

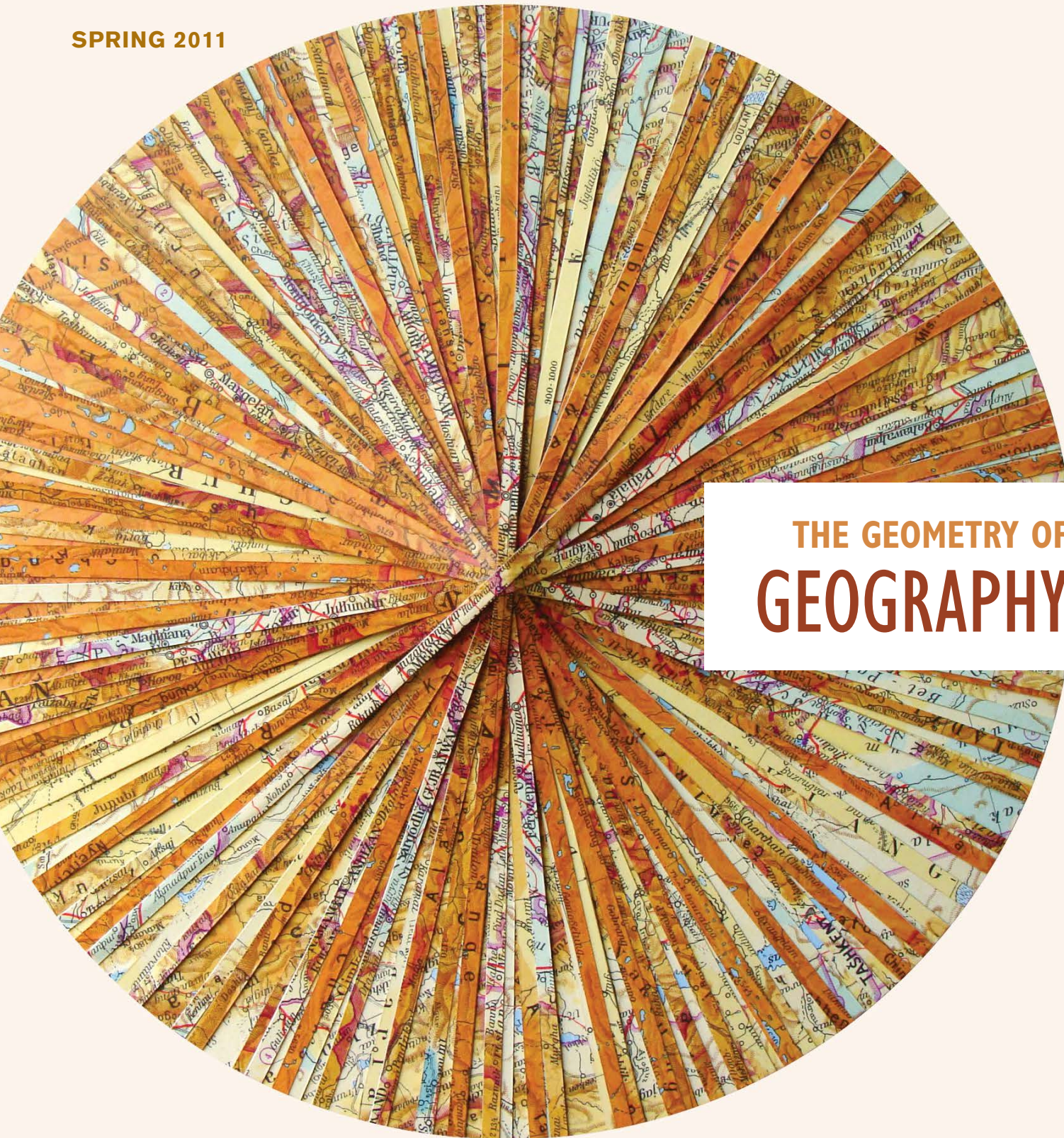
# CASCADE

UO COLLEGE OF ARTS AND SCIENCES

O

UNIVERSITY  
OF OREGON

SPRING 2011



## THE GEOMETRY OF GEOGRAPHY

HOW THE ZEBRA FISH EARNED ITS STRIPES • WHY STUDY ANCIENT LANGUAGES?



I know I am biased, but I attribute our popularity to an unwavering commitment to a strong liberal arts education.



Scott Coltrane, Tykeson Dean of Arts and Sciences

JACK LIU

**T**his year we enrolled more than **23,300 students** at the University of Oregon, the highest number ever. Virtually all of these students take classes in the College of Arts and Sciences, no matter what field they major in. That's because our academic plan calls for any UO degree to be based on a strong liberal arts core and CAS provides the foundation for such an education.

What accounts for the recent popularity of the UO? The economic recession has been a factor in enrollment increases across the country and our athletic success might be a motivator for students to consider the UO (but this year's new students arrived before our football team began its best season ever). I know I am biased, but I attribute our popularity to an unwavering commitment to a strong liberal arts education and a tradition of critical creative thinking and social engagement.

At a time when many colleges and universities are pulling back from offering a traditional comprehensive undergraduate education, we have reaffirmed our belief in this approach. We still require all students to take classes in English composition, plus a year of math for a BS degree and two full years of college-level languages classes to earn a BA degree.

In contrast to the latter, George Washington University just did away with its foreign language requirement and the State University of New York at Albany stopped accepting majors into classics, French, Italian, Russian and theater, with plans to eliminate these departments. USC, Florida State, the University of Iowa, Arkansas at Little Rock, Idaho and Washington State are contemplating closing their German departments to

save money—at a time when the UO has not only maintained its undergraduate German program but can also boast one of the most successful in the country. We also offer lesser-taught languages, including ancient and classical languages like Latin, Greek, Arabic and Biblical Hebrew (see story, page 2).

At the same time, we have achieved national recognition for having some of the best graduate programs in the nation, as evidenced by our showing in the recent National Research Council rating of research doctorate programs (see story, page 23). And we have some of the best teachers in higher education, who continually innovate and find new ways to engage and challenge their students.

Case in point: this year CAS began offering historical role-playing seminars—called *Reacting to the Past*—to first-year students through our College Scholars program (see story, page 18). In these intellectually demanding classes, students take responsibility for understanding, and hypothetically influencing, the course of history by re-enacting events around important turning points in history.

Programs like this not only help our students understand the past, but also prepare them to ask critical questions, collect and evaluate relevant information, think logically, argue appropriately, work collaboratively and act ethically—the skills imparted through a basic liberal arts education. These are exactly the skills that will allow them to take an active role in shaping a better world in the future.

A handwritten signature in blue ink that reads "Scott Coltrane".

## Features

### CASCADE

UO COLLEGE OF ARTS AND SCIENCES

*Cascade* is the biannual alumni magazine for the UO College of Arts and Sciences.

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## Why Study Ancient Languages?



**Homer, Cicero and the authors of the Bible** created some of the foundational texts of Western culture, and many of us have studied one or more of their works in translation. But how many of us have read them in their original languages (ancient Greek, Latin and Biblical Hebrew)? Maybe more to the point: Why would we undertake such a task? Why read the original when we can read these venerable works in modern English?

Faculty members in the UO Department of Classics and the Judaic Studies Program are well acquainted with this line of questioning. Students and parents want to know why time and effort should be expended in the study of “dead” languages that make it possible to read ancient works in the original. And our faculty members are not alone in fielding these questions. The value of studying ancient languages is being challenged far and wide, with some universities choosing to discontinue such language studies (SUNY Albany, for instance—see Dean’s Page in this issue). But not the UO. In fact, the College of Arts and Sciences recently hired faculty members to support the teaching of classical Arabic, adding to the existing curriculum of Latin, ancient Greek and Biblical Hebrew studies.

We asked three scholars of ancient languages to offer their perspective on the debate.

Interview by Patricia Hickson

**Q: What can we learn from studying ancient societies?**

**Malcolm Wilson, department head, classics:** Students pursuing education in the classics are often seeking answers to the big questions: How do I fit into human society? How did we get here in the twenty-first century? Why do we live in the kind of commercial society that we do? What is the genesis of that? It is important to recognize that the kinds of social concerns we have now have a history, and it’s a deep history. Throughout the last 2,500 years, we’ve reshaped our society from its origins, but many of our principles are organically connected with the society of the Greeks. The choices we make today are the results of choices made hundreds of years ago, and those, in turn, are the result of reflection upon what occurred in human society before then. Without going back to that history you can’t understand why we are here now. History is a record of the possibility of human behavior, and that is a very important concept to understand for the social thinker, politician, economist and general human being.

**Mary Jaeger, professor, classics:** There is so much cultural continuity with the ancient Greeks and Romans, in fields ranging from rhetoric and speech making to lyric poetry (which took from Greek authors the idea of the personal voice, of expressing and writing down personal experiences and emotions). The Greeks developed the genre of written history,



which conceived of causation in human terms instead of divine intervention. The idea of standing back and having rational and analytical discussions about the best way to live—this is a Greek idea. And many of these ideas came into the European tradition by way of the Romans.

**Deborah Green, program director, Judaic studies:** The study of ancient societies helps us to understand our own. We can compare them and draw out the similarities and differences. By doing so, we have a blueprint for understanding what went wrong so we can avoid the mistakes of our past. Likewise, as in the case of ancient Israel, it allows us to see how far certain ideas have evolved. Even within the Hebrew Bible itself we can see the progression of an entire culture—a culture that by the end of the overarching narrative so values the poor and vulnerable of society that it views taking care of the downtrodden as the responsibility of all who live in the world. What could be a more important message than that for our own time?

**Q: What are some of the limitations of reading a translation?**

**Wilson:** You cannot fully model ancient languages with the modern. Each language comes with its own way of dividing the world conceptually, and later cultures can only attempt to model the original language. Translation is not a code where there is a one-to-one correspondence of words. Every translation, every edition is the result of innumerable choices. Do we have a perfect understanding? Can we make a perfect facsimile of the original in our modern language? No. Also, sometimes people simply misinterpret text. And if the original is gone, you are stuck with the misunderstanding; there is no way to correct it.

**Jaeger:** When you have effectively translated, you have conveyed an idea, but it's never a perfect translation. There

CONTINUED ON NEXT PAGE

## Translation: A Sign of the Times

**As classics professor Mary Jaeger points out,** when it comes to translation “every generation finds something new.” In other words, the translation of a text is informed by the sensibility of the times. For instance, says Jaeger, modern translations are much more explicit than older ones. “There are a lot of risqué passages in ancient texts that weren’t translated into English until we went through the great sexual revolution of the ’60s and ’70s,” she explains.

At the same time, English keeps changing, which means that words—and by implication, concepts—used in a translation a century or two ago might not be used today. As an example, we offer several translations of Ode 1.38 by Horace, a Roman who lived between 85 and 6 BCE.

### ODE 1.38

#### Horace

Persicos odi, puer, apparatus;  
displacent nexae philyra coronae;  
mitte sectari rosa quo locorum  
sera moretur.

Simplici myrto nihil allabores  
sedulus curo: neque te ministrum  
dedecet myrtus neque me sub arta  
vite bibentem.

#### Christopher Smart, English poet (1722–71)

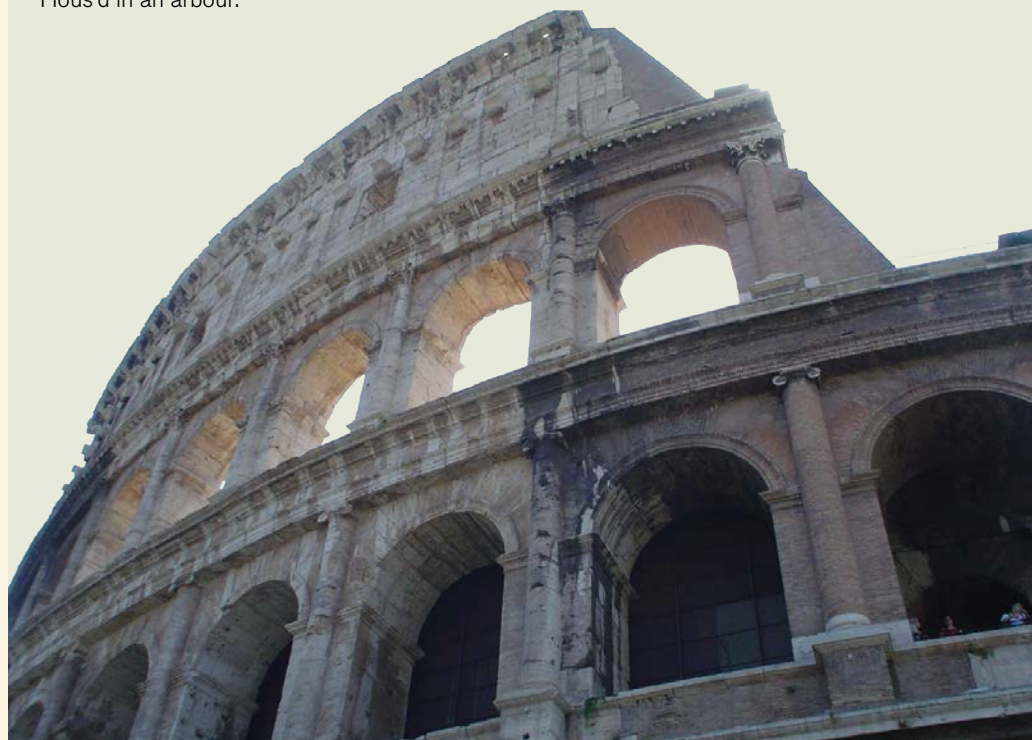
Persian pomps, boy, ever I renounce  
them:  
Scoff o’ the plaited coronet’s refulgence;  
Seek not in fruitless vigilance the  
rose-tree’s  
Tardier offspring.  
Mere honest myrtle that alone is order’d,  
Me the mere myrtle decorates, as also  
Thee the prompt waiter to a jolly toper  
Hous’d in an arbour.

#### William Ewart Gladstone, British Prime Minister (1809–98)

Off with Persian gear, I hate it,  
Hate the wreaths with limebark bound.  
Care not where the latest roses  
Linger on the ground:  
Bring me myrtle, nought but myrtle!  
Myrtle, boy, will well combine  
Thee attending, me carousing  
‘Neath the trellised vine.

#### Eugene Field, American poet and journalist (1850–95)

Boy, I detest the Persian pomp;  
I hate those linden-bark devices;  
And as for roses, holy Moses!  
They can’t be got at living prices!  
Myrtle is good enough for us—  
For you, as bearer of my flagon;  
For me, supine beneath this vine,  
Doing my best to get a jag on!





are concepts that don't come across. The ideas are different in the original version of whatever language. You are going to get closer to the author's thoughts in the original. Part of this owes to the structure of the language itself. Latin has some 40,000 words. English has about a million words. Therefore Latin has to do something different with word order—where the word is in the sentence—and all sorts of things that relate to context. In English you can just pull in a different word. English has a very rigid word order. Man bites dog. But in Latin, it is often the emphasis that is important; it is going to be the word endings that tell you who bit whom, or the context of the phrase. Finally, the poetry is incredible. There is a richness to the literature in its original language that cannot be translated.

**Green:** Our understanding of society, of basic themes in English literature, the foundational stories of our culture, all come from the Bible. Yet, we don't realize how heavily interpreted these stories are. Biblical Hebrew is very, very difficult and

also very sparse. It has very few words. This means every time a work is translated, it is actually interpreted. Translation is an interpretive exercise. Until you learn to read in the original, you can't see the choices translators have made. When you start to read and translate Biblical Hebrew, you realize how very little we know about the original author's intention. You really begin to understand the extent to which our knowledge of the Bible has been dramatically shaped by interpretation.

**Q: What kinds of skills might be acquired in the study of ancient languages?**

**Jaeger:** Studying Greek or Latin is so valuable because it is so analytical. It's a great exercise for the mind, in addition to being tremendous fun and very rigorous. It exercises your memory, enhances your ability to be precise and your ability to hold information in your head before coming to a conclusion. It also helps with a general understanding of language: participles, clauses, syntax—we teach those ideas deliberately. When you study



Latin you get profound insight into good English. From the perspective of a person interested in learning other foreign languages, once you've learned Latin, the grammar of the Romance languages makes a lot of sense.

**Green:** We are inundated with information today—so much information comes to us via the computer, from television, from everything we experience. In business you have to sort through that information and figure out what is gold and what is dross. How do you figure out the problem, the narrative, the solution? You have to first engage your rational mind to acquire the information and then evaluate it to discern “what do I need to know?” To effectively translate requires you to make a choice with every word. You ask questions and you listen for the answers until they tell you a story. Those activities—analyzing information, discerning what is important from what isn't important, engaging the rational mind in order to make and sustain an argument—that's what happens when you do translation. You are making choices and producing a result and then you have to stand behind it. You have to come up with a solid argument for how and why you made those choices. These are the skills of creative enterprise. ■







# GEOGRAPHY

BEYOND THE NAMING OF CAPITALS AND COUNTRIES, GEOGRAPHY HAS EVOLVED INTO A PRISMATIC DISCIPLINE THAT EXPLORES THE BROADER IMPLICATIONS OF PLACE.

**G**et your pencils out for today's geography quiz: Name the capitals of Sudan, Iran and Canada.

Actually, that was yesterday's quiz. Or yesteryear's.

A 21st-century geography quiz would probably not involve pencils nor be a quiz at all. Imagine instead a thought-provoking essay question that would not be concerned with place names, but rather with place *meanings*—something more along the lines of:

- *What are the geopolitical factors that led to the recent independence of South Sudan?*
- *In what ways is Iran unique among Middle East nations?*
- *How has Canada's topography and settlement pattern shaped its relationship with the U.S.?*

To be sure, identifying capitals, countries and continents remains a facet of the study of geography, but as UO geographer Alec Murphy likes to say “place names are to geography as dates are to history.” In other words, they have little or no meaning when isolated from their context. And context is key: geography's imperative is to



UNCHARTED SERIES—VENTS (DETAIL) BY SHANNON RANKIN

examine from many angles the broader implications of place.

In this way, geography has become geometric: it is a prismatic discipline that looks in a multitude of ways at how the surface of the Earth affects our lives as human beings—and vice versa.


How have the human and physical characteristics of specific places influenced wealth distribution, ethnic divisions, political and economic systems and vulnerability to conflict, disease and disaster? How have human beings affected, for better or worse, the waterways, climate, soil and vegetation of the landscapes they have populated? Geographers seek the answers.

To do so, they explore the spatial organization and form of the planet's physical landscapes (rivers, mountains, forests, deserts, variations in climate)

as well as its human characteristics (cities, cultures, political and economic relationships)—relying on both traditional and advanced technologies to characterize these phenomena (maps, GIS, remote sensing).

“This is a truly global science,” said Murphy. “Geography is increasingly important because it not only informs us about where things happen, but *why* they happen where they do.” And this goal is achieved, he says, by “drawing together such seemingly disparate fields as ecology and political science; sociology and botany; anthropology and geology.”

Thanks to this inclusive approach, geography is now enjoying a renaissance after decades of disfavor. In the mid-20th century, conventional wisdom held that Western models of



human behavior would apply to any population, regardless of location. The assumptions in many economic models, for instance, treated all places as if they were the same, says Murphy.

But conventional wisdom eventually caught up with the reality that place does matter, and the last 25 years have seen a fundamental reversal of the one-size-fits-all approach to social science. This has paved the way for geography's multifaceted approach—supported by phenomenal advances in mapping technology and analysis—to regain status and respect as a relevant field of study.

Geography's renaissance is occurring across the nation and also at the UO. The number of UO students majoring in geography has doubled in the last ten years, and these students have the opportunity to study with leaders in the field.

In fact, Oregon geography faculty members are helping set the research agenda for important areas of the discipline; several have played leadership roles in geography's key national organizations.

The National Research Council recently ranked the UO geography department third of 49 programs nationwide in terms of publications per faculty member and third in citations per publication. These metrics indicate both a high level of productivity and the significant influence that UO geographers are having on their peers. Overall, the NRC rated the UO's graduate program in geography as one of the top in the nation.

For a glimpse into the many angles of approach taken by the Department of Geography, here are profiles of four areas of research underway.

—Lisa Raleigh

*Profiles by Patricia Hickson*

## You Are Here: How We Navigate

**At a large family gathering more than 15 years ago, Amy Lobben** started thinking about how people perceive and navigate their way through space. “We were in the car, driving somewhere, and the person navigating for the driver was really, I mean, really, really, bad. So much so that I thought the person was joking, and then I thought: how on Earth can someone be so terrible at this?”

The question was an epiphany of sorts for Lobben, who, having grown up in a family that lived and traveled around the world, had been poring over maps for as long as she could remember. It had never occurred to her that getting around the world might be a challenge for others.

Today, studying human navigational patterns is Lobben's main area of research. An associate professor of geography, she directs the UO's Spatial and Map Cognition Research Laboratory, a unique geographic information systems lab that merges the study of geography, human behavior and environmental psychology (the study of how humans respond to the physical environment).

At the lab, Lobben and other researchers explore the little-understood domain of human orientation and navigational abilities. The experiments involve traditional laboratory and in-field behavioral methods as well as fMRI brain scans and eye tracking (tracking the patterns of eye movement as a person views a map). This multipronged testing approach makes Lobben's experiments among the most rigorous spatial cognition studies in the world.

These experiments generally focus on several different tasks for one individual, most of which involve a map, though some involve geometric shapes. Tasks include mental rotation exercises, in which subjects are given several kinds of maps and geometric shapes and asked to rotate them in their mind; basic navigation exercises that provide subjects with a map and ask them how they would get from point a to z; and computer navigational exercises that combine digital maps and computer games.

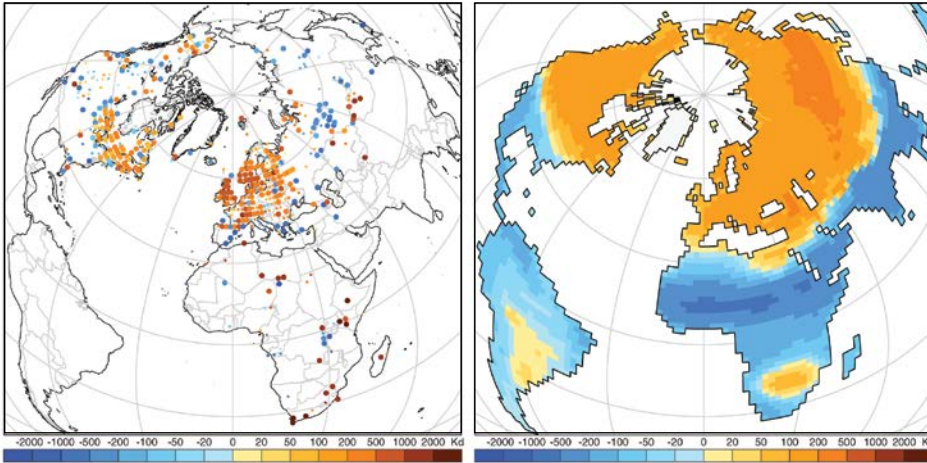
The results of the experiments are useful in isolating and describing how people understand and interact with space and help advance educational tools and methods for teaching navigational tasks from reading a map to getting around a website to putting together 3-D puzzles. The research is also important for the development of tools and technologies for the blind and visually impaired. In fact, a significant portion of Lobben's work revolves around nonvisual spatial orientation.

To explore this realm, Lobben tests subjects who use strategies other than sight to get around. Utilizing tools like tactile maps—maps with raised features that provide information about a landscape—she is able to administer the same kinds of tests to non-sighted individuals as to those with sight.

These experiments allow Lobben to identify what kinds of technologies are most helpful to those who rely on senses other than sight for orientation. While tactile maps are a well-known tool for the visually impaired, new devices are also evolving to serve their needs. These include sound-based navigational tools and those based on haptic technology—devices that communicate with the user through the sense of touch, such as a mouse that vibrates when rolled over features on a web page.

New projects on the near horizon for Lobben include a collaboration with Michael Young, an associate professor of computer and information science at the UO, to develop a GIS soundscape interface that will enable students who are blind or have low vision to work with and analyze geospatial data. ■





These maps show reconstructions of “growing degree-days” (a measure of summer warmth) 6,000 years ago based on pollen records of past vegetation (left) and simulations from climate models (right).

## Data Miner: Using Data from Eons Past to Predict Future Climate Patterns

**Pat Bartlein is a paleoclimatologist,** one of only a handful of scientists who combine studies about the world’s present climate with studies of past climate patterns. His current research delves into the potential connection between wildfires and global temperature change.

Bartlein, a professor of geography, studies prehistoric climate patterns via paleoclimatic data—ancient “natural resource” data that comes from tree rings, lake sediments and polar ice core samples. The data provide evidence about the make-up of the Earth’s atmosphere, as well as temperature and precipitation patterns, from hundreds or thousands of years ago.

Bartlein and other paleoclimatologists have been using data like this since the 1980s to test increasingly complex models that show how the Earth’s climate has changed through the centuries—and also project how it will change in the future.

Thanks to such research, we are now able to put into context the current warming trend of the Earth within the greater scheme of the Earth’s climate over millennia. The data show the most recent years of the 1990s and early 21st century are the warmest of the past 1,000 years, if

not longer, leading to the present concerns about impacts the warming may have on the planet.

“We are able to study how ecosystems have responded to climate changes historically, and thus better predict how current ecosystems may respond to the unusually rapid warming trends of the present,” said Bartlein.

Constructing models that can simulate past or future climate is a complex computer-science enterprise requiring the ability to think on a global scale across thousands of years of time. Testing the climate models requires the synthesis of thousands of paleoclimatic records collected by hundreds of scientists. Each of those records, in turn, contains tens of thousands of data points.

For instance, in the case of paleoclimate data from ancient pollen (see image), each record requires counting thousands of pollen grains to determine what types of plants once grew in a specific region. That record is one of hundreds that can be used to infer past climatic patterns from 5,000, 10,000 or even 50,000 years ago.

As the complexity of the models has increased, so has the demand for

**The models synthesize thousands of paleoclimatic records collected by hundreds of scientists.**

different kinds of data for testing them, and this has been answered by new kinds of paleoclimatic records, advances in statistical techniques and increasingly sophisticated computer software.

Today much paleoclimatic research, including Bartlein’s, is focused on questions about what the future climate may be like based on current atmospheric conditions and projected increases in the release of carbon dioxide and other gasses over the next 50 to 100 years. The newest models provide climatologists with a general sense of future global climate trends, but the science isn’t refined enough to give precise predictions at the regional and local scales, where people will feel the actual effects.

One of the tricks to increasing the precision of the models is figuring out potential ripple impacts induced by projected global increases in temperature. Presently Bartlein is studying how relatively small changes, like increases in individual wildfires across the globe, may amplify the change in worldwide climate patterns. Key to this research is determining how fire behavior is linked to global temperature changes.

The conclusions are preliminary, but Bartlein and fellow UO geographer Dan Gavin, an assistant professor, have collaborated with other researchers on several studies showing that climate has historically been the main driving factor in fire occurrence and suggesting that this will likely be the case in the future.

Their research indicates our warming climate could mean increased wildfires in places we’re not used to seeing them, like the wet forests of the Pacific Northwest. It also means the next generation of climate models will need to incorporate an increased release of carbon from forest fuels due to escalating fire activity around the globe. ■

# Geodatabase-Driven Map-Making: The InfoGraphics Lab

**Maps, which convey information about variations over space,** remain a fundamental component of all geographic studies. By visually representing the world, maps serve as an integral part of humanity's communication toolbox. Their most basic form, "X marks the spot," is found among the ruins of the oldest civilizations.

Today, maps are used for far more than simple navigation. They enable the analysis of spatial relationships—from the distance of a hike, to the number of foreclosed homes in a neighborhood, to the best location for a new public library.

"There has always been spatial analysis, but with the digitization of so much data, we now have really powerful research tools," said Jim Meacham, director of the UO InfoGraphics

Laboratory. "You can do flood analyses, forest analyses, analyses of demographic patterns—all of it much faster than in the past."

The predominance of maps in the 21st century stems from the emergence of geographic information system (GIS) tools that digitally capture, analyze and project geospatial data. At its core, GIS is a computer science that combines cartographic visualization with database technology, allowing researchers to explore complex questions from a spatial perspective and often observe patterns not detectable in a spreadsheet or written description.

At the UO, the modernization of mapping is the province of the InfoGraphics Lab, which serves not only the Department of Geography but also the campus and community at large. Meacham, along with assistant director



*Graduate student Dana Maher was part of the team that helped develop the UO's first iPhone app, "UOregon," which features an interactive campus map. It's available for free on iTunes.*

Ken Kato, make it their mission to be at the leading edge of technology trends that continue to redefine the mapping world. Both have been immersed in cartography and geographic data analysis since the 1980s, before the Internet and digitization of spatial data transformed the field.

"It's evolved rapidly; everything is digital now," said Kato. "Keeping pace with advances in technology is essential for us as geographers because they enable us to communicate spatial information with more people."

Meacham and Kato employ the latest in GIS and data collection technologies—interactive web applications, mobile devices, spatially enabled relational databases linked to specialized software applications—to provide mapping and geographic analysis services to students and professors across campus, not just in geography but also in sociology,

anthropology, city and regional planning, art history and others.

In addition, the same GIS technologies are used to provide mission-critical data to the administrative and operational units that keep the university running. These units rely on the lab's Campus GIS "geodatabase" system to map and store data about the UO's 20,000+ rooms, buildings, underground utilities, safety and transportation features and much more.

Using data from the Campus GIS, the lab also produces the UO's definitive campus maps and is now taking the campus map paradigm to the next level, technology-wise. Last summer the lab, with key programming help from graduate student Dana Maher, produced an iPhone application, "UOregon," that features a searchable, detailed campus map, including a GPS

location device. The application attracted national attention for pushing the limits of what is possible with the newest geographic information technology.

The lab also trains students in GIS techniques and methodologies and applies its expertise to both cartographic and graphic design projects. Among their signature projects are several atlases, including the award-winning *Atlas of Oregon*, now in its second edition.

The *Atlas* is a comprehensive volume that depicts the history, geography, demography and economy of the state via vivid maps that illustrate everything from land ownership to precipitation patterns, vegetation distribution and energy sources. Meacham has also collaborated on an archeological atlas of the Altai Mountains in Mongolia and is working on the first-ever atlas of a national park, the *Atlas of Yellowstone*. ■



# Human Geography: What We Can Learn From Our Neighbors



PHOTO COURTESY OF KATIE MEEHAN

*In Tijuana, volunteers build pervious pavers for a stormwater harvesting project.*

**In many ways the border cities of Tijuana, Mexico, and San Diego, California,** are much alike. They share similar desert landscapes, rainfall patterns, proximity to the ocean and populations of approximately equal size (between 1 and 1.5 million). Despite these similarities, however, their economies, community infrastructure and access to resources differ dramatically. So does their use of water.

Katharine Meehan, who joined the UO geography faculty this year, estimates the average resident in Tijuana uses just half the water of the average resident in San Diego. Numerous factors create this discrepancy—many of them related to wealth and water availability, but there are also important cultural habits that contribute to the statistic.

It is these cultural habits that Meehan is most interested in. Recently, her focus has been on the individual and cultural water conservation practices of Tijuana residents in communities not served by

municipal water supplies. Sometimes referred to as “off-the-grid” communities, these are places where water distribution infrastructure and use regulations have been taken into the hands of the people.

As part of her field research, she recently spent several months in Tijuana studying informal water supply systems and distribution patterns.

Meehan’s interest stems not only from a passion for improving water conservation but also from a larger interest in topics of urban political ecology and social theory. Her work exemplifies the integrative nature of modern geography, as she investigates the intersection between environment, culture, politics and place.

Her research explores questions about how people conserve water when it is scarce, how the flow of water through informal neighborhood infrastructure is organized and what happens when an individual breaks the rules. She also studies how people who live without

many basic government services, such as municipal water, think about politics.

“In the U.S., we don’t think we need to recycle water because it comes from the tap; it’s cheap; it’s around. Comparatively, people in Tijuana recycle out of habit,” said Meehan. “Even middle class families do it.”

Water conservation practices commonly employed by Tijuana residents revolve around intensive grey water reuse. “Say you have six loads of washing and rinsing,” said Meehan. “The Tijuana women will do at least four of those loads with recycled water, using the washing machine and then saving the water in a bucket for the next load. Eventually even that water often finds a final use as water for a plant in the yard.”

Not surprisingly, Meehan has found the conservation practices of many Tijuans are duplicated in other dry and impoverished parts of the world, from Bangladesh to much of Africa.

She would like to see North America adopt similar attitudes toward water use, especially in the western U.S., a dry region plagued by its own “water wars.” Today, tens of thousands of miles of pipelines and irrigation canals redistribute water around many states, including California, Nevada and Arizona where enormous canyons have been filled (Hetch Hetchy Valley, Glen Canyon) and lakes pumped dry (Owens Lake) to satiate the water supply demands of cities like Los Angeles, Phoenix, Las Vegas and San Diego.

She recognizes, though, that U.S. adoption of conservation practices popular south of the border may be hindered by institutional obstacles, such as laws prohibiting grey water to be used for crop irrigation. “From a conservation perspective there are problems with our approach to water regulation in the U.S.,” said Meehan. “We think about importing expertise from the northern hemisphere to the southern hemisphere. But we should also be looking at what kinds of knowledge and expertise we can gain from our southern neighbors when we’re thinking of water management strategies.” ■

HOW THE



# Zebra Fish



EARNED ITS STRIPES

By Eric Tucker

George Streisinger's big eureka moment was also a big Eugene moment.

This year marks the 30th anniversary of a groundbreaking paper published by UO biologist George Streisinger in the journal *Nature* in 1981. The paper described his landmark achievement in science history:

the first-ever large-scale production of genetically uniform clones of a vertebrate organism. It further established his organism of choice—the zebra fish—as a superior model for genetic research

while also laying the groundwork for the University of Oregon to become the zebra fish research capital of the world.

From humble beginnings in a small Quonset hut on the north side of Franklin Boulevard, the UO zebra fish facility moved to the basement of the biology building in the late 1990s; it has since come to house 80,000 zebra fish in floor-to-ceiling tanks in a 5,000-square-foot space and will soon be doubling its space by expanding into an adjacent building.

There are now six high-profile labs in the UO Institute of Neuroscience and Institute of Molecular Biology that rely on the zebra fish as their model organism for research. And the UO is also home to the Zebrafish Information Network (ZFIN), an online resource that allows the worldwide research community to share zebra fish data and scientific insights.

Indeed, the legacy of Streisinger (who died in 1984) reaches far beyond Eugene. His techniques have spread to more than 500 developmental and genetics labs in 32 countries. Many of the mutant strains that Streisinger himself created are still used in labs throughout the world to study human and animal health.

But why zebra fish?

Born in 1927 in Budapest, Hungary, Streisinger and his family fled to the United States in 1939. His first scientific paper, which he co-authored when a senior at the Bronx High School of Science, was on fruit fly courtship. He earned a BS from Cornell University in 1950 and a PhD from the University of Illinois in 1953; in 1956 he completed postdoctoral studies at the California Institute of Technology. Following stints at Cold Spring Harbor and the Carnegie Institution of Washington, he joined the UO Institute of Molecular Biology in 1960.



JACK LIU





After toiling for years on the genetics of bacteriophages—simple viruses that infect bacteria—Streisinger, a home-aquarium hobbyist, turned to the diminutive zebra fish to investigate how genetic mutations affect nervous-system development in vertebrates.

His initial experiments, conducted throughout the 1970s, garnered little notice at first. In fact, as is the case with many creative breakthroughs, Streisinger's work initially inspired skepticism among his contemporaries. Why waste precious time studying zebra fish, they wondered, when other, more widely recognized model organisms—such as mice, fruit flies and nematode worms—were readily available, along with their established toolboxes of genetic tricks?

But Streisinger persisted. As he tinkered, he soon realized the numerous advantages of a creature known mostly, till then, for its ubiquity as a pet-store commodity.

### **It Takes Some Backbone**

*Zebra fish have backbones—unlike other common research organisms like phages, fruit flies and nematode worms—and thus are remarkably similar to human beings in both genetic makeup and embryonic development.*

Streisinger often referred to the zebra fish as “a phage with a backbone.” The presence of a backbone signifies the presence of a brain, a spinal cord, optic nerves and a vast network of peripheral nerves, making the zebra fish an ideal organism for studying human disorders.

“Zebra fish are one of the best systems for doing vertebrate genetics,” said biology professor Monte Westerfield, whose lab looks at zebra fish sensory systems and their connection to human diseases.

The other five UO labs that rely on the special attributes of the zebra fish are also striving to find treatments for human biological disorders that have analogues in specific zebra fish mutant strains. For instance, the work of John Postlethwait, whose lab studies the evolution of zebra



fish gene networks, could lead to therapies for a wide variety of human genetic ailments, including Fanconi's anemia, a disease that affects DNA repair. Other UO research ranges from potential cancer interventions to treatment for human skeletal defects.

### **The Power of Observation**

*Unlike mouse embryos, zebra fish embryos develop ex utero (outside the mother's uterus) and grow inside transparent eggs, allowing researchers to observe embryonic development without the use of invasive procedures and without harming the mother.*

“With mice, we can't see inside the mother,” said Judith Eisen, a 2010 Guggenheim Fellow. “But we can follow zebra fish throughout their development.”

Eisen's lab focuses on the growth and development of neurons in the zebra fish spinal cord. Her team is looking at how individual neurons learn their roles, form networks and allow organisms to carry out complex physiological functions, such as movement and behavior.

“From the first cell, you can see the embryos,” said biology associate professor Philip Washbourne. “There is no operating on pregnant moms, no opening up of skulls.”

Washbourne, whose lab studies synapse formation within developing zebra fish brains, speaks with enthusiasm about the

potential of optogenetics, a new technology that allows researchers to influence the behavior of cells with beams of light. When researchers shine a beam of light on, say, a developing zebra fish brain, light-sensitive proteins inserted into the brain absorb light and open channels, causing specific neurons to fire.

Because zebra fish embryos are transparent, Washbourne can observe these effects without invasive surgery or scans.

“It's almost as if Streisinger anticipated our needs,” he said. “He knew back then that we needed an organism that was see-through, so that we could see the nervous system as it developed.”

### **Master Manipulators**

*The conditions of zebra fish embryonic development facilitate genetic experimentation, as genes supplied by a single parent can be readily manipulated to produce mutant strains.*

Because vertebrate embryos contain DNA material from two parents, genetic experiments with vertebrates have historically required elaborate and time-consuming breeding techniques to yield mutations and other recessive traits. For instance, to manifest a rare recessive mutation, vertebrate embryos require two copies of the mutated form of the gene—one from each parent. But Streisinger's cloning technique gave researchers the advantage of working with embryos that contain only the mother's genes, thus greatly simplifying the process of studying organisms with specific mutations.

Scientists can also manipulate the development of zebra fish embryos by transplanting or removing cells or groups of cells. By observing the biological effects of such experiments, researchers can learn valuable information about the role that specific genes play in the overall health of the organism.

This has been a boon to Westerfield's

## Eisen Lab

Judith Eisen and her research team study the development of neurons in the zebra fish spinal cord. They seek to understand how nerve cells learn their specific roles during embryonic development. They have developed techniques for labeling individual neurons and then watching their development in living embryos. By transplanting single neurons to new locations, they hope to learn when these cells acquire their identities. They have also conducted a variety of screening tests for genes involved in determining the fates of identified neurons. Their goal is to understand the cellular, genetic and molecular mechanisms that govern embryonic cell fate. The Eisen lab also uses the same types of techniques to study neural crest cells, progenitors of the peripheral nervous system.

## Guillemin Lab

Karen Guillemin and her team investigate the molecular interactions between bacteria and host cells. Microorganisms are commonly thought of in terms of their capacity to cause infectious disease, but many microbes, such as those that reside in the human gut, confer important benefits on their hosts such as promoting normal tissue development. To shed light on complex host-microbe relationships, Guillemin and colleagues study the bacterium *Helicobacter pylori*, a pathogen of the human stomach that is associated with a number of diseases including gastric cancer. In addition, they have pioneered a germ-free zebra fish model—a sterilized control group that allows them to observe the benefits of a resident microbial population on zebra fish development.

## Kimmel Lab

Charles Kimmel's lab focuses on the development of the zebra fish skeletal system. By investigating the behaviors of skeleton-forming cells in embryonic zebra fish, he and his colleagues hope to gain a better understanding of how and why these cells grow into bone and cartilage of specific shapes and sizes, as well as what governs the growth and reshaping of skeletal elements as they develop. A combination of genetic and environmental factors can lead to defects in skeletal development, resulting in malformed cartilage and bone. Kimmel's work could eventually lead to effective treatments for a variety of human skeletal defects, such as cleft palate.



## Postlethwait Lab

The genetic repair mechanisms within our cells are essential to human health. Errors in DNA repair can lead to cancer and other serious diseases. To improve our understanding of these vital intracellular processes, John Postlethwait and his colleagues study the evolution of zebra fish gene networks, along with the development of the reproductive process and the skeleton. Postlethwait's research could lead to therapies for a wide variety of genetic ailments, including Fanconi's anemia, a disease that affects DNA repair. Fanconi's anemia, inherited by humans as a recessive trait, can lead to skeletal anomalies (e.g., short stature), microcephaly (i.e., abnormal smallness of the head) and an increased risk of leukemia.

## Washbourne Lab

The brain of an adult human is composed of approximately 100 billion neurons and 1 quadrillion (1,000 trillion) synapses, or connections between neurons. The huge number of neuronal connections leads to the amazing complexity of consciousness, but it also creates a vast potential for developmental errors. Philip Washbourne and his colleagues hope that studying the zebra fish brain can lead to treatments or even cures for a wide variety of human cognitive impairments. Because zebra fish embryos are transparent, the lab can study the mechanisms of synapse formation in vivo (i.e., within a living body). Washbourne and his team hope to pinpoint the connections between synapse formation and developmental disorders such as autism.

## Westerfield Lab

Monte Westerfield's lab seeks to understand how embryonic neurons are assigned specific roles during embryonic development. He and his team study sensory systems and the underlying mechanisms that cause neurons to acquire specific properties. Using

zebra fish and a combination of anatomical, physiological, molecular and genetic techniques, they hope to elucidate the mechanisms that regulate the establishment of specific neuronal cell fates during normal development as well as the mechanisms that can lead to disease. Their current projects include studying the molecular genetics of ear and eye development. In particular, they are using zebra fish to study models of Usher syndrome, the leading cause of deaf-blindness in humans.

ZEBRA FISH LINOCUT BY LOTTE STREISINGER





lab, which looks at zebra fish sensory systems and their connection to diseases such as Usher syndrome, the leading cause of deaf-blindness in humans.

“We are trying to figure out what genes are in common between photoreceptors in the eye and sensory hair cells in the ear,” he said. Identification of such genes in zebra fish could lead to the discovery of the corresponding genes in humans.

In Usher syndrome, children are born deaf, and visual loss is slow and progressive, said Westerfield. Babies are tested for hearing at birth, but cannot be tested for vision, thus doctors may miss a diagnosis of Usher syndrome. If doctors were to know that these children would later become blind, this could influence their treatment decisions.

“The only current way to test is through genetic testing,” said Westerfield. “And the only way genetic testing works is if we know what genes are responsible.”

### Critical Mass

*Because zebra fish display a rapid life cycle (embryos proceed from fertilization to birth in about three days) and reproduce in abundance in the laboratory setting (each female can produce up to 5,000 eggs per year), researchers can expedite identification and genetic analysis of mutants.*

Identifying the source of genetic mutations in zebra fish is the first step toward discovering the cause of—and perhaps the cure for—corresponding genetic ailments in humans.

Their rapid life cycle facilitates the work of UO biology associate professor Karen Guillemin. Guillemin investigates the impact of gut flora on human diseases such as colorectal cancer.

“For zebra fish, it takes only five days to go from fertilization of the egg to the development of the gut,” said Guillemin, whose lab can produce thousands of zebra fish at a time. “The same process takes three months in mice.”

Guillemin’s experiments have revealed that resident microbes in the developing zebra fish gut send cell-proliferating

signals via the same pathway used by cancer-causing genetic mutations.

Recent microbial research, such as that conducted by Guillemin and her team, has led to a strategic shift in humanity’s ongoing battle against cancer, as scientists are beginning to recognize the significant impact that resident microorganisms have on cancer growth.

The implications? “Even if you can’t fix a mutation, you might manipulate the associated microbes to change the

interaction and reduce unwanted cell proliferation,” said Guillemin.

An organism that has a backbone, that begins life as a transparent embryo and develops outside the mother’s body, that allows for quick and precise genetic manipulation and that reproduces and matures rapidly—Streisinger recognized and exploited all of these important traits in the humble zebra fish. The final ingredient? Patience, as he waited for the rest of the world to catch up. ■

## Zebra Fish Groupie and Other Streisinger Legacies



**Another dimension of Streisinger’s legacy** is the strength of the research community he established at the UO. In many other universities, professors tend to keep their doors closed and the grad students don’t talk. Not so at the UO, said emeritus professor Charles Kimmel, who joined the UO biology faculty in 1969 and interacted closely with Streisinger even before the seminal *Nature* article was published.

For instance, inspired by the atmosphere of open-door collegiality fostered by Streisinger, the biology department now sponsors a gathering on Monday mornings

called zebra fish groupie, during which members of all six labs convene to discuss work and to help forge a sense of community among students and faculty members.

“George was a forerunner, and not just in science,” said Kimmel. “He was very much involved in social issues, the environment, war protest.”

In an interview published in *From the Sidelines*, a memoir by his wife, Lotte (see Online Extras, page 28), Streisinger spoke of his fear of global nuclear war, as well as his grave concerns regarding the widespread use of hazardous chemicals, the dangers of runaway population growth and the ever-widening gulf between the rich and the poor.

A lover of the Oregon outdoors, Streisinger died in 1984 in a scuba-diving accident off the central Oregon coast.

“George must have known he would live a short life,” said Charline Walker, a faculty researcher in Kimmel’s lab who worked with Streisinger from 1972 to 1984. “He did everything very intensely.” —ET

## Bollywood Reporter

*From Guilty Pleasure to Global Phenomenon*

**E**nglish, as an academic discipline, has long ceased to be the study of the traditional Western canon. At the UO, English majors today have a chance to focus on everything from world literatures to visual culture.

“What is written or spoken in English, counts as English,” said Sangita Gopal, an assistant professor of the discipline.

Gopal, who was born in India, bursts with energy and enthusiasm for international and cultural studies. She teaches courses in international Anglophone (English-speaking) literature, touching on topics ranging from globalization to labor to human rights. She also teaches film courses, with a specialty in South Asia; her favorite topic is Bollywood.

Gopal’s interest in Bollywood began when she came to the U.S. to study medieval literature—a subject she soon abandoned after taking a few film classes and realizing that the cinema from her home country, despite its international popularity, was little investigated. She also began to recognize the unique status

of the Indian film industry in the world at large. This, then, became her focus.

After the end of World War I, “everyone became Hollywoodized,” said Gopal. That is, American-made films

became what everyone around the world watched—except in India.

“Ninety-five percent of the Indian film market was—and is—local product,” said Gopal. “This really struck me as significant. No other nation except Iran even comes close. So I thought, let us investigate why the Indian film industry has been so successful.”

Gopal’s interest is contrary to her middle-class Indian upbringing. “There, watching Bollywood films was considered low class,” she explained. “For me it had always been this really guilty pleasure,” she recalled with a laugh, describing how she



used to sneak to the movies with her aunt. “If my parents had known I was watching, they would have been upset.”

Gopal asserts the durable popularity of Indian cinema for Indians owes everything to the genre’s unrealistic story lines coupled with over-the-top singing and dancing. These were the very elements the U.S. film industry, and her parents, shook their heads at.

“The Bollywood viewer wants one big story that includes all the elements: the love, the singing, the dancing, the drama,” she said. “It’s precisely that aspect of Bollywood that leads to embarrassment for middle-class viewers and also makes it work as popular film in India—and in many other countries,” she explained.

Gopal has built Bollywood films and concepts into her classes but hasn’t yet devoted an entire course to the subject. It’s something she sees in her future, however, given the inclusive direction of the English department. “Not only has the UO been a pioneer in seeking to analyze film in an academic setting,” she said. “But there’s a commitment to expanding our definition of what ‘studying English’ means.” —PH

*The UO’s resident Bollywood expert Sangita Gopal is coeditor of Global Bollywood: Travels of Hindi Song and Dance (Minnesota, 2008) and of Conjugations: Family and Form in New Bollywood Cinema (Chicago, 2011).*

## Salmon Is Everything: A Many-Sided Story

**In September 2002, water diversion and drought** combined to create conditions for a massive fish kill of some 60,000 spawning salmon on the Klamath River. The kill was a stunning environmental and natural resource management disaster, and a tragedy for the tribes on the Lower Klamath, whose culture and livelihood depended on the fish.

The event drew national news attention, highlighting the story as an example of the struggle between downstream (tribal) and upstream (farmers and ranchers) water users.

Enter Theresa May, assistant professor of theater arts at the UO and an artist who believes in the power of theater to open hearts and create dialogue.

At the time, May was an assistant professor at Humboldt State University in California. Shocked by the devastating event, she saw an opportunity for theater to humanize a polarized political situation that had been poisoned with explosive rhetoric.

Not sure where to start, May began by talking with Native colleagues, students and community members about the possibility of a play that would tell the story of the tribal people whose lives had been impacted by the fish kill. Together they initiated the Klamath Theatre Project.

Over the course of two years, May worked with Native and non-Native students to conduct interviews with the Karuk, Hupa and Yurok communities,



*The original production of Salmon Is Everything was performed at Humboldt State University. Directed by Theresa May, now a UO professor, it opens in May on the UO Robinson Theatre stage.*



# A Philosopher Ponders the Virtual Public Sphere

**Philosophers tend to be categorized** as the most severe kinds of academics. Immersed in theoretical concepts like epistemology, deconstruction and historicism, there's a sense that what they study can't be translated to practical public discourse. But this is hardly the case with Colin Koopman, a new assistant professor in the Department of Philosophy.

Though Koopman has the classic demeanor of a philosopher (serious, refined, precisely articulate, intensely confident), his current interest requires no real-world translation. Koopman's chief concern is the rapid restructuring of contemporary society by the Internet.

Like many other informed observers, Koopman sees the Internet as changing not only how we communicate with one another, but also how we frame concepts such as privacy, truth and the public sphere—even (especially) how we create and represent our identities.

His line of inquiry raises questions such as: What is the value of accumulating knowledge in a time when the World Wide Web provides encyclopedias of

information at our fingertips? And, how are our ideas of privacy and private property evolving to accommodate a digital world overflowing with personal information?

The answers will have repercussions for how we teach at all grade levels, for property law (particularly intellectual property rights) and how we differentiate acceptable and unacceptable online behavior.

In Koopman's view one of the core challenges to approaching such questions is that we lack the terminology even to describe what the Internet is. "We call it 'the Internet,' like it is one thing," he said. "It may have a physical infrastructure, albeit a hyper complex one, but it is at bottom an activity, not a thing."

The goal of a philosopher, said Koopman, is not to provide answers, but



to orient society to troubling questions and assist us in reflecting on them. He advocates a proactive approach—based on informed public discourse—to reconceptualize and reflect on the concepts the Internet challenges.

Currently, privacy is being redefined primarily in a reactive way, as a response to tragic events (e.g., the suicide of a Rutgers University student who was harassed via webcam) or via lawsuits. "Corporations can do a better job of protecting their customers' privacy, instead of waiting for complaints," said Koopman. "And many are already taking a more reflective, less reactive approach. Here we can witness philosophical reflection making a positive difference right at the heart of contemporary corporate America."

Still, technological "innovations" like targeted marketing can feel creepy. Ever notice the ads in your Gmail account correspond to the subjects you write about?

Koopman contends reactionary influences are exactly what may erode the meaning of privacy in our society. "If we as a society don't reconceptualize privacy, it's going to be shaped by the more self-interested sides of contemporary political and economic life," he said.

As a first step to raising the consciousness of the next generation, Koopman is putting together a syllabus for a new course, Internet, Society, and Philosophy, to be offered in winter of 2012. He was recently awarded the 2011–12 Oregon Humanities Center Robert F. and Evelyn Nelson Wulf Professorship to aid in the development of the course.

The class will explore the Internet from an ethical perspective as well as ask critical questions about the very relevance of knowledge itself in a world overloaded with facts.

"We're not searching for truth anymore," said Koopman. "What we want is meaning. We want to know why the truth we can find with our iPhone is meaningful." —PH

a project that eventually expanded to incorporate a fuller range of voices including commercial fishermen, white water rafters and the farmers and ranchers of the upper Klamath Basin. From the words of the people emerged a moving story about the complex relationship between humans and the natural environment.

The play, *Salmon Is Everything*, had its first workshop production at Humboldt State's Studio Theater. Actors included many of the Native students who had helped create the text, as well as Native faculty and staff members, theater students and community actors.

"We filled the theater. People came who had never been in a theater, or even set foot on campus," May recalled. "The play was very significant to the river community."

The play is an important historical document that tells a story about the diversity of people in the Pacific Northwest whose lives are closely tied to the region's rich natural resources, particularly its water and fish.

"We need to hear everyone's stories to meet the ecological challenges on this river and elsewhere," said May. "Community-based theater is a powerful forum for community healing, and can lead us toward a more compassionate civic discourse."

This spring, May will be directing *Salmon Is Everything* on the UO's Robinson Theatre stage. She hopes to involve local Native communities as well as Native students in the production.

*Salmon Is Everything* will open May 20 and run through June 4. —PH

# The Play's the Thing—for Learning Russian

**Last fall, as in years past,** Julia Nemirovskaya's course, Russian Through Theater, opened the curtains to a packed house at the UO's Agate Auditorium. The occasion was the one-night-only, full-scale production of *Suicide: A Russian Comedy*—a famous play originally written by Nikolai Erdman and adapted by Nemirovskaya.

The play was performed almost entirely in Russian by a cast of some 35 UO students—most of whom had little or no Russian language or theater background.

The performance was the latest in a decade of Russian plays Nemirovskaya's class has put on as part of her effort to merge language acquisition and Russian theater. Nemirovskaya, an adjunct assistant professor in the Russian and Eastern European studies program, was born in Russia and grew up around theater, writing plays and text for musicals before moving to the United States in 1991.

Her UO productions are unusual—not only because they are performed in Russian, but because they are written, cast and produced in the impossibly short time of eight weeks. Even more remarkable is that, at the quarter's outset, the students who act in the plays don't necessarily speak



*In just eight weeks, students in the annual Russian Through Theater course acquire enough of the language—as well as acting skills—to stage a play at the end of the term. Last fall's production was Suicide: A Russian Comedy.*

RANDIANNE LEYSHON

## Petrarch is Again in Sight

**For those who aren't historians, or literature geeks** or otherwise fascinated with Italy, Petrarch may only be a familiar sounding name. The truth is the works of Francesco Petrarca (1304–74) have been overwhelmingly influential on modern times. The modern Italian literary language has been shaped by his writing, and his sonnets are a model for lyrical poetry around the world.

On an even grander scale, Petrarch is sometimes called the world's “first tourist” and credited with helping to inspire the Renaissance.

Massimo Lollini, a UO professor of Italian, values the influence of Petrarch

on our art, writing and lives today, even if most of us don't recognize it. For the past seven years, he has been working to make Petrarch's work more accessible to a wider audience through digital technology.

Lollini is focused primarily on the *Canzoniere*, or *Rerum vulgarium fragmenta*, a collection of more than 300 poems read around the world today. Loosely translated, *Rerum vulgarium fragmenta* means “fragments of scattered things in vernacular.” Accordingly, Lollini, like many scholars, believes Petrarch considered the collection unfinished, an ongoing lifelong project that to this day continues to take shape—which is





Russian or have any experience on stage.

For *Suicide*, the production process began on the first day of class last fall, when Nemirovskaya assessed the skill level of the students enrolled, set the schedule for the quarter and went home to choose a play and adapt a script. By the second week each student was cast in a role. By midterms everyone knew their lines, and by show time, every performer knew each line of the play.

The short timeline would be a challenge for any production, but it is an additional challenge for students who are not fluent Russian speakers. Many in the class are neophytes to the language. To make it onstage and perform with near perfect pronunciation requires hours of practice, sometimes late into the night.

“If I need to spend eight hours with a student who doesn’t pronounce well, I spend eight hours,” said Nemirovskaya.

Nemirovskaya describes the course as the most difficult and exciting class she teaches. She believes that students become fluent more quickly by taking on a Russian character. “The contrast between students’ fluency in week two and week eight is astounding,” she said.

For many who take part in the production, Nemirovskaya’s class stands out among their other academic work. Active alumni reunions are testament to an experience that creates long-lasting relationships. —PH

## The Power of Design

### How does design reflect the way we engage with the world?

*Design and Truth* (Yale University Press, 2010), a new book by emeritus professor Robert Grudin, explores the relationship between our creations and political and economic power. His main thesis: that design holds both psychological and moral power over us.

In his own words: “Good design enables honest and effective engagement with the world. Conversely, poor design is almost always symptomatic of a fraudulent and exploitative strategy of production.” To make his argument Grudin looks to a myriad of human-made designs—from the Japanese tea ceremony to motorcycle engines to Thomas Jefferson’s Monticello.

Grudin highlights the Woolworth Building (1913) and the Seagram Building (1958) as illustrations of skyscrapers at their best, inviting us “to rise above the otherwise crushing power of mass interactions.” Despite their size Grudin sees their elegance as softening the sense of a giant corporate conglomerate their structure might otherwise represent.



Not so, writes Grudin, in the case of the World Trade Center, which he describes as just “too big.” About the architect (Minoru Yamasaki), he writes: “Without meaning to, he drew the rhetorical curtain away, laying bare, behind the blandishments of masonry, the operations of faceless power.”

Grudin credits this representation of overwhelming power as part of the reason the towers received widespread criticism as an architectural statement.

Grudin was a professor of English at the UO until his retirement in 1998. *Design and Truth* is the latest among several books Grudin has authored, two of which have been nominated for the Pulitzer Prize. —PH

## Technology is changing how we read and consider literature.

also how Lollini thinks readers should encounter the text.

For this reason he doesn’t consider the book-bound version of the collection an ideal form.

“If we receive Petrarch’s collection of ‘scattered’ poems in a book format, we are drawn to think of it as a finished product,” he said.

Lollini sees digital technology as a means to “reopen” the *Canzoniere* for

reader engagement in a way Petrarch himself would have intended.

“Technology makes available a body of sources and scholarship that have historically been confined to the age of print,” he said. “It allows us to move beyond our conception of these masterpieces as completed objects of study, and instead conceive of them as ongoing projects, still alive today.”

In 2003, Lollini began taking courses in digital software for UO faculty members. It was the beginning of what became a website: “The Petrarch Project: Petrarch is again in sight,” at <https://language.uoregon.edu/petrarch/>.

Through the site, browsers can access Petrarch’s individual poems in a variety of translations, languages, rewritings and adaptations. Registered users provide commentary, creating a space of engagement that generates multiple ways of looking at the original source material. Its homepage declares: “Our project can be successful only if it can capture the authentic spirit of Petrarch’s cosmopolitan intellectual activity.”

Lollini thinks utilizing such technology is imperative from a practical, “get with the times” standpoint. It is changing, he says, how we read and consider literature. —PH

## Let the Games Begin

*Speeches, Debates, Backroom Deals and More*

**K**ing Louis XVI adjusts “her” crown and then, with a regal flick of her wrist, silences her cell phone. Her gaze falls upon the sea of young faces in the National Assembly: a minister wearing a silver cross, proud supporters of Her Royal Highness clad in white, radical Jacobins draped with red scarves. The year is 1791, the place is revolutionary France and the class is CAS 101, *Reacting to the Past* (RTTP).

Taught by Alexander Dracobly, senior instructor in history, the class incorporates an elaborate, immersive interactive game—the first of its kind at the UO—as students role-play the tumultuous events of the French Revolution, in particular the struggles of the newly convened National Assembly to adopt a constitution.

The game, which has no fixed script or outcome, forces students to apply abstract thought to real-world issues. For example, students in this particular unit of RTTP deal with the various challenges—political, philosophical, social and so on—involved in trying to create a constitutional monarchy when the monarch himself appears to be treasonous.

“The students are really diving into their roles,” said Dracobly, adding that the game sometimes requires students to make impromptu decisions that could have major repercussions on the ongoing narrative. “At one point, our Lafayette refused to use the National Guard to put down a crowd,” an unscripted historical deviation (i.e., one that does not match actual events) that led to a strengthening of the Jacobins’ ranks.

Students became so immersed in the game, in fact, that Dracobly even held a “peace and reconciliation” banquet at the end of the term to ease the tensions between factions. All parties—from the king to the most destitute peasant—dined amicably together on spaghetti and meatballs.

To prepare for their four-week-long game—entitled “Rousseau, Burke, and Revolution in France, 1791”—students read and discussed classic texts by political



*Reacting to the Past: Radical Jacobins, in red bandannas and shirts, contemplate their strategy.*

philosophers Jean-Jacques Rousseau and Edmund Burke, as well as works by Voltaire and articles from Diderot’s *Encyclopedia*, and learned about the significant people, places and events that shaped the French Revolution. Once the game started, students were encouraged to cite the texts they had studied, either to support their own character’s viewpoint or to attack an opponent’s argument.

“The class forces them to consider positions they may not personally agree with and to assume roles for which they may not have a natural affinity,” said Dracobly, who from time to time would roll dice to determine the outcome of spontaneous events such as a mob uprising. “It can help students become more sensitive to others’ positions and to listen to them instead of rejecting their arguments out of hand.”

Each class period begins with the distribution of a news bulletin informing students of events that transpired in France since the Assembly’s last session, as well as copies of the newspaper each faction produces each week. Students’ actions each day—speeches, debates, strategy meetings, backroom deals—are to be informed by these events. At the start of one class period, for instance, students learned that religious riots had broken out in the Vendée, west of Paris, and that slave uprisings had turned increasingly violent



*A minister (white indicates loyalty to the crown) confers with the king (not in costume this day).*

in the West Indies.

Students control the events in RTTP, so the game’s outcome may differ considerably from the historical record. Because of this potential for factually inaccurate developments, the class spent two days at the end of the term discussing what really happened in the aftermath of the French Revolution, so that students wouldn’t walk away from the class erroneously thinking, for instance, that Louis XVI persuaded the revolutionaries to abandon their democratic ideals and enjoyed a long, illustrious, guillotine-free reign.

In RTTP, which was founded by Professor Mark Carnes at New York’s Barnard College in 1996, the instructor provides guidance and assesses oral and written work, the quality of which can affect the game’s outcome. For example, one student’s fiery extemporaneous speech inspired peasants to revolt and, following a series of dice rolls by Dracobly, temporarily drove Lafayette out of France.

RTTP is made available through the CAS College Scholars Program, which offered a second RTTP course last winter: “America’s Founding: The Constitutional Convention.” This spring, College Scholars will offer two more: “Defining a Nation: India on the Eve of Independence, 1945” and “Red Clay 1835: Cherokee Removal.” —ET



# Social Sciences Redux

With 3-D films and Betty White both enjoying big comebacks, one might conclude that everything old is in fact new again. In the same spirit, CAS will soon be reviving an old classic.

Beginning in fall 2011, the college will reintroduce the general social science (GSS) major.

Students who select the GSS major will choose among four specializations: crime, law and society; geopolitics, policy and the environment; applied economics, business and society; and social studies teaching.

“The new degree program will combine students’ professional aspirations with a liberal arts approach,” said Larry Singell, UO associate dean for social sciences and professor of economics. “It will provide students with an organized plan for achieving their professional interests.”

Each track will fit within an unexplored

niche created by the intersection of two or more existing CAS disciplines, said Singell.

For example, the crime, law and society track will provide a more interdisciplinary approach to the study of the law than traditional pre-law majors such as political science—one that incorporates classes from across the social sciences, humanities and even the professional schools.

The geopolitics, policy and the environment track, which bridges the gap between geography and political science, will fulfill the needs of students who, for instance, want to work for nongovernmental organizations.

CAS previously offered the GSS degree until the late 1970s, and it was not an option again until 2001 when CAS again began offering a BA in GSS through the Bend Cascades-OSU campus.

CAS decided to revive the major because of student demand and the major’s potential to advance students’ career development.

The new major is also expected to provide much-needed structure for numerous students who might remain in a perpetual undeclared state.

“A lot of students who arrive at college don’t know what they want to do,” Singell said. “This will provide structure to allow those students to graduate in a timely fashion. It will facilitate people finding a home.”

Two scholarships have been established to support GSS majors. Clayton Steinke ’65 (GSS) and his wife, Sheryl ’65 (sociology), MS ’68 (library science), have funded a scholarship that others can contribute to. An additional scholarship has been funded by Mike McCaslin ’61 (political science) and his wife, Libby. —ET

*General social science alumni from the '60s and '70s have used their foundation in social sciences to launch an eclectic range of careers. See pages 26–27.*

# Korean Studies Gets a Boost with \$1.8 Million Grant

**The UO Center for Asian and Pacific Studies (CAPS) is expanding** East Asian programs and public outreach thanks to a U.S. Department of Education Title VI grant. The award designates the UO as an East Asia National Resource Center.

The new center, which will be housed in CAPS, will receive \$1.8 million over the next four years in programming and fellowship funding.

Among many new opportunities, the funding will support the creation of a tenure-track position in Korean literature and film, resulting in up to five new classes devoted to Korean cultural studies. In addition, a number of other faculty members will be awarded course development funding to build Korean components into their courses.

“East Asian studies has a strong history at the UO,” said CAPS director Jeff Hanes, an associate professor of history. “This



new federal designation acknowledges our longstanding expertise and offers us a golden opportunity as we enter what many have called the ‘Asian Century.’”

CAPS is also teaming up with Knight Library to hire a Korean cataloguer to acquire new materials and also advance the “e-Asia Digitization Project,” a growing

collection of digitized e-books and full-text web resources. In addition, grant resources will:

- fund a K–12 outreach coordinator who will help develop statewide curriculum and teacher training workshops
- provide 13 undergraduate- and graduate-level fellowships annually
- help launch a K–16 Japanese Global Scholars immersion program, modeled on the existing Chinese Flagship immersion program
- expand East Asian content for K–12 outreach programs through the UO’s Jordan Schnitzer Museum of Art

The UO center is now one of 22 national research centers for East Asian studies in the United States designated for 2010–13.

“Students who are really serious about East Asia, especially graduate students, will be looking at places designated as national research centers, because they know those are the powerhouses,” said CAPS assistant director Lori O’Hollaren. “Being part of this group raises our national and international profile.” —PH

# Where Will All the People Go?

**Sophisticated meteorological models predict a future** with dramatically different snowfall accumulations, rainfall patterns, weather events, sea levels and temperatures—even in the best-case scenarios. What’s missing from these models is a human component. Where will people be living in this climatically altered world?

Two UO-affiliated political scientists, John Orbell and Oleg Smirnov, are leading an interdisciplinary team of six researchers on a joint project between the UO and Stony Brook University in New York to address this question. With support from the National Science Foundation to the tune of \$1.5 million, the team plans to create computer models of the potential responses of all human populations (that’s about 7 billion responses) to climate change.

For the preliminary model, the team will choose one or two climate events (such as drought and sea level rise), identify those populations likely to be most affected and then—using mathematical equations, GIS tools, human behavior models and basic research—model how the populations might react.

While individual responses to climate stress will doubtless involve numerous variations, Orbell believes populations as a whole will have broadly predictable responses that fall into three general categories: 1) stay and get innovative, 2) stay and get resource greedy (fight) or 3) migrate, which could entail conflict with those populations in targeted destinations.

Orbell, a professor emeritus of political science at the UO, and Smirnov, a previous student of Orbell’s who now is a professor of political science at Stony Brook, are not the first social scientists to consider how populations may respond to changing climates. But the majority of other research on the subject has been qualitative and more often related to localized populations.

Orbell and Smirnov’s proposal stands out due to the global scale of their inquiry and the quantitative computer modeling they plan to use. The project will involve state-of-the-art GIS technology and



mathematical modeling tools, and will follow a formal scientific approach for running simulations.

To the challenge that human behavior defies prediction and is too complex to model, Orbell counters the same could be said of the world’s climate, which continues to be modeled with growing accuracy. “I’m not sure human behavioral systems are any more complex than our climate or ecological systems,” he said.

However, he emphasizes their model will be very basic. “It’s taken climatologists

## Novel Insights Into Dangerous Prejudices

**Historical fiction often serves the important purpose** of breathing life back into otherwise forgotten facts and stories. We absorb the French Revolution through *A Tale of Two Cities* and experience the nuances of the American Civil War through books like *Cold Mountain*.

Those interested in learning about the origins of the prejudices that eventually exploded tragically in the Holocaust might find new insights in the novel, *The Blood of Lorraine* (Pegasus, 2010), by Barbara Corrado Pope, professor emerita of women’s and gender studies.

The novel is set in a volatile time in French history. It’s just before the turn of the twentieth century and Alfred Dreyfus, a Jewish military officer, has been arrested and sent to prison, accused of sharing French military secrets with the Germans (the Dreyfus Affair).

The fictional protagonists are magistrate Bernard Martin and his wife, Clarie, who have recently moved to the small town of Nancy in Lorraine. When a baby is found dead in Nancy, the baby’s mother claims the death is a case of ritual sacrifice by a wandering Jew, and

prejudiced tensions mount. Then, when Clarie’s own baby tragically dies she finds herself adopting anti-Semitic views.

As one reviewer writes: “Pope, a historian, gives us a complex lead and with great skill makes the anti-Semitic atmosphere of the times both palpable and tragically prophetic.”

Pope taught for 29 years in the UO Department of Women’s and Gender Studies and was its founding director. *The Blood of Lorraine* is her second novel. —PH



30 years to get where they are. Our efforts are only the first step toward predicting complicated human responses,” he said.

Orbell and Smirnov both hope the model and associated equations will create the foundation for subsequent work of the same kind—by themselves, but also others.

They will be joined in the project at the UO by Amy Lobben (see profile, page 6), an associate professor of geography, and Doug Kennett, an associate professor of anthropology. From Stony Brook, Minghua Zhang, director of the Institute for Terrestrial and Planetary Atmospheres, and Haipeng Xing, assistant professor of applied mathematics and statistics, will be lending their expertise.

Despite the depressing nature of the work—the impact of climate change on many human societies will likely be devastating, especially in geographically at-risk poor countries—Orbell believes their efforts to scientifically anticipate potential consequences of abrupt climate change will shed a ray of light onto a future we are otherwise marching toward in the dark.

“By exposing the possible scenarios of where people might move and what resources they might need, we are at least preparing ourselves to deal with a global crisis,” said Orbell. “A necessary condition for human civilization to survive is knowledge.” —PH

## A Heroic Struggle Against the Odds

**Within the tribal nation of the Lakotas** are to be found some of the best-known American Indian legends, including Black Elk, Sitting Bull (who defeated Custer at Little Big Horn in 1876) and Crazy Horse.

In his new book, *The Lakotas and the Black Hills* (Viking, 2010), history professor Jeff Ostler explores the heroic and unbroken history of the Lakotas’ fight to retain their land.

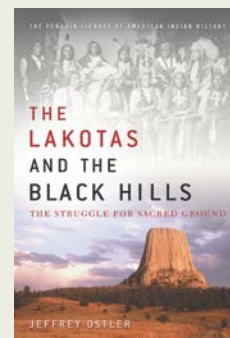
Significant bloodshed marked the eventual forced sale of their land in 1877. A century later, the Lakotas rejected a 1980 U.S. Supreme Court settlement awarding the tribe \$102 million in compensation for land claims lost decades earlier. Though the Supreme Court ruling was a victory of sorts for the Lakotas, it did not return the land to the tribe. The money remains untouched as the Lakotas continue to pursue regaining a portion of the Black Hills.

Ostler calls attention to the significant similarity between the Lakotas’ fight in the 1800s—when they

fought against an enemy with notions of land ownership foreign to American Indian tribes—and their current fight to return to their land, which also

involves rallying against a government-imposed system of laws and politics equally alien to their culture. Then and now, their persistent courage and determination in the face of both violent and overwhelming odds is the remarkable testament of a people who refuse to back down.

This is Ostler’s second book related to Native American history. His first, *The Plains Sioux and U.S. Colonialism from Lewis and Clark to Wounded Knee*, won the Caughey Western History Association prize for the best book of 2004 in western U.S. history. —PH



## Civil Rights Series Wraps Up With WuDunn

**Sheryl WuDunn, the first Asian-American reporter to win a Pulitzer Prize**, will be the final speaker of the inaugural year of the Lorwin Lectureship on Civil Rights and Civil Liberties.

WuDunn won the Pulitzer with her husband Nicholas Kristof for her reporting from Beijing on the Tiananmen Square protests of 1989. WuDunn has also received a George Polk Award and an Overseas Press Club award, both for reporting in China.

Along with Kristof, she is coauthor of *Half the Sky: Turning Oppression into Opportunity for Women Worldwide*, a *New York Times* bestseller about the challenges facing women around the globe. WuDunn and Kristof received the Dayton Literary

**What: Sheryl WuDunn**

**When: May 11, 2011, 7:00 p.m.**

**Where: Ballroom, Erb Memorial Union, 1222 East 13th Avenue**

Peace Prize’s 2009 Lifetime Achievement Award.

Currently, WuDunn is a senior managing director at Mid-Market Securities, an investment banking firm, and is also president of TripleEdge, a social investing consultancy. Previously, she worked at *The New York Times* as both an executive and a journalist. She has also been a vice president at Goldman, Sachs

& Co. and a commercial loan officer at Bankers Trust.

The 2010–11 Lorwin Lectureship has explored the topic of “Women’s Rights in a Global World” through a yearlong series of lectures, symposia, workshops and events featuring renowned activists, scholars and writers. The lectureship was funded by the estate of Val and Madge Lorwin. Val Lorwin was a labor activist and professor of history at the UO who died in 1982. —LR



## Photon Fast Lane

*Imagine Lightning-Fast Quantum Google*

**T**hink the World Wide Web is already pretty fast? Well, even if you've got ultra deluxe high-bandwidth multigigabit access, the Internet of the future could make today's information superhighway look like a bumpy backcountry road.

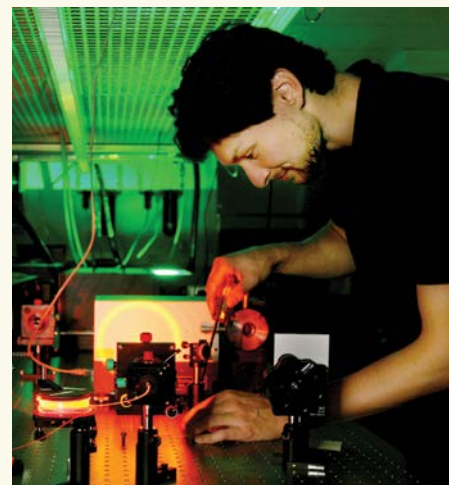
UO physicist Michael Raymer is helping pave the way for faster, more secure Web browsing through the quirks of quantum mechanics, which operates on the level of single electrons of matter and single photons of light. By focusing a dual-color burst of laser light onto a fiber-optic cable, Raymer and doctoral student Hayden McGuinness were able to change the color of a single photon—a crucial step toward quantum computing.

The implications? If digital information can be stored and transmitted in a single electron and a single photon—rather than being stored in bits composed of many electrons and transmitted in light pulses containing many photons, as is currently the case—then quantum theory predicts a huge speedup of certain computer-intensive tasks, such as searching the

Internet. Imagine “lightning-fast quantum Google,” said Raymer.

The research by Raymer and McGuinness takes advantage of the fact that, at the level of single electrons and photons, quantum strangeness reigns. Think Einstein's “spooky action at a distance,” the Heisenberg uncertainty principle and Schrödinger's dead-or-alive cat (see sidebar). Because of this small-scale complexity, certain types of Internet transactions, such as searches, would become unthinkable fast and utterly hacker-proof.

One aspect of that quantum strangeness is wave-particle duality, which means that a photon of light possesses the properties of both a wave and a particle at the same time. This permits quantum bits to store values of both 0 and 1 simultaneously, unlike typical computer bits, which must have a value of either 0 or 1. This feature could not only significantly increase computational speed but could also render the quantum information safe from prying eyes. That's because even the most careful observation



KATIE CAMPBELL

*Doctoral student Hayden McGuinness has teamed with professor Michael Raymer to change the color of a single photon—a breakthrough that could lead to unthinkable fast and utterly hacker-proof Internet transactions.*

of the quantum system would disturb its state, revealing the intrusion—another “spooky” effect.

One roadblock, however, is that quantum systems are based on the fact that electrons emit and absorb visible light. But existing fiber-optic cables are optimized to transmit infrared light. Raymer's work potentially overcomes this obstacle.

In the next phase of their work, “the objective is to convert a single photon from the color that a common quantum memory will deal with into an infrared photon that communication fibers can transmit,” said Raymer, Knight Professor of Liberal Arts and Sciences. “At the other end, it has to be converted back into the original color to go into the receiving memory to be read properly.”

Raymer, who is dedicated to making science accessible to nonscientists (see *Science Literacy*, page 25), recently published *The Silicon Web: Physics for the Internet Age* (Taylor and Francis, 2009) for the curious nonscientist who has little or no mathematics or physics background. The book covers the basics of mechanics, electromagnetism, waves, optics and quantum physics as well as the science behind advanced technologies such as lasers, fiber-optic communication and semiconductors. “One can argue that scientific thought and methods have changed the course of human history as much as or more than anything else,” Raymer writes in the book's preface. “To have a deeper understanding of where humanity is at present, it pays to study science and technology.” —ET

## Quantum Strangeness Reigns

- **Physicist Albert Einstein used the phrase “spooky action at a distance”** to describe the quantum-mechanical phenomenon of quantum entanglement, in which the physical properties of two particles separated by vast distances remain strangely intertwined.
- **In 1935, physicist Erwin Schrödinger devised a deliberately absurd thought experiment** to illustrate the strangeness of quantum entanglement. In it, an unfortunate cat, trapped inside a box with a vial of poison that is randomly released or not, is simultaneously dead and alive until someone opens the box and observes it. Similarly, in the UO experiment, under the action of the dual laser burst in an optical fiber, a single photon of light can end up being both red and green at the same time until someone observes it, at which time it must “decide” which color to be.
- **Formulated by physicist Werner Heisenberg in the 1920s, the quantum uncertainty principle** states that the exact velocity and position of a subatomic particle can never be known simultaneously. For instance, measurement of the velocity of a particle will displace it by an unknown amount, invalidating the simultaneous measurement of its position. For light, measurement of the color of a photon will displace it in time by an unknown amount, invalidating the simultaneous measurement of its arrival time. Using this principle, it would be possible to tell whether or not an eavesdropper has tampered with the photon in an attempt to intercept a message being sent across the Internet.



# Kindle-ing an Improvement in Reading Skills

**Two UO researchers seek to harness the power and portability** of e-reading technology such as the iPad and Kindle to help college students who have difficulties with reading comprehension. The project could ease students' academic anxieties as well as their (literally) heavy textbook loads.

Stephen Fickas, professor of computer and information science, and McKay Sohlberg, professor of communication disorders and sciences, will collaborate with two Department of Defense facilities to develop a process that matches reading impairments to effective reading strategies that can be delivered on electronic tablets. The growing popularity of these devices makes them a useful platform for the delivery of individualized reading support to struggling students.

Fickas and Sohlberg started this project—called the CampusReader project—in fall 2009, and recently received a five-year, \$2.7 million grant from the National Science Foundation to continue the work. With this project, the researchers hope to fill the gaps in the scientific literature that links reading impairments with reading strategies.

“Ideally, as students sit down with their computers to begin their online reading

assignment, the CampusReader software will work in the background to extend the textbook content with strategies that fit with each student's reading profile,” said Fickas.



The CampusReader software will be designed to facilitate reading tasks for a wide range of college students, including veterans with mild brain injuries and adults with learning disabilities and attention deficit disorder.

“Reading comprehension deficits are a huge problem for many students leaving high school who have both identified and unidentified impairments,” said Sohlberg, who recently was awarded the College of Education's five-year HEDCO endowed professorship.

“Our targeted students are those who have cognitive impairments that make it difficult for them to sort relevant from irrelevant information, draw inferences or connect background knowledge to new

learning situations,” said Sohlberg.

As reading-tablet technology improves, and the publishing industry increasingly embraces e-books, the researchers see an opportunity to integrate reading strategies with electronic textbooks.

Fickas and Sohlberg will conduct pilot studies, laboratory experiments and long-term evaluations to develop an educational package that uses open-source software and hardware.

One of their goals is recognition and acceptance of the CampusReader through the Computer-Electronic Accommodations Program (CAP), which provides assistive technology, devices and services free of charge to partnering federal agencies that work with returning soldiers. The research will help active-duty service members and veterans with mild brain traumas who wish to enroll in specialized training programs or resume their education on university or community campuses.

If Fickas and Sohlberg's efforts succeed, reading difficulties—as well as backpack-induced lumbar lordosis—could be greatly reduced on college campuses nationwide. —ET

## Graduate Science Programs Make the Grade

**Several UO science programs were standouts** in the recently released ratings of graduate programs conducted by the National Research Council. The NRC study uses a variety of statistical metrics to rate programs at the top 222 research institutions in the United States.

The strength of a university's graduate programs is a clear indicator of its strength as a research institution. Highlights for UO sciences include:

The **Department of Physics** ranked third of 160 programs in publications per

faculty member. This metric is the most important in the NRC rankings because it measures how involved faculty members are in the creation of new knowledge.

The **Department of Biology** ranked tenth of 120 programs in terms of awards per faculty member, including some of the most prominent research prizes in higher education.

The **Department of Psychology** ranked sixth of 236 programs in terms of citations per publication, an important measure that indicates the wide-reaching influence of research conducted here.

(In the social sciences, the **Department of Geography** was also a standout. See cover story page 5).

“We are not as large as most of our comparator institutions,” noted Scott Coltrane, dean of the College of Arts and Sciences. “But because the new NRC ratings control for size, they reveal that UO faculty members are among the best in the nation and that UO science programs are on the rise.” —LR

# Lack of Women Does Not Compute



*Maria Klawe, president of Harvey Mudd College, encourages women to stretch outside their comfort zone. At a recent UO talk, Klawe revealed that she is taking her own advice by learning to ride long board.*

## At Harvey Mudd College in Claremont, California, 40 percent of students

enrolled in computer science are female. At the UO, the percentage is around 12. And that lower percentage is pretty typical of most institutions of higher learning. What's Harvey Mudd doing right?

When Maria Klawe, Harvey Mudd's first female president, arrived in 2006, women represented only 10 percent of

computer science majors. She credits the surge since then, in part, to a shift in the focus of introductory computer science courses—from abstract theory to real-world problem solving, such as modeling the spread of disease.

“Our introductory course went from drudgery to outrageous fun,” she said during a UO talk last fall.

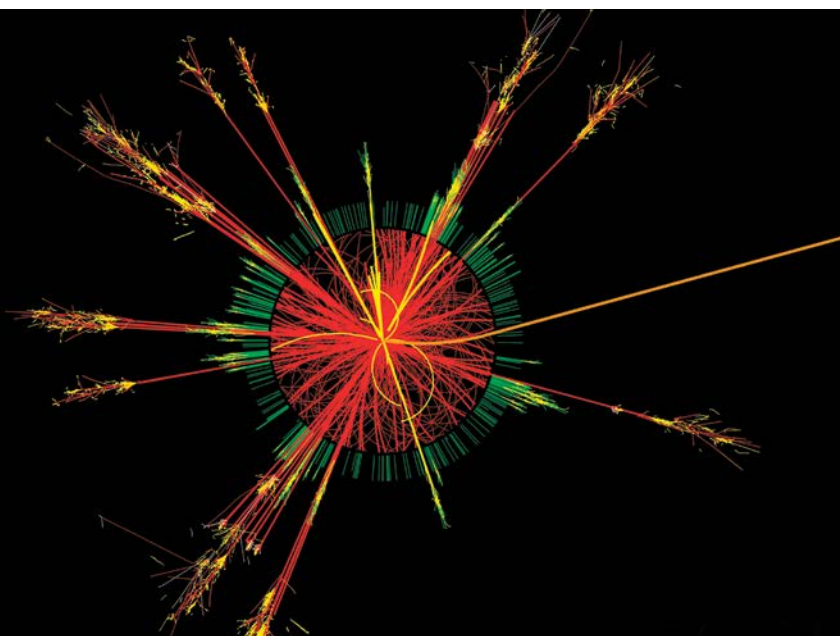
Klawe visited the UO campus in

support of Women in Computer Science (WICS), an initiative led by computer science graduate student Kiki Prottzman, which promotes female interest in computer science and strives to create a strong network for women in computing.

Besides her public talk, “Maria took the time to explore with us how the Department of Computer and Information Science can be more welcoming to women,” said Prottzman, who also directs the female-focused online project Picture Me in Computing.

About 70 students, faculty and staff members, and community residents attended Klawe's lecture. She outlined a number of persistent gender-related computing myths—for instance, that computers are strictly boys' toys and that women aren't good at math—and proposed a threefold solution to the computer science gender inequality problem:

- Increase women's interest through games and contests and by encouraging female students to attend the annual Grace Hopper Celebration of Women in Computing Conference, where 200 female computer scientists (i.e., living role models) convene each year.



## Trigger Man

**The answer to the ultimate question of life, the universe and, well, everything—at least at the subatomic level—may soon be at the fingertips of a UO professor.**

Professor David Strom has been elected to serve as deputy trigger coordinator for the ATLAS experiment at the Large Hadron Collider (LHC), the world's largest particle accelerator. Located near Geneva, Switzerland, in a

*Left: A simulated black hole in the ATLAS detector of the Large Hadron Collider. Image courtesy of CERN.*



- Increase women's confidence through unflinching encouragement and positive feedback. Women in computer science and engineering often experience what Klawe called imposter syndrome—a debilitating lack of confidence in their abilities. She said that even when women are doing as well as or better than men in computer science classes, the women are much more likely to lose confidence and drop out.

- Increase women's sense of belonging by creating a supportive environment and using inclusive language. Klawe said that ways to foster such an environment include being careful with gendered pronouns and “suppressing jerky behavior” among male students.

Showing students that they are capable of learning how to be strong in an area of weakness can also bolster female self-confidence, she said. Klawe herself is working on an area of weakness: learning to ride long board despite the fact that coordination and balance are not her strong suits.

“If you only focus on things that come easily, you won't learn how to learn,” she said.

Prior to joining Harvey Mudd, Klawe was the dean of engineering and a computer science professor at Princeton University. She is also one of 10 board members of Microsoft Corporation. —ET

## Science Literacy For All

**Nonscience majors at the UO can now benefit from a new Science Literacy Program** that was launched last fall with a \$1.5 million grant. Advanced science majors will benefit, too, with the opportunity to co-teach classes alongside professors acting as teaching mentors.

The grant for the Science Literacy Program was funded by the Howard Hughes Medical Institute to help universities strengthen science education. The UO proposal was among 50 chosen from 165 applications.

“The unique aspect of our HHMI program is the engagement of undergraduate science majors in teaching courses for nonscience majors,” said Michael Raymer, professor of physics, who was instrumental in the program's design.

“Our advanced science undergraduates have the outlook on science that we want to model for nonscience students,” he added. “Being close in age to the students taking the 100-level courses, they can illustrate the excitement that comes with scientific discovery. And by involving the science majors in co-teaching courses, the program will help inspire a new generation of science teachers and public communicators.”

The new courses will span multiple departments. For example, faculty members from physics and geological sciences are collaborating to create and teach a new course called Scientific Revolutions—Major Advances That Altered Our Understanding of the World.

Students taking typical science courses listen to lectures, take notes, read textbooks and occasionally get to ask questions, said biologist Judith Eisen, who is director of the program.

“A lot of it—especially the lecture part—is sort of a passive learning experience. But the UO's Science Literacy Program will train faculty members in interactive teaching strategies that are known to be effective.” —LR

**Advanced students will co-teach classes with faculty mentors.**

17-mile-long loop more than 500 feet below the earth's surface, the collider is home to several experiments that will attempt to unravel some of nature's biggest mysteries.

The trigger is a vital component of the ATLAS experiment, an international collaboration involving 2,000 scientists, including a team of UO physicists. Their work seeks to shed light on such scientific enigmas as the origin of mass, extra dimensions of space, black holes and dark matter by smashing together beams of high-energy protons and analyzing the debris. The trigger selects events with potentially interesting interactions from the very large collision event rate (as many as 600 million

per second at full power) to arrive at a manageable fraction of the massive amount of data to be recorded.

“If it is not done well, you can throw the proverbial baby out with the bathwater,” said UO physicist James Brau, Knight Professor of Natural Science.

Strom will serve as deputy trigger coordinator for one year before assuming the role of trigger coordinator in late 2011. He was elected by the ATLAS Collaboration Board, which includes representatives from more than 174 universities and laboratories from 38 countries, including the UO.

“David's election by the collaboration is a testament to the esteem in which

he is held by his colleagues from around the world,” said Stephen Kevan, head of the UO physics department.

The ATLAS detector is about 150 feet long and more than 80 feet high. It is about half as big as the Notre Dame Cathedral in Paris and weighs close to 7,000 tons, the same as the Eiffel Tower or a hundred 747 jets.

As scientists ramp up the power at the LHC, a textbook-changing discovery could occur at any time. Whether a breakthrough takes place in two years or by the end of the decade, the answers to the ultimate questions have never been so close at hand. —ET

## Flashback to the Wayback Days of GSS

**The revival of the general social science major** (see page 19) prompts us to hop in the wayback machine to the 1960s and '70s, when more than 1,200 UO students received a degree in this field. Where did they go from there? What did a GSS degree prepare them for?

Clayton Steinke '65, for one, credits his multitude of social science classes—from anthropology to history, sociology and economics—with helping him understand the dynamics of human relationships, thereby supporting his later management role in business. In 1975, he joined Willamette Valley Company as a purchasing agent and stayed with this Eugene-based distributor of mill supplies for the next 25 years, retiring as a vice president of corporate purchasing and inventories in 2000. To honor the value of his education, Steinke and his wife, Sheryl '65 (sociology), MS '68 (library science), recently established a scholarship for new GSS majors. (For more information, contact Kat Walsch, kwalsch@cas.uoregon.edu.)

Here are some examples of how other general social science majors have found their true calling during the last few decades.

### First Graduate

**Rozanne Enerson Junker '73**

**Rozanne Junker has served the public interest** in many capacities. She recently retired as the founding executive director of First Graduate, a San Francisco-based nonprofit whose mission is to help students finish high school and become the first in their families to graduate from college. It's a mission Junker strongly relates to as the first college graduate of her own family.

But First Graduate is only the latest in a long line of career accomplishments. She has worked for a Republican U.S. senator from North Dakota; as a deputy director in the first administration of California Governor Jerry Brown, a Democrat; in the private sector as a strategic planning manager; and as executive director of CORO, a leadership training foundation, where she started a youth leadership program that has been modeled around the country.

Junker credits her GSS major for exposing her to a world of possibilities. "With GSS you get to see the whole picture," she said. After receiving her BS, Junker stayed on at the UO to obtain an independent study MS (combining graduate course work in anthropology, economics and history) and then a doctorate in political science.

Her first retirement project: an investigation into her family's history, including a research trip to the location of a secret weather station in Labrador, Canada, where her uncle was stationed in World War II.

### Up In the Air

**Arthur Hurley '68**

**Arthur Hurley always wanted to be a pilot.** But his dream wasn't just to fly an aircraft—he had a fascination with other cultures and countries as well. Accordingly, he took up a GSS major with the intention of learning about the world.



Just a year after graduation, he was in the air flying jet transports on embassy runs for the U.S. Air Force, based in Dover, Delaware. Some years later he joined Western Airlines (now Delta) and flew as a commercial pilot until his retirement.

During his career he traveled widely to western and eastern Europe, Russia, Africa, the Persian Gulf and Asia. He even had an opportunity to visit the People's Republic of China when formal diplomatic relations began in 1973.

He credits his undergraduate degree with instilling a long lasting appreciation for the many places and cultures he has seen, and acknowledges especially his art history and Asian history courses with Patricia Lawrence and Paul S. Dull, respectively.

"In my travels, whether to the Acropolis in Athens or the temples of Kyoto, I would view these structures from ages past and recall Professor Lawrence explaining just why they were important," he said.

Hurley retired from flying in 2004 and now lives in Napa, California.





## Blues Brother

Vince McGilvra '68

**Vince McGilvra has taken the road less traveled.** And he credits his GSS degree for putting him on that path.

"After 12 years of Catholic education and memorization, my mind was expanded [at the UO] in my first history course," said McGilvra, "which was taught by an Irish socialist . . . at 8 a.m., no less."

McGilvra served in the U.S. Air Force for four years after graduating from the UO. Following his discharge, he embarked on a solo soul-searching trip across America, during which he met a motley assortment of kindred spirits.

Later, he returned to school, earning a business degree from Arizona State University. He started a small business, and when it failed, he decided to take to the road again and travel the world.

Upon his return to his home turf, he and two partners decided to buy Skipper's Smokehouse in Tampa, Florida. They transformed the restaurant, which offers a variety of Caribbean- and Louisiana-inspired food, into a musical Mecca that hosts well-known artists from around the world.

The Smokehouse was named "Best Blues Club in America" in 2001 by the Blues Foundation.

"It's casual and friendly, just like the UO," he said.

McGilvra retired last summer and is enjoying life in Tampa with his wife, Bridget.

"My career path could not have been envisioned by anyone," he said. "I could not have planned for a better life."

## Driven to Success

Barbara Nelson '64

**In 1986, Barbara Nelson opened an Acura automobile enterprise** in Bellevue, Washington. At the time she was one of only a handful of women in the country who owned an automobile business. Rather than see this as a disadvantage, she capitalized on the distinguishing circumstances.

"My marketing approach was different. I made it very clear that I wanted women to be taken care of in the service department," said Nelson.

Those who have lived in the Seattle area long enough may remember her advertisements; she posed for them with her white standard poodle. Nelson turned her enterprise into one of the most successful Acura dealerships in the country. In 1994 she received the Nellie Cashman Woman Entrepreneur of the Year Award.

Both practical and business savvy from a young age, Nelson said she chose GSS as her major because it allowed her to make the most of the multiple credits she had acquired from other colleges before arriving at the UO.

Today, Nelson's son runs the day-to-day operations of the business and Nelson, though still a 51 percent owner, describes herself as mostly retired.

Among the hobbies she acquired as a dealer was a love of classic cars. She has some 30 vehicles in her collection, mostly from the 1930s and '40s.



## Global Medicine

Jeffrey Shear '71

**Jeffrey Shear never anticipated that his GSS degree would lead to a career in medicine.** "I thought I'd end up teaching history or possibly anthropology," he said.

But his education did indeed lead him to an unexpected profession, in some unexpected places. Most recently, he taught pathology at the American University of the Caribbean School of Medicine.

After Shear completed his UO degree, he did a year of language study in Belgium and then taught high school in the Congo for two years. While abroad he met several American medical students, teachers and missionaries whose encouragement led him to apply to the University of Kansas, where he enrolled in medical school and completed his MD degree in 1979.

His medical practice took him across the country and the world. After completing his pathology training and fellowships at the University of Texas and Ohio State University, he practiced lab medicine, cytopathology and surgical pathology in West Virginia, Kansas, Texas and Nevada. He has also lived in such far-flung places as Saudi Arabia, Canada and the Netherlands Antilles.

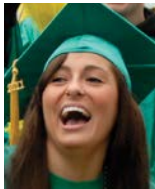
Shear retired from his practice as a pathologist five years ago and now lives part of the year on the Oregon coast, where he likes to bike and write.

"My studies at the UO gave me a desire to understand other people and experience firsthand their cultures and way of life—to 'walk in their shoes,'" he said.

Profiles by Patricia Hickson and Eric Tucker

## But Wait, There's More—Online

Visit the Cascade website—[cascade.uoregon.edu](http://cascade.uoregon.edu)—for online extras.



**MARCH OF MAJORS:** The College of Arts and Sciences stepped out for the January 22 “Celebrating Champions” parade—organized by the university and the City of Eugene—with a lively “March of Majors” representing the dozens of academic major fields of study in CAS. Visit [cascade.uoregon.edu](http://cascade.uoregon.edu) for the story, or go to [facebook.com/UOCAS](https://facebook.com/UOCAS) to view the photo album.



**BEYOND ZEBRA FISH FAME, GEORGE STREISINGER LED A RICH AND INTERESTING LIFE:** His wife Lotte Streisinger offers a colorful memory of her husband in her book *From the Sidelines*, a “personal history of the Institute of Molecular Biology.” Read about his childhood escape from the Nazis; his love of nature and cooking; his little-known talent as a magician and more, in an excerpt at [cascade.uoregon.edu](http://cascade.uoregon.edu).



**THERE'S A CLASS FOR THAT:** A new course being launched spring term will provide UO students with mobile smart phones and a mission: to build smart-phone apps. The class is open to all majors; no prior programming experience is required. It will be taught by Stephen Fickas, who is also designing e-reader applications for students with reading challenges (see story, page 23). Visit [cascade.uoregon.edu](http://cascade.uoregon.edu) to find out more.



**PHYSICIST TELLS THE TALE OF THE JACKSON POLLOCK CURSE:** Richard Taylor can finally tell the untold story: how his research with fractals drew him into a world of international intrigue surrounding the authentication of 32 works said to be painted by Jackson Pollock. (Taylor is also a member of the Luxuriant Flowing Hair Club for Scientists.) Learn more at [cascade.uoregon.edu](http://cascade.uoregon.edu).



**MICHAEL HAMES-GARCÍA AND JANIS WEEKS RECEIVE MLK AWARD:** Two CAS faculty members have been honored with the 2011 UO Martin Luther King, Jr., Award—Michael Hames-García (left) is a professor of ethnic studies, and Janis Weeks is a professor of biology and member of the African Studies Program. Read the story at [cascade.uoregon.edu](http://cascade.uoregon.edu).



**PETRARCH MADRIGAL:** Petrarch is not only going digital at the UO (see story, page 16), but musical as well. Watch a video of University of Oregon music students performing Marenzio's musical reading of Petrarch's “Solo e pensoso” by visiting [cascade.uoregon.edu](http://cascade.uoregon.edu).



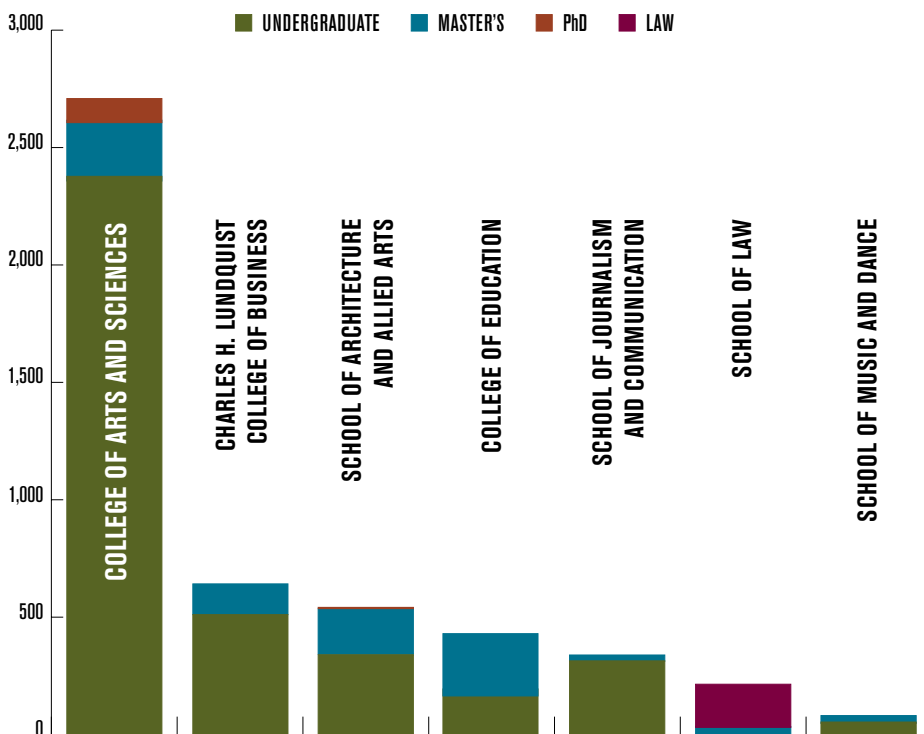
**FOLLOW US ON FACEBOOK:** The UO College of Arts and Sciences now has an easy-to-find Facebook address: [facebook.com/UOCAS](https://facebook.com/UOCAS). We invite you to follow us by clicking on the “like” button on our page.



## College of Arts and Sciences— Did You Know?

*The College of Arts and Sciences is the academic heart of the University of Oregon. It provides a nucleus of liberal arts studies through degree programs in humanities, social sciences and natural sciences.*

### UO Degrees by Academic Unit, 2010



## CAS Degrees

(Excluding certificates, minors, and specializations)

- Anthropology BA, BS, MA, MS, PHD
- Applied physics MS
- Asian studies BA, MA
- Biochemistry BA, BS
- Biology BA, BS, MA, MS, PHD
- Chemistry BA, BS, MA, MS, PHD
- Chinese BA
- Cinema studies BA
- Classics BA, MA
- Comparative literature BA, MA, PHD
- Computer and information science BA, BS, MA, MS, PHD
- Creative writing MFA
- East Asian languages and literatures MA, PHD
- Economics BA, BS, MA, MS, PHD
- English BA, MA, PHD
- Environmental science BA, BS
- Environmental sciences, studies, and policy PHD
- Environmental studies BA, BS, MA, MS
- Ethnic studies BA, BS
- Folklore MA, MS
- French BA, MA
- General science BA, BS
- General social science (PROPOSED) BA, BS
- Geography BA, BS, MA, MS, PHD
- Geological sciences BA, BS, MA, MS, PHD
- German BA, MA, PHD
- History BA, BS, MA, PHD
- Humanities BA
- Human physiology BA, BS, MS, PHD
- Independent study BA
- International studies BA, BS, MA
- Italian BA, MA
- Japanese BA
- Judaic studies BA
- Latin American studies BA
- Linguistics BA, MA, PHD
- Marine biology BA, BS
- Mathematics BA, BS, MA, MS, PHD
- Mathematics and computer science BA, BS
- Medieval studies BA
- Philosophy BA, BS, MA, PHD
- Physics BA, BS, MA, MS, PHD
- Political science BA, BS, MA, MS, PHD
- Psychology BA, BS, MA, MS, PHD
- Religious studies BA, BS
- Romance languages BA, MA, PHD
- Russian and East European studies BA, MA
- Sociology BA, BS, MA, MS, PHD
- Spanish BA, MA
- Theater arts BA, BS, MA, MS, MFA, PHD
- Women's and gender studies BA, BS

### Ten Most Popular Majors in the College of Arts and Sciences

- 1 Psychology
- 2 Political science
- 3 Biology
- 4 Human physiology
- 5 Sociology
- 6 Economics
- 7 English
- 8 History
- 9 Environmental studies
- 10 Spanish

### Faculty Honors and Awards

- 58** Guggenheim Fellows
- 31** Fellows of the American Association for the Advancement of Science
- 15** National Science Foundation Career Awards
- 8** American Academy of Arts and Sciences Members
- 5** National Academy of Sciences Members
- 1** MacArthur Fellow
- 1** National Medal of Science



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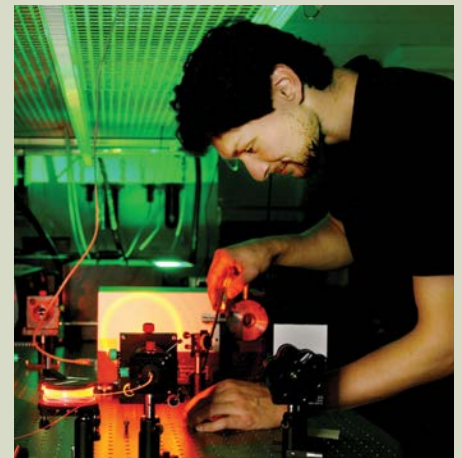
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