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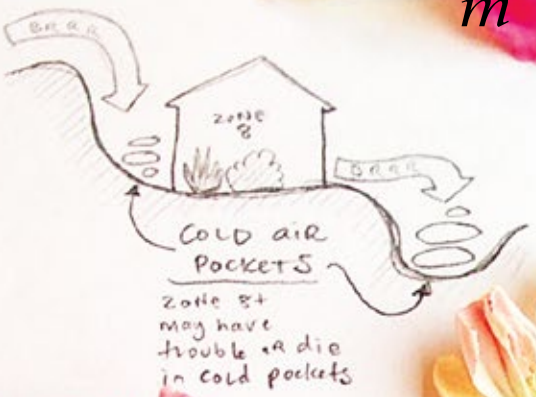

Permaculture
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divide your land into zones
use zones to your advantage instead of working hard to change zones to match usage
Dry areas - dry plants
windy, add windscreens, enhance desire
Efficient land use
Swales, ponds, rainbarrels

cytokynine - tomato bloom set growth

ls - outer
ls - inner
parallel
/swollen nodes

Deer generally avoid aromatic plants (the leaves - they'll munch on
dill, rosemary, onion
They also hate brassica because of the mustard oils

v8n4

Master Gardeners

FALL 2009

v8n4

WASHINGTON STATE magazine

FEATURES

PANORAMAS

DEPARTMENTS

TRACKING

Cover photo: Master Gardener class notes, composed and photographed by Tabitha Borchardt, a graduate of the program and an intern at the Washington Park Arboretum in Seattle and the Bellevue Demonstration Garden.

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first words

Interesting times, Part II :: Having not been spared from Washington State University's recent budget woes, we can think of no other way to absorb our share of the cuts than to drop one issue of the printed *Washington State Magazine.*

Now, before I go on, let me make a few quick points: 1) Don't worry, I'm not asking for money; 2) I don't see us dropping another issue anytime soon; and 3) Even though the budget cuts are permanent, we hope to restore that fourth print issue somehow.

There being no point in whining about the matter, we're determined to approach that reduction as an opportunity. We will, in fact, be publishing a fourth issue this year, but it will be digital. And we need your thoughts on the matter.

In spite of our grounding in print, we appreciate that the Web can do many things a print magazine cannot. It's a marvelous supplement. The Web, we hope you have already realized, provides us with many possibilities, including video, slideshows, and interactive mapping, to complement and enhance the print *Washington State Magazine*.

Even so, we like print and have no intention of giving it up. Not before I retire, anyway. Call us stubborn, if you will. But for those of us raised on print, paper offers an aesthetic experience that a computer screen cannot match. Print is tactile and tangible. It fits on the coffee table much more nicely than a computer.

The only problem with print is the cost. One issue of *Washington State Magazine*, including mailing, costs well over $100,000. In comparison, Web-based publishing is obviously not free. Besides the necessary infrastructure, both on our end and yours, Web publishing requires just as much staff time as print. Still, what it avoids is the expensive combination of paper, ink, skill, and printing press required to produce a magazine you can hold in your hand.

So I'll get to the point. The Summer 2010 issue of *Washington State Magazine* will appear only on the Web. It will closely resemble the current issues on the Web, including a PDF version in print layout. But it will also include some enhancements. For one, we'll be introducing "My Story," a mirror of "Our Story." Whereas "Our Story" is about the Washington State experience, "My Story" will be a chance for you to share your experience after graduation. Like Class Notes, without the space restriction.

Between now and then, we will be prepping you for our great adventure. We will also be surveying, both before and after. But it all comes down to one fundamental question: Will you, when notified by postcard that the Summer 2010 issue of *Washington State Magazine* has gone live at wsm.wsu.edu, fire up your computer and read the magazine online with the same attention and eagerness as you read the print version?

Frankly, we have mixed feelings about the outcome. But we need to know exactly where you, our readers, stand on the very interesting—and unsettling—evolution of publishing.

Tim Steury, Editor

v8n4 FALL 2009

WASHINGTON STATE magazine

LETTERS: *Washington State Magazine* invites letters on its content or on topics related to the University. Letters for publication must be signed and may be edited for style, length, and clarity. Shorter letters are more likely to be published due to space limitations. Writers should include an address and daytime phone number. Letters may be submitted online at **wsm.wsu.edu/feedback.html** or sent to:

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3rd Place
Ballard High School, Seattle
Composting: Saving the Earth One School at a Time

Technological Challenge

1st Place
Stanwood High School
Saratoga Project

2nd Place
North Thurston High School, Lacey
Alternative Hydrogen Production

3rd Place
Heritage High School, Vancouver
Production of Biodiesel from Algae

Design Challenge

1st Place
Auburn Riverside High School
Enviro Energy House

2nd Place
Camas High School
Camas High School Wind Turbine

3rd Place
Camas High School
Eco-Friendly Stadium

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1st Place
Lake Roosevelt High School, Coulee Dam
Fishy Diesel

2nd Place
Camas High School
Going Green on the Elementary School Scene

3rd Place
Bellingham High School
Algae Sequestration

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Erik Reisinger '09 and Trevor Pisinger '09 participated in the ACHA Men's Ice Hockey All-Star Challenge in Philadelphia, Pennsylvania, April 2009. *Photo courtesy Mark Reisinger.*

letters

Living large

I very much enjoyed the article "Living Large" in your Summer 2009 edition. I am always impressed by the dedication of the large animal veterinarians. My hope is that WSU continues to turn out excellent large animal vets and continues to be able to recruit students into the field.

I do have one nitpicky point about the story. The story indicates that Tom Kammerzell's property was built in the 1930s by his grandparents. The barn shown on page 25 was built in 1912 or 1913 by my great-grandfather Mike Kroll. Tom's grandparents Delbert and Miriam Kammerzell purchased the property in the late 1930s and were still very good neighbors for a recent college graduate in 1975-1976. To his credit Tom and his family have done a great job in maintaining, and improving, the property in the time he has owned it. There are very few barns of that vintage in Whitman County still standing, let alone being used as a working barn.Kudos to WSU Veterinary Sciences, Dr. McGraw, Kammerzells, and your staff.

Chris Kroll '75 AgMech
(*and proud father of* ***Anna Kroll*** '09 Foreign Language)
Yakima

Hannelore Sudermann's article entitled "Living Large" in the Summer 2009 Issue of Washington State Magazine brought back fond memories of my many connections with the WSU veterinary school during my tenure at WSU and since my retirement in 2001. Over the years, the WSU veterinary clinic was a wonderful resource and service to me in the care of my horses and hunting dogs. At the time Warwick Bayly was a new faculty member in the College of Veterinary medicine and I still recall the excellent care he provided for my horses. In addition to developing lasting friendships with members of the WSU veterinary faculty, I developed life-long friendships with WSU veterinary students whom I met in the clinic, through student affairs, or elsewhere on campus. These friendships have spanned nearly 40 years, and today living in Montana's Bitterroot Valley WSU veterinary grads continue to provide veterinary care for my horses.

I would like to point out one particular WSU veterinary school graduate whom I suspect you may have overlooked in your search for WSU alums whose accomplishments are exemplary enough to be considered for an article in *Washington State Magazine*. Dr. Jere L. Dick received his DVM degree in the early 1970s and entered a veterinary practice in Pomeroy upon graduation. I find this interesting because Hannelore's article indicated there currently is no large animal veterinarian in Garfield County. I became acquainted with Jere when I hired his wife, Myrna Mae, as a secretary when I was the Director of Residence Living at WSU. As with many veterinary students at the time, wives often worked on campus and elsewhere in the community to help with the costs of veterinary school for their spouses.

Dr. Dick ultimately bought the practice where he began his career in Pomeroy, and after nearly 15 years in Pomeroy he sold his practice when he was offered a position as a veterinarian with USDA's Animal and Plant Health Inspection Service (APHIS). Jere's career with APHIS is a wonderful example of the important role large animal veterinarians play in their local communities and with animal health on a national level. It is also a wonderful example of a WSU alum who began his career as a large animal veterinarian in a rural practice and who now has the role as one of the top administrators in APHIS. After about 20 years with APHIS Jere is now the deputy to the chief of APHIS Field Operations in Washington, D.C. Jere currently plays a prominent national and international role on high profile animal health issues. At this time he is directly involved in the current N1H1 flu virus issue.

Each year, the president recognizes an elite group of career senior federal executives who consistently demonstrate strength, integrity, industry, and a relentless commitment to excellent. This year Jere was the only USDA employee to receive this prestigious award.

George A. Bettas
Stevensville, MT

Interesting times

My father, W. H. Veatch, debate coach at WSC from 1927 to 1960-something, took great pride in telling about the faculty meeting called by the administration to solve the budget cut of 1933–35. The faculty was given the charge to decide which faculty members were to be "released."

Ten percent were to go in the first cut.

The entire faculty assembly agreed to take a salary cut and to retain everyone, not only because they were "teachers together" but also, they knew the continued need for education in the hard times.

Your question of how did Holland "maintain any morale whatsoever" is answered by the fact that the morale came from the grass roots themselves and was not forced down from the top or artificially requested.

President Holland always carried some dimes in his pocket and would give them to little children as he strolled around the campus. When I came home with a dime "from a nice gentleman" my mother was upset to think that there might be a "not so nice" person preying on youngsters. When it was discovered that it was President Holland, it took a committee to suggest to him that there might be a better way to help what he assumed to be hungry children.

Sarita Veatch McCaw '53
Walla Walla

Home economics

Your article "Whatever Happened to Home Economics?" was very interesting since I was graduated with that degree in 1940. It was a great education for life, and I hope today's young women are finding it so—in its new format!

Mary Burnett McCarroll Wiley '40
Walnut Creek, CA

While in Pakistan this past winter, S.M. Ghazanfar '68 met with fellow Cougars:

Row 1 (*left to right*): M. Yaqoob Malik '62 MS An. Sci.; Muhammad Nawaz Sr. '61 MS Vet. Sci.; Asghar Ali Shaikh '66 EdD; S.M. Ghazanfar '68 PhD Econ.; Manzoor Ahmad '66 PhD An. Sci.

Row 2: Faried Nawaz '99 Comp. Sci.; Ibn Rasool Khan '67 MS An. Sci.; M.A. Majeed '60 MS Vet. Sci.; Muhammad Ayaz '75 PhD Food Sci.; Zafar Iqbal Choudhry '70 MS An. Sci.; Nusrat Iqbal Choudhry '69 MS An. Sci.; Qadir Bakhsh Mahr '67 Civ. Eng.

Row 3: A. Rauf Butt '82 PhD Econ.; M. Nawaz '61 MS E. Eng.; Ashiq H. Cheema '70 PhD Vet. Sci. *Photo courtesy S.M. Ghazanfar.*

letters

Patty Murray

I read with interest the article in the Summer 2009 issue by Hannelore Sudermann about Senator Patty Murray.

It was enlightening how the author overlooked the profound inconsistency demonstrated by Senator Murray in going after Republican Senator Bob Packwood for sexual harassment, but voted "Not Guilty" to the charges of perjury to a grand jury and obstruction of justice in the trial of Democrat Bill Clinton. Didn't Ms. Paula Jones deserve as much consideration from Senator Murray as did Bob Packwood's alleged victim?

Lately Senator Murray has been lecturing students about the benefits of "financial responsibility." This coming from our senator who did not read the recent trillion dollar "stimulus" bill prior to voting for it. This is akin to signing a contract without reading and understanding its terms.

I prefer my senators to not play politics at my expense.

Mark Bennett '79
Bonney Lake

Overlooked

As a former coxswain from WSU, I am glad to see a story about the rowing program. However, as a men's team member I am saddened to see that no mention of the men's team was made in the article for the summer 2009 issue of your magazine. The men's team is the original rowing program and has a rich history. It has struggled for years to find the funding that the women's team has handed to them each year. The men's rowing team at WSU is a club sport and is funded through the hard work of its members and dedication of its former members. You said the women's team is overlooked … what about the men's team? Visit www.cougarcrew.com for more information.

Patrick Williams '06
Othello

Like so many "Club" sports at WSU, Mens Ice Hockey does not receive the attention it should.

Two senior students at WSU were chosen to represent Washington State University in the inaugural ACHA College Division 2 Mens Ice Hockey Challenge held in Philadelphia April 3, 4 & 5 2009. Erik Reisinger #11 and Trevor Pisinger #9 were selected as the best WSU had to offer from the WSU Mens Ice Hockey team. Each Pac 10 (actually Pac 8 as two schools do not have ice hockey teams) school sent one to four players in order to make up an All-Star team representing the Pac 8. Twenty-one players made the trip to Philadelphia. Chris Soriano, the coach chosen to lead the team to Philadelphia, made the selections from each Pac 8 school. Last year Chris coached Arizona State University men's ice hockey.

The tournament was a huge success. Nine other ACHA Division teams from all over the USA competed in Philadelphia. The Pac 8 finished 2-3 completing 5 games in 3 days. They were very competitive with every other team.

Mark Reisinger '81
Lake Forest Park

Long-standing ties

In early 2009, I visited Pakistan at the invitation of the Government of Pakistan's Higher Education Commission. My main assignment was to deliver seminars/lectures at the newly established University of Sargodha. My topics included globalization and the Islamic world; origins of economic thought in early Islam; rationalism/intellectualism in early Islam; madrassa education, extremism, and fundamentalism; and the state of higher education in Pakistan. One of my main tasks, I was told, was to encourage students to think open-mindedly and critically. The audience was generally most receptive—and many students/faculty connected rather warmly and graciously.

Over the years, many Pakistanis received their graduate education at Washington State University. WSU has had long-standing educational ties to Pakistan. Under the leadership of WSU President C. Clement French, WSU had established an Inter-College Exchange Program with the Government of Pakistan, funded by the USAID, which began in the mid-1950s and ended late-1960s.

S.M. Ghazanfar '68
Ghazanfar is emeritus professor of economics at the University of Idaho.

For more on the WSU-Pakistan connection, visit **wsm.wsu.edu/ourstory**.

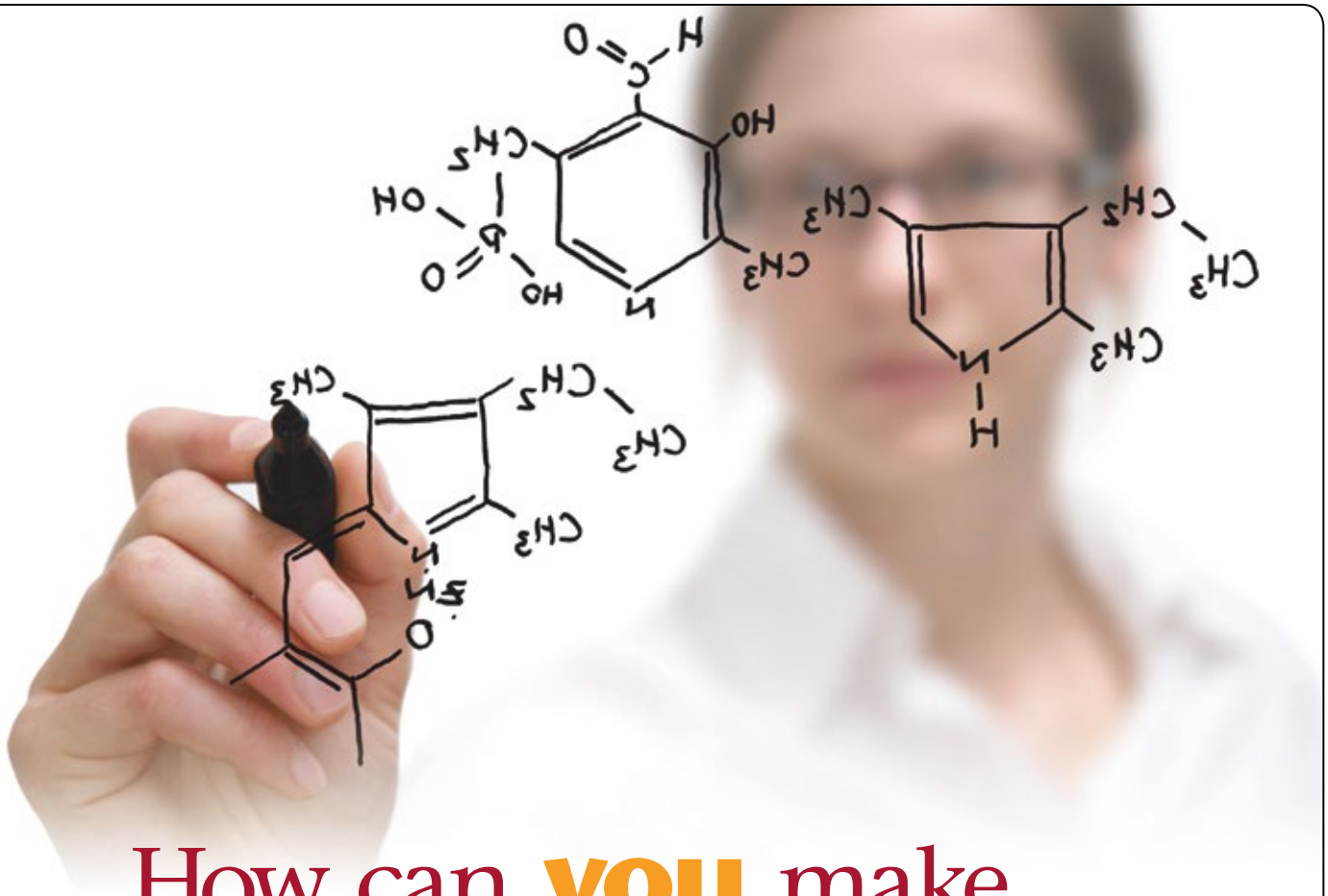
Correction

I am writing in response to the article, "A Seat at the Table." This was an interesting and well written-piece except for an apparent misspelling. In particular, the first paragraph on page 35 of the article mentions "Senator Murray along with Senator Okaka and [Representative] Bob Filner..".

I believe the author was referring to Hawaii Senator Daniel Akaka and not Okaka.

As a WSU Alum formerly from Washington State and now living in Hawaii, the misspelling was rather unfortunate since Senator Akaka is well-loved and respected in Hawaii and is a close colleague of Senator Patty Murray.

Bill Dowdell '84
Mililani, HI



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SEON WINN/ISTOCKPHOTO

Curbing aggressive driving

by Hannelore Sudermann :: There's something about youth and speed and cars.

Criminal justice doctoral student Yu-Sheng Lin tapped into it in his study of risky and aggressive driving behaviors. Surveying Washington State University students, who averaged the age of 19, he joined up with marketing graduate student Mark Mulder and associate professor Jeffrey Joireman to look at the effects of impulsivity and thrill-seeking on dangerous driving. They also examined whether the drivers considered future consequences when making their choices on the road.

Aggressive driving is likely the last crime to be featured on a television drama, Lin admits. "But I wanted to focus on something that can apply to everyone. It happens every day, but it can also be considered criminal behavior."

About a third of all accidents, and close to 67 percent of the resulting fatalities, can be linked to aggressive driving, according to the National Highway Traffic Safety Administration. Lin asked survey subjects if they drive over the speed limit in clear weather (risky behavior) and if they let people know when they are unhappy with their driving (aggressive behavior).

The team focused on three low self-control personality traits—impulsivity, sensation-seeking, and anger—and consideration of future consequences. Then they looked at how the personality traits are associated with deviant behaviors.

The trait that has been perhaps the most studied lately is sensation-seeking, says Joireman. People who climb mountains and do other dangerous sports are sensation-seekers, he says. "The problem comes when people try to solve those needs in socially unacceptable ways."

This issue is very important to the state, says Washington State Trooper Bruce Blood, one of the better-known officers on the Palouse—if only because he is seen so often handing out tickets. In recent years, in response to citizen complaints, the state assigned unmarked vehicles to several troopers, including Blood. In a white patrol car, you just don't see it, he says. But in his Dodge Charger, the state officer sees things even he doesn't believe—passing on blind corners, speeds exceeding 90 miles per hour. Blood collaborated with the team in hopes of furthering efforts to reduce dangerous driving.

Using self-control theory and a general aggression model, Lin's study shows that more could be done to curb aggressive driving. He determined that the consideration of future consequences could reduce impulsivity, though it didn't do much to limit sensation seeking.

The key is to help drivers recognize they have low self-control and recognize the aggressive behavior when it starts and before it

becomes dangerous, says Lin. Lin made the study a component in his dissertation. After completing his doctorate this spring, he is headed to a faculty position at National Taipei University in Taiwan.

Mulder and Joireman are examining ways to identify and reach drivers with low self-control before they get on the road.

"This information is invaluable," says Blood. "It shows that just enforcement isn't enough, you have to have education and enforcement combined. The biggest thing is for drivers to recognize the behavior in themselves when it starts to occur."

Virtually WSU

by Larry Clark :: Swoop around Bryan Hall clock tower like Superman. Examine tiny details of the Sistine Chapel murals. Enter Tut's tomb. Float in a cell next to the mitochondria. All within 15 minutes.

Virtual WSU gives a sense of the campus to online visitors.

What sounds like a fever dream becomes a reality within the virtual three-dimensional world Second Life, a world now joined by a replica of part of WSU's Pullman campus.

WSU joins hundreds of universities and colleges with a presence in Second Life. Many of these institutions have classes, conferences, experiments, art galleries, and innovative 3-D displays. The virtual WSU will host distance degree classes beginning this fall.

Second Life, one of the most prominent "virtual worlds," has about a million active users who use avatars as representations of themselves. Called by its founder "the world's largest Lego set," Second Life is built entirely by residents.

David Cillay, assistant dean of the Center for Distance and Professional Education and coordinator of the Second Life project, says distance classes could be just the beginning for events on WSU's virtual campus.

"We could have an Alive! summer orientation session, alumni events, music concerts, conferences, even a functioning nuclear reactor," says Cillay. "On the fun side, why not a virtual golf course?"

Cillay points out that students designed and built much of the virtual campus, which encompasses about a third of the real world WSU. Representations of Bryan Hall, the CUB, Holland and Terrell Libraries, Van Doren Hall, the Museum of Art, and other recognizable buildings give a sense of familiarity to the online campus.

Faculty and students might find other innovative uses for Second Life, from architectural modeling to health education to physics experiments. One student, Heather Losey McGeachey, created a master of fine arts exhibition last spring at both the Museum of Art and its digital counterpart.

Another innovative use of the WSU campus in Second Life was the world's first virtual journalism summit last April, which coincided with the annual Murrow Symposium. The summit, held in both the real CUB and the virtual WSU, examined news reporting in 3-D worlds and telling stories within those virtual spaces.

"There's a lot of curiosity about Second Life within my department," says Murrow College of Communication faculty Brett Atwood, who organized the summit and uses Second Life in his journalism and public relations classes.

"The idea of journalism and reporting in 3-D spaces is kind of amazing. It's a relatively young phenomenon. From a sociological point of view, with human beings behind each avatar, aren't they worthy of news coverage?" says Atwood.

The summit featured prominent real-world journalists and 2009 Edward R. Murrow Award recipients Helen Thomas and Bob Schieffer, along with virtual world journalists and others, discussing the convergence of journalism and virtual reality and what could be the future of this technology.

Among the speakers was Philip Rosedale, who founded Second Life in 1999. He said he sees virtual worlds gaining ground like earlier forms of communication—such as television or e-mail—from early entrepreneurial adopters, to educators, to professional users, and finally to mass adoption.

"We are currently seeing a rapid evolution toward different forms of education," said Rosedale. He cited the example of a border crossing model used to train future Canadian agents to find contraband. Students who practiced in the Second Life border crossing model saw test scores increase as much as 28 percent.

Real-world news organizations—including Reuters, CNN, and *Nature* magazine—have already established "bureaus" within Second Life and other virtual worlds. Another summit presenter, senior CNN producer Lila King, said virtual journalism wasn't just about packaging a story like in traditional journalism, but rather an ongoing conversation in the community.

"In Second Life, CNN's strategy is about citizen journalism and experimentation," said King, "We can speak openly and in real time with people, something journalists aren't necessarily adept at doing."

Still, Helen Thomas and Bob Schieffer expressed concern that journalistic skills will be lost with the death of many newspapers and main-

stream media outlets. Schieffer said newspaper's editorial functions are crucial, and new media should follow old standards of quality.

"We don't publish until we're convinced it's true. Journalists need to answer 'How did you know about this? Did you ask somebody about this?'" he said.

Second Life and other virtual worlds can also be used to train journalists about those standards and provide them with a safe forum, an idea developed by the new founding dean of the Murrow College and veteran correspondent Dr. Lawrence Pintak.

While serving as director of the Kamal Adham Center for Journalism and Research at the American University in Cairo, Pintak helped build the first virtual newsroom. In one instance, he connected eight Egyptian bloggers with then-U.S. Undersecretary for Public Diplomacy and Public Affairs James K. Glassman for a press conference to discuss Egypt and the conflict in Gaza, where the bloggers could ask hard questions without fear of reprisal.

"Journalism evolves in its environment," Pintak said at the end of a documentary about the newsroom experiment, which debuted at the virtual journalism summit. "It molds itself to the realities on the ground."

Atwood acknowledges there's some bias about the virtual experience. "I've gotten the eye rolls about Second Life, put off perhaps by the cartoon-like aspects. I think there are misconceptions about virtual worlds, but legitimate uses are increasing, there are new innovations in the education and enterprise sectors, and there's rich research happening."

Links and video of virtual WSU, the Sistine Chapel, Tut's tomb, and the cell are at wsm.wsu.edu.

MOUNT REDOUBT ERUPTION MARCH 31, 2009, BY BRYAN MULDER

Safer skies

by Cherie Winner :: When Alaska's Mount Redoubt volcano rumbled to life this past spring, images of the plume of ash rising from it probably revived terrifying memories among 240 people who survived its last eruption in 1989.

They'd been passengers on KLM flight 867, a Boeing 747 bound for Anchorage. Ten hours after the volcano erupted, the plane flew through an ordinary-looking cloud. Except it wasn't a cloud. It was ash from the Redoubt eruption.

The plane lost all communications, radar, electronic cockpit displays—and, within the span of one minute, all four engines. It plunged almost 15,000 feet before the crew managed to restart three of the engines. The plane landed safely in Anchorage, having sustained $80 million worth of damage. "The whole aircraft looks like it was sand-blasted," said an FAA spokesperson at the scene.

Rick Conrey, a technician in Washington State University's GeoAnalytical Lab, says volcanic ash isn't soft and floaty like the ash made by burning paper or wood. Volcanic ash particles are tiny rocks, sharp enough to scratch airplane metal and fine enough to get into all but the most tightly-sealed compartments. If volcanic ash gets wet, it conducts electricity, and if it gets into a working jet engine, it melts into a gooey gob that

:: *continued page 17*

Discovery

In the quest to harness anti-matter, researchers have created a positron trap, aiming to store one trillion positrons for ten days.

Recent legislation has authorized a highway route that follows the path of the Missoula Flood of 15,000 years ago, from western Montana to the Pacific Ocean.

Students have developed a snack pie smelling of grain and a bit of apple that weighs in at 100 calories.

A New Zealand snail and a parasitic worm have helped us understand how disease is transmitted from animals to humans.

The Müller-Thurgau, Burmunk, Madeleine Angevine, Siegerrebe, and Pinot Noir hold promise as alternatives to East-side fruit bombs.

Memories with the greatest staying power are those with a strong emotional element.

Find all this at wsm.wsu.edu/discovery.

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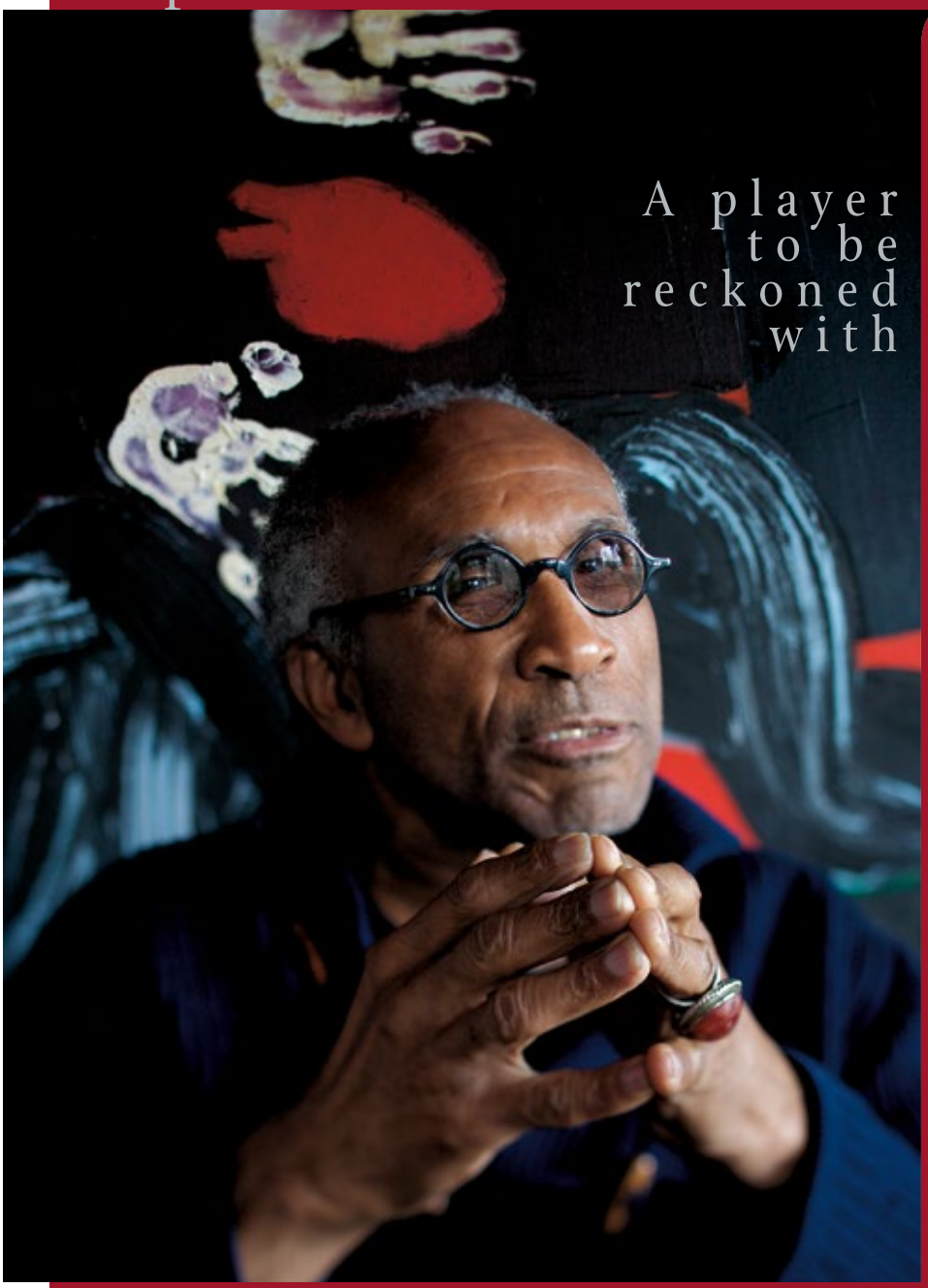

A player to be reckoned with

MATT HAGEN

Not only did Duke Washington '59 break the integration barrier at University of Texas Memorial Stadium on October 2, 1954, he gained 94 yards on eight carries including a 73-yard touchdown run. *Photo Bob Bullis/WSU*

:: ***by Jason Krump '93***

ON OCTOBER 2, 1954, a day shy of his 21st birthday, fullback Carl Talmadge "Duke" Washington '59 and his fellow Cougars played the University of Texas on a sweltering day at Memorial Stadium.

The result was a 40-14 Texas victory, a forgettable day in the annals of Cougar football; however, the day reaches far beyond the athletics history of Washington State and Texas.

Washington, the starting fullback for the Cougars, became the first African-American to play at Memorial Stadium. To the Texas players, however, Washington was not a player making history, but a player to be reckoned with.

"I'm sure it did make a difference in political circles, but it did not make a difference to us on the football team," Del Womack, a running back on the '54 Texas team, said in a recent phone interview. "We just thought he was a good football player."

"I don't think there was any controversy whatsoever," Charley Brewer, the Texas quarterback that day, recollected. "It may have been a sportswriter's nightmare because there was nothing interesting going on. It was a non-event really."

While it may have been a non-event for the players, it was eventful for the administrations at each school.

In a September 16 letter to Texas President Logan Wilson, Washington State College President C. Clement French summarized a phone conversation the two had earlier that day.

Following a conference with members of the Texas Board of Regents, Wilson reported to French that the Regents' position whether Washington State plays or does not play any member of its team is its own responsibility and is without approval or disapproval by the Regents. However, under state law, Texas could not be responsible for the common housing of different races.

In a follow-up letter to Wilson dated September 22, French remarked on the Cougars' September 17 game against USC (a 39-0 loss) and if the Austin papers carried an account of the game.

"If they did," French wrote, "you know that we not only got walloped but that the outstanding

bright spot for our team was the young man who has been the center of our discussion. Therefore, unless he is injured and unable to travel, there is no question but that he will be in our traveling squad and will play."

In his concluding paragraphs, French wrote, "This is a ticklish one for both of us, and we are both equally anxious to get it behind us smoothly."

Washington made the trip and did not stay with the team at the hotel, but rather stayed with an African-American family in Austin.

"Although there were modifications to the living arrangement, I was not fazed by that for the simple reason that there was no devaluation by the institution of accommodations for me," Washington says. "I never missed a meal, never missed a meeting, I surely didn't miss the game.

"We went there to integrate a football game; we did not go to Texas to integrate a hotel."

Drawing from his experiences at Pasco High School, integrating a football game was nothing new for Washington.

"In reflection, what I took from the Texas game was what I brought to the game," Washington says. "I was the only black player at Pasco High School and all the teams we played were all-white teams. How am I going to play high school ball and say that I'm going to be uncomfortable playing against a team that doesn't have any black players?"

There was no sign of being uncomfortable in his performance in Austin. Washington gained 94 yards on just eight carries, one a 73-yard touchdown run. According to accounts from the game, a thunderous ovation from the 28,000 in attendance ensued after the run.

The *Austin-Statesman* newspaper account describes Washington as having "slipped through a groove in the middle, out to his left, and soon outdistanced baffled Texas defenders."

"Anybody who makes a long run, he had to dodge someone," Womack says of the run. "I know there wasn't a hole four miles wide on that play."

A passage from the *Statesman* story reads, "The biggest ovation of the day went to him when he romped for the score. The next biggest ovation went to him when he left the game."

"What was the satisfaction for me was that there was no trash talking in the game, no extracurricular activities, no unsportsmanlike conduct in the game from the Texas players," Washington says.

"I don't think there was the normal trash talk between players and it was a very clean game," Brewer recalls.

Washington finished his senior season with a team-leading 616 yards and was invited to play in the East-West Shrine Game at San Francisco on New Year's Day. Washington was a standout in the game, running for 85 yards and a touchdown.

In a letter dated December 3, 1954, French congratulated Washington on his selection to the East-West game and stated: "I have watched with more interest than you may have realized your participation in football this year and the way you have handled yourself in some potentially difficult situations. I think you have given a fine account of yourself and merit to an unusual extent the recognition which has now come to you."

This September, recognition will come Washington's way again when he returns to Pullman to be inducted into the Washington State University Athletic Hall of Fame.

It will be a meaningful stop for Washington, 75, who after his professional football career (in Philadelphia and British Columbia) ended, returned to Washington State and earned his degree in interior design in 1959.

"When I decided to take the road from Pasco to Pullman," says Washington, "I played on the Cougar field, went up on the academic hill and completed my degree, and then left Washington State to do my life's work. I came to the realization that all of my roads go back to Pullman." «

Read more from the interview with Ken Bone at wsm.wsu.edu.

A new coach and a new game

:: *by Larry Clark*

ROBERT HUBNER

KEN BONE KNOWS HIS TEAM is young, but the new Washington State University men's basketball coach foresees a bright future and a different game.

Bone landed at WSU after four seasons as head coach of Portland State University, where he racked up two Big Sky Conference titles and back-to-back NCAA tournament appearances. Before PSU, Bone spent 12 seasons coaching at his alma mater Seattle Pacific University and three years as an assistant coach at the University of Washington.

Bone expresses confidence in his young team.

"I like the culture of the program right now. I'm very impressed with how the team did academically this spring and the enthusiasm they brought to the court during our workouts," says Bone.

"Coach Bennett and his staff did a great job of identifying good kids who are coachable. It's not just a bunch of selfish kids who are flamboyant out on the basketball court. They are guys who buy into the team concept."

That team will play a different style of basketball, Bone says. While the Bennett teams were known for tough defense and a slower pace, Bone will push for a faster game.

"I want us to spend close to equal time on offense and defense. It will be more up-tempo. There'll be some quicker shots taken, as long as we're making them. You can't come down and jack up three-pointers, just for the sake of doing it," he says.

Before basketball season starts, though, Bone and his staff will scour the state and beyond for future Cougars. The Seattle native's personal and professional roots along the I-5 corridor give him an understanding of the Pacific Northwest's basketball potential.

Holding up a spreadsheet with carefully categorized lists of young players, Bone says, "There are kids that come out of the Northwest every year that play at a high level. Those kids are going to Gonzaga, the University of Washington, across the country. We need to have our foot in the door to land some guys out of the Northwest."

While Bone recruits potential players, he'll also be moving with his wife Connie and their daughters to Pullman and transitioning to small town life.

"Our kids only know the big city. Pullman is not quite that—not a lot of skyscrapers here. It'll be much more intimate for us as a family. As a father of three girls, that's not a bad thing," says Bone.

In Pullman and elsewhere, WSU fans and students have welcomed Bone with e-mails and comments. He does think the fan response could change from last year.

"I don't think we'll see more t-shirts out there: 'Our coach is hotter than yours.' I think I saw those on sale for 99 cents at Dissmore's," says Bone with a laugh.

"Still, I can feel the excitement about Cougar basketball in the air. Walking around campus, students say, 'Hey Coach, congrats, happy you're here, can't wait until basketball.'"

:: *from page 13*

mucks up the compressor blades. It's also very hard to avoid. Once the plume thins out, pilots can't tell whether a smudgy patch up ahead is ash or a harmless cloud. Even radar can't tell them apart. Ash rides the wind for days or weeks and can damage planes more than 3,000 miles from the volcano that produced it.

Ever since the 1989 incident, says Conrey, the Federal Aviation Administration has sent WSU's GeoAnalytical Lab test samples from Mount Redoubt and other volcanoes all over the world to try to gauge how potentially destructive the volcanoes are.

Conrey uses the lab's x-ray fluorescence spectrometer to determine the composition of the magma spewing out of a volcano. It may be mostly basaltic, mostly rhyolitic (high in silica), or a mixture. The differences between them determine how dangerous the eruption is going to be.

Basaltic magma flows easily. Gases from deep underground are able to rise through it and escape into the air, like bubbles rising to the top of a pot of boiling water. The magma might spurt a few hundred feet into the air, but on the whole it behaves more like a river than a geyser. Conrey says that's why a volcano like Hawaii's Kilauea, which has been erupting continuously since 1983, isn't especially dangerous unless you are directly in its path—and it doesn't produce much of an ash plume.

By contrast, rhyolitic magma does not flow easily. It explodes. Rhyolitic magma is thick and gooey. Gases get trapped within it, like bubbles caught in honey or shampoo. As the magma nears earth's surface and the pressure on it drops, the gases in it burst out with incredible force.

"The more you have of silica, the more viscous it is and the more gas it will hold and get more explosive," says Conrey. Mount St. Helens, which hurled ash 60,000 feet into the atmosphere, wasn't even on the high end of the silica spectrum; had its magma contained more silica, it would have erupted with even greater force.

Analyzing samples from past eruptions tells geologists a lot about a volcano's history, but samples of fresh material are also necessary whenever a new eruption begins, because the kind of magma a volcano produced before doesn't always predict what kind it will produce the next time. In fact, different kinds of magma can emerge from a single eruption. "It's a lot more complex than we thought just 30 years ago," says Conrey. "People didn't realize it was that complicated because it was so terribly difficult to get the answers."

Back then, learning the composition of a magma required a couple of weeks of lab work. Now Conrey can prepare a sample in half a day and the x-ray analyzer can deliver a preliminary finding in 10 minutes and a complete evaluation in about an hour. The lab procedure is straightforward. Conrey powders the sample and mixes it with flux, a lightweight compound that enables the rock powder to melt at a lower temperature than it would otherwise. Most powdered rock won't melt until between 1300 and 2000 degrees Celsius, and at such high temperatures, some of the rock vaporizes rather than melts. "You want to use a low enough temperature to keep everything in the pot," says Conrey.

He then chills the molten mixture to make it solidify into a disk of glass about the size of a Thin Mint Girl Scout cookie. The spectrometer analyzes the glass and determines what elements it contains, and in what amounts. If it's high in silica, the USGS and FAA will alert the aviation community to the looming danger.

Track potential ash from Mount Redoubt at wsm.wsu.edu.

Foiling an invasive

by Tim Steury :: Sometimes, figuring something out only deepens the overall mystery.

Take *Pseudomonas fluorescens* D7, for example.

Ann Kennedy, a USDA-Agricultural Research Service soil microbiologist at Washington State University, has isolated these native bacteria as a perfectly natural way to fight cheatgrass, also known as downy brome, scientific name *Bromus tectorum*. Recently, she and her colleagues were awarded a large grant to test the effectiveness of *Pseudomonas fluorescens* D7 for controlling cheatgrass in rangeland.

Cheatgrass, which was introduced in the late 19th century as a forage crop, is an aggressive invader, a grass that has, according to WSU botanist Richard Mack, changed the ecology, if not the landscape, of much of the western United States. Cheatgrass crowds out other plants and changes the fire ecology of a region. It matures in early spring, then dries out and provides a hot-burning fuel for wildfires.

The reason invasive species are so successful is they are out of context, out of their normal environment. Not all introduced plants are necessarily invasive. They may grow in their new environment, but not sufficiently well to crowd out native species. But if a plant does well in its environment and lacks predators or enemies, then it can become aggressively invasive. Other very visible invasives in the Pacific Northwest are Scotch broom and purple loosestrife. The reason they are so visible is they have no natural controls.

Left: Cheatgrass at the Hanford Reach National Monument. *Photo by Daniel Mosquin.* ***Above:*** Electron micrograph of cheatgrass suppressive bacteria. *Courtesy S. Gurusiddaiah and the WSU Franceschi Microscopy and Imaging Center*

So it is with cheatgrass. Originally from Eastern Europe, it is not the problem there that it is here. In its native environment, it has no advantage over competitors and predators.

Kennedy and her colleagues imported soil from Turkey and Kazakhstan and found that 90 percent of the organisms in it were inhibitory to cheatgrass. Only 50 percent of organisms in domestic soil are inhibitory.

Kennedy and colleagues had earlier studied the effect of inhibitory bacteria on wheat. She first came to WSU as a postdoc to work with soil microbiologist Lloyd Elliott. They

were looking at poor growth of winter wheat in early spring and found that the wheat roots were colonized by inhibitory bacteria, also called "deleterious rhizobacteria." Ninety-five percent of the roots in the early spring were covered with the bacteria.

The bacteria do not kill the plant. Rather, by whatever means, they inhibit cell elongation, resulting in stunted root growth, which stunts the whole plant and gives other plants a competitive advantage.

Eventually, Kennedy became interested in whether inhibitory bacteria could be used against weedy grasses. For wild oat, very few inhibitory bacteria could be found. But in jointed goatgrass and cheatgrass, the bacteria were prevalent and effective. Kennedy and her colleagues identified 20 different isolates that inhibited the growth of cheatgrass or jointed goatgrass or both.

In order to reach that point, however, they screened thousands of isolates from the roots of wheat and cheatgrass. About 50 percent of the organisms they found were inhibitory to cheatgrass. However, only one percent inhibited cheatgrass and not winter wheat.

Of that one percent, the champion they finally selected is *Pseudomonas fluorescens* D7.

A particularly attractive attribute of *Pseudomonas* is it flourishes in fall and early spring—when cheatgrass is green and growing. It is inactive in the summer, so there's little worry about it becoming a pest itself.

Even though the bacterium inhibits plant growth, it is not considered a true pathogen, says Kennedy. It occupies the space between root cells and does not have the necessary enzymes to eat through cell walls. It secretes compounds that together have an inhibitory effect, but is still somewhat of a mystery.

Even more of a mystery, though, is the ecological significance.

"If you're a bacterium, you try to preserve yourself and your offspring," says Kennedy. "So why would you colonize a plant you're trying to kill?"

Regardless of evolutionary reason, this fall, with the support of The Nature Conservancy, Kennedy will begin testing the bacteria's effectiveness in large-scale field restoration to plants other than cheatgrass. As effective as it is in the lab and small field plots, how it will work under a variety of environmental conditions is unknown. Kennedy and her colleagues will test it in several cheatgrass-infested sites in Washington, two in Oregon, and one site each in Nevada, Utah, Idaho, and California.

Poised for playing

by Cherie Winner :: Anyone who has taken music lessons has probably absorbed enough instructions about posture to feel like a raw recruit at basic training: Stand straight! Head up! Toes forward!

Leah Jordan, who is starting her senior year at Washington State University, says not to worry about forcing yourself into the "proper" position for playing an instrument. In fact, she says you'll probably play better if you don't—and she has the hard scientific evidence to prove it.

Jordan converted her personal experience as a trumpet player into an honors program research project that showed that most players play better if they stand the way their bodies naturally want to, never mind what the instruction books say.

When her trumpet teacher and academic adviser David Turnbull first met her, he noticed that Jordan's right leg appeared to be shorter than her left. That wasn't news to Jordan, who had felt lopsided for years. "I was crooked, and felt like I was leaning all the time," she says. Turnbull suggested they try putting a heel lift in her right shoe to compensate for the leg length discrepancy. He'd experimented with lifts in the past, both with students and with himself, and been pleased with the results.

"I was not expecting anything," says Jordan. "I thought he was a little bit, you know, crazy. But then we started putting these things under my foot…"

Leah Jordan has found her true position. *Photo Robert Hubner*

And just like that, every aspect of her playing improved. The tone was better, she could reach higher notes than before, and she had more stamina.

"It was really weird. I'd play, and it was like, 'whoa, that was nuts,'" says Jordan.

She thought an exploration of how body position affects trumpet playing would make a good thesis project. With a double major in music and genetics, she was well-equipped to plan and carry out the experiments. Seventeen WSU trumpet students volunteered for her study. Jordan tested variations in four aspects of leg and foot position. To change leg length, each person stood (in stocking feet) on firm rubber pads of 3, 6, 9, or 12 millimeters thickness under one leg and then the other. In another set of trials, an adjustable wooden ramp tilted the player's feet to different degrees, either toes-up or toes-down. A third variation tilted the players' feet toward their outer or inner edges. Finally, the players stood with their feet flat on the floor but the toes angled in or out.

In each position, the player ran through a series of musical and physical tests. They played a C, the standard tuning note for trumpets, and scales, going as high as they could. A computer recorded the sounds and registered their loudness and their overtones, an indication of the quality of the sound (more overtones produce a richer sound). While Turnbull orchestrated the trumpet-playing, Jordan monitored the recordings. She also tested the players' respiratory function in each position, measuring their total lung volume, how much air they could expel in one second, and how fast they could blow air out of their lungs.

The study yielded two very clear results. First, position made a big difference in both respiratory function and quality of playing. Second, every player had a different optimal position.

"Based on the background research that I've done, it has to do with the fact that your foot position changes your pelvic position, and your pelvic position is directly related to your spine position and your respiratory function," says Jordan.

In most cases, she says, "the person's ideal posture for trumpet playing is their body's default position—that in making someone stand with their feet straight and everything in alignment, you're actually working against their body's desired natural position."

It was exciting hearing the differences when a new position suited a player especially well, says Jordan. Some of the players effortlessly extended their range by nearly an octave.

Her results fly in the face of conventional wisdom that there is one correct posture for playing an instrument. Turnbull and Jordan think the importance of individual differences hasn't been fully appreciated, and that teachers often assume that what works for them will work for everyone.

"That's how come you get a bunch of different teaching methods that are all seemingly conflicting," adds Jordan. Each method is right, but only for some people.

Turnbull says the study has already influenced the way he teaches.

"I've always worked with the individual to try to find out what's best for them, but this project has made me think that direction even farther now." He says some music teachers and schools resist what they see as the intrusion of science into the world of music, but he thinks if a little experimentation can lead to better music, it's foolish not to give it a try.

"You're using science to help you create your art. And why not? Why not?" he says.

Turnbull says the students who have continued to use the leg position they did best with during the study still play better than they did before. The effect has not worn off over time.

Jordan used the lift until a doctor determined that her apparent leg-length discrepancy was due to rotation of her pelvis. Several sessions with the doctor corrected the rotation and allowed her right leg to achieve its full length, eliminating the need for the lift. She still uses one other adjustment the experiments pinpointed for her: she lets her right foot toe out while she plays. That's what it wants to do, she says; and the results speak for themselves.

Watch a video of foot position and trumpet playing at wsm.wsu.edu.

Members of the Garfield-Palouse engineering club put the finishing touches on their lift. *Photo Robert Hubner*

Elevating engineering in the schools

by Julie Titone :: Sean Neal is good at math, but one bit of geometry he can't master involves moving ten feet up and two feet over. The wheelchair-bound teen isn't able to climb into a combine to help harvest his family's wheat fields.

While Neal's dad was carrying him up a ladder and helping him into the operator's seat, his math teacher at Garfield-Palouse High School was pondering ways to nudge students toward careers in which they could use their number-crunching skills. Jim Stewart thought an engineering design contest might do the trick. A former baseball coach, Stewart knows kids like to compete. Sure enough, his Gar-Pal design team knocked it out of the park. Their Paraplegic Agricultural Lift (PAL), inspired by the Neal family's dilemma, won second place in a national competition.

The spark that lit the students' creative fire was the 2008 JETS/AbilityOne National Engineering Design Challenge, in which high school students design and build devices to help workers with severe disabilities. The students worked early mornings, nights, and weekends, adding elbow grease to their physics and math skills.

Their 2008 success led to a $10,000 grant to improve the lift and an invitation to the Massachusetts Institute of Technology in June 2009. "One of the biggest things I've learned is what you can do with engineering to actually make a difference," says team member Travis Mallet. "And I really enjoy taking the abstract ideas from classroom science, math, English, whatever, and transforming it into something concrete."

The PAL story has many ties to Washington State University and its Pullman campus. "Stew," as his students call him, earned a degree in social studies and a secondary education teaching certificate at WSU in 1983. Neal is one of several Gar-Pal team alumni who now attend WSU. Robert Lopez, who advises the design team, earned an electrical engineering degree from WSU in 2001.

When Stewart floated the idea of forming an engineering team, Neal and his dad, Warren, had already devised a battery-powered winch to hoist him level with the combine's cab. But Neal, who has spinal muscular atrophy, still needed help maneuvering into the seat.

The team decided its project would be an automated version of the Neal family's lift system. They soon realized it would be too ambitious to design something that Neal could use, because of his limited upper body strength, although the machine could help other paraplegics.

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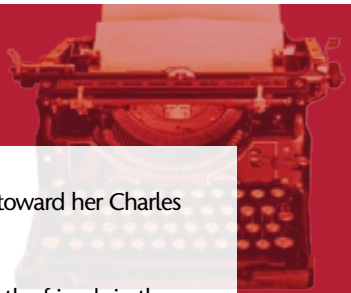


Our Story

After we ran the story about Xerpha Gaines, we received a note from Jeri Archer, Xerpha's great niece, wondering if we would be interested in a collection of photographs found in the belongings of her grandparents, Charles D. Gaines '16 and Hazel Gowdy '17. The photographs are all from the mid-teens. Some are inscribed: Campus Day 1913; W.S.C. Band 1914; Sophomore Tug of War (Silver Lake) 10-3-13. People are generally not identified, but it soon becomes clear who Charles and Hazel are. Charles in his buggy, his horse looking back at its driver. Hazel in a long white skirt and dark blouse, round-cheeked and smiling, taking a step forward, presumedly toward her Charles who is taking the picture.

Some photos will always be mysteries. Who are the friends in the photos? What are they doing? What is this person laughing at? Why are 18 people sitting on an open flat-bed Ford truck? Where are they going?

wsm.wsu.edu/ourstory

Blue/Purples

MICHAEL HOPKINSII ALL OTHER IMAGES COURTESY WASHINGTON POTATO COMMISSION

JUDGING BY HIS OCCASIONAL RIBALD REFERENCES TO THE POTATO, Shakespeare considered the exotic tuber primarily as an aphrodisiac. Although the time of the potato's introduction to Europe from the New World is not clear, recent scholarship has determined that the potato was grown in Spain as early as 1570. But the potato is an odd vegetable. Potatoes of that era were not uniformly oblong and smooth, but came in many colors and shapes, with odd protuberances that reminded some of, well, body parts. Although Indians had eaten them for thousands of years, Europeans were mystified, if not titillated.

But they got more adventurous. And the shifting socio-economic scene in Europe created demand for a reliable food crop, which the potato provided as it gained acceptance. According to John Reader in his recent *Potato: A History of the Propitious Esculent*, by 1622, Dr. Tobias Venner, a noted advocate of healthy living, had added to Shakespeare's virtues additional nutritional ones: "they...doe wonderfully comfort, nourish and strengthen the bodies, …

"…and [are a food that] incites to Venus," he adds.

And you wondered why the average American eats over 140 pounds of potatoes per year?

Although the potato's libidinous qualities have been neither proved nor disproved since Venner's day, we have made substantial progress in understanding its nutritional qualities. And the news keeps getting better.

USDA potato breeder Charles Brown's lab at WSU's Irrigated Agriculture Research and Extension Center in Prosser was the first to discover antioxidants among the many other nutrients of the potato. Brown, who has worked with potatoes for 30 years, concentrates on breeding specialty potatoes, deeply colored varieties, from blue to deep purple and red, for their color-related compounds.

In fact, the deeper the color, the more nutritious the potato, it seems—at least in terms of antioxidants. Oxidation is one of those unfortunate facts of life. Metabolic processes in the body, as well as pollution and other environmental factors, produce very reactive atoms called "free radicals," which damage the body's DNA, providing an opening for the development of disease. Antioxidants, as the name implies, counteract those free radicals.

Probably less than one percent of the potato's genetic diversity has been incorporated in modern cultivars, says USDA biochemist Roy Navarre, who is also stationed at Prosser. The potential for traits that might be gleaned from wild varieties is tremendous, particularly regarding phytonutrients, including antioxidants. There are many cultivars that have never been tested for their nutrients, says Navarre.

The newest edition of the *World Catalogue of Potato Varieties*, published by the International Potato Center (CIP) in Peru contains more than 4,500 potato varieties that are cultivated in over 100 countries worldwide. The catalogue also describes about 1,900 wild potato accessions from the wild potato collection maintained in the CIP genebank.

Closer to home, baby potatoes are particularly high in phytonutrients, says Navarre.

Fifteen miles outside of Prosser, Ed Schneider '77 leads me down a row of deep green potato plants, a row that seems to stretch to the horizon. He pulls a plant from the ground to show me the baby potatoes that he'll start harvesting in just a few weeks, just after July 4.

Right now they're the size of large marbles. He describes how they will be coated with flavoring, then roasted and frozen.

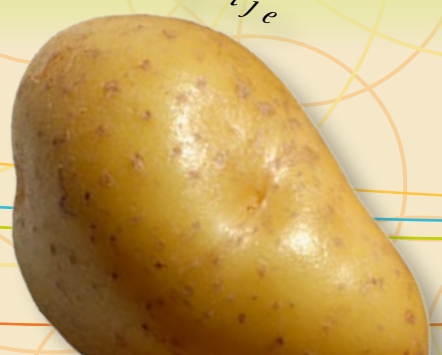
It's noon and my mouth's watering. Unfortunately, the only places you can get these baby potatoes is on one of the airlines or from the big yellow Schwan's trucks that cruise the rural United States.

Or you can grow them yourself. They're actually a regular potato, he says, a Bintje, with bright yellow flesh. They're just harvested early. The novel approach seems to be working, as the market is growing rapidly, says Schneider.

Even the plain old potato is good for you, says Schneider, who farms 1900 acres, mostly potatoes and sweet corn. A potato has more potassium than a banana, he says, echoing radio ads from the Washington State Potato Commission (potatoes.com). As well he should. Schneider is a past president of the commission and is currently president of the National Potato Council.

According to the commission, Americans eat 147.8 pounds of potatoes per person annually. Washington does its part to feed that appetite. Second only to Idaho in potato production, Washington grows 20 percent of the potatoes in the United States. We're the top producer of French fries. Eighty-seven percent of Washington potatoes are processed. One reason for the percentage is export, says Schneider. Raw potatoes are a living thing, and they grow in the dirt, he says, which makes them difficult to export due to disease worries. Fifty percent of Washington potatoes are exported, mostly to Asia.

Bintje



:: by Tim Steury ::

Washington potatoes


Russian Banana

Responding to the growth of area processors, Schneider's father was just starting to grow potatoes when Ed graduated from WSU in 1977. Before that, he grew hay like many of his neighbors. But potato acreage has increased enormously since then. Potato acreage in the Columbia Basin has reached 160,000 acres. The dry climate (about six inches of rain per year) and readily available irrigation water provide an ideal environment for growing potatoes. Washington's yields are among the highest in the world.

Besides his 400 acres of baby potatoes, the rest of Schneider's potato acreage is devoted to the Ranger russet. The majority of potatoes grown in Washington are russets, and 80 percent of the total crop goes to French fries. Whereas he sends his crop straight to the processor, as do many of the farmers around Pasco, others do it differently.

According to post-harvest researcher Rick Knowles, about 60 percent of the Washington potato crop goes into storage, for later processing and fresh use. One of the major landmarks on State Route 26 near Othello is the enormous potato storage shed with Go Cougs painted on its sides. Owned by Johnson Agriprises (Oren Johnson '69, president), the shed holds 36,000 tons of potatoes.

Keeping those potatoes in prime shape for French frying or other use is no small trick. They must be kept at a low enough temperature to keep them from sprouting. But if the temperature is too low, the potato's starch starts turning to sugar. When the sugary potatoes are fried, the sugars combine with amino acids and turn brown. The taste is fine, says Knowles. His father, for one, likes them that way.

But the general consumer is put off by brown fries—or at least the industry believes so. And perception is everything. So the holy grail of French fries is a cultivar that stores under low temperatures without producing sugars.

If that potato is the grail, Knowles and Mark Pavek are Knights of the Round Potato Table. The potato court is the Tri-State Potato Breeding Program, made up of researchers from the USDA (including Brown and Navarre), the University of Idaho, Oregon State University, and WSU.

Breeders in the program make crosses toward desirable traits. The best material is selected, propagated, and evaluated. Pavek is responsible for the in-season evaluation, and Knowles is responsible for the post-harvest evaluation. Everything from the program, with the different growing locations and growing conditions, is sent to Pullman for evaluation under Washington growing conditions. Potato breeding is a long process. From initial cross to releasing a commercial cultivar takes about 14 years.

Besides evaluation, Knowles and his lab conduct basic research, including development of sprout inhibitors. One of their major finds is that the chemical that produces the smell from new-mown grass functions well as an inhibitor.

Another major effort of Knowles's lab is how seed potatoes are handled. Potatoes do produce actual seed, which form a seed ball. The seed is not only very toxic, it is also very variable. Plant the seeds from a single potato plant, and you'll get that many variations.

So potatoes are reproduced clonally. Each eye on a potato will produce a plant genetically identical to the parent. Varying storage conditions result in variations in yield.

The enormous diversity of the potato as well as the variety of preparation might well on their own have provided researchers plenty of work. But now they've been handed an additional challenge. McDonald's, the largest seller of French fries, responded to shareholder pressure this spring by announcing it would survey its suppliers regarding pesticide use, with the goal of moving toward a more sustainable supply.

Despite their ancient Andean origins and great genetic diversity, domestic potatoes are one of our most vulnerable crops. Producing a perfect French fry requires protecting potatoes against a wide assortment of insects and diseases, which generally means the judicious use of pesticides and fungicides.

The move by McDonald's will likely produce a newly energized effort by researchers toward exploring not only alternative controls for protecting the potato crop, but a closer look at the 99 percent of the potato's genetic material remaining to be explored. «

Washington potato varieties

Russets: Russet Burbank :: Russet Norkotah :: Ranger Russet **Whites:** White Rose :: Cascade **Yellows:** Yukon Gold :: Yellow Finn :: Provento **Reds:** Chieftain :: Norland :: Red La Soda :: Klondike Rose™ **Blue/Purple:** All Blue :: Russian Blue **Fingerlings:** Russian Banana :: Ruby Crescent :: French Fingerling

For more information including recipes and nutrition visit Washington State Potato commission's Web site at www.potatoes.com.


Klondike Rose™


Russet Burbank

:: from page 19

The students came up with a modified garage door opener that carries the operator up and over into the combine cab. The idea was simple, but the execution was complicated, says Lopez: "There's been a ton of challenges carrying this from conception to completion."

Lopez works for Schweitzer Engineering Laboratories (SEL), an international company founded by former WSU professor Ed Schweitzer that offers products and services for maintaining electrical power systems. His employer has been a steady source of money and equipment for the PAL project, which gets volunteer help from SEL mechanical engineer Craig Thompson. In addition, Schweitzer offered Mallet an internship where he spends part of his time working on PAL under Lopez's supervision. Mallet is a Running Start student who, while still enrolled at Garfield-Palouse, is already taking classes at WSU.

Schweitzer sees its support of PAL as a good investment, says Tammy Baldwin, the company's university relations coordinator. "Our industry needs to cultivate engineers," she says. "These students are interested, motivated, and driven to excel."

The team was invited to present the prototype at the February competition in Washington, D.C. "At the finals, the kids had to give a 15-minute presentation to a panel of judges and a substantial crowd," Stewart recalls. "When their turn came, they nailed everything and came in at 14 minutes and 30 seconds.

"Twenty years of coaching baseball and I have never been more proud of a team than I was of those kids then."

The Garfield-Palouse team won the engineering award, a second-place finish that came with $1,500. The first-place prize went to a design for a device that allows a user to change and tie a trash bag with one hand.

The PAL project drew the attention of Lemelson-MIT InvenTeams, a national initiative to encourage high school students to invent technological solutions to real-world problems. Garfield-Palouse was given $10,000 for research and development, and invited to demonstrate the new-and-improved PAL this summer at MIT.

The 2008–2009 PAL team of 15 members had to raise money for travel expenses to Boston as well as work on a lift design with streamlined electronics. The goal was to make the new version lighter, easier to wire, and, ideally, less expensive. Sean Neal also insisted it be more attractive. "I've seen some other lifts, but nothing that's easy, compact, and looks good—like being painted red, so it matches the combine," says Neal. He thinks the lift could be adapted for other uses, such as road graders and amusement rides.

Today Neal and Miles Pfaff, another core member of the first PAL team, are in their second year at WSU and mentor the Gar-Pal design team.

The Gar-Pal team hopes to get a provisional patent for the project. "Then, with luck, we'll sell it," says Stewart. A project that started out as "building a toy for Sean," he says, has become a machine that, as he's heard from other farming families, is sorely needed.

See a time lapse slideshow of the students installing the lift at wsm.wsu.edu.

Puppy mills closed for good

by Hannelore Sudermann :: Last January investigators in Mount Vernon raided one of the largest puppy mill operations in state history. They found close to 400 animals. Many of the dogs were sick, in filthy cages, and had insufficient food and water. Days later a similar raid in Snohomish County of a site linked to the Mount Vernon business revealed another 200 animals.

Puppy mills are large-scale dog breeding operations where dogs may be denied their basic needs including proper medical care, sanitary living conditions, and adequate shelter and exercise. The businesses, which sell puppies to individuals as well as to pet stores, can be multi-million dollar operations. This year several mills across the state in places like Kennewick, Gold Bar, and Mount Vernon were exposed and raided.

The first week after a raid is probably the hardest, says Jake Searle '96, DVM '00, one of the veterinarians at Chuckanut Valley Veterinary Clinic who helped treat the dogs from Mount Vernon. Now, months after the raids, veterinarians and volunteers, as well as the community and the courts, are still dealing with the case. There's so much more to it than just rescuing dogs and finding them new homes, says Teresa Steiner '97, one of the volunteers who led the rescue operation. "It's not like Animal Planet where the officer goes in and rescues the dogs and then it's over."

One of Searle's junior colleagues went to the farm to decide which dogs had urgent medical concerns and needed to be removed immediately. Then the rest of the clinic shared what has turned out to be a six-month-long burden of caring for the animals. Some had life-threatening conditions. One male was missing his lower jaw. Others had genetic deformities, and some had teeth that were so rotten they couldn't eat. While the team treated the animals, veterinarian Peter Brown DVM '91 documented their ailments and prepared reports for the criminal case against the owners.

Teresa Steiner '97, president of S.P.O.T., with two of the rescued dogs. *Photos Ingrid Barrentine*

"The people that made it happen were S.P.O.T.," says Searle. "Without them it would have been a nightmare." Saving Pets One at a Time is a local volunteer group that Steiner and others founded in 1999 to provide companion animals with foster care in private homes and placement, as an alternative to a traditional animal shelter.

The volunteer group did get a call warning that there were animals to be rescued, says Steiner. But they had been expecting 40 small dogs. On the day of the raid they discovered there would be over a hundred more. "We were scrambling," she says. With the help of volunteers with crates and vans, they moved animals from the farm south of Mount Vernon to the Skagit County Fairgrounds a few miles away. From there they

Captain Michael Unruh '04 watches over troops from the sky above Afghanistan.

Bill Goeres '77 and Jenny (Brown) Goeres '78 travel to Bolivia to help care for abandoned infants. And Jenny finds subjects for her watercolors.

wsm.wsu.edu/coordinates

Coordinates

could begin assessing the animals' needs and assigning them to foster homes. A few days later, the more than 200 remaining dogs were handed over to the volunteers.

"Fortunately we had a huge outpouring of support," says Steiner. "Well over a hundred people came to help." But they were also facing crowds of people wanting to adopt the dogs that night. The mini-Aussies, Chihuahuas, Corgies, and Shih Tzus are highly desirable animals, and some people saw the raid as a means to the dog they wanted.

Coping with droves of volunteers and eager owners-to-be, and at the same time trying to protect the animals, was overwhelming. They moved from the fairgrounds to a private farm. "That way we were able to limit the people and the confusion," says Steiner. "We needed to spend the first few days logging in the animals, getting them cleaned up, and taking pictures of their problems."

The veterinarians and groomers worked in shifts. They didn't want to do too much for the dogs, because they were evidence in the criminal animal cruelty charges against the owners. "We tried to handle the train wrecks," says Searle, The less serious cases like malnourishment, neglect, poor socialization, rotten teeth, and no muscle tone came later.

Fortunately it happened in the winter when things are generally slower at the veterinary office. "We have five veterinarians here, so it didn't necessarily overwhelm our practice," says Searle.

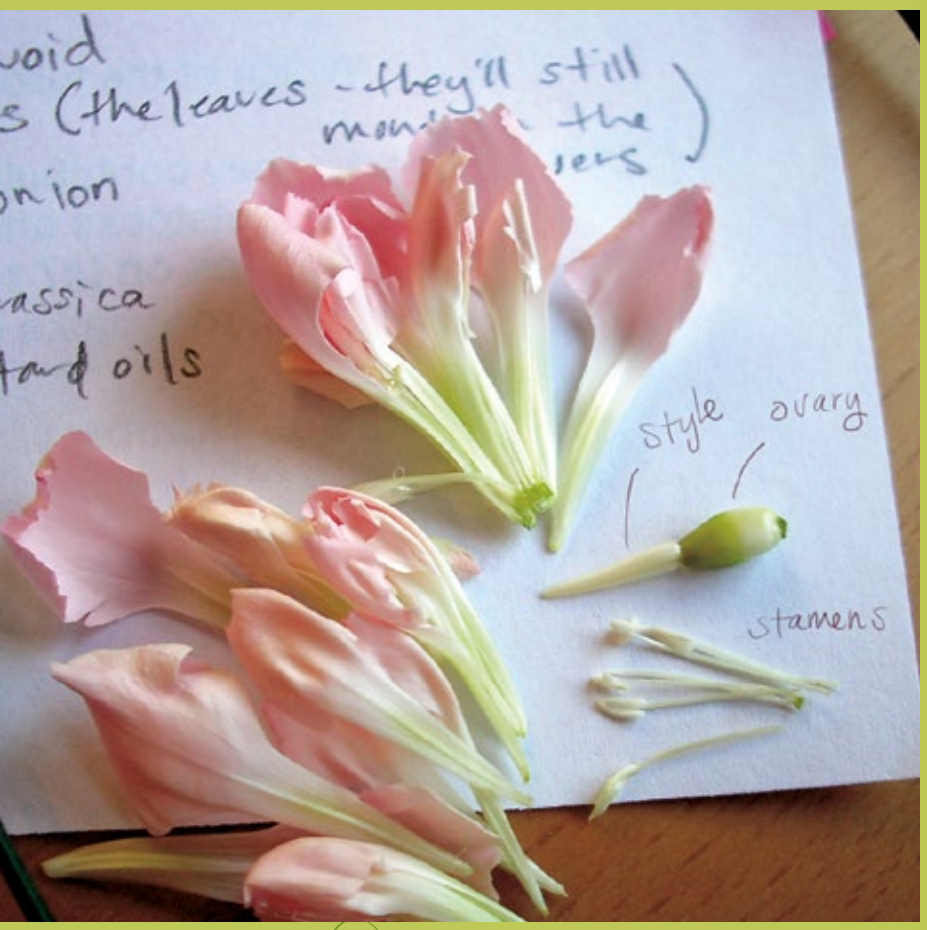
The Mount Vernon raid, and the connected raid in Snohomish County, provided evidence for a new state law to set tighter controls on dog breeding operations, says state Sen. Jeanne Kohl-Welles. The Seattle senator tried promoting a similar bill in 2008.

"The laws were different in each local jurisdiction," she says. "We had no state-wide regulation of large commercial dog breeders at all." Kohl-Welles and her coauthors put forward the bill just days after the Mount Vernon raid. "We still had resistance," she says. But the issues were so clear and the testimony of the animal control officers, community members, and veterinarians so strong that the bill succeeded.

The law now states that no one may own more than 50 dogs that haven't been neutered or spayed. (The original version limited the number to 25.) It also includes rules for crating the dogs so that they can turn around and lie down. And it stipulates that animals get at least an hour of exercise a day.

While the new law helps to limit the mistreatment of animals, more could be done to educate the public about puppy mills, which can be pretty sophisticated operations, says Steiner. She knows of one that raised the dogs out in the country, but sold them from a house in town. The new owners never saw the true conditions in which the animals were kept.

Because of the poor conditions at the Skagit Valley operation, many of the dogs will face socialization and maybe lifelong health issues, says Steiner. S.P.O.T. has carefully screened the families interested in adopting the dogs to ensure they are prepared for the challenges a mill dog might bring. Now animals from the raid in Skagit Valley have new homes around the Puget Sound, and the volunteers and veterinarians have a chance to catch their breath. "It has been a very frustrating year," says Steiner. "Overall, though, we're grateful to be able to help in this situation and see something good come out of something so horrible." «



TABITHA BORCHARDT

Master GARDENERS

:: *by Hannelore Sudermann* ::

ON SATURDAY MORNINGS the Issaquah farmers market is abuzz. People line up outside the city's historic Pickering barn to buy big red wands of rhubarb, strawberries from Puyallup, and armloads of flowers. Music flows through—reggae, elementary school choirs, jazz.

Amidst the din and bright colors from the multitude of vendors and visitors, keen experts with nothing to sell at all set up their table. They wait while people bring things to them—baggies full of leaves, vials holding insects, and dozens and dozens of questions. These are Master Gardeners, trained by Washington State University and empowered by their communities to advise, serve, and instruct their friends and neighbors on gardening and the environment.

At the same time, just a few miles away in Redmond, a similar table is set up at the farmers market on Leary Way. And still others in the Magnolia neighborhood of Seattle, at the Village Green market on Vashon Island, in Edmonds, in Port Orchard, and south in Puyallup.

These Saturday morning experts are not just at the farmers markets, they have tables at the Fred Meyer in Shoreline, outside a historic mansion in Ferndale, at the Lowe's in Tacoma, and at the County Fairgrounds in Spokane. They are part of one of the longest-running, most successful programs ever to come out of Washington State University. Master Gardener programs not only train and certify thousands of volunteers state-wide, but they have branched all across the country into communities as far off as New York, Puerto Rico, and Guam.

For all that Master Gardeners are and do, once they were just a good idea.

Right: "We tried to be of service to people," says Master Gardeners cofounder David Gibby. "But we were overwhelmed with the demand." *Photo Nicholas Draney*

Opposite page, left: Morning light floods the Master Gardeners demonstration garden in Puyallup. The educational venue is open to the public looking for landscaping ideas or needing help with a gardening problem. ***Opposite page, right***: Master Gardener volunteers hold plant clinics throughout the state, including at the Bellevue Nursery on Saturdays, helping customers decide on plants and diagnose and treat problems in their yards and gardens. *Photos Zach Mazur*

IN THE EARLY 1970S Washington State University extension agents Dave Gibby and Bill Scheer were new hires with joint appointments for both Pierce and King Counties. They divided their time between the Seattle offices on Queen Anne and the offices in Tacoma. While Scheer's focus was commercial agriculture, Gibby was assigned urban horticulture—a weighty duty given the population base of more than 1.5 million.

"I had two days in one county, three days in the other," says Gibby. "Each time I got to the other office, I would have hundreds of call back slips." And when Gibby wasn't available, people would turn to Scheer with their questions. "We tried to be of service to people," says Scheer. "But we were overwhelmed with the demand."

Why is my grass dying? When should I plant fruit trees? What's eating my peonies? There was a large public demand for horticulture information, and the University knew it. The solution was Gibby. "They called me the 'sacrificial lamb,'" he says.

Gibby grew up in Utah, in a large family that had a commercial nursery and greenhouse. Scheer was born in the Dutch East Indies, and after WWII went to school in the Netherlands, where horticulture was a major field of study, and so it became his. The pair are credited with concocting and honing one of the best public outreach ideas ever to come from Washington State University.

Gibby tried to address the gardening questions on television, on the radio, and in the newspapers. He would write up tip sheets and leave them next to the cash registers of nurseries. "All it did was make the problem worse," says Gibby. Thanks to his outreach, those gardeners thirsty for information now knew where to find him. "Fifty to eighty calls a day became up to 500 calls a day," he says.

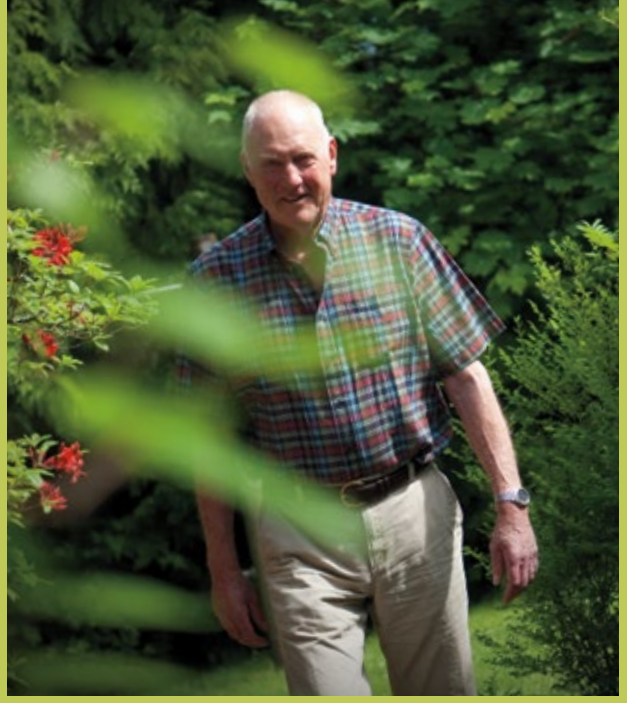
Gibby would sit at his desk and cull through the piles of the messages, answering those who had called more than once, those whose names he recognized, and those who were prominent in the community. The rest he threw away. "I just couldn't get to everyone."

He started attending garden club meetings, hoping to preemptively address questions specific to the season. There between the pruning course and the refreshments, he found a patch of life-long gardeners who were already experts. In many cases, these were the people to whom everyone in a certain neighborhood would gravitate for help. He saw a solution. "I thought, 'What's the problem with having volunteers help out?' " he says.

So he went back to the extension office with the idea, turning to Scheer. They talked about the German system where a mastery of a certain field brought you recognition. Those who brewed beer were *Braumeisters*, those who were expert foresters were *Waldmeisters*, says Scheer. Why not create a program to train garden experts? They took the German notion of "Gartenmeister" and "We Americanized it," says Scheer. "Master Gardeners. We knew people would be proud to have the title."

Both men believed in the idea. But they had to sell it to their colleagues at the research stations.

"To my surprise, I received a hailstorm of criticism," says Gibby. Though it was more than 30 years ago, he can still count off all the reasons his fellow extension agents and supervisors said it wouldn't work: 1. Volunteers could not meet WSU's standards. 2. They had to be licensed



Left: The children's corner of the Puyallup Demonstration Garden at the WSU Research and Extension Center. ***Above***: Bill Scheer, retired WSU extension agent and cofounder of the Master Gardener program. ***Opposite page, left***: A pathway through the Bellevue Demonstration Garden. ***Opposite page, right***: Anya Puceta, at 16 the state's youngest Master Gardener volunteer. *Photos Zach Mazur.*

to provide advice on pesticides. 3. The public wanted the information when it wanted it—gardeners wouldn't come to a planned clinic. And finally, "they said people would not volunteer," he says.

But Gibby had worked with volunteers before. He had no doubt he could find gardeners willing to give their time to the public.

He proposed holding a single clinic, something at a public venue where WSU faculty experts on plants, disease, insects, and soil could be available to answer questions. "I had an ace up my sleeve," he says. Of all the least garden-like places, he chose the Tacoma Mall. The mall administrators were thrilled to make room for the event and agreed to post fliers advertising it. Then he went to the *Tacoma News Tribune* and pitched a feature about it. Finally, he plugged the event on a local television program. And that first evening when the WSU experts set up their card table at the mall, "We got mobbed."

That wasn't enough, though. Gibby walked into the Seattle offices of *Sunset* magazine and approached writer Steve Lorton with an idea of plugging the volunteer program in the popular regional gardening magazine. Lorton was impressed with both the man and the idea. "He was tall, handsome, articulate," says Lorton. "Sort of Jimmy Stewart out of a '30s movie.

"He said, can you do this for me?" Lorton loved the idea. "It was just like lighting a stick of dynamite for me." Beyond the idea of building an army of volunteer gardening experts, the magazine journalist liked the challenge of flying down to *Sunset* headquarters in Menlo Park and convincing his editor to print something immediately.

It wasn't a hard sell. "Proc's (Proctor Mellquist) eyes twinkled, and he said 'Let's do a spread,'" says Lorton. A two-page spread on short notice? It was unheard of. But the story fit with the flavor of the magazine. "In those days we were kind of a publication of community action," says Lorton.

They needed art to run with the story, "so we made up this little sign that said 'Master Gardeners wanted' and hung it up over a card table at an Ernst (garden store)." Then they went out and collected pictures of some sick and hideous looking plants. "Then we wrote the story."

On page 188 in the September 1972 issue of *Sunset* ran the piece titled "Wanted: home gardeners to become Master Gardeners." The story said that WSU's extension service was seeking experienced gardeners to be volunteer garden experts. Those who volunteered would get 55 hours of free training on subjects such as garden techniques, the care and proper use of garden equipment, and the use of pesticides. The story ended with modest hopes that "as the system develops, representatives will be placed in an increasing number of locations through the Puget Sound area and eventually in all the populated areas of the state."

Even to Gibby's surprise, more than 300 people volunteered. He narrowed it down to 75 candidates in King County and 75 in Pierce. "It was a total mixed bag—retirees, a few professionals," he says. "I looked for a passion for gardening, good communication skills, and some gardening expertise."

In January of 1973, they started the classes, teaching in places like Northgate and the Kent library. Sharon Collman, who had a background in entomology, was among the first trainees. Gibby and Scheer taught most of the classes. It was challenging and interesting, she says, but she had no idea she was at the beginning of something big. Collman was also charged with setting up the first plant clinics where, once trained,

the Master Gardeners could meet with the public and answer questions. "In the first season, we served 5,000 people," says Gibby.

"Of course it worked," says Lorton. With a maritime climate that could host all kinds of different plants, the Pacific Northwest is a gardener's paradise. "Gardening wasn't huge back then," he says, "but there were a lot more gardeners here than in any place in the country."

It may have been difficult to get support for the idea in the first place, but it says something that two extension agents in Washington, in the Puget Sound region, were able to get it started, says Scheer. Anywhere else, and it might not have happened at all.

Gibby left WSU in 1974 for a private industry job that was "too good to pass up," he says. Collman, who had been working as a temporary extension agent, was hired to replace him and took over the coordination of the Master Gardener training. Scheer and other faculty continued to help with teaching, and soon Spokane County was starting up its own Master Gardener program.

The notion quickly spread across the state and then the country. According to a recent survey from the U.S. Department of Agriculture, the United States has nearly 95,000 active Master Gardener volunteers. In the past year they donated more than five million hours in their communities. They gave nearly 700,000 pounds of produce to local food banks and spent close to 300,000 hours teaching gardening to children and young adults.

In Washington, 36 of 39 counties host more than 4,000 active Master Gardener volunteers. The bulk of them are in the higher density communities around Puget Sound.

"There really is no typical Master Gardener," says Elaine Anderson, the Master Gardener coordinator for King County, which has over 700 Master Gardener volunteers, the highest number in state. "Other than they all love gardening and all have a real interest in volunteering in their communities," they come from all walks of life. Doctors, dentists, truck drivers. "This year we even had our first 16-year-old in training," she says. She is the youngest Master Gardener ever to be trained in Washington.

It almost didn't happen, says Anderson, who screens the applicants each year to select the best candidates for the training. When Anya Puceta, a Seattle high school junior, called about joining, Anderson repeated what she had been told,that no one under 18 could participate. Puceta, 16, already had some experience gardening at the organic pea patch at her high school and was even assisting in instructing her classmates. "I wanted more information to support what I was doing," she says. One of her mother's friends is a Master Gardener, as is a neighbor. Puceta thought she could squeeze time for the 60 hours of training over 12 weeks between school and studying for her SATs.

When she was turned away because of her age, she was discouraged. "But I'm not one to give up very quickly," she says. "Just ask my mom. It drives her crazy. " She e-mailed and asked for specific reasons why she couldn't participate. "I learned about liability," she says. Then, with her parents' promise to sign a waiver, she called Anderson back.

Anderson, impressed with Puceta's persistence, took the issue to Tonie Fitzgerald, WSU's statewide Master Gardener program leader, who double-checked the policies and encouraged the teen's application.

"She was great," says Anderson. "It was a delight to have somebody that young in the classes." Though many of the volunteers were retirees, two AmeriCorps students in their 20s joined the King County class as well.

"I DON'T COME FROM A FAMILY OF GARDENERS," says Puceta. "At home we have a mid-sized, untended lawn. We just let it be." But she has lately introduced a vegetable patch. "Let's see," she says looking into the yard. "We have nasturtiums and kale and fava beans, rhubarb, chives, and parsley."

Now that the 2009 class of Master Gardeners has finished training, Puceta and her classmates are required to perform at least 50 hours of volunteer time within a year. She is hoping to help at plant clinics as well as offer presentations on organic gardening to people in urban neighborhoods who may not already have access to it. She also wants to work at one of the several demonstration gardens in King County, perhaps the fragrance garden at the Seattle Lighthouse for the Blind, she says.

Plant clinics were the first focus for the Master Gardeners, but in the 1980s demonstration gardens began sprouting around the Puget Sound. Anderson points out the Bellevue garden, which was started in 1984, as one of the community's great assets. "They built themselves up from a blackberry patch," she says. Today, in addition to a regular diagnostic plant clinic, the garden holds a compost center, a children's garden, and gardens designed for shade, drought, and native plantings. "Now they're a kind of a model," she says.

The Cesar Chavez Demonstration Garden lies on Beacon Hill in front of a once-abandoned elementary school that since 1972 has housed El Centro de la Raza, a civil and human rights organization and community center for Latino and low-income families.

Though the garden is small—it strives to be "backyard scale"—it is one of the hardest working per square foot. Its first mission is to provide the community with examples they might use at home, particularly with raising food. Then, all the fruit and vegetables grown in the garden are donated to El Centro's food bank and free hot meal program. And finally, the garden serves to beautify the grounds of the urban community center.

The Master Gardeners have expanded their reach beyond a fenced segment at the front of the building by planting an edible hillside across the parking lot with apples, kiwis, and berries.

Master Gardener Mick Duggan is unloading starts he planted at home in his West Seattle garage. He plans to sell them for $1 each to raise money for other projects. "It doesn't bring in much," he says. "It's mainly to bring people into the garden to talk with us."

As he carries the young plants across the garden he points out the vegetable beds set up on a five-year rotation, to show how weeds and disease can be controlled by changing crops from bed to bed each year. This year the melons and cucumbers fill bed number five; the nightshade family, like tomatoes and eggplant, make their stand in three; and the peas, beans, and corn have sprouted up in two.

Duggan, a Nordstrom retiree, came to the Cesar Chavez garden four years ago. When he arrived, the view from the street was of "ugly compost bins," he says. Now flowers line the fence, and the garden entrance is adorned with once-unwanted roses that were rescued from yards through Plant Amnesty, a Seattle nonprofit organization. Other projects have included translating fact sheets into Spanish and scavenging materials from a nearby foreclosure home.

Everywhere he looks Duggan sees a project. Between the garden and the school stands a grove of horse chestnuts. He shakes his head. "I'm urging their removal," he says. Not only are the nuts unpleasant to deal with, they're toxic, and a little too close to the children's play area. Unfortunately, they were a gift to the center, and not all that easy to lose.

Beneath the trees wait several large cedar forms that he has volunteered to help build. El Centro received a United Way grant to provide raised beds for seniors and people with mobility issues who want to garden, but are not physically able to bend over to the ground or to build their own raised beds. He is not only assembling the forms, he's helping the center find the seniors to use them. At first, people were reluctant to request a raised bed, but "as soon as one person got one, word got out, and the calls started coming in," he says. "Once they get one, they're thrilled."

And behind that project is the building. Duggan and his fellow volunteers plan to help landscape the center with plants that enhance the structure, yet keep clear of the windows for security reasons.

The Cesar Chavez garden is just one of several Master Gardener demonstration gardens in King County, and of more than 50 around the state. Some are maintained by an army of volunteers, while others, like this one, have only a few.

***Opposite page*: Master Gardener Mick Duggan brings plant starts into Seattle's Beacon Hill demonstration garden at El Centro de la Raza. *Photos Zach Mazur.* *Above, clockwise from left*: Xeriscape Demonstration Garden in Riverfront Park in Wenatchee, *photo Amber Barber*; Master Gardeners preserve local heirloom varieties from pioneer homesteads at the WSU Vancouver Heritage Garden, *courtesy Clark County Extension*; an enabling garden (one of many types) demonstrated in Mount Vernon, *courtesy Skagit County Extension*.**

As is the newer xeriscape demonstration garden at the Riverfront Park in Wenatchee, says Fitzgerald. Besides offering a beautiful scene, the Master Gardeners selected plants like lavender and sedum that are especially drought tolerant. With the support of the county public utilities district, they are showing eastern Washington homeowners how to cut down on their water use.

Beyond the clinics and the gardens, much more is going on with the program. There's more awareness of environmental impact, says Fitzgerald. In the 1970s, Master Gardeners' focus was outreach. "Now it's not so much changing the environment just to look pretty," she says. "Now it's a much more proactive program. We're working with municipalities and parks," as well as water conservation districts, historical societies, public schools, and nonprofit groups.

Master Gardeners are teaching their communities to identify and fight invasive plants and insects, limit unnecessary fertilizer and pesticide applications, hold surface water on their properties so it doesn't pour into local streams and scour them of fish habitat, and even to landscape in a way that keeps homes warm in winter and cool in summer, says Collman, who now works as an extension agent in Snohomish County. "The issues we're facing as a society, that's where we're putting our programming."

WSU is lucky to have this army of dedicated volunteers, says Dan Bernardo, dean of the WSU College of Agricultural, Human, and Natural Resource Sciences. "They really multiply our impact on urban and environmental horticulture," he says. To arm them with solid science-based training, and then to send them out to educate others, it's really a noble goal, he says. "It's a nice marriage of our sciences and the needs of the communities around Washington state."

While Master Gardener training in Washington is now county specific, the University is working to unify the core training program to provide the same access to the experts for everyone, whether they're in the populated Puget Sound region or far off in Grays Harbor or Adams counties, says Bernardo. Now horticulture information is widely available—in the media, on the internet, he says. Still, the Master Gardeners program is a model for its connections to the University and all its resources.

Also, thanks to their training, the volunteers are the experts' ears and eyes, watching for infestations of disease, insects, and invasive plant species, helping natural resource agents and scientists cope with the changing environment.

Can they do all this in the 50 hours they're required to volunteer to stay certified? Probably not, say the coordinators. But that's of no consequence, since most of them go far beyond their required time. Of course they're committed, says Fitzgerald. Gardening, for many of them, isn't just a hobby, it's a passion."We are so lucky to have these people who want to learn and contribute to their communities, and

TABITHA BORCHARDT

they do it in the name of Washington State University Extension," she says.

Now Master Gardener programs operate out of land grant universities in more than 40 states. In Mississippi they're leading volunteers in projects to rebuild the public landscapes decimated by hurricanes Rita and Katrina. In Wisconsin they're helping gardeners identify and protect local pollinators. And in Nebraska, they're helping the Pawnee tribe revive its traditional corn variety, and through the corn, its agricultural traditions.

Though they never imagined the Master Gardeners program would be an international model or that it would reach so far into society, Gibby and Scheer knew it was a good idea from the beginning. "I felt if we primed the pump, it really would spread," says Gibby. "I'm proud of what we started." ⊗

***Top, left*:** Besides its close ties to the impressive 90-acre gardens at Manito Park, the Spokane Master Gardeners conduct urban horticulture and water-wise gardening outreach programs. ***Top, right*:** WSU Master Gardener Program director Tonie Fitzgerald among the ornamental grasses at the "Green Zone"—an interpretative center at Spokane County Extension. *Photos Zach Mazur.*

Master Gardeners Online

For the past three decades, the only way to earn a Master Gardener certification was to clear off 12 weeks of Tuesdays each winter for the training.

Today Washington State University's master gardener coordinators realize that while people may have the passion for becoming master gardeners, time, weather, and cost can get in the way.

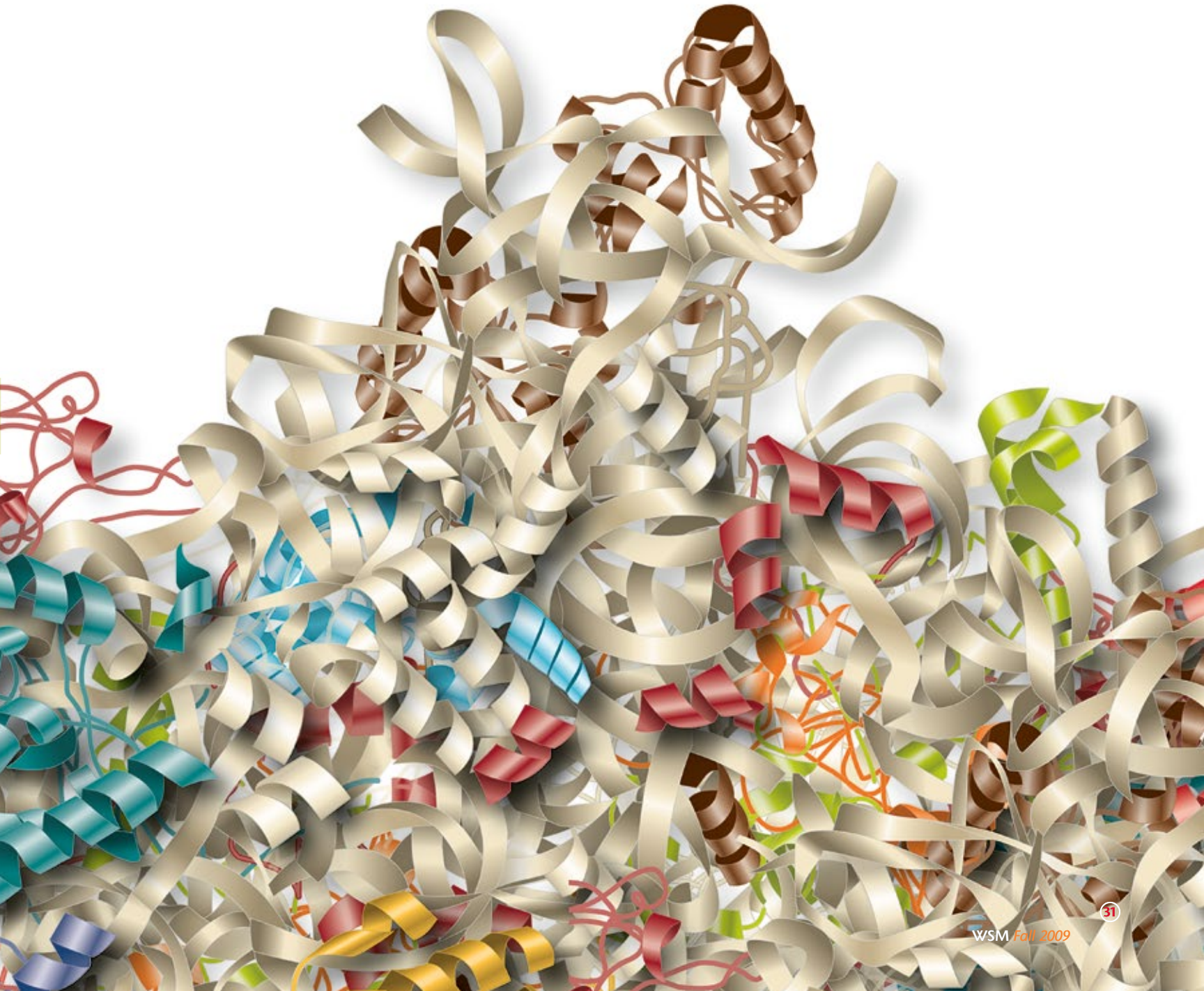
Therefore, components of the program ***will be offered online starting this fall.*** In addition to the full printed curriculum, volunteer trainees can find videos, games, quizzes, and other interactive elements that will help them further their gardening knowledge. How the online offerings are used will vary county by county, but once accepted into the master gardener program, the volunteers will be able to access the training materials through the WSU Master Gardener Web site.

"It allows us to use our resources more wisely," says Tonie Fitzgerald, the Spokane-based director of the WSU Master Gardener Program. "And it provides consistency among the counties."

View an interactive map with photos of the Master Gardener programs throughout the state at wsm.wsu.edu.

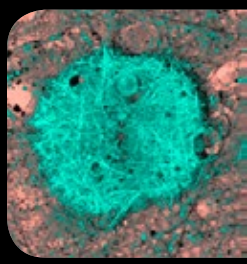
{ The SHAPE of THINGS to COME }

by Cherie Winner :: illustrations by Aaron Ashley



“Life is”

Alex Li
WSU biochemist



ROBERT HUBNER

a process of self-assembly.

Soft-spoken biochemist Alex Li apologizes if he's sounding too philosophical, but it's hard to avoid such reflections when your work deals with the fundamental principles of how living things are put together.

He's especially fascinated by the way proteins come to have the shape they have. Proteins make up our hair and muscle, our brains and lungs, our enzymes and antibodies, and each one must attain a particular shape in order to do its work. They start out as chains of small links called amino acids and then, within milliseconds of their creation, they fold and twist and wad up into the distinctive shapes that are critical to their function. Many go on to combine with other proteins—either identical copies of themselves or different proteins—to assemble into a sort of super-structure.

Despite the complexity of the task, it appears that proteins assemble with little or no help from "cellular machinery," says Li. Amazingly, improbably, most protein complexes achieve their shape by following specific codes that are built into their structure. They self-assemble.

While other scientists delve into the details of how that happens, Li is looking for ways to turn the natural folding and assembly processes to our advantage—to use them to make nano-scale machines that could do things like deliver drugs to a specific location in the body or sense the presence of a pathogen or toxin.

As Li sees it, nature's assembly methods have been honed by eons of evolutionary selection; rather than creating nanomachines by trying to shrink our standard methods of production, why not use the processes nature provides?

When protein folding or assembly goes wrong, life struggles. The plaques in the brains of people with Alzheimer's or Parkinson's disease are made of proteins that assembled into stringy fibers rather than their correct shape. Cystic fibrosis, mad cow disease, and Huntington's disease all involve proteins that fold or assemble incorrectly. *Image Wellcome Trust*

MADE FOR EACH OTHER

With its bumps and grooves and hidden pockets, the surface of a mature protein is so distinctive that Li thinks it presents a "molecular code" that allows it to be recognized by other proteins that have a matching code, the way a key fits its matching lock.

He thinks such codes are powerful enough to explain how proteins and other molecules self-assemble—and that if we understood how the codes work, we could use the same tactic to manufacture nanomachines—molecules made to order to do specific tasks.

"It starts here," says Li, tapping his head. "You visualize something: I think this has the perfect matching code, this is going to self-assemble."

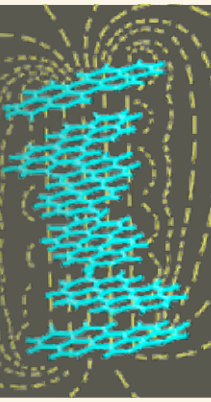
In one recent experiment, he showed that a very simple molecular code enables molecules to recognize each other and come together to form a larger structure. He made molecules that were flat and roughly oval in shape. Each had two small gaps, or bays, where Li could attach other small chemical groups. The bays weren't big enough to accommodate the added groups unless the whole molecule twisted a bit to open up the bays more. By attaching groups of different sizes, Li forced the molecule to twist very little, a lot, or an in-between amount. Then he mixed molecules that had different amounts of twist to see whether any of them would recognize and associate with each other.

He picks up a sheet of paper and holds it out horizontally in front of himself.

"We're taking a planar molecule and we're twisting it," he says, turning the edges of the paper in opposite directions. "As we're twisting the plane at different degrees, we make different codes."

He found that molecules with the same amount of twist glommed onto each other and stacked up like Pringles potato chips. Those with slightly different amounts of twist associated to some extent, like regular chips that sometimes fit together but more often don't. Those with very different amounts of twist were like popcorn. The individual units didn't come together at all.

Li's ability to create molecules that will put themselves together opens up all sorts of science-fiction-ish possibilities. In one experiment, he made a molecule that included features allowing an electron to flow around it. When several copies of the molecule stacked together (because their molecular codes matched), their roaming electrons flowed around the whole stack, producing a magnetic field and the ability to induce an electrical current. The structure was, in fact, a solenoid, just like the ones inside electrical motors, only much, much smaller. "And it's self-assembled!" says Li.



"When molecules have a matching code, it's kind of like people sharing the same personality, same common interests," says Li. "They just get together and become friends." Molecules with incompatible codes, on the other hand, "basically hate each other. You put them in the same flask, they don't see each other. They never come together."

DISORDERLY CONDUCT

That proteins follow precise patterns of folding to attain just the right shape to do their job has been standard fare in biochemistry classes for decades, says WSU molecular biologist Ray Reeves.

"I was trained that proteins have to have some sort of *structure*," he says. "The other part was not interesting."

By "other part" he means portions of some proteins that were found to be not all that orderly. Instead of maintaining a distinctive shape, they flopped around loosely. They appeared to have no real purpose, and were thought to be evolutionary relics like the appendix in humans.

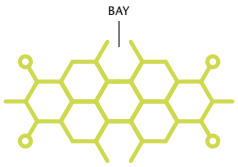


FIG 1A

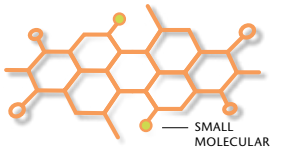


FIG 1B

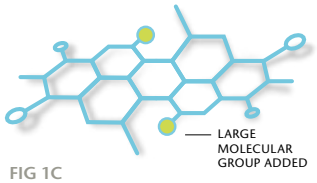


FIG 1C

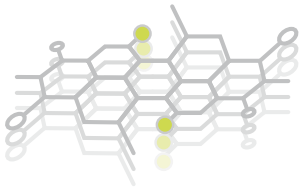
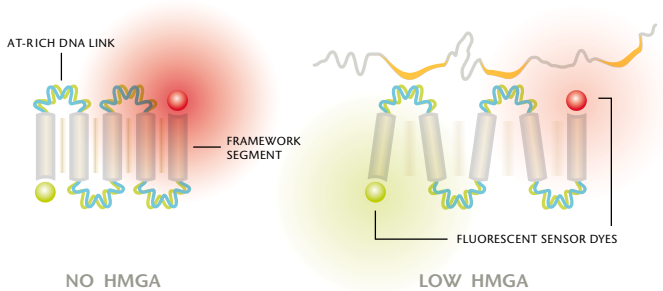
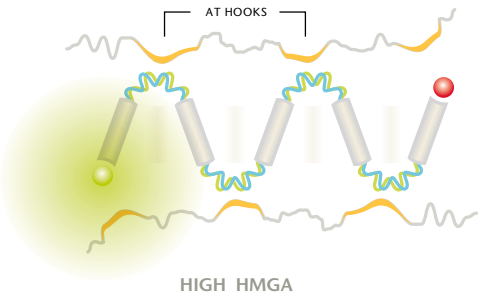


FIG 2 : TWISTED PLANAR STACK

Alex Li showed that the shape of a molecule is a "code" that allows it to recognize molecules with similar codes. **(1A)** He starts with a flat molecule with two open bays where other chemical groups can be placed. **(1B)** Attaching a small chemical at each bay makes the molecule twist slightly to accommodate them. **(1C)** Attaching a larger chemical at each bay makes the molecule twist more. **(2)** Molecules with the same degree of twist recognize each other and nest together.

Li used molecular codes to design a biosensor that detects HMGA, a protein made by cancer cells. In the absence of HGMA, the biosensor is tightly folded and the fluorescent dyes at either end are close enough to interact. When Li shines green light on the biosensor, only the red dye emits light. When HMGA binds to some links of AT-rich DNA, the biosensor partially unfolds. The dyes move farther apart and both dyes emit light. When HMGA levels are high, the biosensor unfolds completely, and only the green dye lights up.





{ The SHAPE of THINGS to COME }

Then Reeves met a protein called HMGA.

It was in the 1980s and he was studying proteins involved in cell division. One group of proteins caught his interest because of one strange behavior: They remained dissolved in 10 percent acid. Other proteins precipitate—become solid—at such concentrations of acid.

Reeves found that one member of the group, HMGA, is strongly associated with dividing cells, suggesting it plays an important role in that process. Yet it floats around like an open chain. It has no shape, no characteristic structure, of its own.

Which looked like scientific heresy. With no inherent shape, what does HMGA do, and how does it do it?

HMGA promotes cancer in at least two ways. It turns on genes that trigger further growth, and it interferes with DNA repair. Working with WSU molecular biologist Mick Smerdon, Reeves found that by distorting the shape of the DNA where it binds, HMGA prevents repair enzymes from reaching parts of the DNA that have been damaged by ultraviolet radiation. *Image Wellcome Trust*

Over the next several years, Reeves and his students found that HMGA is a *transcription factor*, a protein that binds to DNA and assists in turning on, or off, specific genes. In humans, it's involved in the regulation of at least 50 genes, almost all of them involved in controlling cell division or growth. HMGA is abundant in embryonic cells, which are dividing rapidly as part of normal growth. It is present in lower amounts in adult cells that divide slowly throughout life, like those that line the gut and lungs.

It also shows up in cancer cells.

"This is one of the best biomarkers for cancer," says Reeves. HMGA has been found in almost every cancer that has been looked at, including lymphoma, breast cancer, and prostate cancer, "and the worse the cancer, the higher the level."

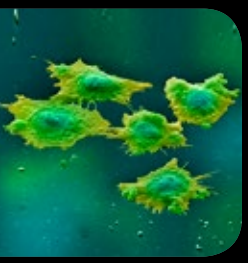
But the mystery of its shapelessness remained. Other transcription factors have definite shapes and turn on their target genes by recognizing specific sequences of DNA. How does HMGA work?

DNA is composed of four subunits, labeled A, T, C, and G (for adenine, thymine, cytosine, and guanine). A single gene has hundreds or thousands of these subunits in a specific sequence that spells out the order of amino acids needed to make a particular protein.

Most transcription factors recognize a short sequence near the start of their target gene. Reeves found that HMGA doesn't recognize DNA sequence at all. Instead, it recognizes the structure of DNA in certain areas, and then shapes itself to fit the structure it finds.

The key to how it works is that DNA is not symmetrical. It's twisted in such a way that one side of it is narrower than the other. In stretches of DNA with all As and Ts (and no Cs or Gs), that narrow side is especially skinny. A patch of just 6 As or Ts in a row, in any order, is enough to create that skinny groove.

"It's like the Colorado River in the Grand Canyon," says Reeves. "It's that narrow canyon that these guys [HMGA] are looking for."



“You end up going places you didn't expect to go.”

Ray Reeves
WSU molecular biologist

ROBERT HUBNER

When HMGA finds such a slot in DNA, in it goes. Then it latches on with three "AT hooks" that form in the protein to snag the edges of the DNA. "They're like little hands sticking in there and getting a grip," says Reeves, "but they don't have any shape [of their own] until they recognize and bind to something."

As HMGA binds to DNA, it changes the shape of the DNA just enough to allow other transcription factors to bind and turn on (or off) whatever gene is nearby.

Since the discovery of HMGA, biochemists have taken a closer look at the unruly, shapeless parts of other proteins, those parts that were once thought to be useless. So far they all have some way of fitting themselves to the shape of their target; many even have AT hooks. "Ours is just taking that idea to the extreme," says Reeves.

GETTING SMART

Looking for ways to exploit the ability of coded molecules to recognize each other, Li hit upon the idea of a "smart" sensor that would signal when it recognized something of interest. In recent years, many labs have worked on biosensors that will detect a virus or an airborne toxin. Each of those biosensors was built more or less from scratch and was designed to recognize just one kind of target. Li aimed for a sensor that could be tailored to different uses by plugging in a part that would recognize the specific thing you were interested in.

He came up with a molecule made of two kinds of alternating segments, like lengths of a broomstick connected by lengths of chain. The broomstick segments provide the basic framework of the sensor. They share a code that allows them to attach to each other so the entire structure folds up like a road map. The chain segments could be bits of protein or DNA—something that will recognize and bind to the target. At each end of the sensor, Li attached a different color fluorescent dye.

At rest, the sensor is fully folded and the dyes at the ends are close to each other. When the recognition segments (the lengths of chain) bind to their target, their structure changes. That, in turn, makes the folds open up, which makes the dyes at the ends move farther apart, which changes the color you see (*see illustration, page 34)*.

Li built the framework segments, incorporating code features so they would match up and make the sensor fold. The next step was to select linker segments that would be the "sensing" part of the sensor. He needed to use something that would recognize a specific target, and would change its shape when it bound to that target. He asked if Reeves knew of any good candidates.

"I said, 'Funny you should mention that!" recalls Reeves. "'I think we've got something for you.'"

Reeves suggested that using stretches of AT-rich DNA as the linkers should allow the sensor to detect the presence of HMGA. It would be a good way to test Li's design, and if it worked, it could offer a new diagnostic test for cancerous cells.

Li tried it. He connected his framework segments with lengths of AT-rich DNA and then exposed the sensor to HMGA. It worked—HMGA bound to the linker segments and changed the shape of the sensor enough to change the color it emitted.

"He said, 'your protein is amazing!'" says Reeves. "I said, 'it's not my protein, it's nature's protein, but it *is* amazing.'"

Li hopes he'll eventually be able to put his biosensor into cells to see if they're making more HMGA than they should be (and therefore might be cancerous). The sensor is small enough that it can be used with living cells, and it is much more sensitive than current methods of detecting cancer, but a few hurdles remain before it is ready for clinical use. Li still needs to find a way to get the sensor into the cells in question. He also has to figure out how to tell whether a cell that's making HMGA is normal and harmless, or poses a threat. At early stages of cancer, the cells aren't dividing rapidly and don't look much different from healthy cells. That's why early detection by current methods is so difficult.

"Can you distinguish that [normal] guy from something that's going to go on to become a tumor?" says Reeves. "At the low end of the scale, going from normal to cancerous is the [point] that would be most important and interesting to detect. I think we're getting closer, but it's not there yet."

THINGS TO COME

The problems yet to be solved don't faze Li. His smart sensor works; he's devised a way to make molecules that are the size he needs and that will find their proper partners and assemble into the proper form; his ideas about how molecules recognize each other have been confirmed.

Best of all, he feels he's onto something entirely new, a set of fundamental principles that apply to many aspects of chemistry.

"I think we have a cross-cutting theory that allows you to say exactly why molecules come together and why they don't come together," he says.

Besides, the work is just plain fun.

"I love coming in every day and thinking about molecules," he says. "Every day the molecules teach me something." ⊗

{ Shapeshifter }

WSU's Ray Reeves discovered that HMGA, a protein involved in the control of cell division and growth, doesn't assume a definite shape until it binds to its target.

In stretches of DNA that are composed of **adenine (A)** and **thymine (T)**, with no **cytosine (C)** or **guanine (G)**, the two strands of the double helix are especially close together. HMGA recognizes the narrow groove between them.

In this diagram, **HMGA (gold)** has inserted part of itself, called an **AT hook**, into the groove of a brief stretch of AT-rich DNA. Branches ( ) of the HMGA secure its attachment to the DNA. Two more AT hooks at either end of the HMGA may bind to other AT-rich areas nearby (not shown). ***If two or three of its AT hooks find places to bind,*** HMGA alters the structure of the DNA enough to allow other proteins to turn genes on or off.

To view animations showing protein folding and links to other protein investigation sites visit wsm.wsu.edu.

Reeves's work with HMGA helped change the long-held view that proteins must have a definite structure to function. Many proteins have been found to work like HMGA, by fitting themselves to their targets. AT hooks—the parts of HMGA that bind to AT-rich regions of DNA—have been discovered in proteins from animals, plants, and even bacteria. They are among the oldest functional protein motifs in evolutionary history.

ILLUSTRATION AARON ASHLEY

IAKOV KALININ

FINDING CHIEF KAMIAKIN

At last, a biography of one of the Northwest's greatest chiefs.

:: *by Tim Steury* ::

IN JULY 1853, U.S. Army Captain James McClellan and a column of 61 men and 161 horses and mules headed east out of Fort Vancouver with instructions from territorial Governor Isaac Stevens to survey the middle Columbia region and Cascades passes. When they reached the Simcoe Valley in mid-August, they were greeted by Fathers Pandosy and D'Herbomez of the St. Joseph Mission. They introduced McClellan and George Gibbs, an ethnographer and geologist with the expedition, to "Kamiakin, the principal chief of the country."

The son of a Yakama mother and a Palouse father, Kamiakin grew up among the Yakamas, but as an adolescent also spent time among his father's people. Following the seasons, with their cyclical succession of plants and salmon, the family camped throughout eastern Washington. Kamiakin was about five years old when his people started hearing rumors of strangely dressed white men, the Lewis and Clark expedition, traveling through the region.

As he grew up, Kamiakin learned the horsemanship of his father and steadily built his wealth on horses. As early as 1840, he was recognized by a majority of Yakamas as their headman and was becoming increasingly prominent among other Sahaptin and Salish tribes.

Kamiakin and his brothers traveled widely, perhaps as far as California, bringing longhorn cattle and milk cows back with them to the Yakima Valley. They also introduced potatoes, peas, and other crops. In fact, note Richard Scheuerman and Michael Finley in their recently published *Finding Chief Kamiakin*, it is curious that Captain McClellan failed to acknowledge Kamiakin's gardens and grainfields as he assured Kamiakin that Americans would not settle in the interior. As Gibbs observed, "it is difficult to imagine" that the area would ever serve any "useful purpose."

STAFF PHOTO

GIVEN KAMIAKIN'S LINGERING PRESENCE across the state, his name having been attached to both high schools and buttes, it is also curious that it has taken so long for a biography to appear. The only previous book-length treatment was *Ka-Mi-Akin: The Last Hero of the Yakimas*, by A.J. Splawn in 1917. However, it focused primarily on Kamiakin's role in the 1855–1858 Yakima War.

Scheuerman and Finley's book, on the other hand, draws on much new material—including genealogical information and oral history—not only to correct what they consider misconceptions about how heavily Kamiakin influenced that war, but also to elucidate his earlier life and, significantly, his later life and his large family.

Through his friendship with Father Pandosy, Kamiakin accepted much of Catholic teachings and had his children baptized. But he would not accept Pandosy's insistence that a Christian be monogamous. Kamiakin had five wives. How could he give up any of them, he asked Pandosy, when he loved them all? The resulting progeny are many, produced over a long life. Kamiakin's lineage in the Northwest is complex and intricate.

Richard Scheuerman '72 grew up near Endicott. "Growing up there, in the shadow of Kamiak Butte, Steptoe Butte, you can't help but wonder about those things." Those things being Kamiakin, of course, and his band, who camped at Kamiakin Crossing on the Palouse River just north of Endicott. After his defeat in the 1858 War and his subsequent exile in Montana, Kamiakin eventually ended up back in Washington, at Rock Lake, where he died in 1877.

The coauthor with Clifford Trafzer of *Renegade Tribe* (WSU Press 1993), the most complete treatment of the Palouse tribe, its role in the war, and Kamiakin to this point, Scheuerman has also written about his Russian ancestors who settled in eastern Washington.

"Even in high school, I knew our community was a little different from others, the nature of the families, relationships, all this talk about Russia. I decided I would track down everybody living in the community who was born in the old country. I don't think I got everyone, but I got most. I still have the notes.

"Several commented about life on the Palouse River when they first came from Russia and the relationships they had with the native peoples when they'd come through every fall and every spring, trading their salmon for the fruits and vegetables.

"It sparked my interest, who are they and why they aren't here now."

MICHAEL FINLEY'S thesis advisor at Eastern Washington University told him that if he wanted to be an authority in Native history of the Inland Northwest, he had to know who the authorities were. "He probably meant pick up their books," says Finley. Which he did. But he also took his advisor literally, personally contacting Trafzer, Scheuerman, and Robert H. Ruby, another prolific scholar of Northwest Indians.

After finishing his thesis, on the three chiefs of the Colvilles, Skolaskin, Moses, and Joseph, Finley went to work for the Colville tribe in the history and archaeology division.

"I had some extra time on my hands outside of work. Coupled with that, I did a lot of research in my work. I'd come across references to Kamiakin," which he started e-mailing to Scheuerman.

Finley also had access to genealogy records, which interested Scheuerman very much.

Scheuerman wrote back, "I haven't seen that before." He said this is wonderful stuff, says Finley. What should we do with it?

Finley is currently vice chairman of the Colville Business Council for the Colville Confederated Tribes. He is a descendent of Jaco Finley, the explorer David Thompson's French-Indian guide. His wife Jackie is, through her father, a direct descendent of Kamiakin. Even though Kamiakin and his wives and younger children settled at Rock Lake, his adult children all moved to the Colville Reservation.

"I thought, what better tribute for my children than to work on their family history."

KAMIAKIN HAD WATCHED cautiously as Whites started moving into the region. He welcomed them, if a little nervously. Nevertheless, in 1848 he had invited the Catholic fathers to open the St. Joseph mission and assured them he would take full responsibility.

But Kamiakin's patience and goodwill had limits. Sometime around 1853, he contacted military authorities at Fort Dalles and asked them to remove a settler who had established a claim on Indian land about 20 miles north of the Columbia River. Not wanting to provoke an incident, they complied.

But Isaac Stevens was not so compliant. Stevens was not only governor of Washington Territory, but also the territory's superintendent of Indian affairs and the supervisor of the Northern Pacific Railroad Survey. In light of this last job, in particular, he thought it essential to extinguish Indian title to what federal officials considered public domain.

Stevens's belief in Manifest Destiny was resolute. "The great end to be looked to," he wrote, "is the gradual civilization of the Indians, and their ultimate incorporation with the people of the territory."

"The rapid dispossession of Puget Sound tribal domains," write Scheuerman and Finley, "confirmed Kamiakin's suspicion that the polite rhetoric of White officials concealed other motives."

His friend Father Pandosy was unable to encourage him. "It is as I feared," he told Kamiakin, "the Whites will take your country as they have taken other countries from the Indians.… . You may fight and delay for a time this invasion, but you cannot avert it."

Angus McDonald, another friend of Kamiakin's with the Hudson Bay Company, affirmed Pandosy's warning. Killing a white settler was like killing an ant, he told Kamiakin. There would be hundreds more pouring from the nest.

Indeed, their warnings were prescient.

Increasing pressure from Stevens and deliberation among Indian leaders moved them all toward the 1855 Walla Walla Treaty Council. Piupiu Maksmaks, the Walla Walla chief, and Kamiakin had hoped that the assembled tribal leaders would present a united front against Stevens. But the Nez Perces, who had long been friendly to the whites, refused to join. In late May, hundreds of people—Yakama, Nez Perce, Palouse, Walla Walla, Cayuse—met with Stevens and other territorial representatives.

Stevens later observed of Kamiakin, "He is a peculiar man, reminding me of the panther and the grizzly bear. His countenance has an extraordinary play, one moment in frowns, the next in smiles, flashing with light and black as Erebus the same instant."

Another observer noted that Kamiakin was the "great impediment in the way of cession of Indian lands."

For over a week, Stevens presented federal Indian policy, pushing his proposals about reservation boundaries and fishing rights.

But Kamiakin was unmoved. "I am afraid that the white men are not speaking straight," he told Stevens.

Regardless, at one point, Stevens offered Kamiakin an annual salary of $500 to "perform many services of a public character." But Kamiakin refused, as he did all offers and gifts, believing that to accept anything from the Whites would compromise him and imply he had sold the Indians' land.

When Kamiakin finally told Stevens he was leaving, that he was "tired of talking," Stevens pushed harder and, according to an interpreter's account years later, resorted to threat: "If you do not accept the terms offered and sign this paper … you will walk in blood knee deep."

Whether it was that threat or the combined advocacy of the other leaders, muse Scheuerman and Finley, Kamiakin finally signed with an X. According to one of the priests present, he was in such a rage that he bit his lip until it bled.

Under the terms of the Yakima Treaty of 1855, the 14 tribes of the confederated "Yakima Nation" ceded to the United States approximately 17,000 square miles in exchange for the exclusive use of 2,000 square miles of reservation land, two schools, and fishing and gathering rights at "all usual and accustomed places."

The Nez Perce and Walla Walla-Cayuse treaties were also drawn up.

Within weeks of the signings, however, the treaties, not yet even ratified, were broken. Gold was discovered on Indian land north of the Spokane River, and Whites rushed to the new diggings. And where miners rushed in, other settlers would soon follow.

Kamiakin convened a conclave a month after the treaty signing, meeting with Teias and Owhi of the Yakamas as well as representatives of the Columbias and Wamapum.

Kamiakin asked them, "What of us then?" Shall we become "degraded people? Let us stop their coming, even if we must fight."

Opposite page: Detail of Chief Kamiakin from a bas-relief bronze sculpture by Jeff Hoppis at the St. Joseph Mission at the Athanum near Yakima. ***Below***: One of the 12 original apple trees planted in 1867 on mission land granted by Kamiakin. It is the oldest orchard in Yakima Valley.

In spite of his despair, Kamiakin still sought reconciliation: "Let us send men to the mountain passes to warn the white men to go back." But "if they persist … we will fight."

AS WORTHLESS AS HISTORICAL SPECULATION might be, one cannot help but wonder what the former Washington Territory might be like had the moderating efforts of Kamiakin, the Catholic priests, and the U.S. Army prevailed over the volunteer militias, the ranting newspaper editors in Seattle and Portland, and the relentless momentum of impatient settlers.

But of course there was no stopping that momentum.

In July 1856, the Washington Volunteers attacked an encampment of 300 Cayuse, Walla Wallas, and Umatillas, and claimed they'd killed many Yakama warriors under Kamiakin in the process. They destroyed the camp's stores of dried beef, tents, and flour and took about 200 horses, many of which they shot.

According to Colonel George Wright, the new commander of the recently formed Ninth Infantry, the attack was on "women, old men and children, with a few of the young men." Kamiakin was not present. He was likely camped among the Okanogans with his brothers and the Yakama chief Owhi and Columbia chief Quiltenenock.

"As word spread," write Scheuerman and Finley, "Army officials railed again against Stevens and the volunteers' methods, which were 'to provoke a continuance of the war and to plunder the Indians of their horses and cattle.'"

A second Walla Walla Council in 1856 deteriorated under Stevens's inflexibility, alienating even the Nez Perce. Escalation of violence seemed inevitable.

STAFF PHOTO

As worthless as historical speculation might be, one cannot help but wonder what the former Washington Territory might be like had the moderating efforts of Kamiakin, the Catholic priests, and the U.S. Army prevailed over the volunteer militias, the ranting newspaper editors in Seattle and Portland, and the relentless momentum of impatient settlers. But of course there was no stopping that momentum.

Amidst the recorded vitriol and impatience of the Whites and the running battles between Indians and Whites, one factor is only slowly being recollected, and that is the impact of introduced disease on the fate of the native peoples of the interior.

"I've often said," says Scheuerman, "before the war started in 1855, it was already finished." Some historians estimate that as much as 60-70 percent of the native population was decimated by smallpox and measles in the preceding decades.

"There were villages on the lower Snake River that were totally uninhabited," he says. "Someone told the story of going upstream on the Palouse River and finding a village with one small child crying, the only one left."

If the physical decimation weren't enough, the psychic toll must have been profound. "On a grand scale," write Scheuerman and Finley, "epidemics demoralized and decreased Native populations, adversely affecting their overall social organization and strength."

Whatever their disadvantage, however, the growing tension led to a major victory.

Lt. Col. Edward Steptoe left Fort Walla Walla in May 1858 with a contingent of approximately 160 men, headed for Fort Colville in a show of strength. North of Rosalia, they met a large gathering of Indians.

Having crossed the Palouse River the night before, Steptoe had received intelligence of belligerent Palouses and Spokanes ahead, but sent a scout back to Fort Walla Walla with the message that he intended to "give them a good drubbing."

But the gathering was far larger than he had imagined, his men were under-armed, and the Indians were angry at the blatant incursion on their territory. Chief Vincent of the Coeur d'Alenes ordered him to turn around, and Father Joset of Sacred Heart mission desperately attempted to negotiate.

But as more and more Indians gathered, they finally attacked under no threat of a drubbing.

Fierce fighting continued throughout the day. Seven soldiers were killed and thirteen wounded, but finally they were able to slip away under darkness.

SUCH AN EMBARRASSMENT to the Army could of course not go unanswered. On July 4, 1858, General Newman Clarke, commander of the Army of the Pacific, issued orders to Colonel Wright for a "complete submission" of the warring tribes.

Wright marched 1,000 men across the Columbia Plateau. Kamiakin and other chiefs massed their people in Spokane and Palouse country to meet the advancing troops.

Wright's troops and the gathered tribes finally met in early September in the Battle of Four Lakes, about five miles north of present-day Cheney. The Indians were unprepared for the improved weaponry of the Army troops, and the warriors fell back under heavy fire in spite of Qualchan and Kamiakin's appeals to stand their ground. The companies that had been part of the Steptoe rout were "burning for revenge" and swept into the Indians. Warriors were overrun, shot down, or clubbed, leaving confusion and death across the plains.

After retreating, Kamiakin and other leaders tended their wounded and waited for Wright's next move. By September 5, they had regrouped several miles north of Four Lakes to meet the soldiers again in the Battle of Spokane Plains. "This proved to be the decisive action of the

campaign and a defining moment in the region's primal clash of cultures," the authors write.

"Again Kamiakin and Qualchan led the Palouses and Yakamas at the Indians' center left and right, respectively. Stellam's Coeur d'Alenes took the right flank and Spokanes under Garry and Sgalgalt formed on the left. As rifles barked and the howitzer began thundering, Indians from the north dashed 'down a hill five hundred feet high and with a slope of forty-five degrees, at the most headlong speed,' in 'feats of horsemanship … never seen equaled.' They rushed forward to join other warriors attempting to contain the soldiers' horseshoe formation."

But horsemanship and valor were in the end no match for Wright's superior firepower.

Wright's strategy had relied on overwhelming force and a "focused assault on Tribal leadership," write Scheuerman and Finley. Wright, who earlier had pursued a diplomatic path, had now assumed a ruthless and uncompromising policy. When Qualchan rode into Wright's camp with his wife to speak of peace, Wright had him summarily hung along with some Palouses he had rounded up. The stream where Wright was camped was named Hangman Creek.

Wright demanded unconditional surrender and had his troops destroy camps, herds, and food caches. Three days after the battle, Wright had ordered his troops east through the Spokane Valley, overtaking a herd of a thousand Indian horses, which they shot.

The war of 1858 was over.

Kamiakin and his band fled eastward into the Bitterroots.

SO WHY DID IT TAKE SO LONG for a biography of Kamiakin to materialize? Scheuerman and Finley give slightly different answers.

Part of it is the nature of the Kamiakin family, Scheuerman ventures. Perhaps they feel a continuation of what Kamiakin himself felt, hurting from the divisions among the tribes, during and after the war. Kamiakin goes to live at the obscure Rock Lake and then drifts off himself into obscurity, the real story of his role and greatness remaining only within the family.

Perhaps more significant, even though it occurred over 130 years go, the family is still enraged over the desecration of Kamiakin's grave. Soon after he died and was buried in a small family plot on the shore

of Rock Lake, fossil hunter Charles Sternberg learned about the chief's grave from a local rancher. Another local resident encountered Sternberg and his brother leading packhorses. Sternberg mentioned casually that "Wouldn't the old chief's head look good on the shelves of the Smithsonian Institution."

When family members visited the gravesite and found Kamiakin's grave dug up and his head gone, they were devastated. They had a holy man supervise the moving of the cemetery to the other side of the lake. All swore never to reveal its new location.

Many attempts have been made to locate Kamiakin's skull, to no avail. Scheuerman himself has tried his best to track it down. He finally gave up.

Some of the reason for the biography's slow coming is simply a matter of privacy, says Finley. But there is also an unease with written history: "What you put in writing can be used against you down the road." Written accounts, both accurate and inaccurate, have been used in deciding treaty disputes.

"On the other hand," he says, "if you don't put anything out, you have nothing to stand on. It's important that you put stuff in writing. It's also important that you're very careful what you say and how you say it."

Scheuerman and Finley plan to donate royalties from their book to a memorial at the site of the Kamiakin camp at Rock Lake, if the family concurs. If not, they will go toward a scholarship in Chief Kamiakin's name.

Background photo: Rock Lake by Bob Brazington. ***Inset, left:*** Author Richard Scheuerman '72. *Photo Luke Rutan/Seattle Pacific University* ***Inset, right:*** Coauthor Michael Finley. *Courtesy Michael Finley*

Robert M. Williams '79

Vice President and Relationship Manager at Union Bank of California in Seattle.

Member of the WSUAA's Board of Directors, African American Alumni Chapter, WSU College of Business National Board of Advisors, and WSU Foundation Board of Trustees.

Gray W Varsity Club member and four-year varsity letter winner in Men's Track and Field (1979 Team Captain).

Loves golf and trips to Cabo San Lucas.

Life Member of the WSU Alumni Association.

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CLASS NOTES

1950s

Florence Wager ('50 Speech, '54 Ed) was honored as Clark County's First Citizen in June for her advocacy for parks, trails, and bike paths.

Kenneth Schmauder ('54 Ag., '70 EdD) has been named by City University of Seattle as faculty program coordinator for school principal and superintendent credential programs in southwest Washington.

1960s

Grant Thorsett '62 retired after 41 years teaching genetics at Willamette University in Salem, Oregon, where he chaired the biology department for 14 years.

Roger Budke ('67 Civ. Engr.) and his wife **Janet (Henning) Budke** ('67 Home Ec.) have retired to Salem, Oregon, where they follow straight ahead jazz and grow heirloom tomatoes in their garden.

Marilyn (Gish) Young '67 has retired from the State of Washington Employment Security Department after 34 years. She worked in Employment and Training Programs as a supervisor.

1970s

Cathy (Seeley) Grindle '72 was awarded Court Manager of the Year for the State of Washington for her contributions to the state and King County District Court.

Robbin A. Anderson ('75 Gen. Stud.) works for Providence Health Systems as a Nationally Certified Pharmacy Technician in Portland, Oregon. Anderson's daughter married in August 2008. She currently lives with her oldest and youngest children.

Kevin Tomlinson ('75 Comm.), an Emmy-award winning cinematographer, was featured in the 2009 Seattle International Film Festival for his first feature documentary *Back to the Garden: Flower Power Comes Full Circle*. The film will also be featured in the Berlin World and Culture Documentary Festival in August. The documentary follows a twenty-year story of several "back-to-the-land hippies" of eastern Washington.

Nancy Curry ('76 Wildlife Biology) has retired after 18 years of managing the Turnbull National Wildlife Refuge near Cheney, Washington. She first worked at the refuge as an intern while at WSU in 1975. She later served with the U.S. Department of Agriculture and the U.S. Forest Service before returning to the Cheney area to manage the 16,000-acre site.

1980s

Michel R. Jolivet ('82 DVM) is medical director/lead veterinarian with the Feral Cat Spay/Neuter Project (FeralCatProject.org), a nationally recognized nonprofit dedicated to saving the lives of homeless cats by providing access to high quality, high volume spay/neuter surgery. Prior to joining FCSNP, he was a veterinarian at the Burien Veterinary Hospital from 1983 to 2009.

Jeff Butler ('84 Comm.) was elected to the Make-A-Wish Foundation Board of Trustees in April 2009. Working for Alaska Airlines for the past 23 year years, Butler currently serves as the vice president of customer service—airports. In 1995, Butler received the Alaska Airlines' prestigious "#1 Leader" Award.

Hasan Sohaib Murad ('86 MBA) is rector of the University of Management and Technology, Lahore, Pakistan. He invites his colleagues who remember him to come to Lahore and be his guest on tours of the beautiful mountain scenery and historical sites.

Frank Chase Jr. '88 was awarded a doctorate degree in theology from North Carolina College of Theology on June 5, 2009.

Jim Drinkwine ('88 Comm.) received an Exceptional Faculty award at Renton Technical College.

1990s

Tod Gilbertson '92 has been named executive director of McKinley Irvin, the oldest and largest family law firm in Washington. He is headquartered in Seattle and lives with his wife and four children in nearby Sumner.

Michael McCullough ('93 Pol. Sci.) is the Chief of Defense Cooperation in the United States Embassy in Yerevan, Armenia. On a day to day basis, he maintains

STAFF PHOTO

What I've Learned Since College

An interview with Maurice (Sandy) Pearson

by Hannelore Sudermann :: Maurice Pearson was born in Chicago in 1904. When he was just a year old, his family moved west and settled in Ferndale on 40 acres near the Lummi Indian reservation. Everyone called him Sandy because of his red hair.

After high school, Pearson worked for three years on bridge projects in Ferndale and Everett until he felt he had enough money to pay for his first year at Washington State College. He was the only one of his six siblings to go on to college.

While in Pullman, Pearson first "bached" with friends in an apartment downtown over Johnny Gannon's Pool Hall. Later, he lived and worked on a dairy close to campus. After graduating in 1929, he married his girlfriend Nell and started teaching in Skagit Valley the first year of the Great Depression. Later he moved to the Columbia Basin and worked with the World War II veterans settling there because of the U.S. Bureau of Reclamation irrigation project. He finished his teaching career back in the Puget Sound area. Hannelore Sudermann met with him recently at his home in Bellingham, which he shares with his son Lyle.

SAVE FOR COLLEGE: When I got out of high school, things were not so I could go on to school. So I worked for three years. I went to Alaska and worked on a fish camp one summer. I worked on the Nooksack River Bridge in Ferndale. And I worked on the Snohomish River Bridge in Everett. Some friends of mine had gone to Washington State. After three years I thought I had enough money to get through a year of school. I think I had under $600. I was foolish enough to think I could get through on this. And I did, but I really scrounged. I did outside work, including janitor work on campus. I lived with a Swiss family, a widowed mother and son and daughter. Their

name was Koppel (their farm is now a community garden). I worked for my board and room and walked back and forth between classes. I slept in the bunk house with their lead hired man and a dog named Baldy.

LISTEN TO ADVICE: The first summer I started for home a group of us hitched a ride on the freight train. There were three or four of us who found an empty car and there was some alfalfa in the bottom of it. We were sizing the thing up, and the brakeman came along and he said you better pick a car with a steel beam underneath it, he said; some of these wooden cars collapse. We rode the freight as far as Renton. We were told it was safer to get off there than to go into Seattle. The cops in Seattle were a little bit more particular.

FIGURE OUT A PATH: I was interested in architecture and my advisors told me that was not a good choice. They said architects are a dime a dozen. So I went into the industrial arts. Then I found the instructor was a fuddy duddy. So I switched to agriculture and took education courses. I think the impression that most people get of college students is that they spend a lot of time drinking and playing poker … and dating. I had been out of school for three years and I felt I needed to buckle down and … I didn't have much time for extracurricular activities.

MAKE EXCEPTIONS: My senior year, I decided I should take a semester of boxing. It was taught by a student coach by the name of Ike Deeter (the founder of boxing at WSU). He kind of gave up on me as a boxer. He told me once he could coach me all my life and never make a boxer out of me. I had the unfortunate tendency of leading with my chin.

YOU NEVER KNOW WHO YOU COULD MEET: It was during my senior year and I found myself at this dance in Bohler Gym. Someone told me it would be a good idea to dance with one of the sponsors. Well, I wasn't too anxious for it because I was a pretty poor dancer. I said, "How do I meet a sponsor?" He said, "Well you hunt up Ed Murrow. He is on the committee and he can introduce you." I didn't know him. He wasn't Edward R. Murrow at the time. He was just plain Ed Murrow, a student. I never did find him. If I had been able to predict his future fame, I probably would have kept hunting until I did find him.

FIND THE RIGHT JOB: I had a major in agriculture and a minor in teaching qualifications. Nell [a friend from before college] and I had just decided to get married… [The school placement office received a wire about Pearson]. The wire said "Was Pearson available for $1,800?" My reply was "Yes." My classmates were amazed that I was hired sight unseen. At that time Burlington was pretty much a Scandinavian community. Maybe they thought I was Scandinavian because of my name.

IT DOESN'T ALL GO SOUTH AT ONCE: It was 1929, the same year the Great Depression—the stock market—broke. At that time prices were going down. It didn't hit everybody at one time. Some people were not affected for two or three years. As a matter of fact I got a couple raises and got up to $2,000 a year. Then it caught up with us and they started cutting. I got cut to $1,500. When it eased up and they started raising again, and I got raised $5 a month. So I commenced to look for another job. I was at Burlington for six years, from '29 to '35. By the time we left, I had saved enough by not buying a house to buy one when we moved.

START NEW THINGS: While I was at Burlington, the FFA, the Future Farmers of America, was just getting organized. We chartered a chapter at Burlington. It was a real good place to get started. There was a very good class of farmers there, very good farmland, and a very good class of students. Two of my students later became state presidents of the FFA. I thought that spoke pretty well for the quality of it.

SEE THE COUNTRY FROM YOUR CAR: A job at Enumclaw opened up. It paid $2,000 a year … I thought that would be a good time to buy a new car. I went to Detroit with the dealer, bought a new car and drove it back. In those days you could save enough on the freight of the car to pay for your trip. I bought a Plymouth. I think it was kind of a deep maroon.

MOVE FOR YOUR FAMILY: I was at Enumclaw for 10 years. But the climate was not agreeable to the boys. Lyle [his son] and his older brother Ken were in school at that time. They had a bronchial condition and were out of school half the time. We asked the doctor if it would help if we moved someplace dry. He said it couldn't hurt. The driest place we could find was Moses Lake. They didn't have any ag departments in the Columbia Basin at that time. It was when they were just starting [the U.S. Bureau of Reclamation project to irrigate farmland in

contact with the U.S. State Department, Millennium Corporation, USAID, Peace Corps, and the military. McCullough welcomes and supports WSU students and alumni affiliated with these organizations.

Todd Edmiston '94 and his family have returned to Tacoma where he will set up his practice after completing his orthopaedic surgery residency and a fellowship in adult reconstruction.

Matthew Marner '98 was recently admitted to the State Bar of California. Matthew currently practices law as a criminal defense attorney in Yuma, Arizona.

Kenneth Archer '99 and **Leslie (LaMotte) Archer** '98 welcome their son, Edward LaMotte Archer, born September 25, 2008. The Archers reside in Seattle.

Josh Meek ('99 Engl., TC) was recently named the Principal of Moses Lake High School.

2000s

Beaux Kemp '03 and **Melissa (Johnson) Kemp** '02 were married January 21, 2009, on Kauai, Hawaii.

Ben Larson '03 is currently an investigator for the U.S. Department of Labor, Employee Benefits Security Administration.

Mitch Lackey '04 has been selected as the chief of police for the City of Camas, Washington. Lackey graduated with a degree in public affairs from WSU Vancouver.

Jeff Griffin ('05 Ed.) was promoted in September 2008 to general manager of the Missoula Osprey Professional Baseball Club, a Pioneer League Affiliate of the Arizona Diamondbacks. He is in his fifth year with the organization.

Tristan Bullington ('06 Philosophy) graduated from University of Illinois College of Law and will begin as an attorney at Prairie State Legal Services in Bloomington, Illinois, in August.

Lorene Leider ('06 Soc. Sci.) earned her bachelor's degree from the WSU Distance Degree Program at age 55. Leider is now an English/Spanish ESL instructor for Hispanic students with the nonprofit Literacy Council of Kitsap County.

IN MEMORIAM

1930s

William Young ('30 Bus. Admin.) 101, March 31, 2009, Anacortes.

Glenn Carlyle Putnam ('35 Chem. Engr.) 93, December 26, 2007, Orange, Texas.

Mary Elizabeth Perrow Riggs ('35 Home Ec.) 96, April 25, 2009, Virginia.

Kenneth Storment ('35 Arch. Engr.) 96, February 27, 2008, Kirkland.

Elmer Burdette Chrisman ('36 Chem., '41 MEd) 95, April 2009, Spokane.

Richard C. Bowers ('37 Elect. Engr.) 92, December 13, 2007, San Jose, California.

Mildred H. Nelson ('37 Music) March 25, 2009, Waterville.

Bertha Slind ('37 Home Ec.) 93, December 15, 2008, Burlington.

Robert C. Christensen ('38 Animal Sci.) 93, April 13, 2009, Moses Lake.

Ole Slind ('38 Gen. Stud./Pre-Med) 96, September 23, 2008, Burlington.

Remo Philip Fausti ('39 Speech Comm.) 91, April 2, 2009, Olympia.

Edward A. Heinemann ('39 Animal Sci.) 91, May 28, 2009, Olympia.

Earl Harland Hood ('39 Ag.) 92, April 23, 2009, Clarkston.

Elizabeth J. Keller ('39 Home Ec., '40 Ed.) 95, May 10, 2009, Vancouver.

Chester Steen ('39 Dairy Sci.) 93, March 24, 2009, Walla Walla.

1940s

James A. Cox ('40 Chem. Engr.) 92, November 15, 2008, Roswell, Georgia.

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Central Washington]. I was there when the veterans were coming in and settling on these farm units. The Veterans Administration had a program they called institutional on-the-farm training. They would pay the veterans for going to school while they settled on these units. The only facility for teaching that institutional on-the-farm training was the high school there. So I inherited this class of veterans. I think I averaged about 17 veterans in a class. We taught them irrigation procedures. And for other things, we had experts come in. We were supposed to spend I think four hours a month with a veteran on his farm. Some were better at farming than others. One, I think, ended up running a car dealership in Moses Lake.

RETIREMENT IS JUST A JOB CHANGE: I retired from teaching in 1960 [at age 55]. The highest salary I ever got was $625 a month. Then I raised cattle. I bought 120 acres west of Lynden and I thought I was going to have a herd of registered Angus. But I found it was too small an operation. So I ended up with what they call a stocker/feeder business. I would buy the calves at the sales and raise them until they had to go to the feed lot. I enjoyed going to the sales. But I made more money on the real estate than I did with the cattle.

DANCE WHEN YOU CAN: I still go to the senior center every week to dance. I dance one and rest about two or three. I still do the Varsovienne and the three-step. I had to give up the fast dances. I just love the polka, but my feet aren't fast enough anymore to keep up with it.

Kary Lamb Lee

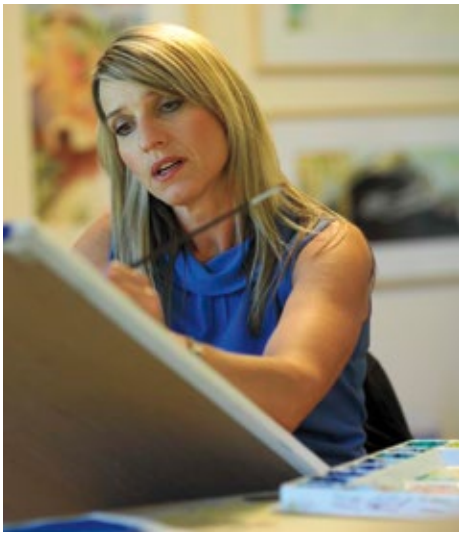
Telling stories

by Hope Tinney :: Husky purple isn't normally in Kary Lamb Lee's palette. The Pullman-based illustrator was born in Pullman, and her family's ties to Washington State University go back 80 years.

Still, she was happy to pull out the purple to create the souvenir poster for the 2009 Windermere Cup, a premiere boating event in the Pacific Northwest and a signature event for the University of Washington.

In fact, Lee's poster says UW crew like no other. While previous Windermere Cup posters have highlighted the grace of rowing, or the beauty of Montlake Cut, or even the storied history of the UW rowing program, Lee's captures all of that and still manages to tell the story of a particular group of athletes.

For the first time in Cup history, the poster features a women's team, a nod to the 2007 NCAA Championship women's team, which finished tenth. The central image is a women's varsity four, driving through a stroke. There's a



Kary Lamb Lee '86 in her studio. *Photo Robert Hubner*

backdrop of beloved landmarks including the Montlake Bridge, Conibear Shellhouse, and Mt. Rainier.

"The nicest compliment that I got is that the athletes loved the poster," Lee said. "It seemed personal to them, and I thought, okay, I did my job."

Though she was born in Pullman, Lee spent her childhood in Southern California, Tacoma, and Chewelah. When it came time for college, she headed back to Pullman with two objectives: "I wanted to do art, and I wanted to make money at it," she said, and laughed. But in fact, she had a plan to do just that. She majored in communication and minored in fine art, and during her senior year threw herself into the National Student Advertising Competition, creating a campaign for Burger King. After graduation she married and moved to Dallas where she found a job as an art director for an international pet supply company.

It was challenging, interesting work, but it was also all-consuming, she says. After her son Colby was born, the Palouse called again when her husband was offered a job at Schweitzer Engineering Laboratories. "The timing was right," Lee said. "I wanted to go home."

Raising her three children, Colby, Debbie, and Katy, now 18, 15, and 14, took much of her creative energy, but she continued graphic design work on a part-time basis. She was creating art, and she was making money at it. Then about 10 years ago she realized she wanted more.

That's when she turned to illustration. In a sense, it was a return to her first love, one that deepened during classes at WSU with fine arts professor Fran Ho. "Whatever I was doing for him I wanted to do my best," she said.

S. R. Martin Jr.

A life in the West

by Hannelore Sudermann :: "Rudy" Martin started out with a plan to collect the history of his family from its Texas roots to his home in Washington. It was at first a project for himself and his children. But the American studies scholar yearned for context, color, and regional history. He had to build a more complete story. He sought out distant family members, dove into ancient county records, and culled through population research in his quest to understand how he and his family

S. R. MARTIN JR., STAFF PHOTO

have been shaped by race, religion, and, most importantly, place.

His book, *On the Move: A Black Family's Western Saga*, is not simply a memoir, it's a new view on the African American experience in the West—from his great-grandparents' farm in Texas, to his own early childhood on a Wyoming dude ranch. His father became a Pentecostal minister in the Bay Area of California. And Martin had his own adventure into Washington where he has been a teacher, writer, and founding faculty member of The Evergreen State College.

He graduated from the University of California, Berkeley, and taught high school. Then he pursued a master's degree at San Francisco State University and a teaching position at Modesto Junior College. Still, he was hungry for not just literature, but culture, art, and history. He needed to move on and pursue an interdisciplinary doctoral degree.

"My dad had a hell of a time dealing with the notion that I wanted to be an academic," says Martin. "He kept saying, 'You can't make any money doing that.'" Twice when Martin was a young adult, his father approached him about changing paths, encouraging him to go to law school or medical school or even take a high paying job.

But Martin found a home in American studies, a field that got its start in the 1930s as an approach that included history, literature, economics, art, media, sociology, and anthropology. In the late 1960s, when Martin was looking for a graduate program, the interdisciplinary study was gaining a foothold on the West Coast. Washington State University offered Martin a teaching assistant position right off the bat, he says. The move was in spite of his wife's protests. "We set up in a

Norman H. Meyers ('40 Elec. Engr.) 92, March 25, 2009, Vancouver.

Harry V. Sucher ('40 DVM) 93, April 22, 2009, Yorba Linda, California.

Helen F. Reiley ('41 DVM) 91, July 3, 2009, Olympia.

Keith H. Bradbury ('42 Arch. Engr.) 90, April 5, 2009.

Robert Howard Doten x42, 89, March 21, 2009, Pullman.

Francis Paul Jones ('42 DVM) 81, January 31, 2009, Wilton, California.

Marion Nicholas x'42, 88, November 1, 2008, Stanwood.

Harry William "Bill" Whitaker Jr. ('42 Mech. Engr.) 91, April 20, 2009, Bellevue.

Eugene Arment Eschbach ('44 Elec. Engr.) 86, June 16, 2009, Portland, Oregon.

Vitt Pietro Ferrucci ('44 DVM) 90, June 1, 2009, Puyallup.

Mary L. Goetz ('46 Comm.) 85, April 14, 2009.

Helen Prenguber ('47 Home Ec.) 84, April 12, 2009, Spokane.

Gerald R. Haas x49, 83, May 8, 2009, Fairfield.

Gordon E. S. Klossner ('49 Bus. Admin.) 86, January 2009, Portland.

Helen Duncan Palmer ('49 Mus., '52 Educ.) 81, January 17, 2009, Shelton.

Gilmore A. Rose ('49 Civ. Engr.) 84, January 29, 2009, Olympia.

Patricia R. Smith ('49 Home Ec.) 81, February 1, 2009, Jacksonville, Florida.

1950s

Richard Broyles x50, 78, March 21, 2009, Pomeroy.

William "Bill" Gammie ('50 Ag.) 81, April 10, 2009, Yakima.

Don George ('50 Ag.) 81, February 9, 2009, Yakima.

Virginia "Ginger" Jensen '50, 81, September 13, 2008, Long Beach.

Elvie Patterson ('50 Bact.) 81, April 8, 2009, Oroville.

Rodney C. Roberts ('50 Music, '52 MA) 81, Spokane.

George W. Shoen ('50 Mech. Engr.) 84, November 19, 2008, California.

Nancy Fitzgerald Stack ('50 Hotel & Rest.) 71, March 2, 2009, Portland, Oregon.

Parnell Thompson ('51 Ag.) 85, April 23, 2009, Seattle.

Colleen Hein ('52 Ed.) 80, March 23, 2009, Yakima.

Harry A. Pryde ('53 Bus. Admin.) 78, March 30, 2009, Seattle.

Frank G. Rule ('53 Mech. Engr.) 82, February 6, 2009, Concord, New Hampshire.

Menzo Clinton ('54 Chem. Engr.) 78, June 20, 2009, Pahrump, Nevada.

Philo Calhoun Wilson ('54 Geol.) 85, April 28, 2009, Orleans, Massachusetts.

Jack Garton ('55 Phys Ed.) 76, May 15, 2009, Everett.

William "Dave" Storey ('55 Mech. Engr.) 78, February 8, 2009, Vancouver, British Columbia.

Gerald Wayne Thorsen ('55 Geol., '60 MS Geol.) May 6, 2009, Port Townsend.

Guy Richard Anderson ('56 PhD Bacteriology) 90, May 14, 2009, Moscow.

Joseph Benecke ('56 Police Sci.) 76, June 13, 2009, Everett.

Richard D. Desposato ('56 Elec. Engr.) 77, April 13, 2009, Ventura, California.

Rudy Johnson ('57 MEd) 82, June 3, 2009, California.

Carl Luhn ('59 Hort.) 79, February 16, 2009, Davis, California.

Hubert J. Nick ('57 MEd) 87, March 25, 2009, Pullman.

1960s

Sandra Lee Hayes ('61 Sociology) 69, March 25, 2009, Guadalajara, Mexico.

Mathias Joseph Silbernagel ('61 Ph.D. Plant Path.), 75, April 14, 2009, Grandview.

Frederick "Fred" L. Latendresse ('62 Gen. Stud.), 70, May 3, 2009, Kennewick.

Elsie (Dawson) Johnston ('63 Engl.) 72, March 25, 2009, Vancouver.

Robert W. Cromer x64, 66, April 29, 2009, Vienna, Virginia.

Robert A. McDonald ('65 DVM) 85, March 13, 2009, Turlock, California.

Louis Michael Hanavan ('67 Police Sci.) 63, April 1, 2009, Palm Springs, California.

Pamela Sue Johnson ('67 Ed.) 63, February 12, 2009, Hamilton, Montana.

Richard J. Llewellyn ('67 Polit. Sci.) 64, June 15, 2009, Boulder, Montana.

1970s

Joe B. Johnson ('70 PhD An. Sci.) 91, February 10, 2009, Walla Walla.

Linda Marie Jacky ('71 Math) 60, April 25, 2009, Walla Walla.

Charles Elaison ('74 Rec.) 67, May 15, 2009, Kennewick.

Dale E. Anderson ('75 MS Env. Sci.) 58, March 29, 2009, Mill Creek.

Jim Steward ('76 Pharm.) 59, April 19, 2009, Medical Lake.

Bruce J. Bradley ('77 Nutrition) 65, March 6, 2009, Idaho.

Thomas R. Daniel ('79 Bus. Admin.) 53, April 29, 2009, Kalispell, Montana.

1980s

Wade A. Franck ('81 Civ. Engr., '88 MEM) 51, May 18, 2009, Vancouver.

Russell Stowe Westover x82, 45, May 10, 2009, Snohomish.

Kenneth C. Bleichner ('83 DVM) 68, October 23, 2008, Biloxi, Mississippi.

Roger Lehnert ('83 EdD) 66, May 11, 2009, Ferndale.

Donald Gordon Paxton ('85 DVM) 95, May 2, 2009, Spokane.

Dan Walling ('85 Comm.) 42, April 3, 2009, Lake Roosevelt.

Robert John Wirth ('85 MBA) 51, April 12, 2009, Spokane.

Kurt Harder ('86 Ag.) 46, June 5, 2009, Kahlotus.

Don Carpenter ('89 Crim. J.) 43, March 24, 2009, Lewiston, Idaho.

1990s

Eric Harder ('92 Ag.) 39, June 5, 2009, Kahlotus.

Michael Rummel ('95 Pol. Sci.) 41, February 1, 2009, Toppenish.

2000s

Michelle M. Fondo ('02 Soc. Sci.) 43, February 10, 2009, Manchester, New Hampshire.

Cory Jensen ('04 Lib. Arts) 24, June 10, 2009, Richland.

Faculty & Staff

Leslie F. Evans, 70, former faculty, April 22, 2009, Richland.

Remo Philip Fausti, 91, retired speech faculty, April 2, 2009, Olympia.

Cecilia A. Fockler, 87, retired food service staff, March 11, 2009, Pullman.

Leonar Foster, 57, College of Education professor, June, 2009, Pullman .

Graham C. Gilliland, 54, retired IAREC staff, April 26, 2009, Prosser.

Frank W. Jenkinson, 90, retired physical plant engineer, May 16, 2009, Bellingham.

Joe B. Johnson, 91, retired animal science faculty, February 10, 2009, Walla Walla.

Jon D. Johnson, 56, Puyallup research and extension center faculty, June 9, 2009, Puyallup.

Martha Locke, 102, retired staff, April 25, 2009, California.

Edna Wiesner McNeil, 91, retired staff, April 7, 2009, Lacey.

Judy Nichols Mitchell, 70, dean of the College of Education, June 26, 2009, Pullman.

Tyre A. Newton, 87, professor emeritus of mathematics, June 16, 2009, Graham.

Ghery Pettit, 82, retired faculty, May 17, 2009, Pullman.

Arthur Russell, 88, June 20, 2009, Pullman.

Esther May Salisbury, 94, library employee, May 7, 2009, Pullman.

Iona J. Trull, 83, instructional media services employee, May 4, 2009, Pullman.

Nancy Lynn Rogers Westergreen, 54, former staff, April 8, 2009, Moscow, Idaho.

pre-fab World War II shack right out on the Moscow-Pullman Highway," he says. "She said, where are you taking me?"

It was a great time to be at the University with faculty like Martin's advisor Mary G. Land, Lewis Buchanan of the English department, and Raymond Muse, the chairman of history. In those days American studies was sort of a bootstrap outfit, says Martin.

There was also a batch of bright, active, and interesting students around him. "I was very serious about doing more history, and very much interested in African American studies," he says. Martin taught the first African American literature course ever offered at the University.

Martin and his classmates advocated for a black studies program at WSU. "In the spring of 1970 I was the guy who stood before the assembled crowd in front of the CUB and said, 'Well the administration does not want to put in our black studies program and so we're leaving.' We had found places for every black student on campus who wanted to go." Understandably, his doctoral thesis looked at literature and political movements—and their interactions.

Before he finished his dissertation, Martin was lured away from Pullman by the prospect of joining the founding faculty at the newly-conceived Evergreen State College. "I couldn't pass it up," he says. "There was this excitement about building a college from the ground. How many people in the whole world ever have that chance?"

That first year, the 999-acre densely wooded campus had only one building and five or six trailers. "It was a mud hole," says Martin. The employees had to navigate the property on boardwalks. He was one of 18 planning faculty, along with three deans and three vice presidents. Though the campus wasn't ready for the students, the instructors were. In the fall of 1971 Evergreen welcomed its first freshmen. They met in community halls, in public libraries, even out in the woods. "We didn't need walls," says Martin.

Evergreen attracted nontraditional students, and the faculty strove to teach in nontraditional ways. Martin taught a course called "Contemporary American Minorities," where Caucasian students were the minority in the class. The students were eager to go along with the experience, he says.

Martin finished his doctorate and enjoyed a full career at Evergreen, eventually becoming an administrator. When he retired in 1998 one of his key projects was his family book. In it, he was able to explore race, religion, and how geography can shape how people define themselves and others. It's not *the* African American experience in the west, he says. But it sheds some light on one family's path.

"By the time I came to racial and cultural political consciousness, as I am still doing, I think, it got clearer and clearer to me that there is no single African American experience," he says. "You simply have to look carefully and get past 'there's a black one, that must mean…' to seeing how very different things can be."

WSU Presidents

An evening of honors

by Hannelore Sudermann :: In late June nearly 200 people gathered to recognize Washington State University's presidents emeriti Glenn Terrell (1967–1985), Sam Smith (1985–2000), and V. Lane Rawlins (2000–2007). The event kicked off a fundraising effort for need-based scholarships for students who might have to drop out of school because of tuition hikes and the poor economy.

Welcoming the crowd to the Fairmont Olympic Hotel, WSU President Elson S. Floyd said he seized the opportunity to get all the presidents together, "so that we could say hello, share stories, and have some photos taken together."

"These were dedicated men," said Rawlins of his fellow presidents. "During their tenure and mine, we struggled to build a great University." He emphasized how valuable an affordable education is to the well-being of a generation and the state. "I encourage you to help where you can by giving and by speaking out," he said.

President Smith weighed in saying the price of attending college has moved out of the range of what he called "the garden variety kid." "We have to do something about it," he said.

It's fitting to combine an event honoring these presidents with an effort to raise scholarship money, said Mikal Thomsen '79, who was representing the WSU Foundation board of governors. All of them have contributed to the University in different ways, he said, "But their common theme has always been the students." «

Washington State University's presidents emeriti Glenn Terrell (seated), V. Lane Rawlins (right), Samuel H. Smith (left rear), and current president Elson S. Floyd. *Photo Robert Hubner*

Greenscapes—Olmsted's Pacific Northwest *by Joan Hockaday* WASHINGTON STATE UNIVERSITY PRESS, 2009 :: *Review by Hannelore Sudermann* :: John Charles Olmsted, nephew and stepson of world-famous park designer Frederick Law Olmsted Sr. and half brother of landscape architect Frederick Law Olmsted Jr., spent much of his life in the shadows of his more famous relatives. Even so, on the West Coast he has had the greatest and most lasting influence of any single landscape architect.

Because of an invitation made to the Olmsted firm to visit Portland in 1903, John C. Olmsted made a number of trips to the Northwest over the ensuing eight years shaping college campuses, city neighborhoods, zoos, and public gardens in Seattle, Victoria, Portland, Spokane, and Tacoma.

When Bainbridge Island-based author and gardener Joan Hockaday learned of a collection of Olmsted's daily letters, about 500 of which he had written home to his wife in Massachusetts while traveling through the Northwest, she was prompted to write this book. The letters, which detail site visits, local color, and his first-hand experience in these burgeoning communities, provide the backbone for *Greenscapes*. Hockaday fills in her research with other correspondence, city plans, and local histories.

The result is the detailed stories of the Northwest's most treasured parks and campuses including the University of Idaho, Whitman College in Walla Walla, Portland's Washington Park, and Seattle's Woodland Park and Volunteer Park. Out of the dense forests, waterfronts, and rangelands of the region, Olmsted imagined neighborhoods and public spaces. Of Woodland Park, he urged that a menagerie be kept to the upper portion of the park, away from Green Lake which he argued was too beautiful and too much needed for the crowds of visitors who would come to ramble and sit under the trees.

He also critiqued misguided park efforts. In Bellingham, for example, the flat eight-acre effort had too many flowering shrubs and plants: "It's like a room that has too many sorts of bricabrac on the shelves, mantel and table..."

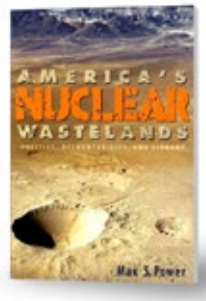
Olmsted's letters capture the history and politics of the time. His 1903 Seattle report became the city's blueprint for planning parks and parkways. His 1910 plans for Oregon Agricultural College directed how the Corvalis campus would be developed. One of his favorite projects was Spokane's Adams Park (now known as Cannon Hill Park) which he converted out of an excavated and abandoned brickyard. Now it is a charming jewel of the city, a quiet neighborhood oasis with stone bridges and a duck pond.

He also worked for private clients, a who's who list of the early 1900s, including Robert Moran on Orcas Island, S.P. Weyerhaeuser in Tacoma, the Cowles family in Spokane, and a good 60 different residences in Seattle. He designed the Capital Hill, and Queen Anne Hill properties of some of Seattle's most prominent citizens, pushing them to keep intact most of the tall trees and vegetation like ferns and salal that made up the natural landscape.

Through the stories of the projects run threads of city politics, government bureaucracy, and a sense of great communities in the making. Olmsted could see the great value of preserving the views and charm already in place. Long before Magnolia was a Seattle neighborhood, for example, he envisioned a broad boulevard along the bluff with views to downtown, Mount Rainier, and west across the Puget Sound to the Olympic Mountains. He saw the possibilities that the communities would realize years later.

The book is illustrated with photographs and postcards from around the time of Olmsted's visits as well as sketches and blueprints. They further Hockaday's efforts to not only give us a history of our communities and landscapes, but enhance her portrait of a man whose vision and imagination helped make the Pacific Northwest such a great place to live. ⊗

America's Nuclear Wastelands: Politics, Accountability, and Cleanup *by Max S. Power* WASHINGTON STATE UNIVERSITY PRESS, 2008 :: *Review by Larry Clark '94* :: When engineers, physicists, and other scientists began making materials for nuclear bombs, the Manhattan Project sites around the country, including Hanford, Los Alamos, and Oak Ridge, were wrapped in World War II and Cold War secrecy. The processes, products, and, most importantly, the waste they produced were hidden from the American public.



Even people who lived near the test facilities were unaware during the early years of the production of the radioactive and toxic matter for atomic bombs. Outside of some Department of Energy employees and contractors, few knew the consequences of this new science: tons of spent nuclear fuel, millions of gallons of radioactive liquids, millions of cubic yards of tainted soil, and over a trillion gallons of contaminated groundwater.

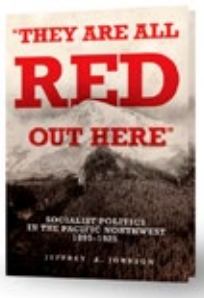
The federal government withheld the information until the 1970s and 1980s, when public pressure forced the release of records and prompted the government to accelerate cleanup efforts. Even now, political dynamics and a culture of stonewalling block progress toward fully containing the contamination.

Max S. Power, an analyst who worked on nuclear cleanup issues for two decades, lays out the history and challenges of our nuclear waste legacy. He acknowledges the enormous cost, the complex science, the sticky policy issues between federal and state governments, and the real and perceived public health problems. But *America's Nuclear Wastelands* offers more than a review of the dilemma. Power's use of real-world examples, mostly non-technical language, and informative sidebars furthers his eventual solution: Engage the public in this extremely important policy debate over what we should do about our nuclear waste.

He contends that governments left to themselves will not solve many critical problems. They don't have the political will to complete the cleanup work or commit the money. Only with involvement from the public can a transparent, accountable, and fiscally responsible cleanup program begin to address the pressing health and environmental problems from nuclear waste. Power makes the call to action without hyperbole or cataclysmic predictions, and he acknowledges progress and the scientific complexity of nuclear waste cleanup.

Theoretical physicist J. Robert Oppenheimer said about the atomic bomb, "When you see something that is technically sweet, you go ahead and do it and you argue about what to do about it only after you have had your technical success." The notion could apply to the waste created in producing those bombs. Technical success was achieved, but now it is time to do something about the byproducts.

With this concise and readable book, Power has provided the public with an important tool to take part in the cleanup decisions. He lays out a plan to avoid past mistakes and make long-term progress in cleaning up our nuclear wastelands. ⊗



"They are all Red Out Here": Socialist Politics in the Pacific Northwest, 1895–1925 *by Jeffrey A. Johnson* UNIVERSITY OF OKLAHOMA PRESS, 2008 ::
Review by Keith Peterson ::
Few if any aspects of the Northwest's political and labor history have been so thoroughly documented as the region's most radical era, from the 1890s to the First World War. Books and articles have highlighted such topics as the rise of the Industrial Workers of the World (IWW), Idaho Governor Frank Steunenberg's assassination, the Centralia Massacre of 1919, and a diversity of other subjects ranging from utopian communities to ethnically based radical politics. This time and these topics have captured the attention of several generations of historians.

So, the immediate question upon picking up a book with a title of *They are all Red Out Here* is this: is there room for yet another study of the region's radical heritage? (*Radical Heritage* is, by the way, the title of another historian's book about labor and socialism in the Pacific Northwest during this period.)

Author Jeffrey Johnson, who undertook much of the research for this book as a doctoral student at WSU, makes the case that there is. "Surprisingly few historians have explored early-twentieth-century grass-roots socialist activism and its repercussions in the Pacific Northwest, one of the nation's most famously radical regions," he writes, adding later: "The present volume provides the first broad regional history to examine socialist party activity across Washington, Oregon, Idaho, and Montana."

Mining little-used papers, particularly at state historical societies in Montana, Idaho, Washington, and Oregon, Johnson does find ways to fill gaps in our knowledge of the period. His strength is in demonstrating the growth and demise of the Socialist Party and its struggle to, at various times, either align itself with or differentiate itself from other groups advocating contemporary progressive causes such as workers' rights, temperance, the anti-war movement, and women's suffrage. Trying to navigate these crowded waters while retaining a separate identity proved challenging for party officials. Indeed, the Socialist Party of Washington splintered into factions at the very height of the movement in 1913 because of differences in opinion over how to accomplish this, and the party never regained its pre-split prominence.

The author has used the voluminous secondary literature of the period well and he has added new insight with his own primary research, fleshing out, in addition to the stories of individual politicians and activists, the role of the regional socialist press, the development of socialist utopian communities, and the alternating courtship dance/battle stance between the Socialist Party and the regionally powerful IWW. Copiously documented and well organized in chronological fashion, *They are all Red Out Here* will become a standard reference for those who study the Pacific Northwest's period of dalliance with radical politics.

Keith Petersen '73 is the Idaho State Historian.

"Photographers deal in things which are continually vanishing..."

—*Henri Cartier-Bresson*

This Land is Your Land, This Land is My Land: Issues of Eminent Domain
photography by Don Normark
WSU Museum of Art, October 1–December 19

by Don Normark :: In 1948 20-year-old photographer Don Normark walked up a hill in Los Angeles looking for a good view. Instead he found Chávez Ravine, site of three ramshackle Mexican-American neighborhoods tucked into Elysian Park "like a poor man's Shangri-La," he thought. He spent much of the next year photographing this uniquely intact rural community. Accepted by the residents, he returned often with his camera to witness a life that, though limited by poverty, was lived fully, openly, and joyfully.

In 1950 the people received letters telling them that they must sell their homes to the government and leave the ravine to make way for a low-cost housing project. As soon as they were constructed, the letter promised, "you will have first chance to move back into the new residences." But once the people were removed, the next city government, citing "creeping Socialism," cancelled the program. Later, the city gave 300 acres of Chávez Ravine to Walter O'Malley, who demolished the last of the houses and built Dodger Stadium.

In 1997 Normark found many people from the destroyed neighborhoods. Ties of family and friendship have held them together over the years, so that although widely scattered, they are still a group. They call themselves *Los Desterrados*, The Uprooted.

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