Interest in arts used to spark preschoolers’ development

By Craig Chamberlain

Painting, drawing, music, stories and make-believe – these are the things that preschoolers are drawn to. Yet the potential for using that natural interest as a means to broader learning and development has remained largely untapped in preschool programs serving children with disabilities, say UI education researchers.

So with a grant from the U.S. Department of Education five years ago, Susan Fowler and Beverly Lewman began an effort to create a curriculum called SPARK (for Skills Promoted through Arts, Reading and Knowledge). After development and field-testing, done in about 30 Central Illinois classrooms, they received another education department grant last fall to duplicate the model around the country.

Starting in October, they established SPARK in selected sites in Illinois, Kentucky and North Carolina, training more than 80 educators. The plan is to take the model to three new states each year.

In starting SPARK, “we knew that the kinds of things that children like to do are oftentimes connected with what we loosely call the arts,” said Lewman, a special education researcher and the project coordinator. “So we thought that if we tried to promote their skills through the arts – not teach the arts, but promote their skills through the arts – the children would be engaged.”

They also wanted the new curriculum to accommodate both the cultural diversity of preschool classrooms and the needs of children with developmental disabilities, said Fowler, the project director and a professor of special education.

For example, the story for a given week’s theme or concept for the day – like loud and soft, or big and small. “We’re talking about multisensory learning throughout this curriculum,” Lewman said, “because some children learn better one way than they do another” – in particular children with certain developmental delays or disabilities, who often are now integrated with other preschoolers. With those “special needs” children in mind, the curriculum designers also placed an emphasis on open-ended questions and on activities without a strong sense of pass or fail.

Linda Dalton, a preschool coordinator for Cumberland County Schools in Fayetteville, N.C., has seen the program work for only about three months in two classes, one integrated and one only for special needs. But already she has seen a “tremendous amount of gain,” she said, especially in language development.

“Something in it for everybody,” Fowler said. “Something for every child, so they’re functioning.” Another plus is that they’re functioning. “We’re hoping to be able to implement it programwide next year.”

With a grant from the U.S. Department of Education, Beverly Lewman (left), a special education researcher, and Susan Fowler, professor of special education, have developed a curriculum for preschool programs serving children with disabilities. After development and field-testing of their curriculum, they received another grant last fall to duplicate the model around the country.

Abstract answers thousands of questions about Illinois

By Mark Reutter

Which Illinois county produces the most corn? How many people work at firms owned by women in Illinois? What city has the highest death rate from cancer? The answers to these and thousands of other questions can be found in the 1997 Illinois Statistical Abstract.

Published by the UI, the 856-page book is crowded with tables, charts and graphs that portray the state in all its quirks and heterogeneity.

The book updates the 1996 edition and is the 12th of a series that began in 1977. It was produced under the direction of the College of Commerce and Business Administration and was edited by Susan Harter, Carole Amidon and W. Thomas Whalen.

The abstract is compiled from more than 50 sources. Unlike in some reference books, the information is arranged “in a sensible way,” Harter said. “You don’t have to be a statistician to use the book.”

Whenever possible, the information is arranged by county and by metropolitan statistical areas such as Chicago, East St. Louis and Peoria. Included are figures on crime, courts and law enforcement; parks and recreation; transportation and energy; government transfer payments; education, health and vital statistics; and the value of goods and services produced, broken down by industry.

A sampler:

• McLean County was the biggest corn producer in 1996; its per-acre yield, however, was slightly lower than the yields in Logan, Sangamon and Putnam counties.
• There were 35,809 firms owned by women in the state. They employed 315,615 people and had a total annual payroll of $5.89 billion.

(See Abstract, page 3)
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the university celebrated its 150th anni-
versary March 11, the UI Board of Trustees
considered the financial health of the insti-
tution.

Susan Gravenhorst, chair of the board,
opened the meeting by noting classes were
first held on March 11, 1868, at what was
then the Illinois Industrial University (re-
named UI in 1885).

“Today, all 66,000 of our students are
still the most important part of the univer-
sity and the crux of what we do,”
Gravenhorst said before the meeting of the
Committee on Finance and Audit.

Thanks in part to a strong performance
by the U.S. stock market in 1997, the mar-
tket value of the university’s investments
 grew to $738 million as of Dec. 31, 1997.
David Brief told the board on behalf of
Ennis, Knupp and Associates, the UI’s fi-
nancial consulting firm.

“That’s an increase of $163 million for
the year,” Brief said, adding that the endow-
ment had not done as well, losing 11.4 percent
for the last calendar year.

“Thanks in part to our management,”
he said. “Based on the growth of
our investments, we have a wide range of
market trends and conditions,” Brief
said. “That gives a manager every opportu-
nity to show what they can do.

“They have been performing very well.

Net real return on the endowment (re-
turn on investment, less inflation and spend-
ing) was 11.4 percent for the last calendar year, Brief
said.

Brief recommended that trustees begin
thinking about opting for a more diversified
portfolio.

“If you have too much money in your
checking account, you’re losing money by
not having those funds in a higher-yield
account,” he said. “Based on the growth of
the university’s asset funds, there is far
more liquidity and assets than the univer-
sity realistically needs.

“A portfolio with more long-term invest-
ment would present a moderate risk in
comparison to the potential benefits.”

The board asked Brief and university
investment staff to gather more informa-
tion on the possible changes.

Upon recommendation from Ennis,
Knupp and Associates and university ser-
tices, the trustees voted to terminate the
firm of Payden and Rygel as one of the
university’s investment managers, which
handles $90 million of the university short-
term funds investment.

“Our over the six years this firm has worked
for the university, we have had a wide range of
market trends and conditions,” Brief
said.”

“They have been performing very well.

The firm will be replaced by Miller
Anderson and Sherrerd, which Brief said
“has beaten the market more often than
not” over the same six-year span.

At the request of the office of the vice
president for business and finance, Ennis,
Knupp and Associates also presented a
memorandum to the board on how to best
integrate “emerging managers” of funds
into the university’s investment program.

Brenda Farnell, a professor of anthro-
pology, argued that the symbol is not only
a matter of concern to Native Americans; its
inaccurate portrayal of American Indi-
ans miseducates those in the campus com-
munity.

“By creating and supporting oversim-
plified and inaccurate views of indigenous
peoples and their cultures, it [the symbol]
contributes to the development of cultural
biases and prejudices rather than educating
against them.”

The continuing presence of the Chief
also sends a covert message that inaccurate
information is acceptable if it supports
your belief system, Farnell said.

“The sentiment and attachment many
students hold for the Chief basically over-
rides critical reflection and creates an anti-
thetical environment dismissive of criti-
cal thinking and reasoned argument.”

Student guests who spoke at the meeting
(Senate, page 8)

Senators vote 97-29 in favor of retiring Chief Illiniwek

By Shannon Vici c

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its March 9 meeting, the Urbana-
Champaign Senate voted 97-29 in favor of
retiring Chief Illiniwek, but ultimately the
fate of the athletic symbol rests in the hands
of the UI Board of Trustees.

The advisory resolution approved by the
Senate calls upon “the university adminis-
tration, the board of trustees to retire Chief
Illiniwek and discontinue licensing Native
American symbols as representations of the
university.”

The resolution characterized the symbol
as a form of racial stereotyping that under-
nines the university’s attempts at inten-
siveness and negatively affects the educa-
tional climate at the Urbana-Champaign
campus.

One day after the Senate passed the
to the board, the Senate Council agreed to follow
the standard procedure for newly approved
resolutions and forward it to the University
Senates Conference, which reviews all
matters acted upon by the senates of the
University of Illinois, Springfield and Chicago
campuses of the UI.

The University Senates Conference may
pass the resolution along to UI President
James J. Stukel with a recommendation
that Stukel send it to the board of trustees.

The board is not required to vote on
the item or even add to it as an agenda
item. If the board decides to address the
issue, it won’t do so until the item has made its way through the proper
channels, which can take several months.

The board last took up the matter in
October 1990 when it voted 7-1 to retain Chief Illiniwek.

In opening remarks at the Senate meet-
ing, Heidi Von Gunden, chair of the Senate
Equal Opportunity Committee that spon-
sored the resolution, responded to one of
the most common arguments for retaining the Chief – that retiring the symbol would
adversely affect alumni contributions to the
university.

Von Gunden reported that she had con-
tacted representatives from several educa-
tional institutions that had retired American
Indian symbols, including Stanford,
Dartmouth, Oklahoma, Arizona State and
Miami of Ohio. All reported that their insti-
tutions had experienced no negative effect
on revenue as a result of the change, she
said.

Von Gunden also reported that in Febru-
ary, the department of anthropology had
sent a letter to the board of trustees that
outlined the adverse academic effects that
the department felt the Chief was having
on its students.

The letter contends that the Chief pro-
 motes inaccurate conceptions of native
peoples of Illinois, undermines the effec-
tiveness of the department’s teaching, cre-
ates a negative climate in the department’s
professional relationships with Native
American peoples, and adversely affects
the recruitment of Native American stu-
dents and faculty.

By creating and supporting oversim-
plified and inaccurate views of indigenous
peoples and their cultures, it contributes to the development of cultural
biases and prejudices rather than educating
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Student guests who spoke at the meeting

(See Senate, page 8)

Trustees review financial health of UI, approve ACES library design

By Lauren Pernot

The UI Board of Trustees
reviewed the financial health of the
University of Illinois and approved
plans for the Agricultural, Consumer
and Environmental Sciences Library.

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What is your job at the UI and how long have you worked here?

I'm head piano technician. I tune and repair pianos in Smith Memorial Hall, the Music Building and at Krannert Center [for the Performing Arts.] I started here in September 1993.

How many pianos are you responsible for? What kind of care and repair do they require?

There are 235 pianos. Some of them have to be tuned monthly, and others — if they are used for performances and recitals — more often. There is another full-time piano technician, Dan Honnold, who works with me. Our top priority is the concert instruments here [at Smith Hall] and at Krannert that are used for recitals and performances. People here are hard on pianos and some pianos are played 15 hours a day. We have to repair a lot of strings and we buy [piano wire] by the pound. There are 12 different sizes of music wire on a Steinway. There are 200-390 feet of wire to the pound, depending on the size. A broken string requires anywhere from 6 inches to 10 feet to replace. Copper-wound bass strings are custom-made by a string maker in Tennessee for each of the 20 or so bass strings. Things like change fall into pianos and have to be removed; parts come off, such as keytops, jacks, hammers, keys, felts and soundboard ribs, and have to be glued back on.

Does it take special schooling or apprenticeships to learn piano tuning and repair?

I went to college as a voice major and quickly realized I wasn't the studying sort, but fortunately in the same town, Sioux City, Iowa, there was a piano-tuning school. So I went. It's a one-year course. At the time, [1977] there were probably only three of these schools in the country. Now there are six or seven. And it's nice to get the formal technical education, but it takes five years of tuning before you can do concert-quality tuning. I worked for myself for 10 years in my own business and enjoyed the freedom, but there's stress in self-employment and not having benefits. I've been tuning pianos for 21 years now. I'm also a member of the Piano Technicians Guild. We have 21 members in the Central Illinois Chapter of the guild, including Decatur, Bloomington and Springfield. It's great for dissemination of information. The old piano tuners have learned things and pass that information down to us. A lot of it isn't written down. I go to [guild] classes and teach some classes. Our local chapter meets monthly. The national and regional chapters meet yearly.

What entitled you to study piano tuning and repair?

I've always had a fascination with mechanical things. As a kid, I had a piano in our basement and I took the cover off to see inside and see how it worked. I took it upon myself to repair it and I tuned it the first time when I was 14. I really like the hands-on things, I like figuring out how to make things work. The allure of coming here [to the UI] was a lot of pianos and a lot of problems to solve. The reality is that time is short here and resources are short. But in this job I get to combine my love of fixing things with my love of music. Whenever I tune a piano, I play a few minutes to see how it works. That's my reward.

What special talents does it take to do your job? Do you need to have perfect pitch?

No, actually we don't listen to pitch when we tune. It doesn't take a good ear, it takes a trained ear. You learn to listen for very specific types of sounds that have nothing to do with pitch, such as harmonics and overtones. Really, tuning and repair is a study of physics, too. How hard does the hammer hit the string and what part makes it [strike] softly and what part makes it [strike] hard? You have to try to figure it out, but mostly it's a real mystery. There isn't a lot of research into the acoustics of the piano. All pianos sound different — concert pianos in particular. And pianos are quirky. You might be trying to determine what is making a noise such as a squeak, buzz or rattle. Sometimes it's something else across the room, vibrating in sympathy to the tones.

— Nancy Koeneman
Kaler seeks down-to-earth ways to tell people about the stars

By Nancy Koeneman

Astronomy professor Kaler still lectures to his students — the planetarium audience — but increasingly Kaler is turning his attention to popular writing, which he says serves as a "foot stacks of books he's read in order to prepare for writing his books. "You have to prepare for writing your books. You have to become a student again and study like crazy." Kaler also learned to be a speedy writer. He can outline the first draft of a 2,500-word scientific article in an hour. It's a skill that comes in handy as he continues to write articles for astronomy magazines.

Kaler views public outreach as an important part of his role at the UI. He regularly gets calls with astronomy questions from teachers, amateur astronomers and the general public. He tries to provide answers. He maintains a Web page called skysights.html on the department's Web site. Kaler updates it weekly and describes what will be seen in the night sky over the next seven days. He also gives historical and scientific information about a "Star of the Week." He uses the weekly section to introduce the general public to the wonders of the universe.

In addition to his writing, he's become a regular guest on WCIA-Channel 3 and on WILL-AM (580) in Champaign, conducts open and continuous testing of Will-AAM's Sky and Telescope magazine and Sky and Telescope telescope. Kaler updates it weekly and describes what will be seen in the night sky over the next seven days. He also gives historical and scientific information about a "Star of the Week." He uses the weekly section to introduce the general public to the wonders of the universe.

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UI connected to vBNS – high-performance computer network

The National Science Foundation (NSF) announced last month that the UI is one of 29 additional institutions that will be connected to the very high performance Backbone Net (vBNS). The NSF’s family of advanced applications to meet Internet2 is bringing focus, energy and president’s Next Generation Internet. connections provide very high-performance connectivity to at least 70 other research and educational institutions. The UI’s connection to the vBNS is a dedicated 155 million bits per second (Mbps). Any Internet traffic between UI and another vBNS-connected institution will automatically be routed via the vBNS for best performance. The current list of vBNS-connected sites is at http://www.vbns.net/site.html.

UI is a member of Internet2, the president’s Next Generation Internet. Internet2 is bringing focus, energy and the National Science Foundation Web site at www.nsf.gov.

Richal Alkire, vice chancellor for research, was appointed to the Illinois Science and Technology Advisory Committee within the Office of the Illinois Governor. The committee was created by Gov. Jim Edgar to help advise the governor and lieutenant governor on research and math education, research and development, uses of technology to meet statewide objectives, and environmental trends and priorities. The committee replaces the Governor’s Science Advisory Committee, which was created in 1899 to focus on issues relating to technological research and development.


Ken Carls, professor of art and design, received an award in the Quest for Design Excellence competition sponsored by the Michigan Museums Association. His winning entry was a book designed for the Saugatuck-Douglas Museum to accompany its 1997 exhibition, “Painting the Town: A Century of Art in Saugatuck-Douglas.”

David Chicoine, dean of the College of Agricultural, Consumer, and Environmental Sciences, was recognized by the Illinois Society of the Professional Farm Managers and Rural Appraisers with the Service to Agriculture Award. The award, given annually since 1940, recognizes an individual who has contributed significantly to agriculture. Chicoine said his college’s economy has been policy economics as it affects state and local public finance with a focus on agriculture.

Carroll J.W. Drabold, professor emeritus of agricultural engineering, received the 1998 Illinois Farm Bureau Award from the department of food, agricultural and biological engineering at the Ohio State University. The award recognizes Drabold’s 32 years of service in extension, research and public service to agricultural drainage. His research in field evaluation and testing of corrugated plastic drain tubing produced valuable data on strength of tubing as related to quality, pipe stiffness and design of building. Drabold helped develop one of the leading educational programs for land-improvement contractors.

Drabold was honored at an awards ceremony in January in Columbus, Ohio.

Brenda Eheart, associate director of the International Programs and Studies, and professor of women’s studies, has been recognized as one of eight 1998 Women of Distinction selected by the Green Meadows girls Scout Council. The honorees are women who demonstrate the fulfillment of the Girl Scout mission. Eheart was honored for co-founding Hope for The Children, a children’s advocacy organization.


Renate Gokl, professor of art and design, was recognized by the Type Director’s Club of New York, one of the most presti- gious organizations in the graphic design profession, for excellence in typographic design in the professional designer category. Gokl’s work will be published in “Typography 19,” the organization’s annual publication.

Billy Morrison Jackson, professor emeritus of painting, was honored in two different juried art competitions. Jackson received an honorable mention from the Baker Arts Center in its first national juried art show for his work, “Daytonite.” He also was honored by the b. spoke gallery, Hun- tington, N.Y., for his color block prints in its juried exhibition, Explore: A March reception honored him and the four other recipients.

Robert Kelly, professor emeritus of composition, was a winner in the Fourth Annual Composition Competition held by the American Academy of Arts and Sciences from 155 composers representing 15 countries were entered. The prize was the premi`ere of his composition in the Boston Chamber Ensemble. Kelly’s composition, “A Symphony of Rose Sonnets” (Symphony No. 4) for tenor and chamber orchestra, Op. 67, premiered in December in Cambridge, Mass.

Yi Lu, professor of chemistry, has re- ceived the fellow’s award from MCI Telecommunications Corp. S. P. Sloan Foundation. The Sloan Fellowship carries an unrestricted stipend that will help Lu in continuing to develop his program of research in bioinorganic chemistry.

J.K. Newman, professor of classics, recently received a medal and diploma for an original Latin poem. Cardinal Alfonso Stickler, official librarian and archivist of the Roman Catholic Church, presented the award at the 15th-century palace of the Apostolic Chancery, Rome. Pope John Paul sent a message of good wishes that was read by Abbate Primate Carolos Egger, president of the Fondazione Latino Americano. Pope John Paul sent a message of good wishes that was read by Abbate Primate Carolos Egger, president of the Fondazione Latino Americano. Pope John Paul sent a message of good wishes that was read by Abbate Primate Carolos Egger, president of the Fondazione Latino Americano.

Duyen Nguyen, secretary in the library’s automated services department, entered the 38-million bibliographic record into WorldCat (the OCLC Online Union Catalog) on Nov. 24. It was the fourth time that CDB’s A-I-A requires 1/2 percent of the cataloging staff garnered a “gold record” for the library, and the UI is the only institution to have received four gold records. OCLC, an international bibliographic database, is the world’s largest library information net- work, linking more than 25,000 libraries in the United States and 63 countries and territories.

Burks Oakley, associate vice president for academic affairs and professor of elec- trical and computer engineering and of bioengineering, has been elected a fellow of the Institute of Electrical and Electronics Engineers. Oakley is noted for his work with asynchronous learning networks.

William H. Pickle, professor of chem- istry, was honored for his work in separa- tion science by two organizations. At this year’s Eastern Analytical Symposium, Pickle was awarded the Frederick Elections Award for Outstanding Achievement in Separa- tion Science. The award is given annually to someone whose work has uniquely ad- vanced the science of molecular separa- tions. Pickle is being recognized for his pioneering work in inital separations. Pickle also will receive the Robert Boyle Medal for Analytical Chemistry from the Royal Society in November.

Arthur Zeller, professor of postdoctoral research associate in cell and structural biology, will receive a Runyon-Winchell postdoctoral fellowship. The Cancer Research Fund of the Damon Runyon-Walter Winchell Founda- tion presents this award to outstanding young scientists conducting theoretical and experimental research relevant to the study of cancer and cancer causes. mechanisms, therapies and prevention at major research centers. The fellowship is for three years to the laboratory of the fellow’s sponsor. Zeller’s and his sponsor, Chris Doe, professor of cell and structural biology, are researching genetic and mo- lecular mechanisms of mitotic arrest.

Beth Woodard, professor of library administration and information services coordinator for the Reference Library, was named the 1998 winner of the Isadora Gil- bert Mudge/R.R. Bowker Award. Spon- sored by the Reference and User Services Association of the American Library Association, the award recognizes outstanding achievement in reference librarianship.

The UI’s Chemical and Life Sciences Laboratory was honored with two awards at the Capital Development Board’s 25th anniversary awards ceremony. A certifi- cate of recognition for Art-In-Architecture honors the building’s five sculptures in the three-dimensional medium category. The UI’s award requires 1/2 percent of the state funds approved for the construc- tion of public buildings to be used for the purchase and placement of art for display at the buildings. The sculptures are Roger Blakley and Peter Fagan, UI professors of art, and Dan Nardi, Stephen Luecking and Barry Tinsley. The CDAB also awarded Thomas H. Madigan Award for New Con- struction to the various project teams in- volved in the building, including team members from many campus units. The teams included architects, structural engineers, mechanical and electrical engineers, construction managers, site engineers, design-related change orders, archi- tecture/engineer and contractor performance ratings, and project teamwork.

The report of honors, awards, offices and other outstanding achievements of faculty and staff members.
Method makes low-thrust spacecraft launches easier

By James E. Kloeppel

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ission planning for low-thrust interplanetary spacecraft probes just became easier with a genetic algorithm developed at the UI.

In recent years, pressure to reduce the costs of planetary exploration has led to an emphasis on designing missions with shorter flight times, smaller launch vehicles and simpler flight systems," said Victoria Coverstone-Carroll, a professor of aeronautical and astronautical engineering at the UI. "These requirements have renewed interest in low-thrust propulsion systems, because of their high propellant efficiencies, but the need to optimize their flight paths posed certain challenges.

Low-thrust systems, such as solar-electric propulsion – which uses solar arrays to collect photons and convert them into electricity to drive an ion engine – possess little impulse power but may be operated continuously. Conventionally, chemical propulsion systems, on the other hand, provide short, but intense, bursts of thrust. Flight trajectories for the two systems differ markedly.

Coverstone-Carroll and graduate student Bill Hartmann developed a Pareto genetic algorithm capable of optimizing low-thrust trajectories. With Steven Willan at the Jet Propulsion Laboratory in Pasadena, Calif., the researchers used this special algorithm to evaluate different mission scenarios.

"We analyzed a number of proposed missions, including a rendezvous with the asteroid Vesta, a mission to Mars and a Pluto flyby," said Coverstone-Carroll, who presented the team’s findings at the American Astronautical Society/American Institute of Aeronautics and Astronautics national meeting in Monterey, Calif., in February. "In each of these missions, the low-thrust propulsion technology delivered more payload capability than the equivalent chemical propulsion mission."

Genetic algorithms work by creating a population of individual solutions that then evolves over a series of generational cycles, with each solution undergoing alterations to its respective parameter set. With the UI algorithm, the automated search procedure provides a mission planner with an array of compromise solutions trading off such system performance characteristics as time of flight and amount of propellant consumed.

"Every pound of propellant that must be launched into space represents one less pound of instrumentation for the mission," Coverstone-Carroll said. "One of the big advantages of solar-electric propulsion is that if you are willing for the flight to take a little longer to reach its destination, you not only can launch larger scientific payloads, you also can avoid the limitations of launch windows."

Chemical propulsion systems, with their ballistic trajectories, are dependent upon launch windows during which the geometry of Earth and the target are favorable. Coverstone-Carroll said: "We can avoid that restriction with low-thrust systems, however. We can launch at any time of year."

While not practical for manned missions, where time of flight must be minimized, low-thrust systems could be used for supply missions, sample-return missions and rendezvous with distant planets. !

Development of mini cooling systems is funded by DARPA grant

By James E. Kloeppel

Researchers at the UI have received a $4 million grant from the Defense Advanced Research Projects Agency to develop miniature cooling systems for men and machines.

The grant – to extend over three years – will support the design and fabrication of a distributed system of lightweight, energy-saving mesoscopic coolers that can be economically mass-produced and assembled together to form flexible cooling systems.

"By combining innovative layered mesoscopic fabrication techniques with a scale-efficient vapor-compression cycle, an integrated mesoscopic cooler circuit will be produced," said Mike Philpott, a UI professor of mechanical and industrial engineering and the director of the project. "The process combines polymer/thin-film layers with silicon-based enhanced-heat-transfer systems (MEMS) device fabrication."

Individual coolers will be constructed as thin, flexible membranes measuring Victoria Coverstone-Carroll, a professor of aeronautical and astronautical engineering, and graduate student Bill Hartmann developed a Pareto genetic algorithm capable of optimizing low-thrust trajectories.
Panel recommends a system of automation to improve safety and efficiency of air travel

By JAMES E. KLOEPPEL

To improve both the safety and efficiency of air travel, more computer automation should be placed in the hands of air-traffic controllers, according to a new report issued by a National Research Council panel, chaired by a UI professor. But, the automation must be specifically designed with the needs of the human operators in mind, the panel cautions.

In its first report, published last year, the role of human factors in the current air-traffic control system was examined. In its new report, “Human Factors in Air Traffic Control: Human Operators and Automation,” (National Academy Press), the panel assesses the potential and limitations that the Federal Aviation Administration is considering, and made recommendations on how human operators should be integrated.

The panel’s three-year study was funded by the FAA.

NIH grant to fund research of diagnostic ultrasound

By Jim Barlow

A interdisciplinary team of UI researchers has received a $2.1 million grant from the National Institutes of Health to determine if diagnostic ultrasound used in medical diagnostics produces damage in lung tissue.

Ultrasound is a non-invasive imaging method that uses high-frequency sound waves to produce images of internal structures, particularly those involving soft tissue, in animals and humans. While ultrasound is considered safe for use in humans, studies on small animals have suggested that lung tissue can be damaged under certain conditions.

“What we don’t know is whether this damage could be seen in humans, or whether this damage occurs in humans,” said William D. O’Brien, a professor of electrical engineering. "No hazard or human injury associated with diagnostic ultrasound has ever been reported.”

The researchers will analyze lung tissue to determine if diagnostic ultrasound produces damage in lung tissue. The new technique uses high-frequency sound waves to produce images of internal structures, particularly those involving soft tissue, in animals and humans. While ultrasound is considered safe for use in humans, studies on small animals have suggested that lung tissue can be damaged under certain conditions. The researchers will analyze lung tissue to determine if diagnostic ultrasound produces damage in lung tissue.

Measurement technique gives snapshot of cell physiology

By James E. KloeppeL

A new measurement technique that simultaneously can identify and measure more than 30 compounds found in a single cell has been developed by a team of chemists and physiologists at the UI. The method – which uses nanoliter-volume separation techniques with an information-rich spectroscopic detection scheme, can be used to obtain qualitative and quantitative chemical information about the target species,” said Jonathan Fuller, a professor of chemistry and a researcher at the university’s Beckman Institute for Advanced Science and Technology. “We can therefore more completely identify and measure biologically important compounds in individual cells without performing any chemical reactions to make the compounds detectable.”

The measurement technique was developed by Fuller, graduate research assistant Robert Fuller, physiology professor Rhairor Gillat and visiting scholar Leonid Moroz. The researchers describe the technique in the February issue of the journal Neuron.

“We begin by placing a freshly isolated cell in a microvial where it is hypo- mogenized and then drawn into a capillary tube,” Fuller said. “The chemicals then separate in the capillary by electro- phoresis and move into a flow cell where they are stimulated by a laser. The laser-induced fluorescence is then collected by a CCD/spectrograph and ana- lyzed by a computer.

“We can identify compounds not only by the separation time, but also by the spectral fingerprints in the fluores- cence emission,” Fuller said. “This allows us to distinguish be- tween compounds that migrate at the same time, thereby avoiding potential misidentification.”

In addition, because the detection scheme is based upon the native fluo- rescence of individual molecules, the researchers need not perform any additional chemistry in order to identify or quantify compounds. “Since we are not relying on any chemical reactions, we are able to measure the true amount of chemicals that are contained in the cell,” Fuller said.

While most measurement tech- niques can identify or measure only a few compounds at the same time, the new technique can handle up to 30 compounds.

“By looking at so many compounds simultaneously, we really get a nice snapshot of the cell’s physiology,” Fuller said. “The concentrations of the various chemicals can indicate both the general health and the metabolic state of the cell. Such measurements also can aid in the identification of neurotransmitters and the mechanisms of their regulation.”
Louis Liebovich, professor of journalism, feels the deteriorating information flow between the press and president is a dangerous thing. He explains this in his upcoming book, “The Press and the Modern Presidency: Myths and Mindsets From Kennedy to Clinton.” “In the event of an economic downturn or a world crisis … there is a very real need for proper lines of communication between the White House and the nation with the assistance of a responsible, critical, and conscientious news media,” Liebovich wrote.

“Everyone from Matt Drudge to Joe Lunchbucket has weighed in on the recent behavior of President Clinton and the news media. Now a journalism professor has joined the debate.”

In his new book, “The Press and the Modern Presidency: Myths and Mindsets From Kennedy to Clinton” (published by Praeger), Louis Liebovich appeals to the two parties to “re-evaluate their relationship.” According to Liebovich, a professor of journalism at the UI, the deteriorating information flow between the press and president is a dangerous thing, potentially even catastrophic.

“In the event of an economic downturn or a world crisis, there is a very real need for proper lines of communication between the White House and the nation with the assistance of a responsible, critical and conscientious news media,” Liebovich wrote. “How this process succeeds or fails in the 21st century can determine how the world will fare for the next generation.”

For Liebovich, who traces the history of the press-president relationship over the past 40 years, fault lies in both camps. “The press has changed, the administration has changed,” he said in an interview. “I think the president said the president ‘lived down to the press’s worst expectations.’” In the book, Liebovich wrote that the modern president and the press are a “vicious and symbiotic relationship.”

“A democracy can’t survive if the press corps and the chief executive fails in the 21st century,” he wrote. “The Anglo-American public and the world at large might very well live down to the news media’s worst expectations.”

“Political stability comes about over the long run as education levels improve,” McMahon said. Differing levels of investment in education also appear to be closely connected to a nation’s standard of living, political stability and economic expansion through education, but not otherwise. “What’s more, average income rises in poor nations, parents demand more and better education for their children,” McMahon said. “The demand for education improves the ‘human capital’ of the country. Without educated people to run them, the best machines and most modern factories are useless.”

“Putting dollar values on the ‘external’ or social benefits of education has been viewed as difficult. However, the magnitude of the benefits can be gleaned by a cursory look at some key data,” McMahon said. “What’s more, average income rises in poor nations, parents demand more and better education for their children.”

“I have found in working with people who haven’t seen the Chief for a long time, and they can evolve again,” said Debbie Reese, a doctoral student in the College of Education and a Pueblo Indian, questioning whether the Chief was an academic concern. “Each of these has evolved over time, and they can evolve again.”

“The campus also must develop a solid Native American Studies Program to eradicate prejudice toward Native Americans through education,” Johnson said. “To destroy a symbol cherished by hundreds of thousands of Illinois students and alumni will not solve the academic problems.”

Senators were divided on the issue, with two speaking in favor of and two speaking against the resolution.

“Bill Clinton will survive, but what is going to suffer is the presidency, because now everything has been confirmed—this is the way presidents are,” said Louis Liebovich, professor of journalism.

“The tradition of the Chief lies in the Chief himself, not in the specific regalia or dance; each of these has evolved over time, and they can evolve again,” said Chuck Lalande, a student of history, who traces the history of the press-president relationship over the past 40 years, fault lies in both camps. “The press has changed, the administration has changed,” he said in an interview. “I think the president said the president ‘lived down to the press’s worst expectations.’” In the book, Liebovich wrote that the modern president and the press are a “vicious and symbiotic relationship.”

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Population shifts being studied from arts, humanities perspective

By Andrea Lynn

It used to be said the United States was the “melting pot.” But, as mass migrations sweep the globe, it now could be argued that the entire planet is a melting pot. A dozen scholars at the UI have begun tracking the globe to see what kind of new melting pot is being created in the process. They’re looking at long-term migrations, such as the long view about cultural exchanges and transformations in the past, said Michael Béroulo, a UI English professor and an inaugural director of the new Illinois Program for Research in the Humanities. Béroulo said, “we’re looking at what happens to ‘expressive culture’—art, theater, music, literature, dress, customs, religions, etc.—when large groups come in contact and/or conflict.”

Chosen by Béroulo, the IPRH’s first Fellows: anthropologist Brenda Farnell, who is studying indigenous identities and the works of Native American artist Matt Garcia, the sculptor behind the giant cactus-growing areas of Los Angeles County; sociologist Zine Magabane, the influence of African-American expressive culture on South African culture; art professor Joseph Squier, the role of artists in the “digital diaspora”; English professor Zohreh Sullivan, new writers who have re-located; communications professor Angharad Valdivia, the local salsa-mu- sic subculture. Five graduate students also have been named Fellows, and are exploring topics ranging from an influx of workers in Moscow to the East Indian migration in Trinidad. IPRH also is sponsoring conferences and courses focused on diasporas.

According to Béroulo, diaspora stud- ies aren’t merely trendy, not just the newest-latest. “The population movement across the globe has gotten to the point at which you have a sizable Asian population in the United States and South America, a mix- ture of French and West Indian cultures in the Caribbean, internal migrations in Central Europe and Asia, and, of course, the more traditional diaspora, the Jew- ish and the African,” Béroulo said, noting that whether the spread of Spanish-speaking Latinos across the Western Hemisphere counts as a diaspora “is up for grabs.”

Where diaspora studies leave off and immigration studies begin has yet to be determined. But the touchstone is the recognition of the starting hybridity of culture,” Béroulo said, offering as an ex- ample such things as the revival of Ja- macian ska and reggae music by biracial British bands in the late 1970s; Bugs Bunny, “who has an African lineage de- rived from the Yoruba trickster Eju- Elegbara by way of Uncle Remus’ Brer Rabbit stories”; and, of course, “that fa- mous Chinese invention, spaghetti.”

Squier, a professor of human resource education and former industrial arts teacher. At one of those companies, Caterpillar Inc., “the trainers of technicians” are hungry for any insights they can get about problem shooting,” Johnson said. The company, in fact, provided him with oppor- tunities to test many of his ideas while working with their technical staff.

One reason for the interest is money. Every hour machines are down can mean tens of thousands of dollars in losses for a business, Johnson said. “So these technicians have to know what they’re doing; they’ve got to know how to do it right, and they have to do it right.”

Another is the dramatic change in recent decades in both the machines and the people dealing with them. “You’ve gone from very mechanical-based systems to those that are controlled by electronics,” Johnson said. “Electronics are very ab- stract. You need a completely different way to think about those systems.”

At the same time, most of today’s trainers come in with little of even the mechanical background that used to be almost a given, he said. He hired someone with his father to break down and reassemble his car as a teen-ager—but noted today’s youth don’t get the same experience.

Ultimately, it’s former mechanics or tech- nicians who teach the trainees, and while the teachers know course content extremely well, they may not know the best way to design the course or teach the material so it will stick. “Some of the problems we were seeing with trainees, in fact, can often drown their students in schematics and technical detail, yet leave troubleshooting methods to be learned on the job.”

Adan Salcido, a student of the techni- cal training staff for Empire Southwestern, a Caterpillar dealership that also trains tech- nicians for other Caterpillar dealerships, said he has seen the benefits of Johnson’s research and instruction: “With our product line being as large as it is, we cannot cover every problem you will come across. Given that understanding scenario that they might encounter out in the field, so what we try to do is teach them how to properly troubleshoot. Being able to do that, they can take those same procedures and apply them to any compo- nent out there.”

Pioneering program bridges engineering-business gap

By Mark Reutler

Removing the barriers between engineer- ing and business education is the goal of a pioneering new program developed at the UI.

The Program in Technology and Man- agement, believed to be the nation’s first interdisciplinary program for undergradu- ate students, enables engineering and busi- ness-minded students to gain technical and management skills. The program, which started in the junior year and has 70 students enrolled, is co- taught by faculty from the College of Commerce and Business Administration and the College of Engineering.

“It’s a challenge to bring these students into a single program,” said Thomas F. Conry, head of the department of general engineering. “Our goal is to eliminate barriers be- tween technical and commercial disciplines. In industry that can lead to a way of life.”

The program, which started in the junior year and has 70 students enrolled, is co- taught by faculty from the College of Commerce and Business Administration and the College of Engineering.

Support for the joint program has been provided by a gift from Leonard C. and Mary Lou Hoot and by the Procter & Gamble Fund, the GE Fund and the AT&T Foundation.

DARPA (Continued from page 6)

about 4 inches on a side, Philpott said. “An active vapor-compression system will chill one side of the cooler, reject- ing heat on the other side. Each unit will be self-contained, complete with refrigerant, compressor, valves, heat- exchangers, sensors and controls.”

Functioning like tiny heat pumps, the mesoscopic coolers would be fast- ened together to create customized cooling systems to allow the range of military and commercial applica- tions. Sewn together into a garment, for example, the coolers could be worn by military personnel on active duty in hot climates.

“These flexible, active-cooling de- vices could become the basis upon which a complete uniform for the war- rior of the 21st century is built,” said Mark Shannon, a professor of me- chanical and industrial engineering and associate director of the project. “With this new mesoscale technology, com- plete environmental control of indi- vidual soldiers is possible.”

In addition to cooling soldiers, the mesoscopic coolers could be used in many other applications, from cooling electronics and infrared sensors to re- ducing heat signatures from aircraft and military vehicles. A multidisciplinary team from the UI and industry has assembled to develop the technology. The team in- cludes experts in microfabrication, mi- croelectronics, materials science, microscale heat transfer and thermo- dynamics, laser-aided processing, bio- medical devices and sensors, and sys- tems integration.

The UI provided $500,000 in new mesoscopic fabrication facilities as well as housing.
Telephone alert system to be tested March 24

In preparation for tornado season and other potentially urgent conditions, the campus will conduct a test of the March Alert System on March 24. This system is designed for quick and efficient transmittal of timely messages throughout the campus by means of a phone tree, and can be supplemented by fax and/or pager messages throughout the campus by means of a phone tree, and can be supplemented by fax and/or pager messages.

The first round of notifications will come from the Chancellor’s Office, the Division of Public Safety, the Regimental Band, and the Telephoto System Directory, with subsequent notifications the responsibility of campus units receiving those calls. Each unit should have in place a process for these messages to be disseminated further and reach as many personnel as possible in the shortest time. The purpose of the March 24 exercise is to allow units to review contact information and evaluate effectiveness of internal communications. Questions can be directed to the Office of the Vice Chancellor for Administration and Human Resources at 333-6536.

All personnel should be familiar with the Tornado Preparedness Plan in the Campus Administrative Manual, and supplemental information regarding severe weather protocols, all of which can be found in the Fire Department or Campus Risk Management sections of the Division of Public Safety Web page at http://www dps uiuc edu. Questions about the upcoming exercise and/or emergency preparedness may be directed to Lt. Richard Rodgers, University Fire Department, at 244-4816.
**March 19 – April 5**

**Calendar of events**

### Lectures

2 Thursday

**“Path.”** Bahlie Tissen, Tod Williams/Billie Tsien and Associates, New York. 7 p.m. Flyer Auditorium. 12:15 p.m. Latzer Hall.

Tuesday

**New Barbarism.** Barry Routh, Retired Veterans Against the War. 2 p.m. Levis Commons Theater. 12:15 p.m. Latzer Hall.

Wednesday

**“Sexual Equality as Parity of Effectiveness.”** Allison M. Sanger, Planned Parenthood Federation of America. 12:15 p.m. Latzer Hall.

Friday

**“Environmental Change in Antarctica.”** Tom Bassett and Koli B. M. Jaggar, University of Colorado, Boulder. 3 p.m. Levis Commons Theater.

### Colloquia

19 Thursday

**“Étudier les pousses des plantes.”** Tapani Ronnberg, University of Helsinki. 11 a.m. Atkins Tennis Center. 7 p.m. Memorial Room, Smith Hall.

20 Thursday

**“The Human Genome Project and the Social Implications of Technologies of Enhancement.”** David Rothman, Columbia. 11 a.m. Atkins Tennis Center.

### Music

19 Thursday

**Graduate Recital.** Zachary Sullivan will present a program of Russian, American, and lesser-known composers. 3 p.m. Foellinger Hall. 3 p.m. Memorial Room, Smith Hall.

**Junior Recital.** Timothy Mootz, baritone, and Kranmer Center. Admission charge. 8 p.m. Recital Hall, Smith Hall.

**Master of Music Accompanying Recital.** Sallie Pummill, piano. 5 p.m. Recital Hall, Smith Hall.

**Odessa Philharmonic Orchestra.** Robert Earl, music director and conductor. 8 p.m. Foellinger Great Hall, Kranmer Center. The orchestra performs: Suite from Tartar Ballet by Rienholdt Blähte, Symphony No. 2 by Howard Hanson and Symphony No. 2 by Sergei Rachmaninoff. Admission charge.

**University Symphony Orchestra.** Donald Schleicher, conductor. 8 p.m. Foellinger Great Hall, Kranmer Center. Rachmaninoff. Admission charge.

21 Friday

**Graduate Recital.** Zachary Sullivan will present a program of Russian, American, and lesser-known composers. 11 a.m. Atkins Tennis Center. 7 p.m. Memorial Room, Smith Hall.

**Senior Recital.** Lauren Schweitzer, cello, and Michel Beethoven. Admission charge.

**Master of Music Recital.** Roger Soadou, baritone. 7 p.m. Recital Hall, Smith Hall.

**Master of Music Accompanying Recital.** Rachel Kapelski, piano. 5 p.m. Memorial Room, Smith Hall.

**Master of Music Recital.** Helen M. Kim, cello. 5 p.m. Music Building auditorium.

**Master of Music Recital.** Michele Thiers, soprano. 5 p.m. Recital Hall, Smith Hall.

22 Saturday

**Children’s Book Reading: “Peter Rabbit.”** 10:30 a.m. Assembly Hall.

**Master of Music Recital.** Sibylia Sternin, mezzo-soprano. 5 p.m. Recital Hall, Smith Hall.

23 Sunday

**Master of Music Recital.** Methie Tirsan, soprano and Richard Tognetti, Australian Chamber Orchestra. 7:30 p.m. Foellinger Great Hall, Kranmer Center. Sibylia Sternin performs Bach’s “Black Angels.” Admission charge.

**Master of Music Recital.** Sibylia Sternin, mezzo-soprano. 7:30 p.m. Recital Hall, Smith Hall.

**Master of Music Recital.** Methie Tirsan, soprano and Richard Tognetti, Australian Chamber Orchestra. 7:30 p.m. Foellinger Great Hall, Kranmer Center. Sibylia Sternin performs Bach’s “Black Angels.” Admission charge.

**Senior Recital.** Kartik Seshadri, sitar. 8 p.m. Music Building auditorium.

### Theater

2 Thursday

**Downstate Playwrights.** 8 p.m. Studio Theater, Krannert Center. Admission charge. 11 a.m. Atkins Tennis Center.

**Junior Recital.** Susan Noyes, mezzo-soprano. 11 a.m. Recital Hall, Smith Hall.

**Master of Music Recital.** Rachel Kapelski, piano. 5 p.m. Memorial Room, Smith Hall.

**Master of Music Recital.** Helen M. Kim, cello. 5 p.m. Music Building auditorium.

**Master of Music Recital.** Michele Thiers, soprano. 5 p.m. Recital Hall, Smith Hall.

### Olympic stars of figure skating will be featured in Campbell’s Soups’ Champions on Ice coming to the Assembly Hall at 7 p.m. May 3. Tickets are now on sale. All of the medalists from the men’s and women’s singles competition as well as the pairs and dance competition will be performing with the exception of the dance duo from France who received a bronze medal. Among those featured are Tara Lipinski and Michelle Kwan, gold and silver medalists from the United States, and Isu Kuuki (picked) gold medalist from Russia.

### Events for the Calendar should be sent 15 days before the desired publication date to Inside Illinois Calendar, News Bureau, 817 S. Wright St., Champaign, Ill. 61820. More information is available from Marty Yeakel at 333-1085. The online UUC Events Calendar is available at http://www.uuc.edu/calendar/cal.html.
march 19 – april 5

more calendar of events

(Continued from page 11) International Programs and Studies and Political Science.

4 Saturday
Veterinary Medicine Open House, 9 a.m.-4 p.m. Veterinary Medicine Basic Science Building, 200 S. Lincoln Ave., Urbana. Discover the art and science behind veterinary medicine. Animal lovers, pet owners, science buffs and aspiring veterinarians will enjoy popular exhibits that include a petting zoo, first aid for dogs and cats, the wildlife medical clinic, and the “window” cow, which gives visitors the chance to peek and reach into a live cow’s stomach. There will be demonstrations of horse grooming and shearing, cow milking, sheep shearing and police dog work. Veterinary Medicine.

Junior Curator: “Native Americans.” 10-11:30 a.m. Fourth Floor, Native American Gallery, Natural History Building. This class is designed for 10-year-olds. Pre-registration and deposit are required. Deposits are returned if the child attends the class or if the class is canceled. Registration forms are available in the third-floor gallery of the Museum of Natural History or call 333-2560 for more information. Museum of Natural History.

5 Sunday
15th Annual International Dinner and Entertainment Night, 6 p.m. Latzer Hall, University YMCA. Many countries from around the world will be represented by their various culinary specialists. All dinner, performances representative of several world cultures will be presented. Information and to make of several world cultures will perform representative performances. Many.

Dinner and Entertainment Sunday
230-002 in the main lobby. Promenade gift shop: 9 a.m.-4 p.m. Monday-Friday; 9 a.m.-1 p.m. Saturday; 1 a.m. Sunday. Open 8 a.m. to dusk daily. Tours: call 333-2127. Museum and Kinkead Pavilion.

Robert Allerton Park
Open 8 a.m. to dusk. “Allerton Legacy” exhibit at Visitors Center, 8 a.m.-5 p.m. daily; 244-1635. Garden tours: call 333-2127. World Heritage Museum Heritage Bash gift shop: 9 a.m.-5 p.m. Monday-Friday; 2-5 p.m. Tuesday, Thursday; 1-4 p.m. Saturday and Sunday. Tours: First and third Sundays at 2:15 p.m. and by appointment for groups of 10 or more.

organizations

Classified Employees Association
11-85-0.0-1 p.m. first Thursday monthly. Call 333-5766 or e-mail homes@uiuc.edu for more information. Contra Dancing
To live fiddle music with featured caller in an atmosphere friendly to both singles and couples. Visit http://utetsa.lis.uiuc.edu/ or call 328-0729 for schedule. Illinois Folk Dance Society
8-10 p.m. Thursday and Saturday. Illinois Union. Teaching dances first hour; beginners welcome. Anne Marse, 398-4685.

Illini Gilder Club
7 p.m. first Thursday monthly. 127 Bevier Hall. Prospective members welcome. Information hot line: 762-4971. Lifetime Fitness Program
Individual and group activities. 6-8:30 a.m. weekdays. Kinesiology, 333-8324.

PC User Group
3 p.m. third Monday monthly. 117 Computing Laboratory, IMU. Call Mark Zinzow, 244-1289, or David Harley, 333-5656.

Queer on Campus
Informal social group for UI graduate and professional students, and faculty and staff members who are lesbian, gay, bisexual or transgender. Meetings are the first Monday of each month at an off-campus site and the third Thursday of each month at 5-6:30 p.m., Wahl room, University YMCA. For more information, e-mail qoc@uiuc.edu or see Web page at www.uiuc.edu/qoc. Secretariat
11-85-0.0-1 p.m. third Wednesday monthly. Illinois Union. Phone 333-4424. Speedskating Club
5:45-6:30 p.m. Tuesday. Ice Arena. Skates for loan. Phone 398-1938.

Women’s Club
German interest group of the UI Women’s Club meets monthly. October through May. German conversation only. Call 344-1899 for dates and places.

The Australian Chamber Orchestra, Australia’s only national orchestra, performs at 8 p.m. April 1 in Foellinger Great Hall at Krannert Center for the Performing Arts. The Williamses continue to thrill folk, bluegrass, country and gospel audiences after more than 25 years as musical and marital partners. Their stellar vocals form the centerpiece of their concerts with Jim Watson, formerly of the Red Clay Ramblers, on supporting vocals and bass, and Kevin Maul, playing dobro. Recognized as one of the finest performing arts groups touring the country today, the group is a regular favorite on Garrison Keillor’s popular radio show “A Prairie Home Companion.”

Robin and Linda Williams and Their Fine Group perform at 8 p.m. April 3 at the Tryon Festival Theater at the Krannert Center for the Performing Arts. The Williamses continue to thrill folk, bluegrass, country and gospel audiences after more than 25 years as musical and marital partners. Their stellar vocals form the centerpiece of their concerts with Jim Watson, formerly of the Red Clay Ramblers, on supporting vocals and bass, and Kevin Maul, playing dobro. Recognized as one of the finest performing arts groups touring the country today, the group is a regular favorite on Garrison Keillor’s popular radio show “A Prairie Home Companion.”