAMS (74 Swms.), 59, March 8, 2015, Seattle. GORDON M. BRADLEY (75 Env. Sci.), 63, April 22, 2015, Pullman.

MA-Lee.), 59, March 25, 2015, Renton. BONG SOO LEE (80 Econ.), 62, March 6, 2015, Taejon, South Korea.


IN MEMORY OF ERICH JOSEPH LEAR, 1948–2015

For a warrior, to be harmonious is to flow, not to stop in the middle of the current and try to make a space of artificial and impossible peace. He knows that he can only give the very best of himself under conditions of maximum tension. Ask yourselves these questions: What am I doing with my life? Does it have a purpose? Is it right enough? A warrior accepts his destiny, whatever it may be. However, he fights to change things, and he makes something exquisite of his passage on Earth.

—Carlos Castaneda

This quote by Carlos Castaneda, a 1960s shaman and spiritual writer, was included in the program of Erich Joseph Lear’s memorial service, held on March 29, 2015, in Bryan Hall Theatre. Castaneda’s books had a profound effect on how Lear approached both life and death. Erich stated his career approach was “to help people reach their goals.” This was evident in his work as an administrator, educator, mentor, and friend.

Erich earned his college degrees in violin performance and was an accomplished musician, playing in a variety of orchestras and chamber ensembles. He began his academic career as a teacher but soon realized that his true calling was as an administrator. While he was a philosophical thinker, Erich was also pragmatic and the combination made for a strong leader. First as the director of the School of Music at WSU and later as the dean of the College of Liberal Arts, he impressed people with his brilliant mind and ability to see both the big picture and the details within. Colleagues were often amazed at how his mind worked, similar to a giant spreadsheet, whether discussing budgets, architectural drafts, or long-range planning for a program. And yet through it all he was humble and respectful of other ideas and viewpoints. For me, Erich was my mentor, colleague, and dear friend. In honor of his retirement in 2011, I performed a voice recital entitled “Words of Wisdom” with pianist and WSU professor Gerald Berthiaume. Lear loved Mahler’s music, and the songs included this lyric:

I have died to the world’s turmoil and rest in a silent domain.

Surrounded by those he dearly loved—his wife, Jane, and his daughters, Sarah and Rachel—Erich lost his battle with cancer on February 18, 2015, leaving this world much too soon. What he left behind was a wonderful legacy of dedication to his profession, students, family, and friends.

BY JULIE ANNE WIECK

Julie Anne Wieck is an associate professor of music at WSU.

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HOW DO YOU MAKE THE BEST CHOCOLATE CHIP COOKIES IN THE UNIVERSE?

You've got to know your dough. Whether you want chewy cookies or crispy dunkers, it's all about chemistry. Especially when it comes to the flour.

At the wheat lab on the Washington State University campus where my friend Doug Engle works, scientists test out different kinds of flours to find out which kind works best. They've got baking down to a science.

Different types of wheat grown in the west come into the lab for testing. Their first stop is the flourmill.

The machinery at the mill grinds up wheat kernels and makes them explode. When the kernels explode, they turn into tiny flour particles that will impact how the cookies look and taste.

While an explosion might sound like it damages the wheat kernel, it actually happens fast enough to keep tiny storage compartments for the long, sugary chains of molecules—the starches—from blowing apart. You need starch in your flour to help soak up the liquids in the dough and help give the cookies their form. If the storage compartment, or starch granule, breaks then liquids will flood the cookie.

Cookie structure also depends on proteins. Cookies have protein, but not a whole lot. So, unfortunately we can't just make cookies for dinner.

At the lab, scientists text out flour that comes from either hard or soft wheat kernels. Hard wheat is great for baking bread, but doesn't work as well for cookies.

"What makes the best cookie is soft wheat," Engle explained. "If you bite into a wheat kernel and it's softer, it will make a better cookie."

All wheat started out soft, but over centuries, hard wheat developed. Scientists aren't totally sure why there are two kinds, but they can tell them apart when they look closely at their structures.

Some of my mice friends helped with wheat research here at WSU. They tried both kinds and preferred soft wheat to hard wheat. We don't know exactly why or how they can tell them apart, but soft wheat is easier for them to chew. Scientists, on the other hand, can use lab equipment to measure the differences.

In the wheat lab, they measure the quality of a cookie by how it spreads in the oven. Most cookie recipes call for all-purpose flour. Usually it contains mostly hard wheat flour so to balance out the dough they call for more water and butter.

With hard wheat, the starches suck up too much of the water in the dough and the cookie shrinks when it bakes. Soft wheat makes a cookie softer and bigger.

After talking to Engle about cookies, I was getting thirsty. Thankfully, the lab of cookies was just a short walk away from a place where you can find milk courtesy of the university dairy cows.

Sincerely,

DR. UNIVERSE

My friend Doug Engle sent Ms. Lori and her curious elementary kids in Bismarck, North Dakota, some flours made at Washington State University. While they investigated the answer with their own cookie experiments, I met up with Engle at the Western Wheat Quality Laboratory.
A celebration of
the life and legacy
of Elson S. Floyd

In the service of education

August 26, 3 p.m.
Beasley Coliseum
Washington State University
Pullman
The tenth president of Washington State University, Elson S. Floyd, arrived in Pullman with aspirations to lead the University into a new era of prestige and growth. Even though Floyd faced an unprecedented budget crisis that drastically cut state funding, an uphill effort to establish a medical school, and a closely-held personal struggle with illness, he worked tirelessly toward WSU’s land-grant mission of service and access to education—and achieved his goals.

Charismatic and intuitive, decisive and visionary, Floyd as a leader inspired the Cougar nation. In just eight years, he elevated the University in student access and diversity, research and private funding, academic and campus expansion, and service to the state.

Floyd died June 20, 2015, in Pullman, after a battle with colon cancer. He was 59. In the wake of his passing, condolences and appreciation flooded into the campus and social media from students, alumni, dignitaries, and state and national leaders. He was remembered not just as an exceptional leader, but as a kind and loyal man who cared deeply about students, family, friends, and colleagues.

“I have a hard time thinking of when one Washingtonian’s loss has been this noted and appreciated. It was very profound all over the state,” says Washington Gov. Jay Inslee. When he met Floyd in 2007, says Inslee, “I remember thinking, this is a real comet that’s going to light up the state. And he did.”

Inslee and others recall Floyd’s warm smile, emotional intelligence, work ethic, and his unselfish and sincere desire to promote education.

“He was somebody who was driven to succeed and change the world. He had a drive and a will that was incomparable. But he was driven for the greater good. It wasn’t about Elson Floyd. It wasn’t about WSU. It was what WSU and Elson Floyd could do for you,” says WSU Interim President Daniel Bernardo ’85 PhD.
Floyd’s commitment to education began in Henderson, North Carolina, where he was born on February 29, 1956. The oldest of four boys, he was raised by his mother Dorothy and father Elson, neither of whom graduated from high school but desired an education for their sons. Dorothy said that, as a child, Floyd would do math problems in the sand because they couldn’t afford paper.

“Dr. Floyd was a rags to riches guy. He was afforded a higher education because of scholarships and financial aid. He was all about providing that chance to others,” says Bernardo.

Because of a scholarship opportunity, Floyd was the first African American to graduate from Darlington School, a prestigious private institution in Rome, Georgia. He excelled at school, both academically and socially as president of the student council, vice president of the honor council, and a three-sport athlete.

He went on to college at the University of North Carolina, where he received his undergraduate and graduate degrees. Floyd began his career in higher education there as an assistant dean for student life. He also met and married the love of his life, Carmento.


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Another of Floyd’s earliest endeavors was an ambitious tour to each of the state’s 39 counties to spread the word about WSU and its academic and service mission.

“Those tours were the essence of what Dr. Floyd did, to reestablish that connection with the ag community,” says Worthy.

“From a faculty perspective, his leadership through the economic crisis, his extraordinary commitment to students and faculty during that time and trying to protect us, was impressive,” says Laura Griner Hill, professor and chair of the human development department.

“He made wise decisions that were both financially prudent and compassionate, but never lost sight of his goals. Floyd was known for his transparency and honesty, and it was never more apparent than during the budget problems. He made it clear that he would safeguard WSU students, faculty, and staff as much as possible.

“Standing up for the students and faculty, defending the budget decision he made, and being a vocal champion for them, was impressive,” says Pruneda.

So after Floyd became president, the worst fiscal crisis in University history struck in 2008, during the recession. Over the next several years, state funding was cut by 32 percent. Undaunted, Floyd was forced to make tough budget decisions, but never lost sight of his goals.

“Floyd’s leadership was not about cutting corners, but about making the right decision and putting the state first,” says Gardner.

Back on campus, Floyd quickly sat with them at sports events and greeted them on campus. As a student, Rafael Pruneda remembers when he first saw the Floyds at the all-campus picnic in 2007.

“He stood out because of his presence,” Pruneda says. “And his leadership impacted every corner of the University, the state, and beyond. I’ll always remember him as a role model. He inspired me to become a leader and make a positive impact on the community.”

Floyd’s leadership impacted the entire campus, the state, and beyond. He was known for his transparent and honest leadership, and his presence for the students. They affectionately called him “Dr. Floyd” when he sat with them at sports events and greeted them on campus. As a student, Rafael Pruneda remembers when he first saw the Floyds at the all-campus picnic in 2007.

“He stood out because of his presence,” Pruneda says. “And his leadership impacted every corner of the University, the state, and beyond. I’ll always remember him as a role model. He inspired me to become a leader and make a positive impact on the community.”
in Pullman,” says Netzhammer. 

“Mel Netzhammer was selected as WSU Vancouver chancellor in 2012, the first chancellor appointed by Floyd. Netzhammer recalls how the president explained his plan for the campuses.

“He wanted to create a new vision for the urban campuses that really complemented each other. He wanted to move away from this idea that the urban campuses were competitors but rather grow together, both in garnering major gifts from individuals like Bill and Melinda Gates, Paul Allen, Gene Voiland, and Oregon property developer Jordan Schnitzer, and in supporting other WSU fundraisers.

“We were a sensation partner for a dean in the fundraising arena,” says Bernardo. As former dean of CAHNR, “It gave us credibility as we sought gifts from the agricultural industry—such as the $32 million endowment from the tree fruit growers of the state—when the president says it’s a priority.”

Floyd also pushed the University to pursue more research funding. During his tenure, annual research expenditures grew by 57.7 percent, placing WSU among the top 11 percent of public universities for research funding.

Floyd saw the urban campuses of WSU—Spokane, Tri-Cities, and Vancouver—as a priority for broadening access to education.

Mel Netzhammer later appointed Lisa Brown as chancellor of WSU Spokane and H. Keith Moo-Young chancellor of WSU Tri-Cities. All three oversaw expansion of their campuses in enrollment and academic success.

Floyd also founded WSU North Puget Sound in Everett in 2012, and began discussions about a partnership with Bellevue College this year.

WSU grew tremendously during Floyd’s presidency. Cranes and trucks were familiar sights at all WSU campuses, as the University completed 30 major construction projects. Among them: one of the world’s most technologically advanced wine science centers at WSU Tri-Cities; the first residence hall on the Pullman campus since 1971, followed by two more; Martin Stadium expansion and other athletic facilities; the Paul G. Allen School for Global Animal Health; several other athletic facilities; the Paul G. Allen Sports Complex; and health sciences buildings in Spokane.

Within the academic sphere, Floyd established the Edward R. Murrow College of Communication and brought back together the College of Arts and Sciences. In athletics, Floyd hired Athletic Director Bill Moos ’73, who then brought new coaches and new energy for Cougar sports.

Unwavering commitment to students

The medical school and other changes at WSU were paralleled by achievements closer to Floyd’s heart: student access to higher education.

“Floyd was always a champion of education and medicine as part of WSU’s land-grant institution,” says Worthy. “He very clearly wanted medical education and health care as one of the core values for a land-grant institution.

“Floyd had the highest enrollment rates in his history, peaking at almost 29,000 in 2014. Floyd made great efforts to get financial aid to students so they could come to the University, despite increases in tuition.

“Floyd was always a champion of affordable access. While some other universities wanted autonomy in setting tuition rates, he was lobbying to reduce the level of tuition,” says Worthy. In summer 2015, shortly after Floyd’s death, legislation voted to lower tuition and increased funding for universities. Floyd would have approved, says Bernardo. “It pained him to see tuition go up. I just wish he could have seen it go down. There’s little doubt that the tuition reduction and the way higher education was treated in the state’s budget would not have occurred without the leadership of Elson Floyd.”

Not only did the number of students increase across all of WSU’s campuses, the diversity of the student population expanded dramatically. From 2007 to 2014, the number of students of color almost doubled.

“In a very thoughtful and strategic way, he said to the entire University community, we need to expand the percentage of our students from minority populations,” says Worthy. Elson and Carmenito were both known for their compassion for students, through scholarships and aid, and even staying at the bedside of ill students until parents arrived. “When individual students were troubled, he took a genuine interest in their personal and academic well-being,” says Hill. Pruneda saw Floyd’s compassion during the budget crisis. “A lot of students were very unhappy and he was aware of that. In an article in the Evergreen, he said, ‘If you have questions, I’ll be in the CUB for three hours.’ It was a very powerful message to let students know he was approachable and willing to listen to you,” says Pruneda.

Pruneda worked as a staff member for events in the Floyd’s home where he got to know the Floyd family. An ASWSU senator and leader among Latino students, Pruneda was appointed as a student regent in 2014. Even though Floyd didn’t know about the application, Pruneda credits the president for the inspiration and support.

“He went out of his way to make sure his former students were taken care of,” says Pruneda, who is pursuing a career in higher ed. “I work now for the WSU Foundation in Student Affairs and Enrollment. I wouldn’t be in this position without his mentorship and guidance.”

Thearest of people

For Pruneda and the countless others who met him, Floyd’s warmth and character left a powerful impression.

“When he would come into a room, he would really command your attention because he had this very held presence. When he would smile, you knew he was a good person and he had your attention,” says Pruneda. Floyd’s charisma and intuition let him move smoothly between the worlds of business, politics, and academia.

“Until I met President Floyd, I thought of university presidents as being circumspect and scholarly, but not harmonious with being decisive and a true executive. He was a president who could walk with scholars and be an academic, but he was also a president who could walk with CEOs and be decisive,” says Gardner.

Floyd connected to people no matter their social class, political leaning, or ethnicity, transcending his own childhood in the segregated South, says Gardner. It was a talent recognized by everyone, from students and alumni to state and national leaders.

“Elson’s charisma and approachability transcended his own childhood experiences,” says Gardner. “He raised everybody up who was around him,” says Inslee, who had Floyd as part of his gubernatorial transition team. “His legacy won’t be chiseled in stone, but it will be known for its compassion and its warmth and its dedication.”

For Floyd, it was always about the people.
marble or granite on an edifice. It's built on people's lives because he opened doors to them."

Many people who worked at WSU also saw that Floyd was invested in their success. "Elson was chief among my great mentors," says Netzhammer. "He wanted to give you confidence in the decisions you were making, yet bring you along in his vision. He was truly one of the rarest of people."

Gardner says a major part of people's commitment and connection to Floyd came from Floyd's belief in unqualified loyalty. "I used to believe loyalty should be questioned. He taught me that loyalty stands on its own merits."

Regent Worthy often witnessed Floyd's honesty and loyalty. "He was absolutely a man of his word. If you heard it from Elson Floyd, there was never a retreat," he says. "In the very public role as president of Washington State University, he realized there was a lot of potential for misinterpretation of his intention. He always sought to be as clear and deliberately spoken as he could be."

Floyd was admired for his diligence, even beyond his position at WSU. "He had a work ethic like I've never seen," says Worthy. Worthy points to Floyd's role as one of the most prominent African American educators in the country, chairman of the Pac-12 Conference, a member of the Knight Commission, a trustee at Oregon State University appointed by Oregon Gov. John Kitzhaber, and an active member of the Black fraternity Alpha Phi Alpha.

On a personal level, Floyd was known to welcome students and others into his home, and even cook for them at times. "He had a really good Southern hospitality about him, both he and his wife. They were really proud of where they were from. They made sure any guests that came into their home were welcome. Whether it was a student or the governor, they were always treated well," says Pruneda.

He also remembers lighter moments, such as when Floyd was walking across campus during homecoming week and saw students dancing the "Electric Slide" on the mall. "He was watching us and then he stopped and started electric sliding with us. He had a big smile on his face. Not a lot of people can say they saw a university president electric slide on the Terrell Mall," says Pruneda.

Anecdotes of Floyd's compassion abound at WSU and beyond. "As a person, there was a tender side to Elson that some people didn't know," says Bernardo.

In lieu of flowers, the family suggests memorial gifts to honor President Floyd be made to the Elson S. Floyd Founders Fund for the WSU College of Medicine.

A Pullman grocery store clerk tells of helping Floyd at the checkout line. A teenaged boy behind him had some flowers, and Floyd asked who they were for. "My mother," the boy replied. Floyd smiled, said, "That's a fine thing," and paid for the boy's flowers.

In simple acts of kindness and his belief in people, Floyd showed that he was a man of faith, says Worthy. "I didn't see it as clearly until I had an opportunity to go to North Carolina for the memorial service with his family and his colleagues in his hometown."

The memorial service in the Henderson church was attended by hundreds of Floyd's family and friends as they laid him to rest and remembered the man they admired and loved.

Floyd is survived by his beloved wife, Carmento; his mother, Dorothy; his daughter, Jessica Floyd Middlebrooks, (her husband Shawn) and granddaughter Victoria; his son, Kenneth Edwards and granddaughters, Kenae' and Kennedy, all of North Carolina; and brothers, Michael and Dennis Floyd of North Carolina, and Garrett Floyd of Tyler, Texas.