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This past spring, I visited the University Center for the Arts off Remington Street near campus, which was tantalizingly close to completion. Our guide, in hard hat and reflective vest, was Gina Cochran, UCA manager, who knew every turn in every corridor. Colorado State retiree John Roberts also was with us, and he talked about his days as a student in the late 1950s, when the building was a high school. John remembered gathering with the a cappella choir on the landing between the first and second floors every Friday at noon to sing, their voices echoing throughout the building.

We were fortunate to have Barbara Cavarra touring with us, too. Barbara, the wife of Robert Cavarra, preeminent organist at Colorado State who died in February this year, was looking forward to seeing the Recital Hall, where the mighty, 2,096-pipe Casavant organ would be housed. Robert Cavarra had been instrumental in bringing the organ to campus in 1968, and he played it with rare vigor and finesse throughout his career as teacher, consultant, composer, and performer.

Our small entourage moved down hallways flanked by display cabinets, new faculty and administrative offices, and music practice rooms. Construction workers were busy with final touches to façade or plastering, while others were completing the transformation of vacant space into meticulously designed dance and theater areas. Even the renovated bathrooms – some of which had original fixtures – didn’t escape our attention.

Admiring a wood floor that originally had been part of the school gym, I thought about a comment I’d recently heard from a UCA co-director. We were talking about the historic value of the former high school and the importance of maintaining that link in the new building. “But in the end,” the co-director said, “the UCA is only brick and mortar, although world-class at that.” The most important part of the project, he said, was to fill the building with the School of the Arts. Only then would it come to life.

Absolutely true, I thought as our group turned a corner – but then, standing in the Recital Hall where the organ would be installed, we couldn’t help appreciating the physical appeal of the open, inviting room. Large, multi-paned, arched windows – once bricked over – opened to an eastern view, and light flooded the hall. Some 280 upholstered chairs soon would fill with people waiting for concerts to begin.

It’s just brick and mortar, but it’s also the heart of the arts, a welcoming home with historic doors to be thrown wide open for students, teachers, and the public. More stories about this beautiful complex for music, theater, and dance start on Page 18.

Paul Miller
THE VIEW FROM

Campus

Top gun for the environment

by Emily Wilmsen

Ron Sega’s résumé includes flying two missions as a NASA astronaut, which fascinates people who meet him in his new roles as Colorado State’s Woodward Professor of Systems Engineering and vice president of Energy, Environment, and Applied Research at Colorado State University Research Foundation, or CSURF. Though he’ll occasionally talk about space flight, his focus is on energy and the environment.

As senior energy official in the U.S. Air Force, Sega and his team helped change the Air Force culture, resulting in a savings of 3.3 trillion British thermal units of energy, purchasing about 1 million megawatts of renewable energy, and testing synthetic fuel in airplanes – all in one year.

Mention the overall Presidential Award for Leadership in Federal Energy Management that his team received last year in Washington, D.C., and Sega’s face lights up. “We worked hard and made real progress,” he says.

He’s now brought that success to Colorado State, where he serves as special adviser to President Larry Edward Penley on energy and environmental issues. He’s charged with maintaining the University’s multidisciplinary research focus on solving some of the world’s most pressing environmental problems and reducing the University’s carbon footprint in a rapid time frame.

When he’s not busy teaching in the College of Engineering, he’s thick in the action at CSURF, a separate nonprofit that manages the University’s real estate decisions and technology transfer activities such as licensing.

“We want to provide leadership in energy and the environment through initiatives in education, innovation, supply, demand, and management,” Sega says. “It’s a systems approach used for years in aerospace that’s now being applied at CSU to the areas of energy and the environment. To do that, we need to have as many people on our team as possible – on campus as well as alumni and friends.”

His growing list includes some influential friends around the state. A sample from his calendar lists back-to-back meetings with government leaders and executives including Gov. Bill Ritter – Sega accompanied him on a trade mission to Canada – and major employers such as Lockheed Martin, Woodward Governor, Merrick, and the National Renewable Energy Laboratory.

Sega also has strong Colorado ties. He taught at the Air Force Academy and is a former dean of the University of Colorado–Colorado Springs engineering college.

He travels frequently and often has lunch in the car or at his desk. And there’s keeping up with the family – wife, Ann, and sons Matt and Jack, who are 5 and 6 years old, respectively – and occasional public appearances as a former astronaut.

This spring, officials at Wings Over the Rockies Air and Space Museum honored Sega as part of an exhibit called “Colorado’s Astronauts: In Their Own Words.”

Sega acknowledges his past is full of many different roles – pilot, astronaut, key government administrator, professor, scientist, dean, vice president. But he looks ahead to making the University and the state of Colorado world leaders in developing technological solutions to global challenges.

“Our increasing focus on energy and the environment is consistent with the mission of a land-grant institution,” Sega says. “Colorado can be viewed as a microcosm of the nation in terms of addressing energy and the environment. This new emphasis is the right thing to do.”

Ron Sega, the new vice president of Energy, Environment, and Applied Research, celebrates Homecoming 2007 with his wife, Ann, and sons Jack (at left) and Matt. Cam the Ram anchors the crew.
Life in space – and on campus
by Emily Wilmsen

Tom Vonder Haar signed on with Colorado State shortly after Neil Armstrong landed on the moon in 1969. Although Vonder Haar hasn’t known the thrill of a lunar stroll, he’s created his own strong legacy in atmospheric science over the past 40 years.

After 28 years as director of the University’s Cooperative Institute for Research in the Atmosphere, an organization he helped create and launch to international renown, he left that position in August to resume his role as a researcher.

He was at CIRAs helm when research projects and collaboration agreements were developed with the National Oceanic and Atmospheric Administration, National Park Service, U.S. Department of Defense, and NASA. His teams of Colorado State scientists, with federal research partners, have won awards from those organizations for their research products, which help scientists around the globe understand atmospheric changes that affect weather and climate.

“CIRA is a place with very high scientific standards that applies research to practical problems,” he says.

Although he’s been responsible for bringing in more than $200 million in research dollars to the University over his career, he’s modest about his accomplishments, including being named to the National Academy of Engineering.

Vonder Haar, a University Distinguished Professor, is one of a few university professors worldwide who have led NASA Earth science missions – and he remembers some challenges clearly. In October 1984, he was at Cape Kennedy watching Sally Ride’s historic second flight on the Challenger shuttle. On the flight was the Earth Radiation Budget Satellite that Vonder Haar and his team designed with NASA, the first satellite Colorado State sent into space with the agency. For a few seconds high above Earth, Ride couldn’t open the solar panels on the satellite to make it operational. She shook the mechanical arm holding the satellite, and the panels popped open.

“I had heart palpitations,” Vonder Haar says with a laugh.

Fittingly, Graeme Stephens, who led CSU’s second satellite mission with NASA, is Vonder Haar’s replacement as director of CIRA. Stephens is principal investigator on CloudSat, which was launched April 2006 in collaboration with NASA’s Jet Propulsion Laboratory. NASA honored CIRA with a Public Service Group Achievement Award for processing data that is critical to getting CloudSat’s information on the characteristics of clouds to the international science community.

“Tom’s contributions to the Department of Atmospheric Science and the University are immeasurable,” Stephens says. “Not only has Tom participated as a faculty member teaching and advising students, but he also created and nurtured CIRA into one of the leading cooperative institutes that serves wide-ranging goals.”

Vonder Haar points out that CloudSat, which measures how much precipitation is in clouds, is now being used in occasional Coast Guard rescue missions or to divert commercial airlines away from severe storms. The radar looks at the base of clouds so rescuers can use it to “see” objects through dense cloud cover.

That’s the kind of research that’s making a difference at CIRA. And it’s the type of science that Vonder Haar is getting back into – at least for the foreseeable future. After another four or five years, it might be time to put a few more fishing lines in the water or spend more time hunting, hiking, or gardening, he says.

“I’m most proud of the ability to create research partnerships – to match CSU’s capabilities with the needs of different research agencies,” Vonder Haar says.

“The biggest impact we’ve had is in the legacy we create in the scientists and students who move on. I feel good about creating opportunities for people.”

◆
Jezebel drops in for a visit

On a mild June morning at the University Center for the Arts, Jezebel was lifted with a crane and set carefully in place. Jezebel, a 20-foot-tall, twisted steel sculpture by Bret Price, then was bolted into place outside the west entrance of the center to become a source of aesthetic interest to the public.

The sculpture is one of five by Price installed on campus. The other sculptures – all made by heating large pieces of steel in special chambers then twisting with heavy equipment – are located on the Lory Student Center and Morgan Library plazas, west of the LSC Theatre, and near the Lagoon.

The sculptures mark a revival of the University’s Sculpturescape program introduced in 1998 to bring to campus significant public works of sculpture by regional and national artists.

The Sculpturescape program is directed by Art Professor Gary Voss and funded through Facilities Management.

New online enterprise is open for business

Not worrying about rising gas prices is just one way that the Colorado State University System’s new online campus, Colorado State University-Global Campus, is helping a growing number of nontraditional students succeed in completing bachelor’s or master’s degrees.

“CSU has been successful in attracting students who have the financial resources and high index scores,” says Rich Schweigert, chief executive officer of CSU-Global Campus. “However, the traditional university paradigm is challenged with providing access to broader student populations, particularly those people who are geographically isolated from a campus, working, or otherwise considered nontraditional students.”

The CSU-Global Campus enterprise, with its own faculty and staff, is the first of its kind in the Western United States among large public research universities.

The new online campus can respond quickly to changing market needs and will help maintain Colorado’s economic strength and resiliency by offering programs that are career-relevant and tailored to existing and emerging industry and occupational trends statewide.

The new campus is not intended to compete with community colleges but will bridge barriers for students who have dropped out of a four-year university, who want to continue after community college, or who want to earn advanced degrees but find traditional universities aren’t a match for them. CSU-Global Campus also is building alliances with government agencies, nonprofit organizations, and corporations to provide accessible and affordable educational opportunities.

Applications are online at www.CSUglobal.org or via phone at (800) 920-6723.
Raising the roofs

Major construction is changing campus

Colorado State's campus is being transformed by several major construction projects to enhance the learning, teaching, and research environment.

“This is the largest group of construction projects in the history of the University,” says Brian Chase, director of Facilities Management. “The projects will have a major impact on the quality of education for students in the coming years, and that’s possible because of the strategic vision of President Penley and the Board of Governors.”

With construction comes detours and congestion, but some campus green areas and open spaces have been set up for temporary construction staging areas and parking. Signage throughout campus and online information will be updated to help people avoid problem areas during construction.

Overall, the projects add about 344,000 square feet to campus infrastructure, with the new parking garage on the southeast corner of Lake and Center streets adding about 900 spaces.

To help absorb the temporary loss of about 1,100 parking spaces due to construction, a temporary lot is located on the lawn east of the Student Recreation Center. Following construction, the lawn will be restored as an outdoor amphitheater and flood-water detention area.

“Parking Services is working to ease the discomforts of parking impacts on campus,” says Dave Bradford, director of Parking Services. “We continue to urge everyone to consider alternative transportation options – at all times but particularly during this period of intensive construction.”

Progress updates on construction projects and the impact on parking are online at www.facilities.colostate.edu, www.parking.colostate.edu, and Today@ColoradoState.

New construction projects

The new, four-story Computer Science Building east of Lory Student Center (shown below) includes three main labs, a 24-hour personal computer lab for students, and teaching labs. The energy-
efficient, 20,000-square-foot facility opens for students in January 2009.

The 90,000-square-foot Academic Instruction Building, to be constructed in the parking lot south of Clark Building, will contain office and classroom space, lecture halls, and a wi-fi study lounge. Completion is expected in January 2010.

Lake Street Parking Garage (opposite page, top), the first of three planned parking garages on campus, will add 850 to 900 parking spaces on campus. The garage also will include a small retail space and some office space. Groundbreaking begins in December with a completion date of 2010.

A 57,000-square-foot indoor Athletics Practice Field to the north of the Student Recreation Center will have a synthetic turf field, sprint track, and regulation-sized basketball court. Completion is expected in summer 2009.

The Student Recreation Center will expand by about 61,000 square feet, and the existing center will be renovated to include an indoor climbing area, expanded fitness center, multi-athletic court, and other amenities. Completion will be fall 2010.

An Athletic Academic and Training Building (above) will add 8,000 square feet to Moby Arena for a weight room and academic study/tutoring space for student-athletes. Completion is set for 2009.

The former Music Building will house the Institute for Learning and Teaching in 2009 and expand by 20,000 square feet into a comprehensive learning center, providing access to a variety of student programs including Resources for Disabled Students, Student Transfer Center, Center for Advising and Student Achievement, and Undergraduate Research.

Rockwell Hall will expand by 35,000 square feet to the east of the current structure. The addition will support a new undergraduate business program. Completion is planned for January 2010.

Academic Village will increase its housing capacity with a 200-bed, 63,000-square-foot residence hall east of the existing building. Completion is set for summer 2009. ●
Our thin, fragile shell of life

by John Calderazzo

I think the sky is lying to me again. I’m standing in my back yard, staring up at the constellations. As I often do, I imagine the air I’m breathing stretches up and away from me for hundreds of miles, until the last molecule of oxygen peters out somewhere in the prairies of deep space.

In fact, I know the atmosphere wraps our planet no more thickly than a shell wraps an egg. But my eye is easily tricked by the transparency of air and immensity of the universe, and my brain wants to follow. It’s reassuring to think that Earth’s atmosphere runs on and on, just as it’s reassuring to stand on a beach and assume that the crashing ocean is boundless, its amazing creatures numberless. Who wants to believe that the natural world can’t absorb, with little or no change, whatever we humans throw at it?

Not me. And not Yuri Gagarin, the Soviet cosmonaut who in 1961 became the first human to visit space. But as one story goes, Gagarin looked down shortly after liftoff, saw how thin the skin of breath we call the atmosphere really is, and grew terrified. Until that moment, he had never realized the limited and fragile nature of our planet.

Since the time that Gagarin and others were able to see the entire planet from space, writers like Rachel Carson, author of Silent Spring, have done a great job helping us understand how we affect the environment and how pulling on just one thread in the great fabric of biological life can yank so many others out of kilter.

But we need to be reminded of this time and again. How else to explain the relatively lukewarm attention that our citizens and policymakers have until recently paid to global climate change? Overwhelming, ever-mounting evidence from scientists suggests this is the biggest single issue now facing the planet.

So why haven’t we paid more serious attention? Science illiteracy? The fact that “Preserve the Arctic ice pack!” doesn’t have the ring of “Save the whales!”? The possibility that we suffer from environmental fatigue – a voice saying, “Oh no, we’ve found another way to trash the planet!”?

Maybe the problem is the tricky nature of air itself, not to mention the complications of our swirling atmosphere. When I stand in my backyard, staring at stars or afternoon thunderheads, I can’t actually see anything growing warmer.

Or maybe too many of us suffer from denial born of an unfathomable clash of scales. By that I mean: Our human-sized perceptions might fail us when bumping against cosmic measurements that science provides. Sure, my rational mind accepts the mounting evidence of climate change, but a tiny part of me still doesn’t want to believe that we puny humans (the 6 billion-plus of us) can cause such monumental, planetary changes.

Which is why, in the end, I’ve decided on something anti-intuitive. I’ve decided to distrust my gut feelings and throw my lot with the much bigger picture that only science can provide.

So here I am, standing in my backyard, watching an infinity of cold, glittering stars. And I’m thinking: The thin skin of our planet isn’t immune to us. The world is warming. We’ve caused a good deal of it. And now, what are we going to do about it? ♦

Who wants to believe the world can’t absorb, with little or no change, whatever we humans throw at it?

English Professor John Calderazzo and his department colleague and wife, SueEllen Campbell, are founders of Changing Climates @ CSU (changingclimates.colostate.edu), a multidisciplinary series of talks and initiatives designed to infuse climate change teaching across the University curriculum.

John and SueEllen recently won Pennock awards for outstanding achievement as faculty members and for their climate change program.
**Football and Tailgate Schedule**

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<th>Date</th>
<th>Opponent</th>
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<td>Aug. 31</td>
<td>Colorado (in Denver)</td>
<td>TBA</td>
<td>Tailgate</td>
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<td>Sacramento State</td>
<td>1:30 p.m. MT</td>
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<td>Sept. 13</td>
<td>Open Date</td>
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<td>Sept. 20</td>
<td>Houston</td>
<td>TBA</td>
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<td>Sept. 27</td>
<td>at California</td>
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<td>Oct. 4</td>
<td>UNLV</td>
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<td>TCU</td>
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<td>Oct. 18</td>
<td>at Utah</td>
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<td>Oct. 25</td>
<td>at San Diego State</td>
<td>4 p.m. MT</td>
<td>Tailgate</td>
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<td>Nov. 1</td>
<td>BYU</td>
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<td>Nov. 8</td>
<td>at Air Force</td>
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<td>Nov. 15</td>
<td>New Mexico</td>
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<td>at Wyoming</td>
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Cycling Club is a NATIONAL FORCE

by Chris Casey

With just two laps to go in the USA Collegiate Road Racing Nationals this May, Phil Mann, a sprinting star for Colorado State’s Rams Cycling club, looked like he wouldn’t repeat as national criterium champion.

Instead, West Virginia’s Steven Gordon was pedaling to what seemed an insurmountable lead. His jersey flashed alone in front of the splash-colored pack in the Men’s Division I race that barreled through downtown Fort Collins. Colorado State racers in green-and-gold jerseys were somewhere in the pack but hard to spot as the peloton blurred past spectators.

But then Mann and two CSU teammates, Dan Lionberg and Daniel Workman, jockeyed fiercely on the last laps. Mann popped out of Lionberg’s draft heading into the race’s final turn and shot past Gordon on a sprint to the finish. Mann raised his hands in triumph, a heart-pumping crescendo to this year’s Nationals. The finish thrilled the host-city crowd and may well become a permanent part of the 30-year-old cycling club’s lore.

“I knew I could stick it if I got the jump on him before the last corner,” Mann says. “I was a marked guy after winning last year. I was really relying on my teammates this year, and they were just phenomenal.”

Crushing the top dogs

Fort Collins hosted the Nationals May 9-11, which featured about 50 teams competing in Division I and II races. Colorado State finished third in the overall team competition in the 37-team Division I field. Mann placed second in...
Division I men, while Amanda Miller placed fourth overall in the women’s bracket. Carol Hutton finished 13th, and Julia Manley was 30th.

Colorado State has been named Collegiate Cycling Team of the Year twice in the past five years and in 2008 dominated the Rocky Mountain Collegiate Cycling conference championships.

“Typically, CU and Fort Lewis College are powers of the conference, and we’re the ones chasing them,” said T.G. Taylor, who recently was Rams Cycling president. “This year it wasn’t even close. We crushed them.”

Taylor joined Rams Cycling as a graduate student, continuing a love affair with cycling that started when he was an undergraduate at West Point. That same combination of fitness and camaraderie has drawn 100 current cyclists to the club. Most members compete in road racing and mountain biking, while others ride recreationally, joining the team on training rides of 200 to 450 miles per week.

“We care about all our riders, whether they’re beginners or pro bike racers,” Taylor says.

Any CSU student, faculty, or alumnus can join the team, though riders must be full-time students to race. Riders are classified in A, B, and C levels, with A riders being the top race cyclists.

Chess on wheels

Taylor, following in the pedals of aggressive and business-savvy presidents like Nathanael Ksiazkiewicz (2003-04), has brought stability to the club as it enters its fourth decade. Taylor loves cycling’s fitness demands and mental component.

“Cycling is like chess on wheels, especially in college races,” he says. “Tactics can be very complex.”

Rachel Knott, a former triathlete, nordic skier, and marathon runner who turned her athletic talent to cycling, says tactical smarts are crucial in determining race winners.

“I get so frustrated after races, but it kind of draws me back at the same time because I think I can race smarter next time,” Knott says. “It’s definitely not the strongest person who wins all the time.”

Megan Cassidy, who will start graduate school this fall, competed in her second road nationals in May for the University.

“I used to think it was an individual sport, but it’s so much more of a team sport than you’d ever think,” Cassidy says. “It’s so exciting when you can get in a race, do your job, and work together as a team.”

And as Taylor points out, biking is the wave of the future in regard to the environment. “With gas prices hovering around $4 per gallon, it would be nice if people rode their bikes a lot more instead of taking their cars everywhere.”

The Collegiate Road Nationals will be back in Fort Collins next May, promising more white-knuckle finishes. And although Mann won’t be back – he left the club to pursue a professional cycling career – he’s leaving with memories of a spectacular final race. ♦

Rams Cycling is on the Web at www.rams cycling.com; the team’s alumni booster club is at FriendsOfRams.org.
Taking clean energy research to market

by Kathy Hayes

In March, Colorado State University created the Clean Energy Supercluster. Called Cenergy, the Supercluster comprises more than 100 faculty members Universitywide. The alternative energy solutions being developed are driving changes in how we think, live, work, and interact with our environment.

“Green is about more than changing a light bulb,” says President Larry Edward Penley – it’s about empowering University resources to educate a green-collar work force and fusing research with development. “Once research enters the marketplace,” Penley explains, “it can transform lives – generating jobs, improving health and living conditions for people worldwide, and stimulating economic prosperity.”

Here, three Cenergy researchers discuss approaches to solving global problems.

Breathing easier

“Superclusters bring people together who may not normally work together,” says Jennifer Peel, assistant professor of environmental and radiological health sciences who, as an environmental epidemiologist, examines how air pollution affects human health. Through the Supercluster, Peel and Morgan Defoort, associate director of CSU’s Engines and Energy Conversion Laboratory, have received funding to develop a cleaner, healthier solution to indoor cookstoves used by billions of people in developing countries.

“Indoor air quality from these cookstoves can be 10 to 100 times worse than outdoor air,” Peel says. Yet good research is lacking on the health effects of using traditional cookstoves versus improved, cleaner-burning stoves.

With Defoort and students from multiple disciplines, Peel is participating in a cookstove study in Nicaragua. The study focuses primarily on children and women who are most exposed to cookstove smoke.

“We’re looking at respiratory symptoms – such as coughing and burning eyes – and also at inflammatory markers, lung function, and blood pressure,” Peel explains. “Afterwards, we’ll give the women a new stove, and next year, we’ll measure again.”

They expect to collect evidence showing improved health in the women and children, thanks to using an improved stove.

Getting people in other countries to change cooking methods isn’t easy, but a local women’s organization is helping. The group has gathered villagers together to demonstrate how the new cookstoves work better, use less fuel, and are a healthier alternative for the women and the community.

The women have agreed to pay $1.50 each for their stoves, which cost about $100 to make. “It’s not a lot by our standards, but it’s an investment for them,” Peel says. “If they invest in the stove, it’s more likely they’ll use it.”

And breathe a little easier.

Measuring solar power

Using solar cells to capture energy from the sun is another healthy, cost-effective way to reduce pollution. As a renewable source of energy, the sun also provides the most energy per acre of any source we now know, says Jim Sites, associate dean in the College of Natural Sciences.

Yet solar production accounts for much less than 1 percent of the world’s energy. Although the industry is growing quickly, a dearth of manufacturers means demand isn’t being met. This is especially true of new, thin-film solar cells, which are faster and cheaper to make than crystalline and silicon counterparts.

“There are a lot of start-up companies in the U.S. and worldwide,” Sites says. “These companies understand how to develop thin-film solar cells, but they need a serious electronic evaluation of how things are working. They don’t...
always have the tools and the right people for that.”

Companies worldwide send their solar cells to Sites’ photovoltaic laboratory, where precise measurements are taken to find out where energy losses are occurring, the cause of the loss, and the extent of the problem.

“As a physicist, I can calculate what an ideal solar cell will do – how much electrical power you get versus how much light is hitting it. That’s important to manufacturers,” Sites says.

Equally important, Sites continues, is that solar power is a very fertile area for training students. In the last three years, eight of Sites’ students completed doctorates and work for innovative companies like A VA Solar, First Solar, and Prime Star or in leading research facilities such as the National Renewable Energy Laboratory in Golden, Colo.

What does Sites see as the biggest global issue surrounding solar energy? “It’s how much we’re willing to invest to get over the hump,” he says.

It’s up to us

Management Professor Tom Dean says economic systems will provide their own incentives and rewards for getting over that hump, to the point where clean-energy endeavors will provide greater benefits – and profits – than using fossil fuels.

Changes in thinking and the way we do business will precede technology in revolutionizing our approach to energy, Dean says. Those changes will begin when the true cost of fossil fuels is reflected in the price.

“Presently, the system rewards people for dumping carbons and doesn’t charge them for the problems they cause,” Dean explains. “The sooner we realize the true cost of fossil fuels, the sooner we’ll develop solutions.”

Dean’s research and teaching interests are in the area where sustainability and entrepreneurship intersect. He believes that developing sustainable solutions is an ideal opportunity for entrepreneurs. He tells students, “Fossil fuel supplies will likely be depleted while you’re in the midst of your career. That has tremendous implications – and it creates lots of opportunities.”

For example, General Electric, once one of the country’s biggest polluters, developed an initiative to reduce its impacts on the environment while also increasing revenues. In 2005, the company introduced a 4,500-horsepower engine that lowered greenhouse gas emissions by 40 percent and improved fuel consumption.

“GE realized that going green is not just about strategy. It’s about entrepreneurship – new markets, new products, new ways of doing business,” Dean says.

Movements toward long-term alternative energy solutions already have started. While fuel prices soar, venture capitalists invest millions of dollars in clean energy start-ups. “It’s an issue affecting the course of human history. We’ll either solve it or we’ll have incredible problems from it.”

Dean believes that as the demand for energy rises at the same time fossil fuel supplies run out, belief systems will change, leading to changes in reward systems, which will lead to changes in behavior.

Our energy dilemma is as much a business and economic problem as it is a technical problem, Dean says. “We need to solve both simultaneously. Resolving these issues is not always about sacrifice but about doing things differently.”

Human solutions to human impacts
Institute dedicated to addressing environmental issues

by Nik Olsen

On a scientific level, the response to environmental problems that threaten the health and welfare of billions of people around the world has been noteworthy. The human role in this matrix, however, often is overlooked.

Now, a new organization at Colorado State – the Institute for Society, Landscape, and Ecosystem Change – is focused on creating innovative, human-centered solutions for global environmental issues.

“Humans are critical because they are drivers of environmental change while at the same time the focal point for solutions,” says Chris Fisher (shown below), co-director of the institute and associate professor in the Department of Anthropology.

The complexity of human and environmental interaction demands creative, interdisciplinary collaboration, and the institute spans multiple academic departments and disciplines to meet this need.

“The institute is truly a pan-University organization that includes scientists from all eight CSU academic colleges working toward innovative solutions to our most pressing social and environmental problems,” says co-director Kathleen Galvin (opposite), professor and department chairwoman of anthropology.

From the local to the global, the institute’s scientists tackle problems such as deforestation, climate change, urbanization, desertification, and land degradation.

“ISLEC research takes place here in Colorado, Latin America, Asia, Africa, and everywhere in between,” Galvin says. “Our projects involve both the short- and long-term effects of human environmental impacts to better understand present and future problems that result from global environmental change.”

In just a few months of operation, the institute has been successful with new grants from organizations such as the National Science Foundation to support research. ISLEC is actively seeking long-term partners and donors.

Such support is important to society’s future. “Humanity is facing profound and linked social and environmental change,” Fisher says. “By anyone’s calculus, these trends form a clear danger to the well-being of the human species.”
being of our society, now and in the future. It's up to us to begin creating future solutions that will improve our ability to better respond to the anticipated and unintended outcomes of these changes. In this way, ISLEC is a solution-based organization that will help CSU to become a world leader in focusing the human response to global change.”

The institute's scientists use tools drawn from the social and natural sciences including archaeology, anthropology, ecology, geology, soil science, computer modeling techniques, and geographical information systems. The objective is to better understand past and present land use and to look at scenarios of change that have future implications for both humans and ecosystems.

The intent of the institute is to provide University faculty with the structure, the time, and the resources to solve linked human/environmental problems, adding to CSU’s reputation as an environmental solutions provider. “The goal is to build not only sustainable but also resilient human-environmental systems,” Fisher says.

Galvin adds: “Sustainability is more of a process, not an endpoint. A change can occur tomorrow that could make a solution unsustainable. For a resilient social and ecological system, it is important to monitor conditions to create flexible solutions that are adaptable to new circumstances.”

One of the institute's primary goals is to bring top scholars to campus to share innovative research. This spring, the institute hosted two leading figures. Clark University’s Billie Turner, a respected professor of environment and society and member of the National Academy of Sciences, gave a talk about Southern Yucatan, Mexico, as an example of a move toward sustainable land use. University of Manitoba Professor Fikret Berkes lectured about the applicability of resilience thinking to the study of social-ecological change.

The institute also hosted a two-day workshop on agent-based modeling, a method to address human decision making about land use. As a result, new classes and research in this modeling are occurring at the University.◆

Earth’s spokesman
A philosophy professor’s reverence for nature
by Paul Miller

Over the course of his long career, Holmes Rolston III has taught scholars and concerned citizens new ways to think about and value the natural world. The philosophy professor, former Presbyterian minister, and founder of environmental ethics has built a body of work based on carefully reasoned and far-reaching premises: “No one can really become a philosopher, loving wisdom, without caring for these sources in which we live, move, and have our being, the community of life on Earth.”

Rolston, who retired from Colorado State this spring, doesn’t avoid hard-hitting topics. “In an age of ecological catastrophes,” he says, “it is positively hazardous to live as if nature were valueless. It is difficult to recognize this value without reverence and without generating a process that makes such reverence possible.”

When Rolston speaks – and he’ll keep speaking to audiences around the world in his retirement – his words are weighted with a life immersed in close awareness of nature. He effectively created the field of environmental ethics with a seminal article in 1975 called, “Is There an Ecological Ethic?”, a testament to his conviction that nature is not only to be respected but considered a sacred gift. A reviewer of Rolston’s work notes, “There is no more powerful portrait of the human emotional, cultural, intellectual, and spiritual potential to be found in nature than his writings.”

Rolston, who admits to being a “canoe freak and tree hugger,” spent his youth roaming the woods in the Shenandoah Valley of Virginia. He graduated from Davidson College in 1953, then received a divinity degree in 1956 from Union Seminary in Richmond. Moving overseas, he earned his Ph.D. in theology and religious studies at the University of Edinburgh, Scotland. A prodigious scholar, he next received a master’s in philosophy of science from the University of Pittsburgh in 1968, then settled into a career at Colorado State, where he eventually became a University Distinguished Professor.

In 2003, he was awarded the prestigious Templeton Prize of more than $1 million – the largest such prize in the world – from Prince Philip in Buckingham Palace. Rolston gave the prize money to his alma mater to endow a chair in science and religion.

When Rolston first started teaching at Colorado State, he was pleased to see strong programs in natural resources, but he also noticed the lack of philosophy in those disciplines. “I ventured a class in environmental ethics,” he says. “It filled at once.”

Over the years, Rolston has seen people responding more vigorously to ecological crises, due in part to his decades of work. “People have become very aware of the conservation of nature,” he says. “Where increasing development once was held as an ideal, people now are valuing other species and their place in life on Earth. Sustaining the biosphere is as important as sustaining development. “Students are much more aware that our future depends on the choices they make now. We need to be not only citizens, but residents on our landscapes as well. And in that regard, Colorado State as a land-grant university can teach students as much as any ivy-league school.”

Following a lecture tour in Portugal, Rolston this summer is teaching educators in Russia about environmental ethics for a UNESCO program. He’ll then return stateside for a horse-packing trip to the Chinese Wall in Montana’s Bob Marshall Wilderness. In the fall, he’ll resume teaching for two months in Taiwan.

“I’ve spent my life in a lover’s quarrel,” he says. “Not with my wife of four decades but with the two disciplines I love: science and religion.”
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A home for the Arts

University center resonates with performing and visual arts

Photos by Bill Cotton, John Eisele, and Joe Mendoza

Heston McCranie and Missy Larson practice on the new Recital Hall stage in the University Center for the Arts.
For many years, Colorado State's vision for the arts was only a dream housed in an otherwise vacant building fronted with imposing stone columns. That vision sought to fill the former Fort Collins High School, alive with young students' voices until the school closed in 1995, with symphony concerts, stage plays, dance performances, and works of art. For a number of years, though, the building remained largely empty.

Now, after long, hard work by art lovers at the University and throughout the region, the dream has turned into the University Center for the Arts. The building is once again filled with teachers and students – albeit older, college-aged students – who study music, dance, and theater at the center. Moreover, a wealth of performances by visiting artists and students are being presented throughout the year in acoustically fine-tuned venues.

And there's more to come. In April 2009, Colorado State's new Art Museum, the first of its kind on campus, and the Historic Costume and Textile Museum will open at the center with special exhibits. Soon, visitors will be able to admire such exhibits, then stroll down a corridor to enjoy concerts in the magnificent Griffin Concert Hall.

The way it was

Prior to the mid-1990s, the need had become critical to create a performance hall and facilities for music, theater, and dance, which for decades had been located in different places throughout campus. Bob Hoffert, emeritus dean of the College of Liberal Arts, recalls that the scattershot placement of those venues had become unbearable.

“The arts facilities were utterly inadequate,” Hoffert says. “The music program was in a former library that didn't have any soundproofing at all. The theater was in a ballroom in a former student center – Johnson Hall – with no space for the physical requirements of theater. Dance shared room in the General Services Building with other campus departments. It was unbelievable.”

But during a lengthy meeting in the late 1990s with administrators, and with the support of then-President Albert Yates, Hoffert recalls hammering out the concept of a center for the arts, which prior to that time had existed only as a vague notion for a performance hall.

“It had to be a comprehensive venue, not just a performance hall, that could meet the educational needs of our students at the University,” he says. “From that time on, everything we talked about focused on a University Center for the Arts.”

Highs and lows

The decision to build an arts center was complicated and difficult, but that choice turned out to be one of the easier
aspects of the project. Michael Thaut, co-director of the School of the Arts and chairman of the Department of Music, Theatre, and Dance, says that finances became a major challenge of the project.

“The UCA stalled in the face of a statewide financial crisis, and funding became a big concern,” Thaut says. “A major delay in 2003, when the project was already under way, almost broke the morale of many people on campus. We were afraid the center as it was envisioned wouldn't be built.”

But the new CSU president, Larry Edward Penley, viewed completion of the UCA project as essential to the future of Colorado State as a major university. He advocated with student leaders for the creation of a campus facilities fee that would upgrade and construct student-focused facilities like the UCA.

Patrick Fahey, chairman of the Department of Art who steps down as co-director of the School of the Arts this fall, admits that the challenges and setbacks were tough at times.

“Building the UCA consumed us, but now we can concentrate on collaborative efforts within the School of the Arts to develop and enhance course offerings,” he says. “We’re also enhancing partnerships and alliances with the community and educational institutions in the state.”

Ann Gill, dean of the College of Liberal Arts, also was part of what she calls the emotional roller coaster of the project. “Part of the millions of decisions made about the facility involved finding ways to do things well and within budget. When the center was first proposed, it wasn't much of a priority on the list of physical development projects. But then the momentum and enthusiasm picked up, and now we're having a grand opening for the UCA in October. We've come such a long way.”

Thaut adds that the $43 million center, which was finished in July, came in ahead of schedule and under budget.

“Through the extraordinary devotion and effort of the University community over the years, we now have one of the finest complexes in the region that celebrates the visual and performing arts,” says President Penley. “The University Center for the Arts is an outstanding tribute to the cultural heritage that enriches our society.”

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**Donors are the heart of the arts**

Major donors to the University Center for the Arts ($500,000 or more) are:

- Colorado State students, $29.6 million
- The Bohemian Foundation, $4.92 million
- Griffin Foundation, $2 million
- Kenneth and Myra Monfort Foundation, $500,000
- Serimus Foundation, $500,000

Other donors contributed a total of $5.5 million.
A splendid room for a world-class organ

In 1968, 25,000 pounds of intricately fashioned pipe organ parts and hundreds of board feet of solid oak casework were delivered to campus and installed in the Music Building. Several months later, the organ, replete with 2,096 pipes, 56-note keyboard, 32-note pedalboard, and 34 stops, was lofting notes to the heavens.

This summer, the Casavant organ, considered among the 25 greatest organs in the world, was moved to the University Center for the Arts, where master musicians and students alike are again touching the ebony, ivory, and rosewood keys.

Parsons Pipe Organ Builders of Canandaigua, New York, spent some 3,000 hours cleaning, restoring, and moving the organ. Ric Parsons, the company’s president, said the new hall where the organ resides is “a splendid place for the Casavant. The visual appeal, the warm sound, the rich history – it’s like the room was built just for the organ.”

In 2004, the Stewart and Sheron Golden Endowed Chair in Liturgical Organ Studies was established, the first endowed chair for the College of Liberal Arts. – PM

An endowment fund to bring renowned organists to Colorado State to play and teach has been set up in the name of Robert Cavarra, longtime professor of music at the University and noted concert organist who died Feb. 8, 2008.

“Bob had a tradition of bringing to campus the very best organists from all over the world,” says Barbara Cavarra, Robert’s widow. “The Robert Cavarra Endowment fund is my way of continuing Bob’s musical legacy.”

Details on how to donate are on the Colorado State University Foundation’s website at www.advancing.colostate.edu/foundation.
The soul of jazz
by Kimberly Sorensen

The bass starts out with a low buzz, then saxophones speak with soulful rhythm. The piano then enters, the tempo picks up, and trumpets arrive in a blend of classic jazz sound. Although the music could be coming from a nightclub, it’s actually another day of jazz ensemble rehearsal at Colorado State.

Although jazz studies isn’t a degree program in the School of the Arts, it supports and supplements music majors by providing a way for students to round out their musical skills.

“Jazz lends itself to be a dynamic teaching tool for our students because when they perform jazz, they’re sharpening their performance skills, improvisation style, and composition experience,” says Peter Sommer, director of the Jazz Studies Program and jazz saxophonist and composer.

The program includes two big bands, Jazz Ensemble I and II, and two smaller jazz combo groups. The bands perform pieces from classics by Duke Ellington to contemporary works by Maria Schneider and Jim McNeely. The Vocal Jazz Ensemble, a relatively new addition, is designed for vocal majors to broaden their skills in a cappella.

With the opening of the University Center of the Arts, the jazz ensembles and combos hold rehearsals in the new rehearsal hall, one of the largest of its kind in the nation at a university setting. The new hall is much more accommodating for rehearsals, Sommer says.

As the jazz program grows at CSU, Sommer envisions more community outreach opportunities, particularly in public schools. Jazz programs in middle schools and high schools are starting to thrive, and performing for and with these students can strengthen and enrich the local musical community. “My first exposure to jazz was in my high school jazz band. If I hadn’t had that opportunity, I wouldn’t be the jazz saxophonist I am today. We want to encourage that same experience for today’s high school students.”

Each semester, Sommer schedules a guest artist to perform on campus with the ensembles, giving students valuable exposure to professional jazz musicians. This fall, CSU Jazz Ensemble I will travel to Heidelberg, Germany, to perform joint concerts with the German SRH Big Band.

After graduation, music majors pursue careers in music education, go on to graduate school, venture into the music therapy industry, or become professional musicians. “I make a point to include personal and business skills in my teaching whenever possible so when our students are out in the real world, they’ll know how to handle themselves in professional situations both as performers and educators,” Sommer says.

Sommer is happy to teach – and learn – from his students.

“Our students are enthusiastic, creative, productive, ambitious, and just plain fun. I don’t think I could ask for anything better.”

Jim and Wendy Franzen, local arts supporters and University benefactors, have been instrumental in providing seed money to establish the jazz program at CSU, including a full-time faculty position in jazz studies. “Simply put, jazz at CSU would not be where it is today without the generous gift from the Franzen,” says Peter Sommer, Jazz Studies director.
Perfect climate for art

Art lovers will have to wait just a bit longer to see exhibits at the new Colorado State University Art Museum at the University Center for the Arts. Some 3,000 objects, including Japanese prints, Warhol photographs, African sculptures, and contemporary art, are slowly being acclimated to the new environment.

“Opening the new museum is a long, detailed process that includes packing, moving, acclimatizing, and installing works of art,” says Linny Frickman, museum director. “The slow process of moving is helping to protect art objects made from wood and other organic materials that may otherwise be damaged from sudden climate changes.”

The museum at the UCA is equipped with climate-controlled systems, lighting, and security designed to safely exhibit and store artwork at ideal temperature and humidity levels, Frickman says.

The new museum will feature rotating exhibits of objects from the permanent collection.◆

New home for historic textiles

With white-gloved care, more than 12,000 artifacts are being moved from the Gifford Building on Colorado State’s Main Campus to the University Center for the Arts. The artifacts make up the Historic Costume and Textiles Collection of fragile textiles, accessories, and clothing pieces, some dating back 2,000 years.

The $2.3 million collection’s new home will provide more space including a gallery for the thousands of pre-Columbian textiles, Civil War era hoop skirts and men’s jackets, Geisha shoes, elaborate fans and hats, beaded flapper dresses, handmade lace, and famous designer apparel.

The new, climate-controlled facilities will offer easier access for experts, students, and visitors to study the collection. The move doubles storage space for the collection.

An open house tour called "Behind Closet Doors" will take place from 11 a.m.-1:30 p.m. April 11, 2009, in 136 UCA Annex. Visitors may tour the storage facility and discuss storage and display issues with trained volunteers.◆

Grand Opening Events

The University Center for the Arts opens with a ribbon cutting and community open house from 1-3 p.m. Oct. 16 and the grand opening of the University Dance Theatre with special guests Diavolo Dance Theatre on Oct. 17 and 18.

More details on grand opening events are on the Web at www.sota.colostate.edu.
Ambassadors of dance

After more than 10 years of dreaming, the reality of new dance space at Colorado State means that Jane Slusarski-Harris, director of dance, couldn’t be happier.

“We’ve waited a long time for the creation of a theater dedicated solely to dance,” she says. “We now have the facility to match the dedication of our students and the high standards we hold them to within our program.”

The University Dance Theatre, the new, 200-seat performance space, marks the completion of the University Center for the Arts complex. The theater is located in the original Fort Collins High School gym, which high school alumni remember as the girls’ gym.

The space was meticulously designed and reconstructed for dance. “The theater is the only place in Northern Colorado designed for dance performance. It’s a tremendous asset to the University’s arts program and for the dance community,” Slusarski-Harris says.

Fully upholstered seats can be pulled back to free up more of the specialized sprung dance floor for large classes and rehearsals. “This type of seating made the most sense because students perform only during certain times,” says Gina Cochran, UCA manager. “Rather than waste that space, it’s used for larger classes and rehearsal.”

Cochran says the sprung floor has a cushion of air underneath that helps prevent injuries to dancers. The theater also is equipped with state-of-the-art lighting operated by student technicians.

“As a classroom, the theater will allow student technicians, designers, dancers, and choreographers to practice and learn different aspects of dance production and performance,” Cochran says. “Our students are responsible for illuminating scenes, creating moods, and forming environments, all ingredients of fluid and seamless productions. In a sense, this theater is a palette for them.”

In addition to the theater, two new studios were built for the dance program’s 50 majors and all University students to rehearse and study technique. Other performance opportunities for students include the CSU Tour Dance Company, which travels to schools, festivals, and community events to perform and offer culturally diverse dance experiences. Under the direction of Chung-Fu Chang, the company recently performed at the AVG A International Festival in Merida, Mexico.

“Our students are the next generation of educators and artists,” Slusarski-Harris says. “They are our ambassadors.”

Erica Juergens-Bow, 2006 Colorado State dance graduate, is returning to her alma mater with the international dance touring company, Diavolo Dance Theatre, to perform for the grand opening of the University Dance Theatre in October. The Los Angeles company will be in residency at CSU Oct. 8-18.

Diavolo artistic director, Jacques Heim, and company members will audition CSU students to perform with the company for a VIP reception Oct. 16 and two public performances Oct. 17-18. Master classes, workshops, and lecture-demonstrations will be included throughout the residency and are open to the public.

Tickets for performances are available by calling (970) 491-4TIX (4849) or visiting www.csutix.com. Dance residency information is available at (970) 491-6330.
Price Johnston is glad to bring his passion as assistant professor of theater design back to Colorado State. He’s also glad to be close to his family, but not too close. And Colorado has mountains. He missed the mountains.

“I grew up in Colorado, and to have the opportunity to come home and teach at a progressive theater program was something I couldn’t pass up,” he says. Johnston (pictured above), the newest faculty member in Colorado State’s Department of Music, Theatre, and Dance, specializes in lighting, scenic, and sound design and the new field of digital media design. He could be called a “behind-the-scenes guru.”

“Digital media, such as projections shown on the stage, sound, and animation, is like the new kid on the block when it comes to the theater design industry because it encompasses design aspects that recently have advanced through technology,” he says.

Johnston, who fills a position that hasn’t had a permanent faculty member in 10 years, was attracted to the University’s growing and progressive arts curriculum. The fine arts graduate program, in fact, recently was nationally ranked by U.S. News and World Report.

“I was drawn to the fact that CSU’s theater program places significant emphasis on undergraduate education and training, and it’s not often you see that on a university level.

“Walt Jones, director of CSU’s theater program, has a vision to create a strong program that competes locally and globally,” Johnston continues. “Students will leave CSU with bachelor’s degrees but have Bachelor of Fine Arts training. I want to be a part of that vision.”

Completion of the University Center of the Arts was another key draw in his decision to join Colorado State. “The UCA shows that arts are important to the University, and I wanted to teach at a place that makes the arts a priority and invests in it.”

A new design lab, digital lab, sound and video booth, and lighting lab in the UCA will help enhance design skills for students. All those resources weren’t available when theater was housed in Johnson Hall on the Oval.

“Johnson Hall was the old student center that predated Lory Student Center. It was never meant to house theater – it was rustic, crude, and cramped. People in theater felt like squatters over there.”

With performing arts housed in one facility, Johnston says students will be able to play off one another, broaden their talents, and leave the University with impressive résumés of productions they designed.

“In this industry, people can no longer be dedicated to specializing in one aspect of design. We have to educate students so they know how to light dance shows, provide audio projections for operas, and create the appropriate atmosphere for piano recitals,” Johnston says.

Prior to joining Colorado State, Johnston was production manager and lighting supervisor for the international touring company, David Dorfman Dance “Underground,” in Chicago. Recent work includes the Jeff Award-winning 1776 and Janis Brenner’s Lost Found Lost at the Isadora Duncan International Dance Festival in Russia. He’s designed more than 100 productions in London, Athens, Moscow, St. Petersburg, and New York.

In addition to expertise, Johnston brings a straightforward teaching philosophy to students: “You can’t learn my field out of a book. You have to put your hands on the equipment. My students will do that from day one.”

◆ – KS
Less is more: saving big by reducing water use

by Patrice Stafford and Carol Dollard

Water is a valuable resource, especially here in the semi-arid West. As pressure on water resources continues to grow, the cost of potable water continues to rise and now exceeds $1.5 million for Colorado State.

Minimizing water usage reduces operational costs and environmental burdens on local water resources. Facilities Management and other University departments are continuing to decrease campus water use to save money and energy.

• Since 1990, potable water use has decreased more than 22 percent (108 million gallons), despite a student population increase of 25 percent and building square-footage increase of 19 percent.
• To conserve water, retrofits on campus include converting refrigeration systems to air-cooled compressors, which saves roughly 17.5 million gallons of water per year.
• Retrofits also have been made to residence hall toilets, faucets, showers, and laundry facilities. Energy-efficient clothes washers in residence halls save about 22 gallons of water per load.
• Conservation projects have been implemented in some of the top water-using buildings including Chemistry, Microbiology, Painter, and others. Projects include installation of water-saving kits for autoclaves, which saves the University about $60,000 and 15 million gallons of water annually.
• Trees, shrubs, and other plants on campus are selected for low water use, winter hardiness, and heat and drought tolerance. The irrigation system uses 95 percent raw water, which saves about $250,000 and keeps the equivalent of 281 tons of carbon dioxide out of the atmosphere per year.

New School of Global Environmental Sustainability

To streamline Colorado State’s environmental research efforts and to prepare students for the growing green workforce, the University has unveiled the state’s first School of Global Environmental Sustainability. The umbrella organization will encompass all environmental education and research at the University.

Leading environmental researcher Diana Wall will serve as founding director of the school. Over the next year, Wall will form advisory committees to help create curriculum and programs for the school, which could start offering new courses as early as 2010.

“Under Dr. Wall’s leadership, the school will ensure that students leave CSU with the creative, critical-thinking skills needed to solve the globe’s greatest environmental problems and successfully contribute to the emerging green workforce,” says President Larry Penley.

The school will act as a clearinghouse for the hundreds of University faculty in all eight colleges who are studying the environment in areas such as atmospheric science, environmental politics, wind engineering, agricultural economics, green building, wildlife biology, ecotourism, forestry, ecology, sustainable entrepreneurship, and public policy.

Demand is building for students with well-rounded educations: Studies suggest the renewable energy job market nationwide could create 40 million new jobs by 2030.

As founding director, Wall, biology professor and senior research scientist at the Natural Resource Ecology Laboratory, will look at closing curriculum gaps so that every department on campus offers some type of environmental course or experience for students.

“Environmental problems are expansive and require expertise in all disciplines to ensure that sustainable solutions are developed and implemented,” Wall says.
It is Easy Being Green.

Homecoming & family weekend 08

Friday, Oct. 10

**CSU Homecoming Parade**

5:00 p.m.

The biggest parade in town is heading right through the heart of campus! Join the Fort Collins community in celebrating CSU and this year’s Homecoming theme: “It is Easy Being Green!” Check out the new parade route online at homecoming.colostate.edu.

**Homecoming Festival**

6:30 p.m., West Lawn, Lory Student Center

Join the Homecoming Festival for music, games, food, and more! Celebrations include the annual bonfire, fireworks show, and lighting of the “A.” Homecoming Festival is free; $15 per person registration fee covers dinner, drinks, and dessert.

Saturday, Oct. 11

**Homecoming 5K Race**

7:45 a.m., CSU Oval

Register for the race by calling (970) 491-5081 or visit online at www.hes.cahs.colostate.edu/Homecoming.

**Homecoming and Family Weekend Pre-Game Tailgate**

11:00 a.m.-1:00 p.m., Hughes Stadium

Traditional tailgate fare includes visits by Cam the Ram, CSU pep band, and cheer squads to set the stage for Ram Spirit! Cost: $10 per person for CSU Alumni Association members and $15 per person for Alumni Association nonmembers.

**Homecoming Football Game:**

**CSU vs. Texas Christian University**

1:30 p.m., Hughes Stadium

Cheer the Rams to a Homecoming victory over Mountain West Conference opponent TCU. A limited number of discount-priced tickets are available to families and alumni who register by Sept. 26. Register today at homecoming.colostate.edu.

Check out the full schedule of events at homecoming.colostate.edu!
The all-consuming complexities of oil

What’s next after easy, cheap energy supplies dry up?

by Kay Rios

I

t’s easy to understand why discussions about oil supplies heat up so quickly. The fact that U.S. consumers paid $38 billion more for gas in the first six months of 2006 than they paid in the same period in 2005, according to the U.S. Government Accountability Office, makes it personal to all Americans – and personal to the rest of the world as well.

It’s easy to see that costs are increasing, but understanding the complex issues of the world’s oil supply is not easy, says Kyle Saunders, associate professor of political science at Colorado State.

Saunders is writing a book on energy policy and the frames used in public and political debates on alternative energy in the United States “About three years ago, I started researching this, and I’ve found that the more I learn about energy topics, the less I feel I know. It’s like grabbing a handful of sand and squeezing it right through my fingers. There are so many different causes and so many effects.”

The major problem is estimating when oil production will peak. U.S. oil production peaked around 1970 at close to 10 million barrels per day, then steadily declined to about 5 million barrels per day in 2005. As far as other world oil resources peaking, the GAO’s 2007 report to Congress on crude oil says that depends on how much oil is still in the ground, how much of that oil can be produced, and what future demands will be.

The amount of oil remaining in the ground is uncertain. The Organization of Petroleum Exporting Countries, or OPEC, which controls most of the world oil reserves, has not had its estimates verified by independent auditors.

So much of our lives are dependent on oil production, Saunders says. “Our entire lifestyle, our entire economy is based on cheap energy.”

Oil is amazing, he adds. “It has such elegance as a fuel source. It has such portability, it’s been easy to get, and it has the biggest energy return on investment out of the liquid fuels we have available. There’s a reason the transportation sector is based on oil – it was the lowest and easiest apple to pick off the tree. Now, how do we get to the more expensive fruits?

We pay more.”

While alternatives such as ethanol and biofuels have potential, he says those are only marginal replacements and don’t deliver as much energy bang for the buck. “Two kinds of fuels have more energy return than oil: coal and nuclear. You can turn coal, oil shale, or tar sand into liquid fuel, but there’s much more environmental degradation than you get with processing oil. And we all know about public response to nuclear. You take away those sources, and what’s left? You have ethanol and other biofuels, which, as of now, do not have the energy return that we need.

“The transportation sector is based on oil because it was the lowest and easiest apple to pick off the tree. Now, how do we get to the more expensive fruits? We pay more.”

“Then you have wind and solar technologies that aren’t liquid fuel-based. Our entire transportation infrastructure is based on liquid fuels. That’s not to say we couldn’t innovate, but it will take a lot of time to do so. It takes 15 years just to turn over a car fleet. But turning sources into liquid fuel and maintaining the cheap energy profile we have right now is the real issue.”

Issues with current and future supplies of oil also exist. “Light, sweet crude is what everyone wants. That’s what the refineries were originally designed to process. It comes out of the ground, goes to the refinery relatively cheaply and
comes out as products with relative ease. Light, sweet crude oil peaked in 2005. We know that. What’s left is heavy, sour crude, and it’s more expensive to refine.”

As one means of supply, offshore drilling has come into focus with pressure on Congress to lift its long-standing ban. But the U.S. Energy Information Administration’s detailed study on offshore drilling concluded that lifting the ban would not have a significant impact on domestic crude oil and natural gas production or prices before 2030 – and even then, the impact is expected to be insignificant.

At some point, as the GAO’s report says, a national strategy must be created. The consequences of an oil peak, the report says, will depend on our preparedness. In the longer term, biofuels and improved automobile fuel efficiency may help solve the problem, but as the report maintains, these alternatives will require large investments and either major changes in infrastructure or breakthrough technological advances.

For the time being, many states are putting their own renewable portfolio together. “Colorado’s plan says 20 percent of its energy will come from renewable sources by 2020, and that’s a good goal. It’s a wonderful idea, and we need more like it,” Saunders says.

And, he says, the discourse is changing. Saunders regularly contributes to a discussion website at www.theoildrum.com, and many more are out there.

“The more we talk about this, the more people are learning about it. And the more people understand about energy, the better chance that smart decisions will be made.

“Many things could happen. We could learn to live with less. We cannot just assume we will have cheap energy forever.”

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Telling the stories of trees

by Gretchen Menand

Every tree has a story, says Randy Moench, manager of the Colorado State Forest Service Nursery and an eloquent storyteller himself. Standing in a green sea of small trees at the Foothills Campus nursery, Moench admires the lodgepole pine, a Colorado native conifer, for its ability to survive.

“Lodgepole pine is adapted to disturbances such as fire,” he says. “It deposits a lot of cones on the ground that stay shut until after the disturbance. Then the cones open and distribute their seeds.” Moench, a Colorado State forest biology graduate (’79), has many tree stories, but he also likes talking about other distinctive elements of the nursery he’s been managing for 22 years.

The 130-acre nursery is mainly a tree conservation program, Moench says. “It’s part of an agency that provides forestry services to private landowners. The nursery’s part includes selling seedling trees to roughly 5,000 individuals a year.” He adds that the nursery grows seedlings for conservation practices such as windbreaks, restoration from fire or bugs, and wildlife habitat.

The nursery distributes nearly 2 million seedlings per year for conservation efforts, but not just any landowner can purchase the seedlings. Landowners must own two or more acres of land; use the seedlings for conservation, not landscaping; and purchase a minimum of 30 to 50 seedlings, depending on species and size.

The nursery delivers to nearby states and nearly every county in Colorado, and it collaborates with local extension offices or soil conservation districts in those counties.

“It’s difficult to find young, inexpensive seedlings from local sources today. Here in our nursery, the seeds are collected from native stands of trees. They’re selected not just for things like color but also for functions such as surviving drought conditions for windbreaks.”

Seeds grown at the nursery may hold the key to a sustainable future locally as well as around the globe. Recently, seedlings were shipped to Germany for climate change research. Researchers at a German university requested Colorado State seedlings of species from warmer climates for their genetic seed banks. The researchers wanted trees from southern sources that were more adapted to hotter, dryer conditions than their own native trees. For this climate research, Moench says researchers are evaluating the performance of different seed sources from different locations.

The Colorado State Forest Service tree distribution program dates back to 1917, when foresters purchased seedlings from other nurseries and distributed them mainly to eastern plains for windbreaks on farms. The present nursery, which has been operating since 1957, grows 45 native species. In recent years, demand for new species for different conservation needs prompted the nursery to add 20 new species to its inventory.

In addition to growing trees, the nursery serves as an outdoor laboratory for other CSU departments such as entomology. It’s also a wildlife habitat for songbirds and mammals such as black bear and red fox, which help control rabbits that may otherwise damage flora.

Moench’s interest in natural resources began when he was a student doing seasonal work in the high-elevation conifers of the Rio Grande National Forest, where he helped reforest clearcuts with Engelmann spruce seedlings from a nursery in Carbondale. He became enamored of the stories told by trees, and over the course of his career, he’s helped restore river habitat with willows, provided trees for windbreaks and homes for wildlife, and helped document native plant occurrences of trees and shrubs for a mine reclamation project in the 1970s (the data of which he compiled using punch cards and a mainframe).

Moench’s home-away-from-home is the nursery. “After raising seedlings all my life, it hasn’t been until recently that they’ve grown as big as me. It’s like seeing your kids grow up. For the first time, they’re bigger and taller than I am,” says the 6-foot-4-inch Moench.

He’s concerned about the recent beetle and fire epidemics that are affecting the future of Colorado’s forests, but he also keeps an eye on the long view.

“Forest die-offs are a concern because the scale is nothing like what we’ve seen before – it may be a generational thing. It’s hard to say if it’s natural or unnatural. Is it global warming? We don’t know.”

But as a lifelong forester and storyteller, he also has confidence in his charges. “I don’t worry about the regeneration of trees. Trees may take a long time to grow, but they’re survivors.”

◆
“I don’t worry about the regeneration of trees. Trees may take a long time to grow, but they’re survivors.”

– Randy Moench
Visions

The pipes of the Casavant organ, some of which reach 19 feet in height, are given a blue hue through the artistic eye of Colorado State photographer Joe Mendoza. The organ was refurbished and moved to the University Center for the Arts this summer.
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