



JOURNAL



JOHN ARBONOWSKI

Lights, camera, action

Chemistry labs in Metcalf provided just the right 1950s feeling for the filming of a documentary about researcher Rosalind Franklin, whose work contributed to the Nobel Prize-winning model of DNA created by Francis Crick and James Watson.

Gary Glassman, left, executive producer of the documentary and owner of Providence Pictures, works with Leah Serinsky, a student at

Mount Holyoke College who is playing Franklin. Historians argue that Franklin's contributions were never properly credited at the time.

The Metcalf lab space is slated for renovation. The documentary, being made for the PBS series "Nova," is expected to air in April to commemorate the 50th anniversary of the Watson-Crick discovery.

Randall Kennedy, N. Scott Momaday on campus March 3, March 6

Randall Kennedy, March 3

Noted Harvard Law School Professor Randall Kennedy will give the annual Martin Luther King Jr. Lecture on Monday, March 3, at 4 p.m. in Salomon Center. He will speak on "Marriage and the Politics of Race in America."

In his most recent book, "Interracial Intimacies: Sex, Marriage, Identity, and Adoption," Kennedy examines the historical, sociological, legal and moral issues surrounding interracial relationships. He is also the author of "Race, Crime, and the Law," which was awarded the 1998 Robert F. Kennedy Book Award, and "Nigger: The Strange Career of a Troublesome Word." His writing has appeared in a wide range of scholarly and general interest publications, including The American Lawyer, Atlantic Monthly, The Boston Globe, The New Republic, The New York Times, Time, The Wall Street Journal and The Washington Post. He has also written for and serves on the editorial boards of The American Prospect, Dissent and The Nation.

Kennedy teaches courses on contracts, criminal law and the regulation of race relations. He is a member of the American Law Institute, the American Academy of Arts and Sciences and the American Philosophical Association.

The lecture is free and open to the public. For more information, call 863-2474.

N. Scott Momaday, March 6

Pulitzer Prize-winning novelist N. Scott Momaday will speak on "Native American Oral Traditions: The Stories and Storytellers" on Thursday, March 6, at 6:30 p.m. in Salomon Center.

Momaday, who won the Pulitzer Prize for his novel "House Made of Dawn," is a poet, playwright, painter and storyteller, as well as a professor of English and American literature. A Kiowa born in the Oklahoma Dustbowl, he was raised on reservations in the Southwest, steeped in oral tradition.



Kennedy



Momaday

He is the author of numerous books and articles, and his writings have been translated into French, German, Italian, Russian Japanese and Spanish. His paintings, drawings and prints have been exhibited throughout the United States and abroad. He has been a commentator on National Public Radio's "All Things Considered," and he is the narrator of the PBS "American Experience" special, "Last Stand at Little Bighorn," and a featured commentator on the PBS series "The West," produced by Ken Burns.

Momaday currently is Regents Professor of the Humanities at the University of Arizona.

The lecture, which is free and open to the public, is sponsored by the Office of the President, the Third World Center and Native Americans at Brown. For more information, call 863-2474.

Scientists, artists partner to create virtual Petra

Digital technology will electronically preserve the rapidly-deteriorating temple and its artifacts.

BY MARY JO CURTIS

Professor Martha Joukowsky has spent more than 10 years excavating the Great Temple of Petra, racing against time and the ravages of the desert to uncover the architecture and artifacts of the ancient Jordanian site.

Now, supported by a grant of more than \$2 million from the National Science Foundation, Joukowsky and her students from the Center for Old World Archaeology and Art are receiving some unusual and innovative assistance from a team of scientists and artists. Together they are using technology to capture and restore aspects of Petra for future generations.

Led by principal investigators and Professors of Engineering David Cooper and Benjamin Kimia, a team comprised of Professor of Applied Mathematics David Mumford, Professor of Visual Art Richard Fishman, post-doctoral research associates Frederic Leymarie and Pierre-Louis Bazin, and New York University Professor of Computer Science and Mathematics Demetri Terzopoulos is collaborating with Joukowsky in a multi-faceted project that bridges research in the physical sciences and humanities.

The group is building upon work begun three years ago with funding from an initial \$1.25 million NSF grant. Cooper, Joukowsky, Kimia, Mumford, Assistant Professor of Computer Science David Laidlaw and then-graduate students Leymarie and Eileen Vote collaborated to digitally represent and manipulate two- and three-dimensional shapes from data recorded by laser range scanners and digital and video cameras – and then apply those theories to archaeological site analysis.

One dramatic result of that effort was the development of an immersive virtual reality rendering of the Great Temple in Brown's supercomputing lab, the Cave. In this second phase, the team will create a "fish tank" virtual reality, that is, a desktop version that will be less expensive and more readily available to students and researchers.

"The Cave demonstrates the usefulness of this, but it needs to be more practical, so we're developing a prototype of that technology," said Leymarie, the project manager.

During the decade Joukowsky and her colleagues have spent in Petra, they've unearthed more than 10,000 architectural fragments – and nearly 326,000 cultural objects.

Continued on page 2

SAC sponsors President's Forum for staff March 7

The President's Staff Advisory Committee (SAC) will sponsor a President's Forum for all University staff beginning at noon on Friday, March 7, in Sayles Hall.

President Simmons is expected to reflect on relevant University concerns. She also will respond to questions that have been submitted in advance to SAC at sac@brown.edu, or sent by campus mail to Box 1955.

For more information about the SAC, send e-mail or visit the SAC Web site at www.brown.edu/sac.

Awards and Honors



Walter Donat, M.D., received the annual Milton Hamolsky Outstanding Physician Award from the medical staff of Rhode Island Hospital. A clinical associate professor of medicine and a pulmonologist, Donat was praised by colleagues for "his tireless dedication to patients, his pursuit of knowledge and his commitment to teaching the next generation of physicians." The award is presented annually "to a physician who has made exceptional contributions to medicine, medical education and research, who has demonstrated leadership, and who has been an exemplary role model."

W. Curt LaFrance Jr., M.D., received the annual Career Development Award from the American Neuropsychiatric Association (ANPA). The award honors a person who shows exceptional promise in a career in neuropsychiatry and the clinical neurosciences. LaFrance is a postdoctoral research fellow at the Medical School and Rhode Island Hospital. He is a staff neurologist and staff psychia-

trist at both Rhode Island Hospital and Butler Hospital, and is a staff psychiatrist at The Miriam Hospital. The award will support costs associated with participation in two consecutive annual meetings of the ANPA, and will establish an informal mentoring relationship between LaFrance and two ANPA Fellows.

On the Road



The Workshop on Neural Coding at the Mathematical Biosciences Institute at Ohio State University united neuroscientists, mathematicians, engineers and computer scientists in exploration of how the brain codes information. **Michael Black**, associate professor of computer science, attended the workshop, held Feb. 10-14. He gave an invited plenary talk in which he presented statistical approaches for modeling the motor cortical encoding of arm motions and decoding algorithms that translate the activity of a population of neurons into a signal that can be used to control a brain-machine interface. This work is part of the neural prosthesis project in the Brain Sciences Program at Brown in collaboration with Brown professors **John Donoghue** and **Elie Bienenstock** and a number of graduate students.

People



In his State of the State Address on Feb. 4, Rhode Island Governor Carcieri mentioned and introduced **Anne DeGroot, M.D.**, assistant professor of community health. Carcieri cited DeGroot's work developing an HIV/AIDS vaccine, and her local company, EpiVax, as local success stories. "We need more pioneers like Dr. DeGroot," the governor said.

Correction

An image of a fly brain was misidentified in the print edition of the Feb. 21 George Street Journal.

Brown in the News

From Voice of America Feb. 20: John Mustard, associate professor of geological sciences, was a participant in a Feb. 19 session at NASA headquarters in Washington, D.C., on recent images from the Mars Odyssey spacecraft.

Those images, combined with observations from the Mars Global Surveyor, suggested that melting snow likely caused numerous eroded gullies in the mid-latitudes of the Red Planet.

As reported by VOA: "Several geologists not involved with the research believe the snow melt explanation is plausible, although some are less convinced than others. Among the more skeptical is Brown University geologist John Mustard, who does not reject the theory, but seeks direct evidence. 'For example, does it explain all of the observations that have been made of the gullies to date? And why do we see these only on steep slopes? Wouldn't shallow slopes also have been conducive to the flowing of water? Is it the final word? Well, I don't think so,' says Mr. Mustard. 'But I think it opens up intriguing new areas that we can take planetary science and the exploration of Mars.'"

Mustard also was quoted in a similar story that appeared in the **Feb. 20 New York Times**.

Brown faculty are often quoted in the media. For regular online updates, go to Brown in the News at http://www.brown.edu/Administration/News_Bureau/FYI/FYI.html



The multidisciplinary Petra team has created new computer programs to reassemble puzzle-like pieces and project how the original objects may have looked. Richard Fishman sculpted masks based on the projections.

Petra

Continued from page 1

"Petra is very rapidly eroding, so the team is eager to build accurate models" of what's there, said Cooper. "Some of the geometry has been recorded pretty accurately with surveying equipment, but that's very time consuming. We want to do it with new techniques and get data faster and much cheaper with video and digital cameras, instead of long-range scanners, to make it more automated."

Reconstructing pots from the thousands of excavated sherds may take anywhere from a few hours to a few days – or may be impossible, Kimia noted. New computer programs, however, reassemble the puzzle-like pieces, offering mathematical probabilities for each potential match. Using various mathematical models, the team is also developing programs that can project how the original objects are likely to have looked – even when only a few pieces are available.

"You can get a fair amount of information from an individual piece," noted Cooper. The shapes – eroded rectangles, spheres and cylinders, as well as the irregular and free-form – provide rich data for developing shape theories.

That effort is enhanced by Fishman, who advised the scientists on the artistic process; he's now collaborating with them on digital virtual sculpting. Terzopoulos, a computer vision and animation specialist, was brought in to make inferences about the appearances of people and mammals of the period.

"With a 3-D reconstruction of the site, we want to have animated reconstructions of people and animals there – and maybe eventually tie this to forensics, using bones from the site," Cooper explained.

"We work on state-of-the-art multimedia trying to make the computer do what the senses do automatically – we want to make the computer perceive, to bring cognition into the process," said Kimia.

"It's been a real synergistic effort," Cooper said. "It looks as if these tools will be very powerful in helping archaeologists to extract more information from finds and make it easier to analyze these things... this could really be a revolutionary contribution to archaeology."

"The gains are immeasurable, both short term and long term," agreed Joukowsky. "I know our use of technology has improved learning."

While there are a few similar projects elsewhere – a team from Columbia is using earth-penetrating radar to scan sites beneath the surface in Egypt to identify potential digs, and another from Stanford is using scanning technology to reassemble an ancient 10-by-30-foot map of Rome – the Brown scholars are pioneers, according to Cooper.

"In terms of automatically reassembling 3-D shapes from fragments, we are further along than anyone else in the world," he said.

In addition to the archaeological applications, the project is aiding the development of a common language and understanding among the collaborators. Fishman sees his digital sculpting as a "link between arts, humanities and technology [that is] important for Brown and timely for education and the way society is moving."

"Many artists continually look for something that's unique to the time in which they're working, but many are put off by technology," he said. "For most artists, this is not the way they visualize the world.... This exposes me to things I don't know about, and it's important for us in the art department to expose students to this technology."

Together, Kimia said, the team "can see things from different angles." He believes it's important to bridge the gap between engineering and the humanities, as well as between engineering and medicine.

"We speak completely different languages, and we have to learn a lot to work in a common interface," he said. "I don't know too many others who do this. People have to have a vision of where this will go before they invest the energy."

Ultimately, Cooper predicted, this technology will be available on a wide scale to the community and schools, where students can trade in their video games for an Indiana Jones fedora "and feel like they're on a site – and learn about mathematics at the same time."

Said Joukowsky, "The greatest lesson I've learned is that creative thinking can achieve unimaginable results."

(For more information, see www.LEMS.Brown.edu/shape/)

GEORGE STREET JOURNAL

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THE GEORGE STREET JOURNAL STAFF

Our phone number is 401 863-2476; our fax number is 401 863-9595. Reach us through campus mail at Box R.

General Assignment

DIONNE MONTGOMERY, Dionne_Montgomery@brown.edu
MARK NICKEL, Mark_Nickel@brown.edu
TRACIE SWEENEY, Tracie_Sweeney@brown.edu

Arts and Humanities

MARY JO CURTIS, Mary_Jo_Curtis@brown.edu, 863-2478

Social Sciences

KRISTEN COLE, Kristen_Cole@brown.edu, 863-7508

Science and Medicine

SCOTT J. TURNER, Scott_Turner@brown.edu, 863-1862

Layout

KAREN WARGO, Karen_Wargo@brown.edu

CALENDAR The calendar databases are maintained by Christine DeCesare.

Submit information about events to the News Service by campus mail (Box R), in person (Room 301, Mad-dock Alumni Center), by fax to 401 863-9595 or by e-mail (Events@Brown.edu).

Send us your information as soon as possible – it's never too early once you have time and place confirmed. Deadlines for submissions are published on the calendar page and on the paper's website.

The on-line George Street Journal calendar of events can be read at www.webstar.brown.edu/Administration/News_Bureau/Events/index.html

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Office of Public Affairs and University Relations
LAURA FREID, executive vice president

CALENDAR

FOR THE WEEK OF FEB. 28 – MARCH 9

EDITOR'S CHOICE

FEB. 28 to MARCH 1

The **Brown University Orchestra**, conducted by Paul Phillips, will perform in concert at 7 p.m. in Sayles Hall. The program will feature Vaughan Williams' "Fantasia on a Theme by Thomas Tallis," Shostakovich's "Cello Concerto No. 1" (featuring 2002 concerto competition winner Troy Chang '03 on cello), Purcell/Stucky's "Funeral Music for Queen Mary" and Respighi's "Pines of Rome." Tickets are \$4 for general admission and \$2 for seniors, children and those with a Brown ID. For more information, call 863-7552 or 863-3234.

MARCH 1

The **Haffenreffer Museum of Anthropology** will present Nipmuck flutist and storyteller **Hawk Henries** from 1 to 3 p.m. The afternoon's family program will feature traditional music, storytelling and demonstrations of the ancient art of flute-making. The performance is free with museum admission, which for nonmembers is \$3 for adults, \$2 for seniors and \$1 for children. The Haffenreffer Museum is at 300 Tower St., Bristol. For more information, call 253-8388.

MARCH 3

Harvard Law School Professor **Randall Kennedy** will give the annual **Martin Luther King Jr. Lecture** at 4 p.m. in the Salomon Center for Teaching. Kennedy, who will speak on "Marriage and the Politics of Race in America," is author of "Interracial Intimacies: Sex, Marriage, Identity, and Adoption," a look at the historical, sociological, legal and moral issues surrounding interracial relationships. For more information, call 863-2474.

MARCH 3

Chippewa leader **Winona LaDuke** will kick off events for **Women's History Month** when she speaks at 7 p.m. in the Salomon Center. LaDuke, organizer of the Honor the Earth National Tour and founder of the White Earth Land Recovery Project and the Indigenous Women's Network, is writing a book on Native American environmentalism. This event is also part of the **Provost's Lecture Series on Race, Poverty and Environmental Justice**. For more information, call 863-3080.

MARCH 4

As part of the lecture series "**Why the War in Iraq?**" sponsored by Brown Faculty, Alumni,

Students and Staff Against the War, Associate Professor **Neta Crawford** will speak on "Preemption: The New National Security Strategy" at 7 p.m. in the auditorium of the Metcalf chemistry building. Crawford recently published "Argument and Change in World Politics: Ethics, Decolonization and Humanitarian Intervention." For more information, call 274-0217.

MARCH 6

Pulitzer Prize-winning novelist **N. Scott Momaday** will speak on "**Native American Oral Traditions: The Stories and Storytellers**" at 6:30 p.m. in Salomon Center. Momaday, who was awarded the Pulitzer for his novel "House Made of Dawn," is a poet, playwright, painter and storyteller; his many books have been widely translated. For more information, call 863-2474.

MARCH 6-9, 13-16

Brown University Theatre will present Luigi Pirandello's "**Six Characters in Search of an Author**" in Stuart Theatre. Directed by Kevin Moriarty, this modern classic is the story of a troubled family that takes over a play rehearsal to demand its actors portray their lives – and the fireworks that ensue. Performances are at 8 p.m., except on March 16, when there will be only a 3 p.m. matinee. Tickets are \$14 for general admission, \$10 for senior citizens and \$5 for full-time students, and are available at the box office. For more information, call 863-2838.

MARCH 7-8

Ancient studies scholars from around the nation will gather at Brown March 7 and 8 to discuss "**War, Peace and Reconciliation**" from the perspective of various ancient civilizations. Experts on early China, ancient Israel, Greece, Rome and the Aztecs will give lectures throughout the two-day event. All talks will be held March 7, 7 to 10 p.m., and March 8, 9 a.m. to 5 p.m., in Room 106 of Smith-Buonanno. The colloquium ends with a 3:20 p.m. panel of Brown faculty members who



TRACY SCHULTZ FOR BROWN UNIVERSITY THEATRE

Michael Benn, David Myers and Rachel Bonds (left to right) in "Six Characters in Search of an Author."

will discuss their experiences with modern peace studies. Panelists include **Omer Bartov**, the John P. Birkelund Distinguished Professor of European History; **Neta Crawford**, associate professor (research) at the Thomas J. Watson Jr. Institute for International Studies; and **P. Terrence Hopmann**, professor of political science, and research director of the program on global security of the Watson Institute. All events are free and open to the public.



Bartov

MARCH 8-9

The University will host a two-day conference, "**Invested in Community: Ethnomusicology and Musical Advocacy**," beginning at 9 a.m. in List Art Center. This is the first U.S. conference focusing on the vital role of the academic in advocating community music. Pioneering scholars from the United States and Europe will speak on creating projects nationally and internationally. The public is welcome. For more information or a schedule of the lecture sessions, call 863-3234 or contact Applied_Ethnomusicology@brown.edu.

MARCH 9

The **Brown University Jazz Band**, directed by Edward Tommasi, will perform a concert program of works by Thad Jones and Bob Mintzer at 8 p.m. in Grant Recital Hall. The concert is free and open to the public. For more information, call 863-7552 or 863-3234.

4:30 p.m. Film "The Gleaners and I: Two Years Later," Cable Car Cinema, 204 S. Main St. [French Film Festival]

6:30 p.m. Film "Friday Night," Cable Car Cinema, 204 S. Main St. [French Film Festival]

9 p.m. Film "The Son," Cable Car Cinema, 204 S. Main St. [French Film Festival]

3 Monday

Noon. Lecture "The Instrumentalization and Marginalization of Human Rights in Afghanistan - Pre, During, Post-Taliban," Norah Niland, Tufts University. McKinney Conference Room, Watson Institute [Watson Institute]

EDITOR'S CHOICE

4 p.m. Lecture "Marriage and the Politics of Race in America," Randall Kennedy, author. Room 101, Salomon Center [University Events]

4 p.m. Lecture "Reforming Fiscal Regimes in Brazil and Argentina: Institutions and Future Economic Prospects," Eduardo Gomez, Brown. Room 101, Wilson Hall [Watson Institute]

4 p.m. Lecture "Power to the People? The Challenges of Post-War Reconstruction in Kosovo," Dana Eyre, deputy special representative of the Secretary-General. McKinney Conference Room, Watson Institute [Watson Institute]

5:30 p.m. Lecture "Teaching as Persuasive Communication," Nancy Dunbar. Room 001, Salomon Center [Sheridan Center for Teaching]

5:30 p.m. Lecture "Epigrams in Elegy: Inscriptional Language in Propertius," Jeri DeBrohun, Brown. Room 102, MacFarlane House [Department of Classics]

5:30 p.m. Lecture "Tamango Around the Atlantic: The French Slave Trade, Literature and Film," Christopher Miller, Yale University. Music Room, Rochambeau House [Department of French Studies]

EDITOR'S CHOICE

7 p.m. Lecture Winona LaDuke, University of Minnesota. Salomon Center [Center for the Study of Race and Ethnicity]

4 Tuesday

Noon. Lecture "Cultural Values as Primary Impetus in Sino-U.S. Relations," Zhaoyu Huang. McKinney Conference Room, Watson Institute [Watson Institute]

4 p.m. Lecture "The Futures of European Capitalism," Vivien Schmidt. McKinney Conference Room, Watson Institute [Watson Institute]

5 p.m. Lecture "The Brain in the Gut: Neurology, Psychoanalysis and the Stomach," Elizabeth Wilson, University of Sydney. Crystal Room, Alumnae Hall [Pembroke Center]

EDITOR'S CHOICE

7 p.m. Lecture "Preemption: The New National Security Strategy," Neta Crawford, Brown. Metcalf Auditorium, 190 Thayer St. [Brown Faculty, Alumni and Staff Against the War]

7 p.m. Discussion "Women of Color/White Women Dialogue," Partite Lounge/Appleget Lounge [Part of Womyn's Herstory Month]

5 Wednesday

11 a.m. Lecture "Endocannabinoids and Related Lipid Mediators in Pain," J. Michael Walker, Brown. Ray Conference Center, Butler Hospital [Department of Psychiatry and Human Behavior]

Noon. Lecture "The Logic of Terror: Some Aspects of the Role of Violence in the Balkans, 1804-1950," Dimitris Livanios. McKinney Conference Room, Watson Institute [Watson Institute]

4 p.m. Lecture "Science Lies Its Way to the Truth ... The Importance of Behavioral Research," Meredith West, Indiana University. Room 206, Hunter Lab

Continued on page 4

DAILY EVENTS

28 Friday

2 p.m. Film "Alias Betty," Cable Car Cinema, 204 S. Main St. [French Film Festival]

4 p.m. Colloquium "Probing Molecular Recognition by Protein Kinases with Novel Peptide Mimics," Jose Madalenoitia, University of Vermont. Room 115, MacMillan Hall [Department of Chemistry]

4:30 p.m. Film "Marriages," Cable Car Cinema, 204 S. Main St. [French Film Festival]

7 p.m. Sports Men's hockey vs. St Lawrence. Meehan Auditorium \$ [Department of Athletics]

7 p.m. Sports Men's basketball vs. University of Pennsylvania. Pizzitola Sports Center \$ [Department of Athletics]

7 p.m. Concert The Brown University Orchestra will perform Williams, Shostakovich, Purcell/Stucky and Respighi. Sayles Hall \$ [Department of Music]

7 p.m. Film "C'est le Bouquet!," Cable Car Cinema, 204 S. Main St. [French Film Festival]

9:30 p.m. Film "Friday Night," Cable Car Cinema, 204 S. Main St. [French Film Festival]

1 Saturday

Noon. Film "Ça ira mieux demain," Cable Car Cinema, 204 S. Main St. [French Film Festival]

1 p.m. Storyteller Hawk Henries will tell stories and demonstrate the ancient art of flute-making. Haffenreffer Museum [Haffenreffer Museum]

2:30 p.m. Film "C'est le Bouquet!," Cable Car Cinema, 204 S. Main St. [French Film Festival]

3 p.m. Recital David Cohen, baritone. Featuring Schumann's Dichterliebe and works by Mozart and Bizet. Grant Recital Hall [Department of Music]

4:30 p.m. Roundtable Discussion with director Jeanne Labrune and actor Richard Dubuisne. Cable Car Cinema, 204 S. Main St. [French Film Festival]

7 p.m. Sports Men's hockey vs. Clarkson. Meehan

Auditorium \$ [Department of Athletics]

7 p.m. Sports Men's basketball vs. Princeton. Pizzitola Sports Center \$ [Department of Athletics]

7 p.m. Concert The Brown University Orchestra will perform Williams, Shostakovich, Purcell/Stucky and Respighi. Sayles Hall \$ [Department of Music]

7 p.m. Film "The Son," Cable Car Cinema, 204 S. Main St. [French Film Festival]

8 p.m. Theater "Winter Mini-Fest," produced by Julie A. Strandberg. Ashamu Dance Studio \$ [Department of Theatre, Speech, and Dance]

9:30 p.m. Film "Satin Rouge," Cable Car Cinema, 204 S. Main St. [French Film Festival]

2 Sunday

Noon. Film "Inch'Allah dimanche," Cable Car Cinema, 204 S. Main St. [French Film Festival]

2:30 p.m. Film "The Gleaners and I," Cable Car Cinema, 204 S. Main St. [French Film Festival]

RESEARCH

NOTES

Visual cues help us process what we hear:

By mapping eye movements in fractions of a second, a Brown researcher has found that humans attempt to make sense of what they are hearing through visual cues long before they have heard an entire idea. The finding offers insight into how the mind uses vision to process information.

Julie Sedivy, assistant professor of cognitive and linguistic sciences, is interested in the process by which humans assign meaning to words and phrases. Psycholinguists know that as humans process language they make many split-second decisions about the words they are hearing. But questions remain about how humans cope with uncertainty at every stage of that moment-by-moment decision process.

In a series of studies involving approximately 150 people, participants sat either in front of a computer screen that displayed an image of objects or in front of a work surface set with objects and received verbal instructions concerning the objects. Researchers used a headband-mounted camera to map the participants' eye movements.

Given a scene of a table set with a drinking glass and pitcher, the participants heard instructions such as "pick up the tall glass." Researchers found that participants frequently looked first at a pitcher, indicating attempts to interpret "tall" early, and before hearing the entire noun "glass."

"On the basis of one or two sounds, we saw the participants' eye movements begin to shift," said Sedivy. "As soon as they identified a word, they began to map it."

However, when a short glass was added to the scene so that there were three objects - a pitcher, tall glass and short glass - participants were more likely to look at the taller of the drinking glasses when they heard "tall" because size was the distinguishing factor between the two glasses.

The finding suggests that humans consult a whole domain of information, including visual cues and expectations about rational communicative behavior, in resolving the uncertainty involved in processing a sentence, according to Sedivy.

There appears to be a set of mutual expectations between conversational partners, for example, that redundant information is typically avoided. In the example with the pitcher and two drinking glasses, "tall" would be redundant in referring to the pitcher, because there is only one pitcher, while there are two glasses, Sedivy said.

If that type of complex and subtle information were not available, the moment-by-moment mapping of sounds to meaning would only serve to introduce a great deal of uncertainty to language processing, according to Sedivy. For example, if mapping to an object begins upon hearing "tall" rather than waiting until the following word "glass," given a scene in which there are two tall objects, the chance of an initial mapping guess being correct is only 50 percent.

Not subject to the conscious control by humans, the automatic eye movements are so subtle they are unnoticed by study participants, who may feel simply that their eyes are taking in the whole scene all at once when, in fact, the eyes are darting rapidly from one very specific location to another.

"This is a surprising relationship between highly intelligent processes of language understanding and low-level automatic processes such as eye movements," Sedivy said. "As humans, we have to deal with multiple levels of information simultaneously, and those different levels of information must be incorporated into the study of linguistics."

Sedivy conducted the research with Daniel Grodner, a postdoctoral fellow in cognitive and linguistic sciences; Anuja Joshi, research technician; and current and former undergraduate assistants including Charles Joseph, Estelle Reyes, Gitana Chunyo and Rachel Sussman. — *Kristen Cole*

A look at one state's programs for gay, lesbian students:

A two-year evaluation of the nation's only statewide program for gay and lesbian high school students found more positive climates for sexual diversity in schools that had implemented the program than in those without the program.

Laura Szalacha (pronounced sha LAH ha), visiting associated professor of education at Brown, led the study of the

Massachusetts Department of Education Safe Schools Program for Gay and Lesbian Students for her doctoral thesis in human development and psychology at Harvard University's Graduate School of Education.

She interviewed 1,646 high school students and 683 faculty and professional staff between 1998 and 2000. There were Gay-Straight Alliances in 62 percent of the state's secondary schools at the time of the study, a figure that has since increased to 71 percent.

Contrary to arguments that such programs promote homosexual behavior, the percentage of students who self-identified as gay or lesbian was the same - 7 percent - in schools with and without Gay-Straight Alliances.

"There is no reason to believe this program does harm and every reason to believe it does good," Szalacha said.

The study looked at the effectiveness of the Commonwealth's four mandates within the Safe Schools Program for Gay and Lesbian Students: develop policies protecting gay and lesbian students from harassment, violence and discrimination; offer training to school personnel in violence and suicide prevention; offer school-based support groups for gay, lesbian and heterosexual students; provide school-based counseling for family members.

Students, faculty and professional staff were questioned on their knowledge of the official school policy, their assessment of the school's sexual diversity climate in various dimensions, and their measure of the individual student's behavioral comfort level with gay and lesbian issues.

Two factors appeared to contribute to the success of such programs in producing a safer climate in schools, according to Szalacha: faculty training in the program and a desire on the part of students for safer sexual diversity climates.

Thirty-five percent of the students in schools with Gay-Straight Alliances reported that gay, lesbian and bisexual students could safely choose to be open about their sexual identity, as opposed to only 12 percent of the students in schools without the alliances. — *Kristen Cole*

CALENDAR

Continued from page 3

[Department of Psychology]

4 p.m. Lecture "Welfare Ranking of Subsidies under Restricted Financing," Anders Sorenson, Johns Hopkins University. Room 301, Robinson Hall [Department of Economics]

4 p.m. Lecture "From Genome to Vaccine," Annie DeGroot, Brown. Room 115, McMillan Hall [Center of Computational Molecular Biology]

6 Thursday

Noon. Colloquium "Infant Joint Attention Skills and Early Social Development," Stephen Sheinkopf, Brown. Room 241, CIT [Center for the Study of Human Development]

Noon. Lecture "What's Poverty Got to Do with It? Mobilization around Genetically Modified Organisms in India," Ron Herring. Chancellor's Dining Room, Sharpe Refectory [Watson Institute]

4 p.m. Lecture "Ethnicity and Armed Struggle: Rethinking Guerilla Movements in Post-1964 Brazil," Jeffrey Lesser. Room 101, Wilson Hall [Center for Latin American Studies]

5:30 p.m. Lecture "Discourses of Western Planting: Richard Hakluyt and the Beginnings of the British Empire," David Harris Sacks, Reed College. John Carter Brown Library [John Carter Brown Library]

6:30 p.m. Lecture "Native American Oral Traditions: The Stories and Storytellers," N. Scott Momaday, novelist. Salomon Center [University Events]

7 p.m. Film "The Indian Sea (Mar das Indias)," Room 116, Watson Institute [Portuguese Documentary Series]

7 p.m. Film "Rio Escondido," in Spanish. Room 112, Watson Institute [CLAS film series]

7 p.m. Reading Jill Christman, Ball State University. Room 102, Wilson Hall [English Department]

8 p.m. Theater "Six Characters in Search of an Author," by Luigi Pirandello, directed by Kevin Moriarty. Stuart Theatre § [Department of Theatre, Speech, and Dance]

8 p.m. Reading John Kinsella will read from his poetry. McCormack Family Theater [Creative Writing Program]

7 Friday

Noon. President's Forum. President Simmons will speak to staff, take questions. Sayles Hall. (Staff Advisory Committee)

2 p.m. Writing Workshop Jill Christman, Ball State University. Barker Presentation Room, 70 Brown St. [English Department]

4 p.m. Piano Workshop featuring students in the applied music program. Grant Recital Hall [Department of Music]

7 p.m. Sports Women's basketball vs. Dartmouth. Pizzitola Sports Center § [Department of Athletics]

7 p.m. Colloquium "War, Peace and Reconciliation in the Ancient World," Room 106, Smith-Buonanno [Program in Ancient Studies]

8 p.m. Theater "Six Characters in Search of an Author," by Luigi Pirandello, directed by Kevin Moriarty. Stuart Theatre § [Department of Theatre, Speech, and Dance]

8 Saturday

9 a.m. Conference "Ethnomusicology and Musical Advocacy." First day of a two-day conference. Room 120, List Art Center [Department of Music]

9 a.m. Colloquium "War, Peace and Reconciliation in the Ancient World," Room 106, Smith-Buonanno [Program in Ancient Studies]

7 p.m. Sports Women's basketball vs. Harvard. Pizzitola Sports Center § [Department of Athletics]

8 p.m. Theater "Six Characters in Search of an Author," by Luigi Pirandello, directed by Kevin Moriarty. Stuart Theatre § [Department of Theatre, Speech, and Dance]

9 Sunday

9 a.m. Conference "Ethnomusicology and Musical Advocacy." Last day of a two-day conference. Room 106, Smith-Buonanno [Department of Music]

4 p.m. Concert The Borromeo String Quartet will perform music by Haydn and Beethoven. John Carter Brown Library § [Women of Brown]

8 p.m. Theater "Six Characters in Search of an Author," by Luigi Pirandello, directed by Kevin Moriarty. Stuart Theatre § [Department of Theatre, Speech, and Dance]

8 p.m. Concert Brown University Jazz Band will perform works by Thad Jones and Bob Mintzer. Grant Recital Hall [Department of Music]

EXHIBITIONS

David Winton Bell Gallery, 64 College St.

"Katarzyna Kozyra: Bathhouses" through March 9

HOURS: 11 a.m. - 4 p.m. Monday through Friday; 1 p.m. - 4 p.m. Saturday and Sunday

John Hay Library, 20 Prospect St.

"Latin American Materials from the George Earl Church Collection" through March 15

HOURS: 9 a.m. - 5 p.m. Monday through Friday

John Carter Brown Library, The College Green

"Plants and Publications from the New World: 1492-1825" through May 1

HOURS: 8:30 a.m. - 5 p.m. Monday through Friday; Saturday 9 a.m. - noon

Simón Bolívar Room open Tuesday and Wednesday 2 p.m. to 5 p.m.

Haffenreffer Museum of Anthropology

300 Tower St., Bristol

■ "Kayak, Umiak, Canoe"

■ "Dragon Bridge: Taoist Paintings of the Mien"

■ "Packracts for Posterity? Relevance in the Anthropology Museum"



From "Plants and Publications from the New World" at the John Carter Brown Library.

- "Death, Defense, Distinction: Weapons and Power"
 - "Hopi Katsina Dolls: Ancestor Spirit Carvings"
 - "Native American Dwellings, Tipi and Wetu"
- HOURS: 11 a.m. - 5 p.m. Saturday and Sunday