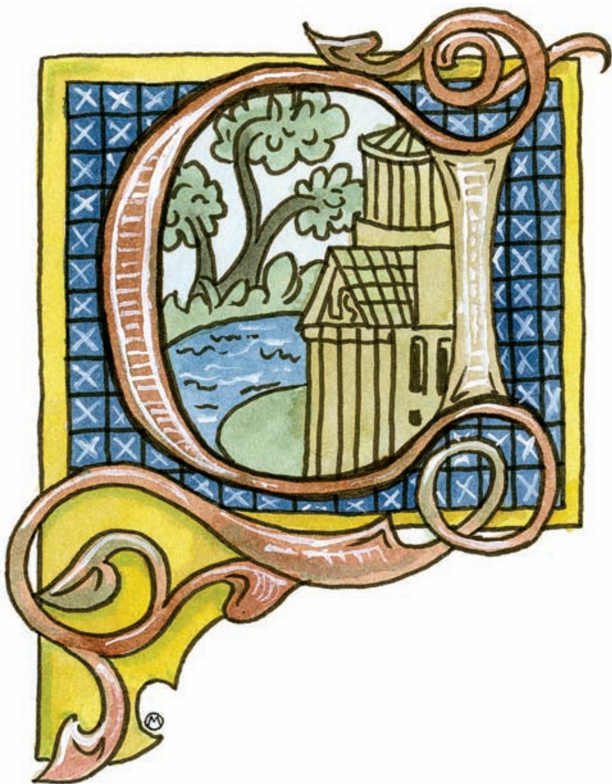
The Professor's Tale

On a journey he began more than 60 years ago, Russell Peck inspires students and colleagues as a scholar of Middle English literature and as an academic 'force of nature.'

By Myra Gelband '71



ONSIDER THIS JOURNEY. FIRST, RIDE A MILK TRUCK 150 MILES FROM YOUR HOME, in the shadow of the Wind River Mountains of Wyoming, to Rawlins, where you board an overnight train to Chicago. There, another train, this one bound for New York City that lets you off at Princeton Junction, where you take the Dinky to Princeton University. For this you leave behind your boyhood world and a full scholarship to the University of Wyoming, where you'd likely be known by many and considered a standout, having been captain of your high school football team, valedictorian, and winner of the school prize in English. Instead, you travel 2,000 miles to an Ivy League bastion, surrounded by young men of privileged and prep school lineage.

In 1952, Russell Peck, the John Hall Deane Professor of Rhetoric and Literature, ventured east on his own to Princeton, sight unseen, to take up the beginnings of a scholastic career as a medievalist of remarkable achievement and longevity.

Shall we compare this to a pilgrimage, akin to a story from Geoffrey Chaucer's *Canterbury Tales*? Perhaps consult an expert. That would be Russell Peck himself, for there is hardly a more respected source on Middle English literature than Peck, an internationally regarded authority on John Gower, a contemporary and friend of Chaucer's.

The journey brought Peck to Rochester in 1961. Now well into his 51st year on the River Campus, Peck is the longest-serving active faculty member at the University, still teaching a complement of undergraduate and graduate courses and leading the rich intellectual life of a research scholar.

"Russell is always going at high speed, in everything he does. I can't think of

MICHAEL OSADCIW

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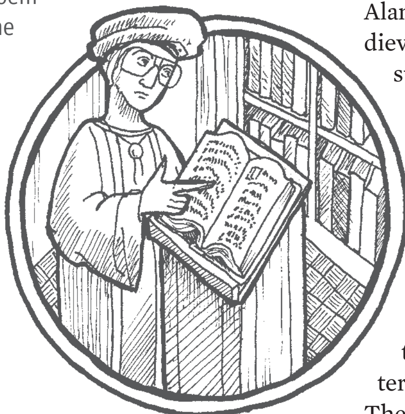
The Roles of Russell Peck

When asked to summarize Russell Peck in one word, colleagues and friends describe him as "energetic," "enthusiastic," "intellectually curious," "persuasive," "persistent," "generous," "exuberant," "radiant," "indefatigable," and "a rapidly walking library."

It is, in short, a long list. Here are a few of his many facets:

Scholar

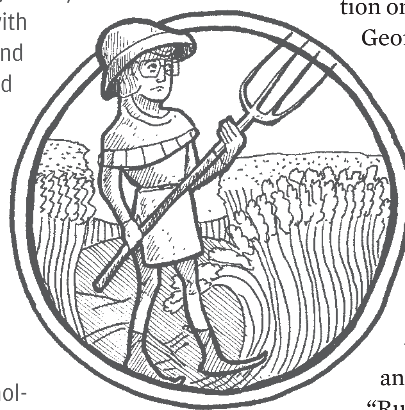
Widely respected as a scholar of Middle English literature, Peck is an internationally recognized authority on Geoffrey Chaucer, the 14th-century author of *The Canterbury Tales*; the poet John Gower, a contemporary and friend of Chaucer's; William Langland, the presumed author of the 14th-century narrative poem *Piers Plowman*; and Thomas Malory, the 15th-century writer who's credited with first bringing together *Le Morte d'Arthur*, a canonical text of the Arthur legend.



His work has been recognized by the John Gower Society, the National Endowment for the Humanities, the Guggenheim Foundation, and other national humanities and academic associations. He was named the John Hall Deane Professor of Rhetoric and Literature in 1985.

His wide-ranging command of his field has long been a marvel to many.

"I never had a class with Russell, but I remember being in an absolutely packed house at Hubbell Auditorium, when he delivered a lecture on grammar that was illustrated entirely with slides of dragons," recalls Don Chew '79S (MBA), '83 (PhD). "He went through every part of speech and form of grammar with dragon images. It was hilarious, silly, and amazing. Only Russell could have pulled that off."



Years later, when Peck asked Chew to help manage the finances of the TEAMS project, all Chew asked for in return was a copy of that dragon lecture. "Russell said he'd tossed it out. I was crushed. I can't imagine how many such things he's done over the years."

He's also been known to take his scholarship quite seriously, showing up in a cast for graduation in 1971 after injuring his arm jousting.

Farmer

Since the 1970s, the Pecks have owned a farm in Canada's upper Ottawa Valley, where Russell, Ruth, and their three children, Demaree, Nathan, and Gunther, continue to maintain a working farm.

another person who combines his range and his passion in the academic realm," says John Michael, chair of the English department. "He's phenomenal, in the sense that he is great. But he's a phenomenon, a force of nature, intensely committed to everything he does."

"Literary study is an exercise in vitality," Peck wrote in a 2001 essay called "Teaching What Can't Be Taught," and there is no better proof than to see him as he leads students through rigorous course material, whether in the classroom for his storied lectures on the works of Chaucer, the jam-packed itinerary of his intensive Theatre in England course, or in devising forward-looking ways to share the vibrant literary history of the Middle Ages.

"His scholarship is distinctive because Russell is an exquisite teacher and a great scholar," says Peter Lennie, senior vice president and the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences, and Engineering. "But beyond that, he's a source of inspiration to everyone. He has had such a fully vigorous career. He doesn't let up, and he shows no sign of slowing down."

Alan Lupack, curator of the Rossell Hope Robbins Library of medieval studies and the Camelot Project, puts it another way. "I suspect Russell lives in a world where days are longer than 24 hours. Also, I don't know if he sleeps."

Rochester was another step in Peck's journey, and he arrived, once again, without a preview of the city or the campus, having accepted the job over the phone. "I was looking for somewhere with snow," he says, no hint of irony in his voice. "That was part of the attraction. I turned down other offers. Rochester was at the top of my list."

FACULTY OUTLOOK: In many ways, "he remains a young upstart," say colleagues, noting Peck's wide-ranging academic interests and commitment to students in the English department.

The snow may have added to Rochester's appeal, but the vibrant music scene also figured strongly as Russell had met and married an accomplished pianist, Ruth Demaree, while in graduate school at Indiana University. Russell earned his PhD in Middle English language and literature, with a dissertation on "Number Symbolism and the Idea of Order in the Works of Geoffrey Chaucer," while Ruth was a graduate student in music.

"I heard her perform Rachmaninoff's *Piano Concerto No. 2,*" he says. "That was it for me."

After finishing her master's degree, Ruth went to Paris on a Fulbright fellowship to study piano at the Conservatoire National. Russell followed with a marriage proposal. They wed in June 1958 in Paris and spent their summer camping as they traveled through France.

Perhaps you detect a fairy tale quality. Need an expert? Once again that would be Peck, who has also devised and taught courses in Fairy Tale and Popular Culture and Myth and Fairy Tale.

"Russell is the world expert on Cinderella," says Thomas Hahn, a longtime colleague in the English department. "The mark of a successful teacher is to be able to hear what's going on in the culture in general. His fairy tales course is the best example of that. It deals with mythic patterns and large issues involving healing the soul. But there's more going on. Really, he's reconciling the world in those stories."

Reflecting on the young man who alighted the train from Wyoming into the world of Ivy sophistication, Peck candidly says, "I

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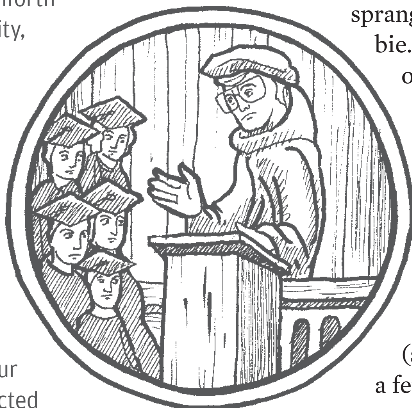
Teacher

Recognized for his teaching by generations of Rochester students, Peck has been widely honored by national organizations, including the Council for the Advancement and Support of Education and the Danforth Foundation, as well as by the University, where he's received the Edward Peck Curtis Award for Excellence in Undergraduate Teaching; the Robert and Pamela Goergen Award for Excellence in Undergraduate Teaching, the Students' Association Professor of the Year award (1998); and the 2009 President's Medal for Distinguished Service.



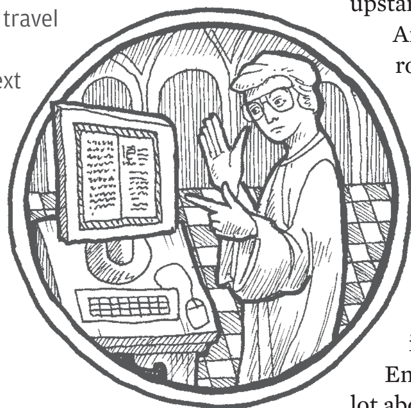
Always looking for ways to exemplify the notion that teaching can occur far beyond the classroom, he's conducted courses at his family's farm in Ontario, taken students to Stratford, Ontario, for a Shakespeare festival, and established a regular theater course in England during winter break. Former students remember cookouts at the Pecks' home in Rochester, where Peck, accompanied by his wife, Ruth, on piano, was known to sing such songs such as "Goodbye, Forever, Saloon" from a prohibition hymnal.

Gardener

At their home in Rochester, Russell and Ruth Peck are avid gardeners, tending peonies and other perennials that supply the flowers for the English department's annual diploma ceremony.

Digital Entrepreneur

In what he calls his most important work since arriving at Rochester, Peck is the founder and chief editor of a series that makes authoritative copies of medieval literature available to students and scholars. Concerned that works were in danger of being lost as they fell out of print or of languishing in libraries accessible only to scholars who could travel to work with them, Peck has been the driving force for the Middle English Text Series (METS), part of the Consortium for Teaching Middle Ages (TEAMS). The series, available online and perpetually in print copy, produces accurate, authoritative texts that can be read easily in the original Middle English. The series has grown to more than 80 volumes.



wasn't equipped to understand Princeton. I loved my classes, but I didn't fully appreciate my total surroundings until I was ready to graduate."

Isn't that true for most of us? What outwardly may have seemed a young cowboy's lack of sophistication and worldliness likely sprang from the same insecurity felt by nearly every college newbie. That experience has informed Peck's approach from the outset of his academic career, allowing him to reach across disciplines and generations.

Once settled at Rochester, Peck made fast friends with new colleagues, including the acclaimed poet Hyam Plutzik, who succumbed to cancer five months later at the age of 50. First, the young medievalist took over Plutzik's honors seminar in poetry, and, shortly after, became the first director of the Plutzik Poetry Series, started in the poet's memory and which reached its milestone 50th year in 2012 (see page 38). Even though he handed off those duties after a few years, Peck remains devoted to the Plutzik Series and the many friendships he has cultivated through that connection.

Such relationships may explain why Peck, who always has time for students, for new ideas, and for colleagues, is cherished in the Rochester community.

"There are two really important things a university like Rochester can do for undergraduates," Lennie says. "One is to provide a rich, residential experience where students are brought together with a diverse set of peers. The second is to find ways to offer opportunities to engage with faculty who change the way they think about the world. This is what defines Russell above all."

Michael credits Peck with convincing him to join the Rochester faculty in 1988, and marvels at his generosity and openness, then and now. "I came in with a group of younger faculty, and we were naturally viewed with some skepticism by our older colleagues because of our interests in other areas, such as women's studies and literary theory.

"Russell went out of his way to make us welcome, to feel engaged. He's so open to new ideas and the work of others. I wish that were more common, but in truth we tend to get focused on whatever our specialization is at any given moment."

Not long ago, Peck gave a talk to a faculty group on medieval literature and cognitive science. "There is an emerging approach, about which I have some reservations, involving cognitive linguistics," Michael says. "I was astounded by Russell's work on this, and it made me rethink my resistance. In that way, he remains a young upstart."

An upstart who does everything with a nod to his Western roots. Since the early '70s Russell and Ruth have owned a farm near Dacre, Ontario, in the upper Ottawa Valley, because he wanted to give his children the opportunity to enjoy a farm life, as he had. The family spent a year there, with the children enrolled in the local school while Russell finished a book on John Gower. They raised animals, installed the plumbing and electrical systems, and put a new roof on the old house and seven barns, built by a trapper/settler in the 1840s. Peck even devised a way to teach at the farm, bringing students there over several years for a course in Middle English romance. "That was wonderful for me, and I learned a lot about teaching," he says, wistfully.

"The farm is about 300 miles from Rochester, hours of driving into the country," says Jarold Ramsey, a professor emeritus of Eng-

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lish who knows something of Western living from his own youth in central Oregon, where he lives in his retirement. "Russell thought nothing of that trip, though it really was a long haul."

Over the years Peck has been the faculty director of the Medieval House (now the Medieval Society), the Drama House, and its theater program. He was responsible for acquiring, in 1987, the collection of medieval texts that became the Robbins Library in Rush Rhees Library, a unique, working scholar's collection of non-circulating (and thus, always available) material.

His Chaucer class still attracts robust enrollments, and he has introduced courses on subjects as varied as History of the English Language and Black Exploitation Films. The latter grew out of Peck's response when the inner city of Rochester was rocked by race riots in the 1960s.

Peck labels the 1964 riots as the single most momentous event in his formative years at Rochester.

"That had an enormous impact on my thinking. I knew a lot about medieval literature, but little about contemporary race issues," he admits. "The Rochester riots occurred before those in Newark and Watts. It was the beginning of a tumultuous time. The [Vietnam] war and shootings at Kent State forced me to re-educate myself about the society around me."

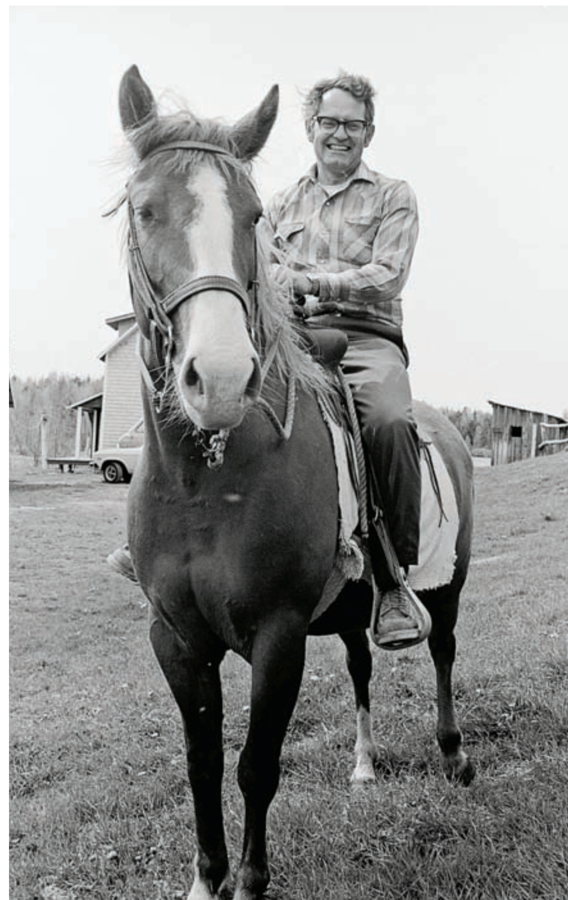
In that turbulent era, when students were often portrayed as disaffected and rebellious, Peck's effort to connect in and out of the classroom had a lasting impact. "The violence at Kent State in 1970 was a catastrophic jolt to the psyche of the campus," remembers Debbie Watkins Moncrieff '71, who is now an assistant professor at the University of Pittsburgh's Department of Communication Science and Disorders. "There was a powerful feeling of empathy and camaraderie that sprang forth from those events, and Professor Peck was an active voice in those conversations. He cared deeply about the welfare of all students."

Moncrieff vividly recalls Peck's Chaucer and Middle English lectures. "It was hard not to be drawn in. He was such a performer in front of the class. There was a sparkle in his eye, his impish grin, that enormous intelligence and enthusiasm. He sang to us. He would pull out his tuning harp, and lead the class in rounds."

Sara Cohen '12, an English major from Silver Spring, Md., sat in on a Peck lecture when she was deciding if she wanted to attend Rochester. Once she enrolled, his was the first class she signed up for. "The course description for Classical and Scriptural Backgrounds included something like, 'the course is this professor's soul.' I decided if a professor wrote that in the summary, I was going to enjoy that class, and I did."

Since then, Cohen has gone with other English majors to Stratford, Ontario, each fall, to attend plays at the Stratford Shakespeare Festival, and this year was one of 23 students who took Theatre in England, a four-credit course in London that Peck has taught for 21 years. Also along were a few additional pilgrims, Don Chew '79S (MBA), '83 (PhD), who has worked with Peck to manage the finances for an innovative publishing project, and Janice Willett '78S (MBA), a trustee who met the Pecks in 2002 when she attended a Plutzik reading in New York City.

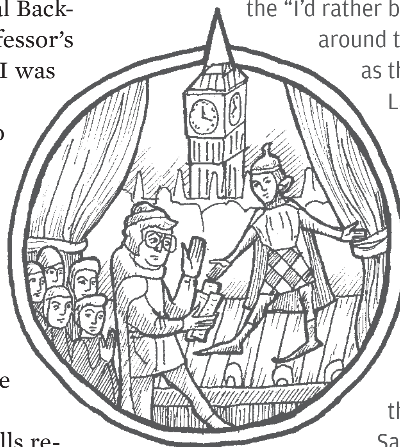
Both Chew and Willett marvel at the organizational skills required for the London undertaking, which involves Russell and Ruth together shepherding students to at least two plays a day over two weeks during winter break, becoming, in effect, surrogate parents.



STUDY ABROAD: Over several years, Russell and Ruth Peck hosted Rochester classes at their farm in Ontario, Canada, where students met Butternut and other animals while studying medieval literature.

Ringmaster

Peck has long taken an interest in making sure he and his students know each other and the community in which they live. Organizing the first installment 30 years ago as the "I'd rather be in Rochester project," Peck leads trips around the area, taking students to such sites as the Public Market, the Seneca Park Zoo, Lake Ontario, concerts, movie screenings, and others. Says Jarold Ramsey, professor emeritus of English: "[W]henever there was any celebrating in the name of literary study, Russell was your man."



But he's best known for organizing the English department's annual diploma ceremony, a multimedia extravaganza that recognizes each of the 70-plus graduating seniors.

Says John Michael, professor and chair of English: "I always fear for Russell the week before graduation because he runs around at such a breakneck pace. The prospect of his giving up the diploma ceremony fills me with despair. No question, he is irreplaceable."

UNIVERSITY LIBRARIES/DEPARTMENT OF RARE BOOKS, SPECIAL COLLECTIONS, AND PRESERVATION (PHOTO); MICHAEL OSADCIW (ILLUSTRATION)

Peck says he starts looking for tickets in March, and spends hours searching for the right plays—this year ran the gamut from *Hamlet, Measure for Measure,* and *Richard II,* to *War Horse* and *Cinderella,* to works by Jean Paul Sartre and Neil LaBute—and the best seats. The syllabus is demanding and pleasantly exhausting. The group stays at the Harlingford Hotel, where each day starts with a 75-minute class held in the hotel lounge.

"In London, Russell will lecture in the morning, go to two plays, join us for a drink in the pub, then excuse himself to reread a play and prepare for the next day," Chew says. "I don't know how he does it. He doesn't let anyone else grade his students' papers, either."

"After watching Russell in action, I have a better sense of what makes a good teacher," says Willett, who has joined the Pecks in London for the past seven years. "He frames the discussion in a way that draws responses from the students, and he finds value in every response, which encourages more responses and leads to genuine insight. He gives the impression that he is learning as much as the students. And it's hard to resist his own love of the subject. Those morning sessions have never failed to dazzle me."

Imagine how the students feel. "The course was absolutely overwhelming, but in the best way possible," says Cohen.

One evening Cohen found her energy waning. "Professor Peck must have noticed, and asked how I was doing. I admitted I was a little tired. I asked him how he was doing, and he responded, 'Oh, you know me, I always have energy!' This is constantly true."

Since the late 1980s Peck has been the creator, chief editor, and driving force for the Middle English Text Series (METS), through the Consortium for Teaching Middle Ages (known as TEAMS). Dismayed that much of the material he wanted to teach was out of print, Peck embarked on the arduous task of producing accurate, authoritative texts that can be read easily in the original Middle English. With funding from the National Endowment for the Humanities and input from other medieval scholars, what began as a project to publish 25 texts has grown to more than 80 volumes, with more to come.

Peck calls the series the most significant work he's done since he arrived at the University. And Hahn categorically agrees, "There is no other series comparable in any discipline. This is the single biggest influence on how medieval studies is taught around the world, the most important innovation of the 20th, now the 21st, century."

The volumes will be perpetually in print, published through Western Michigan University, and sold at cost. But they're also available online, in a searchable database, maintained out of the Robbins collection, and available to scholars around the world to use for free.

"Russell is here every day," says Lupack. "He oversees every text, every line, every word."

And nearly every graduate, as is evident in the English department's annual diploma ceremony. Always orchestrated by Peck, the event is held in Hubbell Auditorium to accommodate an audience from across the University.

"The English department ceremony is unique," says Lennie. "Diploma ceremonies are rare among colleges and universities to begin with, and special because they highlight the rich commerce that faculty and students have had together. But I know of no other place with a diploma ceremony such as what Russell creates. It's legendary, the highlight of the academic year. It is, like the man himself, singular and distinctive."

The ceremony began simply enough some 40 years ago as an intimate occasion at which faculty read from their specialty of study,

Epitomizing 'Everything That's Good in Higher Education'

Trustee Janice Willett '78S (MBA) first met Russell and Ruth Peck in 2002 in New York City during a special event of the Department of English's Plutzik Reading Series. Having lived in England for many years, Willett enjoyed talking to the couple about London and the theater and found that they had seen many of the same productions.

Before long, the idea arose that Willett should join the Pecks in England for their regular, two-week winter break course on the theater.

"There aren't many people who are happy seeing two plays a day, but to Russell, it's almost a calling, and I was hooked," says Willett. "One of my favorite things as a theater-goer is that fluttery feeling of excitement in the moment when the house lights go down and just before the curtain goes up, thinking about all the preparation that has gone into the production we are about to see. And one of the things I like best about Russell is knowing that he feels the same way, even if he's just seen the curtain go up at another play five hours ago."

SCHOLAR SUPPORT: A gift from Janice and Joseph Willett honors Peck's 50-plus-year career.

Since then, Willett has joined the Pecks in London for seven such trips. When she and husband Joseph '75S (MBA) announced this spring that they were pledging $3.5 million to *The Meliora Challenge:* The Campaign for the University of Rochester, Willett made sure that an important part of the gift would be in honor of the Pecks, providing support for Russell's work in the English department and recognizing Ruth's role in Russell's endeavors, particularly the London theater program.

"The Russell and Ruth Peck Professorship will honor a half-century of dedication to this University," she says. "My great hope is that all of their former students will contribute to making it possible."

The commitment also provides support for student scholarships in the Simon School of Business as well as for the University's International Theatre Program.

Willett says getting to know the Pecks has given her a new appreciation for the commitment it takes to make a difference in the lives of young scholars—and for the synergies of marriage.

"Our gift to the University in support of Ruth and Russell is because to me they epitomize everything that is good in higher education in the United States, along with everything about how a life should be lived."

—Scott Hauser

For more about The Meliora Challenge, or to support the Peck Professorship, *visit campaign.rochester.edu.*

GENERATIONS OF ADVICE: Peck meets with English major Lillian Dickerson '12 to discuss her honors thesis in his Morey Hall office. Peck also advised Lillian's sister, Kathryn '05, as a Take Five Scholar.

performed a short play or two, and were led in song by Peck before graduates lined up to receive their diplomas, while holding long-stemmed peonies cut from Ruth and Russell's perennial garden.

Here is what that has begot, circa 2011, still produced and stage-managed by Peck:

A multimedia production with hundreds of photos of the 70-plus graduating seniors taken during departmental outings throughout the year: theater-going in Stratford, Ontario; travels in England; Niagara Falls adventures; Mount Hope Cemetery in autumn; tobogganing in Highland Park; the lower falls of the Genesee; the Seneca Park Zoo; Eastview Mall in nearby Victor, N.Y.; and the senior picnic on Lake Ontario.

The department still sings, and there are prose and poetry readings. And, of course, music, with recorded selections ranging from the Brahms Requiem to the Beach Boys to a song called "What Do You Do with a BA in English?" from the Broadway musical *Avenue Q*. There's a harmonica rendition of "The Dandelion Yellow" played by Peck, who brings the proceedings to a fitting and emotional climax with a reading from Chaucer.

It's "very moving—funny, sentimental, and spectacular," in the words of its creator, who gets help from his colleagues but is still the ringmaster.

Did Peck plan to stay at Rochester for so long? "I never really thought in those directions. I always just liked what I was doing, and they were very good to me. I've been lucky in many ways," says Peck, "and I've enjoyed good fortune here.

"I was the 'mustard' professor at the University of Hull [in England] in 1967–68," Peck says, with a playful smile. "That was the old R. T. French/Reckitt-Coleman fellowship, and when I returned to Rochester, I was given tenure." The rest is history.

Along the way, and to no one's surprise, teaching has become the family profession. Ruth Peck had a long association with SUNY Geneseo, teaching music and piano, and still performs and plays as a soloist and collaborator in Rochester.

The Pecks' three children have achieved their own considerable success in the classroom: daughter Demaree is an award-winning high school English teacher in Virginia; Nathan is a high school science teacher with many awards in Missouri; and Gunther is a history professor at Duke University. It pleases Peck to no end that his children still spend time on the farm, as he and Ruth still do, for maple syrup making and timber harvesting.

And last, this: A graduate might discover among saved bits a blue examination book, the final in an upper-level course in Middle English literature. No copy of the questions, only the rush of answers, and not all of them correct, because Peck's exams have always been famously difficult.

"It's very hard," he would whisper, as though someone else had devised the test and he only sneaked a peek. Peck's written comments hop across the hurried essays, but there, at the end, is the approval every student seeks: ". . . with one of the highest quality." Praise, in its simplest form.

If we're lucky we encounter teachers, colleagues, and friends who help us decipher our way forward. And when we're truly blessed, there is that one, that singular one, whose own journey, by word and deed, stands as a beacon.

Russell Peck. One. Of the highest quality. R

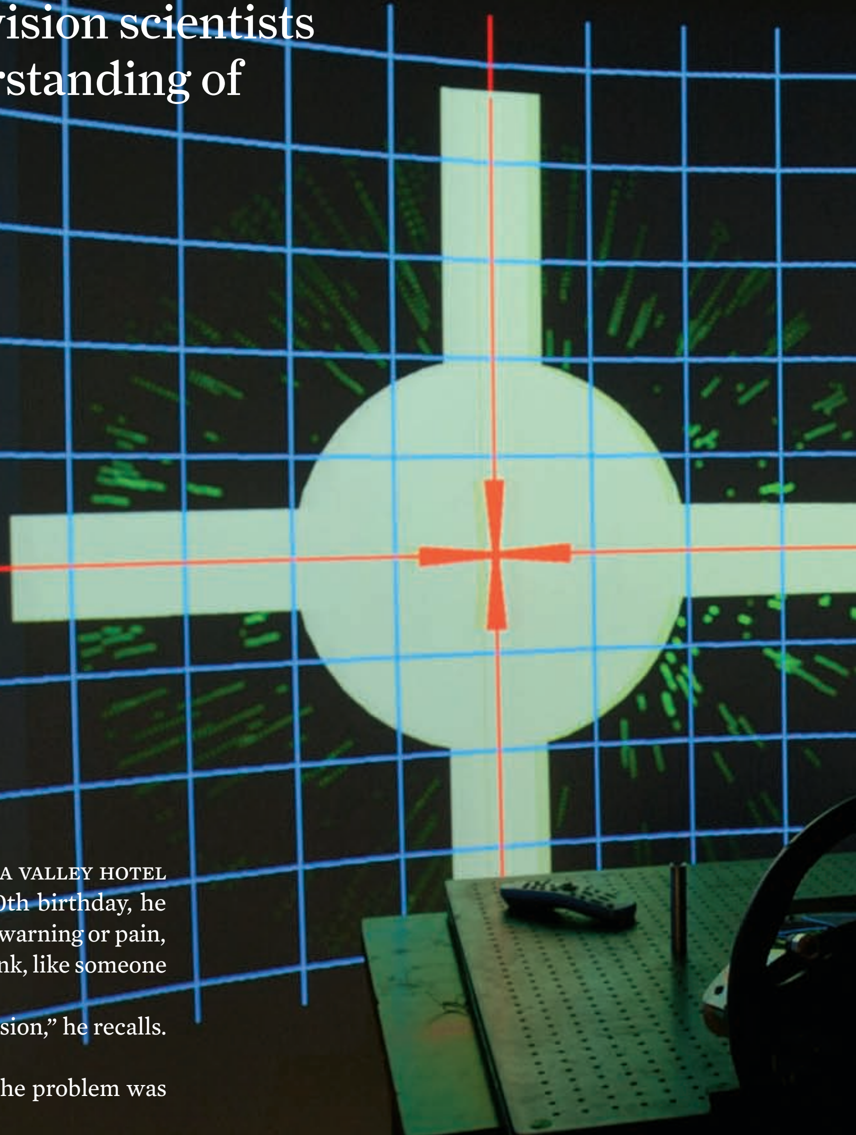
Myra Gelband '71 is a retired senior editor for Sports Illustrated.

ADAM FENSTER

The Mind's Eye

How do we transform an ever-changing jumble of visual stimuli into the rich and coherent three-dimensional perception we know as sight? Rochester vision scientists are helping reshape our understanding of how the brain 'sees.'

By Susan Hagen



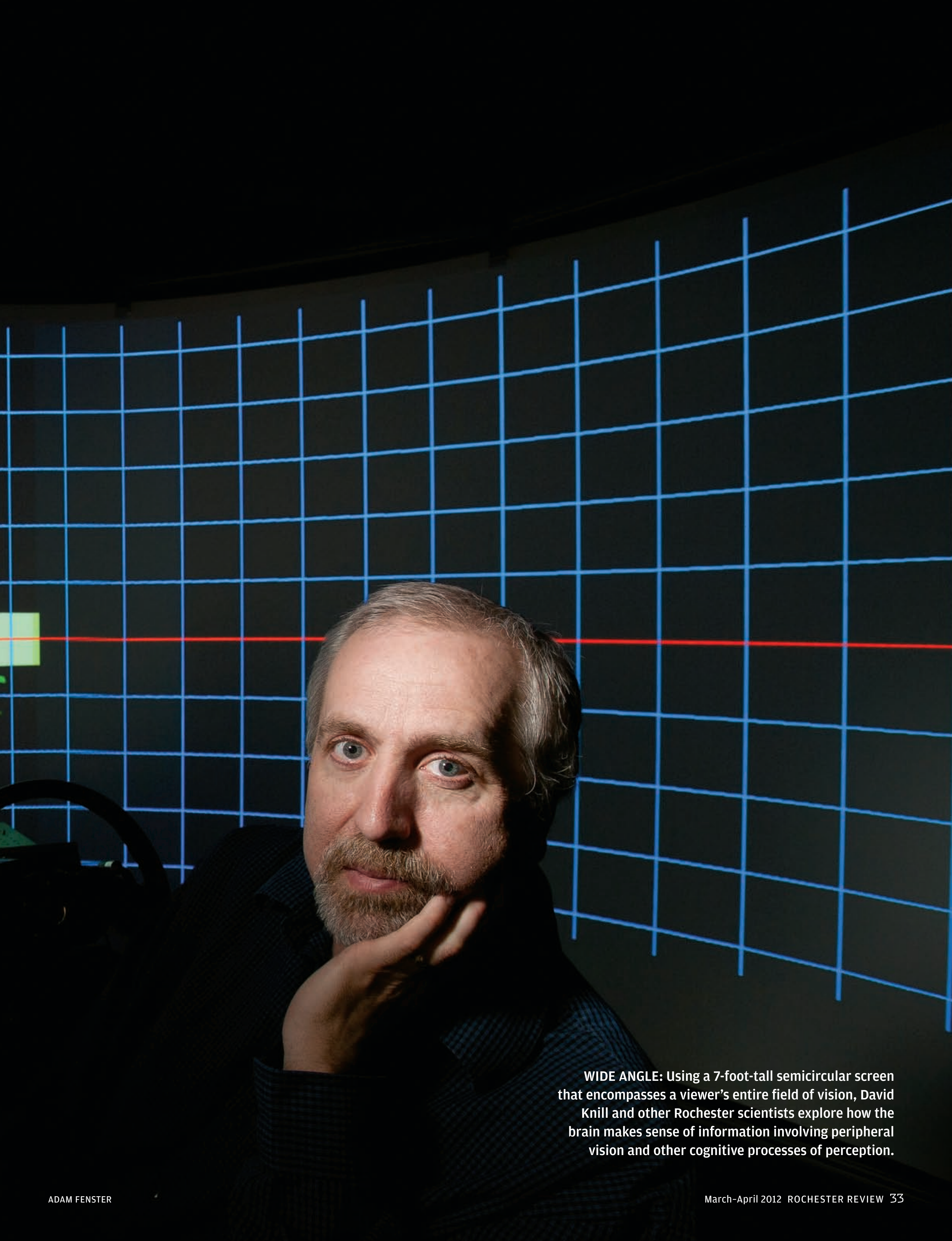
By the time James Risen arrived at the Napa Valley hotel his wife had booked in celebration of his 60th birthday, he knew something was terribly wrong. Without warning or pain, the right side of his field of vision had gone blank, like someone had pulled a curtain over the area.

"I could only see about half of my normal vision," he recalls. "It was like not getting the whole picture."

As he would soon learn from emergency room doctors, "The problem was not with my eyes. There was a problem with my brain."

Risen had experienced a stroke that damaged his visual cortex, causing blindness on the right side in both eyes. It's a common complication, estimated to affect up to 50 percent of people who suffer a stroke, and extremely disorienting.

"Every time I opened my eyes I was reminded that I had a severe visual problem," Risen says. When walking in crowded areas, people would just pop into sight, as if from nowhere, because he had no ability to detect objects or movement peripherally on the right side. Taking a hike in the woods was out of the question. "I might run into a tree or step in a pothole," he says.



WIDE ANGLE: Using a 7-foot-tall semicircular screen that encompasses a viewer's entire field of vision, David Knill and other Rochester scientists explore how the brain makes sense of information involving peripheral vision and other cognitive processes of perception.

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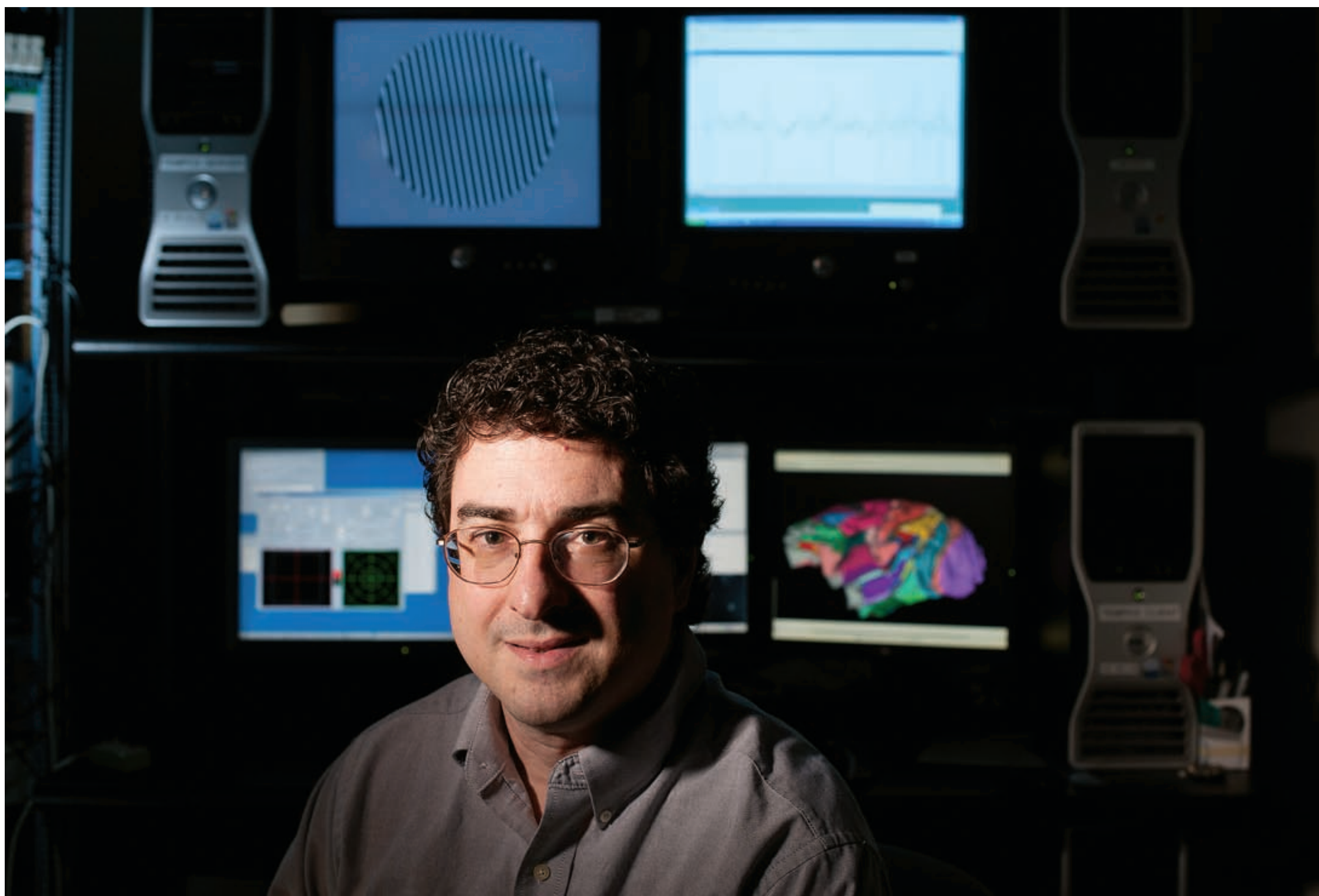


PARALLAX PARADOX: Greg DeAngelis is working to pinpoint the areas of the brain responsible for motion parallax—our ability to discern our three-dimensional relationship to objects around us based on our own motion and distance from the objects.

Even more unsettling was the message he received from his first visit to a neuro-ophthalmologist. The brain cells that process that portion of his vision were dead and doctors could do nothing to restore his sight. He was advised to adjust: stop driving, sell his house, and move downtown where he could catch a bus to his job as an administrator for a law firm in Columbus, Ohio.

For Risen, the loss of independence was "frightening." "I was very depressed."

Not long afterward, Risen became a participant in a University research program on human vision and began the long road to recovery. In the process, he also became part of the growing number of discoveries at Rochester that are helping to reshape our understanding of how the brain "sees." Using investigative tools that range from a room-sized virtual reality environment to microscopic electronic probes, scientists are exploring how our brains are able to transform the jumble of competing and rapidly changing sensory inputs from our eyes into the rich and coherent three-dimensional perception we know as sight. Their insights are helping to build a better appreciation for the brain's plasticity and leading to the development of life-altering vision therapies.

It's not surprising that Risen would land in Rochester for the latest in vision discoveries. The city's moniker is the World's Image Center and Rochester is home to Kodak, Bausch & Lomb, and Xerox, companies focused on optical engineering and optical systems, many of which are developed for use with the eye. Today, even as these corporations downsize, the city boasts the headquarters of more than 80 businesses focused on optics and imaging.

For almost a half century, the University's Center for Visual Science has coupled this local expertise with the skills of researchers across disparate disciplines. Center founder Robert Boynton was a professor of both psychology and optics, two very different fields merged under the rubric of vision.

The center brings together 32 faculty members from engineering, optics, neurology, ophthalmology, brain and cognitive sciences, and neurobiology and anatomy. Through funding from the National Eye Institute and the Office of Naval Research, the center provides access to shared experimental facilities and to technical experts like Keith Parkins, one of its senior programmers who creates computer code for everything from 3-D and head-mounted displays to see-through augmented reality systems.

"It's a kind of beautiful synergy between basic science, engineering, and medicine—all three," says David Williams, center director for the past 21 years and the dean for research for Arts, Sciences, and Engineering.

"There is actually a pretty big cultural gulf between these enterprises," he says. In most universities, engineers would have little experience with patients, and physicians, little exposure to equip-

ADAM FENSTER

LONG VIEW: As Krystel Huxlin (standing) and neuroscience graduate student Anasuya Das look on, Maurice DeMay of Rochester demonstrates the peripheral vision exercises he does to strengthen his visual abilities after a stroke damaged his visual cortex.

ment design and basic science. But through the center, clinicians, researchers, and designers meet regularly to share experimental results, ideas, and sometimes even study participants.

The center is a recognized leader in vision research with its members publishing in journals like *Nature, Current Biology, Nature Neuroscience,* and the *Journal of Neuroscience.* If the findings that flow out of this collaboration confirm one thing, it's that the abilities we take for granted—like sight, depth perception, and hand-eye coordination—are some of the most biologically complex tasks that we undertake as humans.

"More than 50 percent of the cortex, the surface of the brain, is devoted to processing visual information," points out Williams, the William G. Allyn Professor of Medical Optics. "Understanding how vision works may be a key to understanding how the brain as a whole works."

"When scientists back in the 1950s met to talk about artificial intelligence, they thought that teaching a computer to play chess would be very difficult, but teaching a computer to see would be easy," says center member David Knill, professor of brain and cognitive sciences.

"Why? Because chess is hard for humans. Only the rare human with lots of practice becomes a master. But seeing appears easy for us. Even a baby can see. For that matter, insects, birds, and fish can see—albeit differently than humans. Some see better, in fact."

What researchers now know is that human vision is incredibly complicated. While we've developed software that can beat the pants off the best chess master and best our brightest at *Jeopardy!,* computer models have barely scratched the surface of human vision.

"We mistakenly think of human vision like a camera," says Knill. "We have this metaphor of an image being cast on the retina and we tend to think of vision as capturing images and sending them to the brain, like a video camera recording to a digital tape."

But human vision is more akin to speech than photography. From infancy, our brain learns how to construct a three-dimensional environment by interpreting visual sensory signals like shape, size, and occlusion, how objects that are close obstruct the view of objects farther away. Even nonvisual cues, such as sounds and self-motion help us understand how we move in space and how to move our bodies accordingly.

"We learn to see," says Knill. "It's something we have spent our lives learning to do, so we can't imagine not understanding what we are seeing."

That sight is constantly adapting underpins some of the most exciting discoveries in vision science at Rochester. For example, scientists have long assumed that an individual's basic visual sensitivity, such as the ability to discern slight differences in shades of gray, was fixed. Not so, found Daphne Bavelier, professor of brain and cognitive sciences. In a series of ongoing studies on the effects

ADAM FENSTER

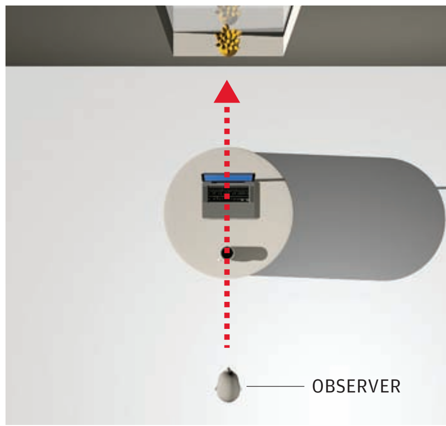
Motion Parallax: Living in a 3-Dimensional World

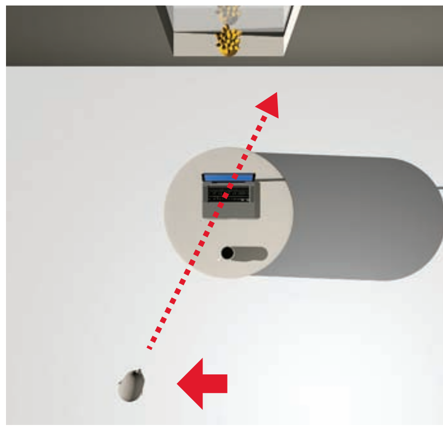
Our eyes and brain use several visual cues to perceive depth and estimate the distance of objects in our environment. One of these cues is motion parallax, which causes objects to seem to move at different rates and in different directions in response to the movement of an observer.

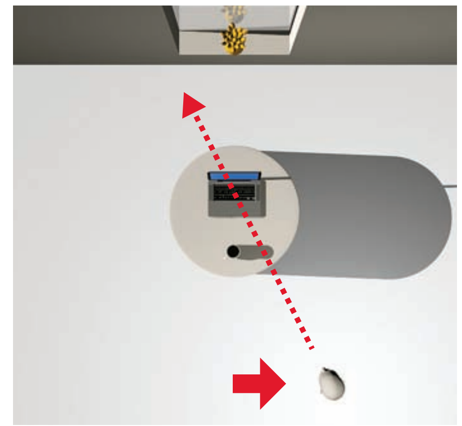
Observer at Rest
The main depth cues here are perspective and occlusion, or the obstruction of far objects by those closer to the observer.

Observer Moves Left
Motion parallax causes far objects to appear to move in the same direction—to the left—while near objects move in the opposite direction.

Observer Moves Right
Now, motion parallax causes far objects to appear to move to the right, while near objects appear to move to the left.







SOURCE: Greg DeAngelis, Department of Brain and Cognitive Sciences/Center for Visual Science

of playing video games on visual perception, Bavelier has shown that very practiced action gamers become 58 percent better at perceiving fine differences in contrast. Such visual discrimination, she says, is the primary limiting factor in how well a person can see.

"Normally, improving contrast sensitivity means getting glasses or eye surgery—somehow changing the optics of the eye," says Bavelier. "But we've found that action video games train the brain to process the existing visual information more efficiently, and the improvements last up to years after game play stopped."

More recently, Bavelier and Rochester cognitive scientist Alexandre Pouget found that playing action video games can also train the mind to make the right decisions faster. Video game players in their study developed a heightened sensitivity to what was going on around them, a benefit that could spill over into such everyday activities as driving, reading small print, keeping track of friends in a crowd, and navigating around town.

"It's not the case that the action game players are trigger-happy and less accurate: They are just as accurate and also faster," Bavelier says. "Action game players make more correct decisions per unit time. If you are a surgeon or you are in the middle of a battlefield, that can make all the difference."

Building on Bavelier's discovery that video gaming can teach the visual cortex to make better use of the information it receives, Bavelier and Knill have begun research on how to retrain stereopsis, the brain's ability to perceive depth by combining the slightly disparate views it receives from each eye, in patients who are stereo-blind. Like the effects in 3-D movies, stereopsis is what makes a solid object seem to "pop out" and underlies our ability to judge distances very precisely, such as when we thread a needle or hit a ball, says Knill.

An expert on depth perception, Knill studies how the brain uses such visual cues to control our behavior in the world. How, for example, does the brain incorporate information from shape, size, shadow, orientation, and position of objects to guide hand movements? What signals allow us to know exactly how far away a cup is on the table, and to grasp for it with such amazing accuracy?

For the stereopsis study, Indu Vedamurthy, a postdoctoral fellow in the center, has designed a 3-D computer game using computer animations, two-way mirrors, and eye-tracking devices, in collaboration with Bavelier and Knill. Up to six days a week for an hour each time, study participants who have poor stereovision do their best to squash a virtual frog. The catch is that the game removes all the other reminders that we typically rely on for depth, like perspective and relative speed and motion, and requires the player to rely solely on stereoscopic cues to judge the frog's location. The team is hopeful that by forcing participants to focus on these cues, they will strengthen their ability to perceive depth.

Greg DeAngelis also explores depth perception but at the basic biological level of single neurons. The professor and chair of brain and cognitive sciences is an expert on motion parallax, a depth cue that rises out of the viewer's own movements.

STEVE BOERNER FOR *ROCHESTER REVIEW*

With motion parallax, the direction and speed an object moves on the retina is directly related to its distance from the viewer. As we move, near objects seem to move in the opposite direction of our head, while further away objects move with us.

"Motion parallax cues are driven by the geometry of the viewing, so it is potentially a very precise measure of distance and a powerful cue to depth," DeAngelis says. "The challenge for us was to understand where in the brain there are neurons that can actually extract information about depth from motion parallax, and until a few years ago, nobody knew."

To solve the puzzle, his team created a virtual reality system with an animation that simulated the movement of objects but in a pattern that was ambiguous unless the viewer moved from side to side. They then measured the firing of neurons in the middle temporal area of the brain, a small area known for processing visual motion.

When individual neurons in this region received only the visual cues from the animation, they fired indiscriminately. But when signals from the movement of the eyes were added, the neurons fired in a way consistent with the three-dimensional layout of the scene.

The experiment demonstrates, says DeAngelis, how single neurons in the brain combine visual images with information about the movement of the eyes to compute depth. Our perception of three dimensions does not rely solely on visual features like shape or occlusion or even on binocular vision.

"The brain uses lots of other signals to make sense of the visual input and one of those is the movement of the eyes," he says.

"We've learned a lot about the function of different areas of the brain over the years by observing humans with brain damage from lesions and strokes," he says. But such nerve cell loss is typically not confined to a specific region. His lab is able to temporarily inactivate tiny areas of the cerebral cortex only 1 millimeter in diameter, then observe and map the functions of discrete areas with precision.

SUCH ADVANCES, DEANGELIS ANTICIPATES, WILL HELP TO decode how the brain understands even more complicated aspects of depth, like the perception of undulating surfaces and their orientation to the viewer.

Insights into visual perception are important to understanding who we are as a species, researchers say.

"Humans are very visually dominated creatures," says DeAngelis. "If you compare humans to mice, mice have pretty lousy vision. They rely on whisking, and tremendously on olfaction. Not that our other senses are not important, but a lot of our behavior, like the ability to manipulate things with our hands and work with tools, relies heavily on vision."

After losing half of that ability, Risen couldn't agree more. He came to Rochester to work with Krystel Huxlin, an associate professor of ophthalmology and of brain and cognitive sciences who has pioneered the use of vision exercises to help restore sight lost from brain damage caused by a stroke. "The brain is like a big muscle, in its own way, and it requires exercise, and if you want to recover functions, you have to exercise it," says Huxlin.

The use of brain therapy was a radical idea in medical and scientific circles not too long ago, one that was met with considerable skepticism. Once nerve cells die, they don't come back, no matter how much they are stimulated.

But Huxlin's work has not only shown improvement in vision, it's also helping scientists better understand the brain's powerful ability to relearn a skill using alternative neural pathways if given the right coaching.

To rebuild peripheral visual perception, study participants stare at a tiny target in the center of a computer screen while a quarter-sized pattern of moving dots flash for half a second in their blind field. Without glancing at the moving pattern, participants try to distinguish in which direction the dots are drifting. A second exercise uses a circle of bars. The goal is to identify whether the bars are oriented vertically or horizontally.

Compared to running laps and lifting weights, leaning on a chin rest and staring at dots doesn't sound exactly taxing. Wrong, say Risen and others participants.

"It is very tedious, and it's focus, focus," says Risen, who has done the exercises five days a week at home for the past 18 months. "It's very easy to cheat even if you don't want to" by inadvertently looking at the moving dots, he says. The sessions include 300 trials, two times a day, a process that takes about an hour. Progress requires months of consistent practice. "If I worked out as much as I do this, I'd be an Adonis," he says.

"The reason this works is because we are hammering at the exact same spot in the visual field, and at the same neural circuits, over and over again," says Huxlin. Although the stroke has destroyed the cells that typically transmit visual signals, other, weaker pathways also carry visual stimuli. "What we think is happening is that the training is basically reawakening or driving these alternative pathways harder to the point that the information then reaches consciousness."

Once the brain recovers the ability to detect motion stimuli from the exercises, most other aspects of vision recover automatically, she says. But does the improvement that Huxlin is able to measure precisely on the computer screen translate to a real-world ability to understand the three-dimensional world? That's one of the questions Knill is working with Huxlin to explore. To study individuals with vision damage similar to Risen's, Laurel Issen, a graduate student working with Knill and Huxlin, employs a virtual reality system. Participants sit in front of a 7-foot-tall, semicircular screen that encompasses their entire of field of vision. There, they experience a pattern of moving dots.

Think of sci-fi movie animations, in which space explorers fly through an asteroid field, says Knill. The dots move past in ways that simulate physical movement in a certain direction. The beauty of this elaborate setup, he notes, is that researchers can manipulate the pattern of dots in the subject's blind field. Eventually Knill and Issen plan to test participants before they begin Huxlin's regimen of eye exercises, and again after months of therapy to document improvements in the damaged areas.

In the meantime, Risen is thrilled with the personal measures of his recovery. He's experienced "significant improvement" in his vision and his "life is much easier now. I'm more comfortable in my environment."

Last September he officially cleared the hurdle he had been dreading for three years. He passed the peripheral vision test for his driver's license, which involves being able to detect a flash of light to the side.

"When I saw that light, I was the happiest man in the world," he says.

Susan Hagen writes about the social sciences for University Communications.

Hyam Plutzik The namesake of the English department's celebrated reading series, the poet began with readings of his own work as a faculty member from 1945 to 1962.

UNIVERSITY LIBRARIES/DEPARTMENT OF RARE BOOKS, SPECIAL COLLECTIONS, AND PRESERVATION

LITERARY LIGHTS

Over the past five decades, the Plutzik Reading Series has brought some of literature's biggest names to campus to carry on its namesake poet's mission to share the power of poetry.

By Valerie Alhart

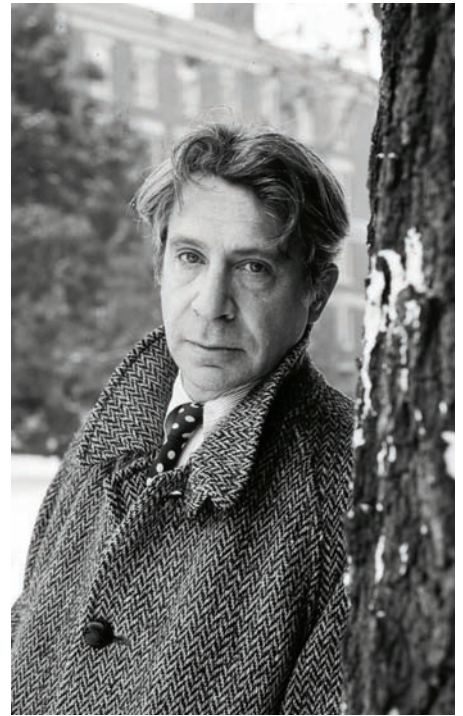
The roster reads like a Who's Who of modern literature: James Baldwin, Ted Hughes, Robert Lowell, Bernard Malamud, Michael Ondaatje, Adrienne Rich, Salman Rushdie, Allen Ginsberg, Rita Dove, J. M. Coetzee, W. S. Merwin, Elizabeth Bishop, John Ashbery, Anne Sexton, and John Updike, to name a few.

Since 1962, more than 300 poets, novelists, and nonfiction writers have been guests of the English department's Plutzik Reading Series, sharing their work with students, faculty, and area community members in one of the nation's longest-running collegiate reading programs.

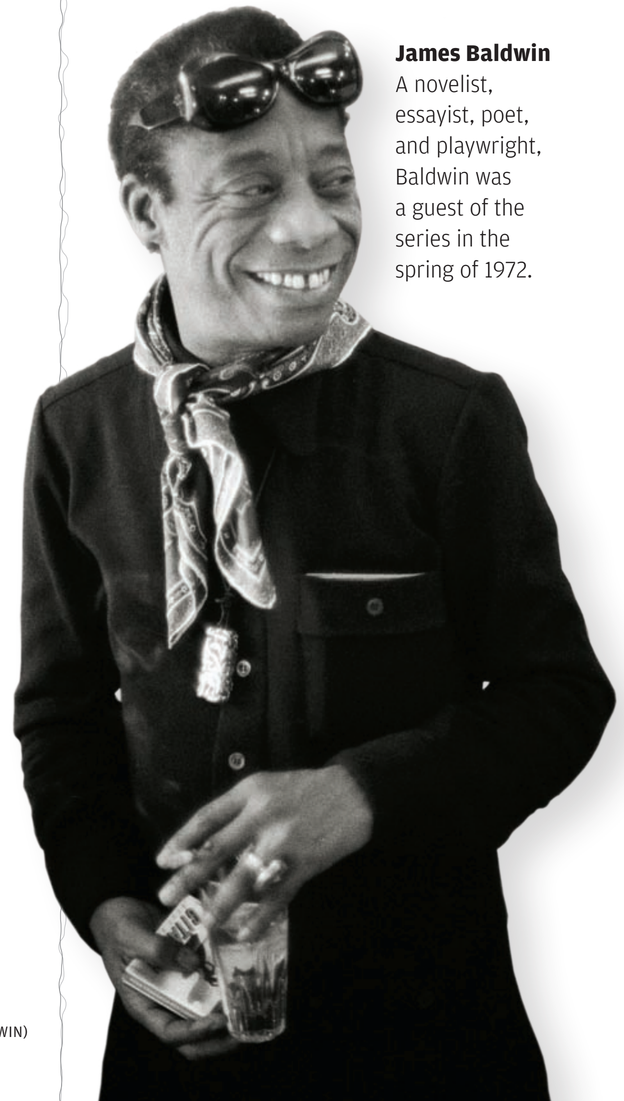
Plutzik, who joined the Rochester English faculty in 1945, made it his mission to ensure that students would be able to appreciate poetry not only on the page, but also as a performative act, in which listeners would experience the excitement of an impassioned author at a podium. Although Plutzik started small—reading his own poetry to students in the Welles-Brown Room in Rush Rhees Library—his insistence on poetry as an experience launched a series that has featured the foremost names in literature, including Nobel laureates, Pulitzer Prize-winning writers, and National Book Award winners.

"He really invented poetry readings at the University of Rochester," says Jarold Ramsey, professor emeritus of English and a former director of the series. "And the faculty of the English department have always felt that there was an important connection between being able to read poems on the page and being able to hear them spoken."

Over the course of 2011–12, the University and the Hyam Plutzik Centennial Committee are celebrating *(Continued on page 42)*



Anthony Hecht A frequent reader in—and a former director of—the series, Hecht won the Pulitzer Prize for *The Hard Hours* in 1968 as a Rochester English professor.



James Baldwin A novelist, essayist, poet, and playwright, Baldwin was a guest of the series in the spring of 1972.

UNIVERSITY LIBRARIES/DEPARTMENT OF RARE BOOKS, SPECIAL COLLECTIONS, AND PRESERVATION (HECHT); CORBIS (BALDWIN)

NOTABLE: Grotz is earning accolades for *The Needle*, her second collection of poetry.

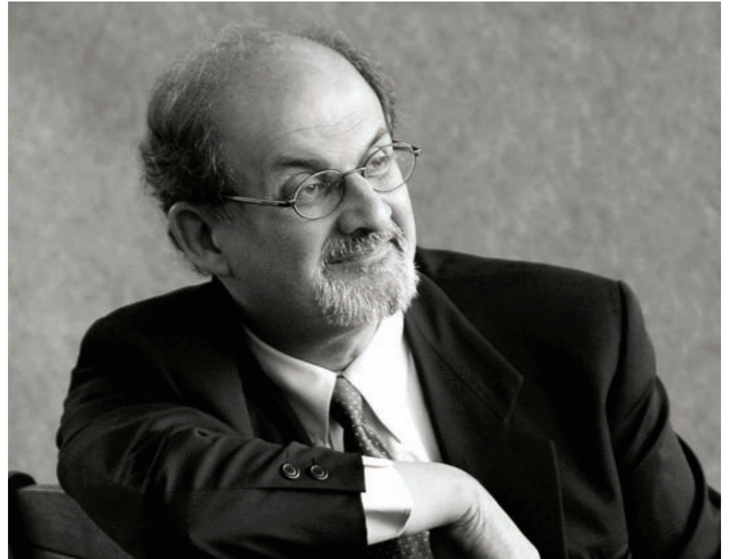
POETIC PRAISE

Rochester Poet's Work Named Among Nation's Best

A 2011 book of poems by Jennifer Grotz, assistant professor of English, is earning national recognition.

The Needle (Houghton Mifflin Harcourt), Grotz's second collection of poetry, was cited by National Public Radio as one of the five best books of poetry published in 2011, and the *Washington Post* noted that the collection should establish Grotz "as one of America's best young poets." In addition, her poem "Poppies," originally published in the *New England Review,* was selected for inclusion in the anthology *The Best American Poetry 2011* (Scribner).

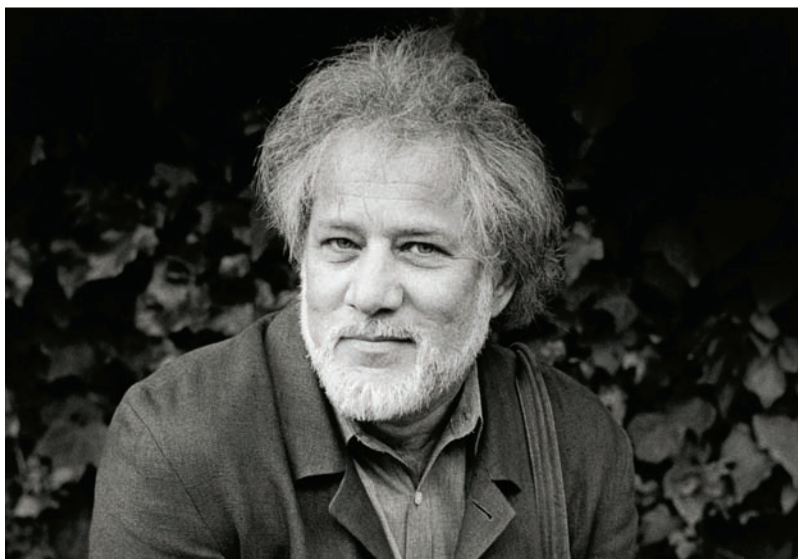
Grotz, who also teaches in the University's literary translation studies program, is one of four creative writers on the English department faculty who help coordinate the Plutzik series. The others are poet and critic James Longenbach, the Joseph H. Gilmore Professor of English; novelist Joanna Scott, the Roswell S. Burrows Professor of English; and fiction writer Stephen Schottenfeld, assistant professor of English.



Salman Rushdie The internationally acclaimed, Booker Award-winning author of *Midnight's Children* spoke as part of the series during Meliora Weekend in 2003.

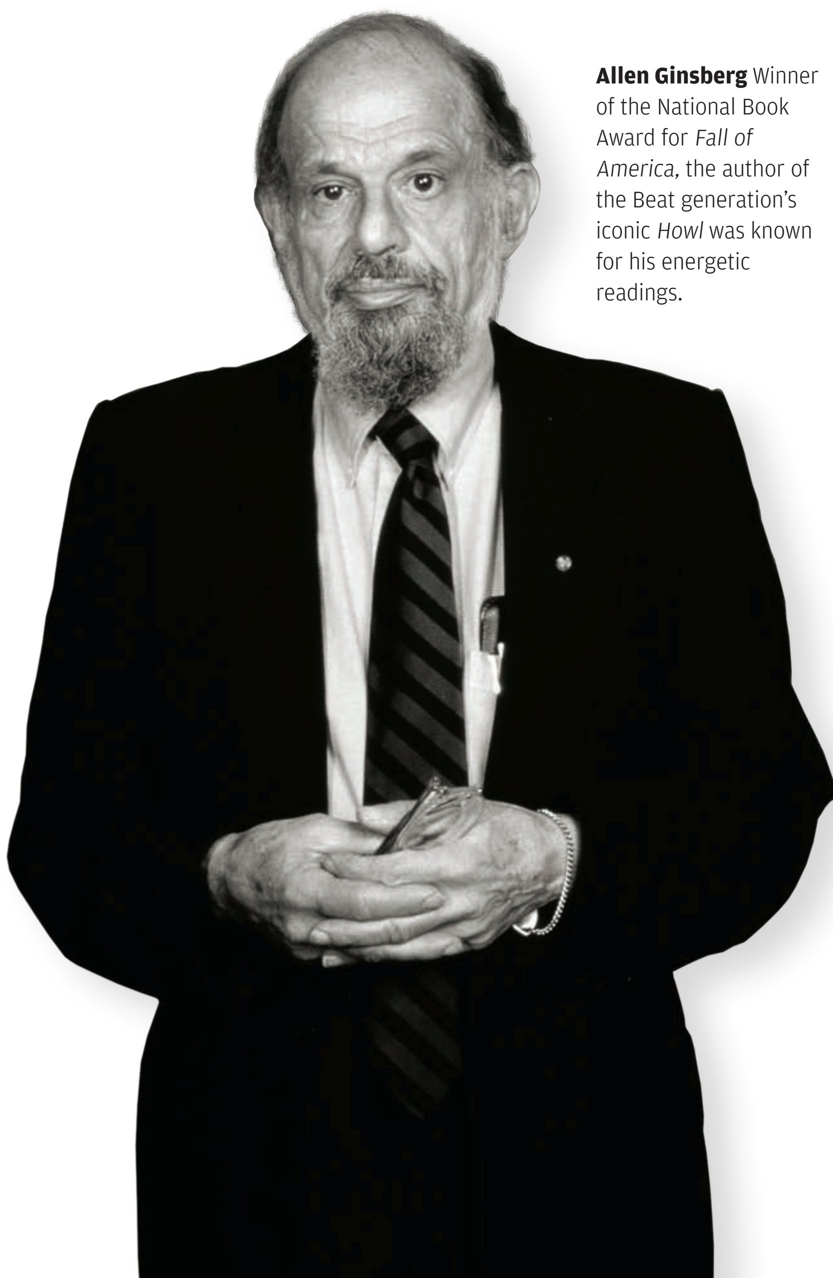
Rita Dove The first African-American woman to serve as U.S. poet laureate, the Pulitzer Prize winner read from her work as a guest during Meliora Weekend in 2004.

ADAM FENSTER (GROTZ); CORBIS (ALL OTHERS)

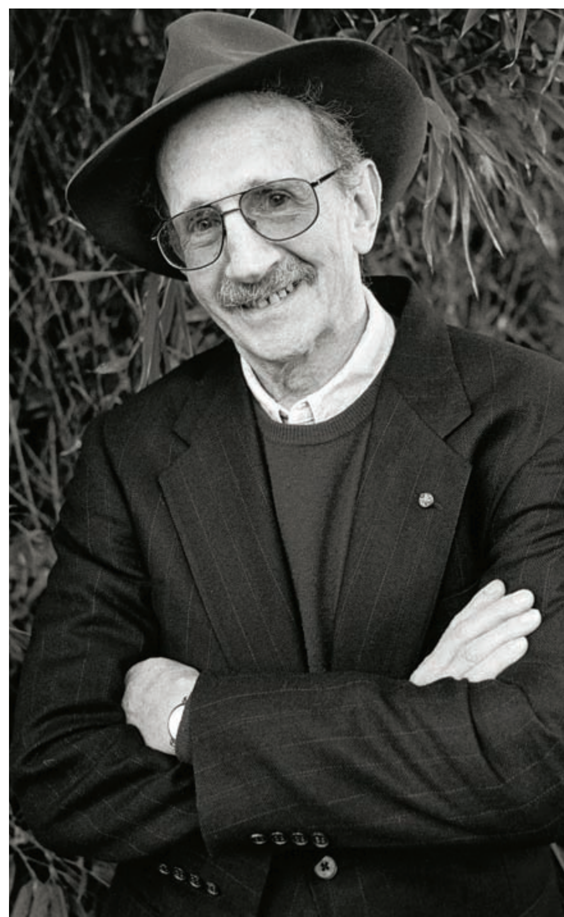


Michael Ondaatje The Booker Award–winning author of *The English Patient* was a 1975 guest.

Adrienne Rich A guest in 1963, Rich received the National Book Award in 1974 for her collection *Diving into the Wreck*.



Allen Ginsberg Winner of the National Book Award for *Fall of America*, the author of the Beat generation's iconic *Howl* was known for his energetic readings.



Philip Levine The current U.S. poet laureate and Pulitzer Prize–winning poet will read from his work on campus in April to mark the 50th anniversary of the series.

MELIORA MOMENTS

Plutzik Memories

'I thank him still for showing me how to tell students that they must find their own voice.'

It's amazing to me how vivid my memories are of Professor Hyam Plutzik of the English department, even at 81.

When I think about a particularly significant moment of personal growth during my years at Rochester, what comes immediately to mind is not a lecture or a class but Plutzik's review of the student literary magazine in which I had published a story and some poems.

I was a philosophy major but, like most of my friends, I had literary aspirations—"pretensions" would be a better word. And that is what Plutzik recognized.

I can still recall his exact words in that review: "Mr. Zweig must take care to avoid the least suggestion of pretentiousness in his work."

Deflating, when I was dying for praise. Oh, there were some favorable comments as well, a concession that my story (it was called "You Can Stop Crying Now," a title taken from a poem by Kenneth Patchen) "managed to win a certain victory in the end."

But what counted for me was Plutzik's seeing my flaws as a writer, my temptation to mimic the language and diction of others. Plutzik set me straight.

PLUTZIK PUPIL: The poet influenced how Zweig approached his own teaching as a professor.

His honest, accurate criticism taught me more, as a future teacher and scholar, than any applause would have done. The page on which his review was printed has long disintegrated (along with my undergraduate scribbling) but I thank him still for helping me to see where my talents did not lie, and for showing me how to tell students I have myself had to review that they must find their own voice. —ARNULF ZWEIG '52

Zweig is a professor emeritus of philosophy at the University of Oregon. For more Meliora Moments, and to submit your own, visit http://meliora.rochester.edu.

Anne Sexton A few months after her 1966 reading, Sexton won the 1967 Pulitzer Prize for *Live or Die.*

Robert Lowell The 1970 guest was a two-time winner of the Pulitzer Prize, a National Book Award winner, and U.S. poet laureate.

(Continued from page 39) the 50th anniversary of the series and the centennial anniversary of Plutzik's birth with several special events and exhibitions. Last fall, Wesleyan University Press released a special edition of Plutzik's second book of poetry, *Apples from Shinar.* The new edition includes Plutzik's previously unpublished introduction, and a new afterword by David Scott Kastan of Yale University.

Several events this spring will mark the anniversary. In March, poet and critic Susan Stewart will present the George Ford Memorial Lecture. Later in March, Nigel Maister, artistic director of the International Theatre Program, will present a dramatic reading of Plutzik's long poem, *Horatio.*

And in April, Pulitzer Prize winner Philip Levine, the current U.S. poet laureate, will read from his work. From the podium of the Welles-Brown Room, he will add his name to a storied list of poets and writers. Ⓡ

Valerie Alhart writes about the humanities for University Communications. For more about the Plutzik anniversary, visit www.hyamplutzikpoetry.com.

SHANNON TAGGART FOR *ROCHESTER REVIEW* (ZWEIG); CORBIS (SEXTON, LOWELL)