

THE UNIVERSITY OF CHICAGO MAGAZINE





LANDMARK GIFT

Pearson Family Foundation donates \$100 million, creating institute to confront global conflicts

At a time of heightened global violence, as war and political persecution drive the largest displacement of refugees and migrants since World War II, the University of Chicago has received a \$100 million gift to establish **The Pearson Institute for the Study and Resolution of Global Conflicts** and **The Pearson Global Forum**, which will annually convene preeminent international policy leaders and scholars to ensure the regular exchange of ideas, and to maximize the potential for positive change by also bringing together participants from a variety of sectors concerned with global conflicts. The Pearson Institute will be housed at the Harris School of Public Policy. The landmark gift from The Thomas L. Pearson and The Pearson Family Members Foundation is equal in size to the second-largest gift in the University's history.



THE UNIVERSITY OF
CHICAGO
CAMPAIGN
INQUIRY & IMPACT

Daniel Diermeier, dean of the Harris School of Public Policy and Emmett Dedmon Professor of Public Administration, speaks at the University's Mandel Hall on September 30, where more than 1,100 faculty, students, alumni, trustees, and dignitaries gathered for the announcement of The Pearson Institute. Above, brothers Thomas L. Pearson and Timothy R. Pearson on campus.

THE UNIVERSITY OF CHICAGO MAGAZINE

FALL 2015
VOLUME 108, NUMBER 1



As the University looks back on 125 years, campus leaders look ahead to the 150th anniversary. See “Future Tense,” page 32. Illustration by Gonalo Viana.

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See the full print issue of the *University of Chicago Magazine*, web-exclusive content, and links to our Facebook, Twitter, Flickr, and Tumblr accounts at mag.uchicago.edu.



Construction is under way on the Campus North Residential Commons at 55th Street and University Avenue. The College residence hall, designed by Studio Gang architects, is slated to open in fall 2016. For more on Campus North, see "Continuing Education," page 21.

PHOTOGRAPHY BY ROBERT KOZLOFF



Back to the future

BY LAURA DEMANSKI, AM'94

Volume 108, Number 1, Fall 2015

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This fall, the University celebrates 125 years of inquiry and impact that began with its incorporation on September 10, 1890. A packed slate of campus events and a quasiquicentennial page on the University's website (125.uchicago.edu) offer ways to remember and celebrate. At the *Magazine*, we

looked back and ahead: back with a selection of vintage UChicago postcards ("Déjà Views," page 30), and ahead by asking faculty and other campus leaders to predict the state of their fields in the University's 150th year. Our cover illustrator, Gonçalo Viana, brought past and future together, imagining a new use for an old technology of remembering, the View-Master. Readers of my generation may feel a double pang of nostalgia.

When we first asked campus experts to forecast the next 25 years in their fields, we had trouble forecasting their reactions to our request. In an unpredictable and rapidly changing world, who would be gutsy enough to go on record about new developments a quarter of a century from now?

UChicago thinkers, natch. Twenty-two scholars went out on that limb (see "Future Tense," page 32). Computer science professor **Andrew Chien** glimpses a future where computing is viewed as a science and an art. Globalization and migration will influence the spread of religion and languages in particular ways, predict the Divinity School's **Richard A. Rosengarten**, AM'88, PhD'94, and linguist **Salikoko Mufwene**, PhD'79. The Law School's **Geoffrey R. Stone**, JD'71, is confident about which recent Supreme Court case will be overturned by 2040.



In College dean **John W. Boyer's** (AM'69, PhD'75) reflections on the prospects for liberal arts education, UChicago's past decodes its future. Boyer's essay comes as the ink is barely dry in his years-in-the-making *The University of Chicago: A History*, which you can read about in "Past and Present," page 12.

FOND FAREWELL

Associate editor Lydialyle Gibson has moved on from the University to start a new chapter at *Harvard Magazine*. For ten years, Lydia graced our pages with indelible stories about ideas and—especially—the people behind them. She served as coeditor of UChicago Journal and managed our Metcalf interns. But most of all, Lydia wrote. Her award-winning story about organismal biology professor **Michael LaBarbera** and his menagerie of marine animals, "A Life Aquatic" (Mar–Apr/14), delved into what made LaBarbera such a perceptive observer of the mysterious creatures he studied and taught about. Part of it, she concluded, was his ability to get inside their skin—or carapace—and see the world as they do. Lydia's stories do the same. We'll miss her in these pages. ♦

LETTERS

Pride and principles

Allow me to preface this letter with a confession: I haven't always been proud of my alma mater. Not of masochistic students embracing the school's complicity in the murder of fun. Nor when meeting fellow alums who haven't quite integrated into civilized society. And never during Scav. I was like Charlton Heston in *Planet of the Apes*. A man—not an animal—curiously out of step. But those moments pale when compared to the overwhelming sense of pride I felt upon reading about the Chicago Principles (“Opening Inquiry,” July–Aug/15). The University’s un-

wavering support for free expression is everything it should be.

Freedom’s kindling is speech. The more of it, the freer we are.

How rotten has the climate gotten on college campuses? Well, for one thing, proclamations like this are much too rare. There’s no place for trigger warnings, hurt feelings, and sensitivity when promoting the free exchange of ideas. In a year when cartoonists were killed for the unforgivable crime of satire, these principles have particular resonance. Freedom of expression is worth defending without mealy-mouthed qualifications or post hoc “contextualizing.” For a school that famously champions the theoretical, it’s heartening to see an affirmation with a practical purpose. Freedom’s kindling is speech. The more of it, the freer we are. The University of Chicago remains a beacon of open discourse. As an alumnus, I’m delighted. And as an American, I’m thankful.

Oliver Mosier, AB’08
ASTORIA, NEW YORK

Inquiry, opened

The report of the Committee on Freedom of Expression exhibits both the strengths and the weaknesses of classical liberal legalism. It stoutly defends an ideal free marketplace of ideas, while leaving room for several undefined exceptions and failing to recognize the institutional inequalities that already distort that marketplace. In this regard, it resembles the Supreme Court’s fantastical performance in *Citizens United*.

In the face of nationwide debate, the report affirms the status quo. The University administration will continue to determine what conduct expresses a debatable idea and what constitutes a genuine threat, an unjustifiable invasion of confidentiality, or an undue disruption of ordinary activities. It will still decide which speakers and programs are worthy of University hospitality and support. We must trust in the administration’s expertise, lack of bias, and immunity to pressure from financial donors.

The pursuit of diversity, in viewpoints as well as demographic backgrounds, is conducive to robust debate, but also makes it more likely that some will have difficulty tolerating others’ viewpoints. The report’s rather casual response to student concerns about an inclusive and safe envi-

ronment—pleas for civility, without stated procedures for enforcement—begs a deeper question about University policy: should students be admitted and retained who cannot be trusted to tolerate the kinds of robust debate and practice the civility to which the University is committed? Or rather, are survivors of personal trauma or disrespected group identity entitled to special accommodations?

Daniel Hoffman, AB’63
CHARLOTTE, NORTH CAROLINA

Your piece on the Chicago Principles for free expression on campus left me wondering about the limits the drafting committee sees for those principles in two related regards.

First, the committee appears to imagine the “freedom to debate and discuss” as a commitment to something that largely resembles academic debate. But this sort of reasoned “free and open discussion of ideas” is only part of the larger spectrum of protected, and vital, speech in a democracy. What of more raucous forms of protest and civil disobedience? Sit-ins, marches, street theater, even—at the outermost extreme—riots? These are often the forms of protest that the less powerful use (because they sometimes must) to challenge those in power, who would prefer an armchair debate to a massed protest crowd. They may not be civil, nor always be reasonable, but they are one of the ways those who are denied the chance to have a quiet academic discussion sometimes must assert their own voices. To be sure, the balance required to nurture both



PHOTOGRAPHY BY JOY OLIVIA MILLER

LETTERS

protest and dialogue is a difficult one, but both have real claims to be valuable speech. What weight do the principles give protests of this sort?

Second, it is hard to miss the principles' injunction against speech that is "directly incompatible with the functioning of the University." The other exceptions to speech protections sound in the familiar territory of First Amendment law, but this is a novel carve out. Fair enough, if one thinks of the University largely as a vessel for speech that must be protected in order to carry out that function. But what of speech that addresses the University itself as a political entity? The University of Chicago has a long and sometimes fraught history as an entity itself in relation to the neighborhoods around it, as well as to the larger national and global scene. Do the principles, now being adopted by other universities, work to wall off the universities themselves as targets and sources of legitimate protest?

These questions arise from the dual tradition of speech on campus. As academic institutions, universities do, indeed, carry forward a role as guarantors of free speech and open discourse by their members. Here, it is paramount to protect the rights of all speakers on campus. But as political and economic actors embedded, inevitably, in landscapes of privilege and power, universities as institutions are not immune from challenge; on the contrary, they are remarkably powerful shapers of discourse, economic and racial mobility, and national policy. Too, they are the home of one of the

principal groups—students—that can readily build larger social movements.

The Chicago Principles do a fine job of protecting universities and the speech they shelter if one sees universities solely as academic protectors of dialogue. But they do not clearly attend to more disruptive forms of protest and challenge, nor consider the ways those challenges might be directed against universities or the way larger disruptive challenges to social power structures can take form within academic communities and spill out into the larger polity. A full account of academic speech should bear in mind that there is another rich thread of discussion and protest here—a line that runs through Kent State and links the anti-Vietnam movement to the anti-apartheid movement to today's climate change divestment movement, and others. We should remember that a great many moves toward greater justice have begun, or taken strength, from student movements. That tradition, too, is an inheritance of the great universities.

Craig Segall, AB'04
SACRAMENTO, CALIFORNIA

Family connection

"Criminal Injustice" (July–Aug/15) provides a fine description of the extraordinary work of Jonathan Rapping, AB'88, the founder of Gideon's Promise and the driving force behind the effort to strengthen the public defender system in the United States.

It might have been noted that Jonathan Rapping is the son of Leonard A. Rapping, AM'59, PhD'61. Leonard, a brilliant man and a distinguished economist, a warm and wonderful friend, died in 1991.

The author writes that Jonathan Rapping's "activist mother, Elayne

I decided to brush up my high school French and walked into a classroom run by one of the most energetic, persuasive teachers I'd ever met.

Rapping, had taken him to protests ... since he was small. ... 'She taught her son to have a healthy dose of skepticism about authority.'" And it might have been noted that Mr. Rapping's mother met his father when she was an undergraduate at the University of Chicago.

David H. Bennett, AM'58, PhD'63
SYRACUSE, NEW YORK

The writer is correct. Our story failed to mention both that Rapping's father was a University of Chicago alumnus and that his mother, Elayne Rapping, EX'63, attended the College. We regret the oversights.

Library land

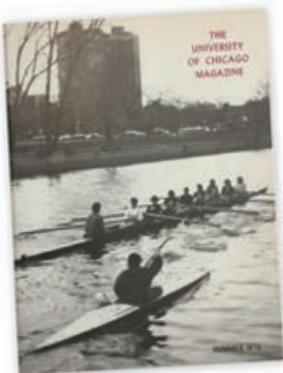
The use of Chicago Park District land in any amount for a presidential library should never have been considered ("Bringing It Home," UChicago Journal, July–Aug/15), and the University of Chicago should be ashamed of its role in this maneuver to build itself up while encroaching upon this precious gift to the people of Chicago from an earlier generation of leaders who were, in this regard, more civic minded than selfish. Whatever benefits to the community might result from this library could surely have been achieved without the expropriation of public open land already in short supply in this city.

Joan Davis Levin, AB'58, JD'72
CHICAGO

BLAST FROM THE PAST

In the June/96 issue of the *University of Chicago Magazine*, there is an interesting article on the Oriental Institute Museum. It is only marred by a reference to Chicago's "pendulous weather extremes." Need I point out that weather does not swing like a pendulum? Or hang down? More colorful writing, yes, but not like this!

Lexicographically yours,
Leah Spilberg Joseph, AB'39, AM'40,
Oct–Dec/96



and the University's outpost in Paris.

It is because of Morrissey that I, after nearly two decades of mostly pleasant meandering far from the French language (which remained demurely tucked away in my drawer of parlor tricks), moved to France to work for a United Nations outpost in Geneva and later ended up in my current position as a UN translator. (To preempt an oft-asked question, translators write; interpreters speak.) Morrissey doesn't know it, but he set things rolling.

Sometime during my second year at Chicago, I decided to brush up my high school French and walked into a classroom run by one of the most energetic, persuasive teachers I'd ever met. That was Morrissey, of course. Whatever he was teaching had to be the most study-worthy subject on the planet. I ultimately declared my major as French.

During the long years of parenting three young children, when reading a page of the newspaper was a feat, I fantasized about returning to the volumes of Montaigne and Proust sitting patiently on my shelves—and now, with my oldest (fluent in French, croissants, and steak frites, and itching to reform the US political system—*bon courage!*) applying to the College this fall, I feel that some loose ends are about to be tied up.

Neither the article “Paris à dix ans” (UChicago Journal, Nov–Dec/14) nor Phil's letter mentioned one of Morrissey's major achievements, which doubtless contributed to his receiving the Legion of Honor medal from the French government: ARTFL (artfl-project.uchicago.edu), a consortium-based service that provides its members with access to North America's largest collection of digitized French resources. When ARTFL got off the ground in 1982, the idea of being able to search text corpora in sophisticated ways was novel for the average reader. Today, of course, we take such things for granted, but Morrissey deserves credit for his vision, back then, of what was possible.

Talvi Laev, AB'84

FERNEY-VOLTAIRE, FRANCE

Over the moon

In his recollections and discussion of Harold Urey in his letter to the editor (Letters, July–Aug/15), Roman

Schmitt, SM'50, PhD'53, refers to the many University of Chicago students and postdocs who, in their later careers, were involved in the study of lunar samples. He mentions several, including George Wetherill, PhB'48, SB'49, SM'51, PhD'53; Gerald Wasserburg, SB'51, SM'52, PhD'54; Samuel Epstein; and George Reed Jr., PhD'52.

I was also a member of that merry company, as a principal investigator analyzing the first returned lunar samples from Apollo 11 using what was then the relatively new technique of Mössbauer spectrometry. Wow, was that exciting, to be holding an actual piece of our moon in my own hot little hand (very carefully, of course, so as not to contaminate or damage it).

In advance of the return of samples, we had developed a new approach, Mössbauer scattering spectrometry, so that if only a very few samples of lunar rocks were returned, we could still study and analyze them completely nondestructively. Fortunately, the Apollo 11 astronauts brought back many samples, so various types of analysis were used in many laboratories, including mine at the Illinois

Institute of Technology and IIT Research Institute in Chicago.

The spectra that we obtained were elegant and fascinating. The presence of small amounts of metallic iron in the lunar samples showed up as a quite characteristic symmetric pattern of six absorption lines widely spread out beyond most other absorption. And to our delight, the mineral ilmenite, an iron titanium oxide that we had studied earlier and that is relatively rare on Earth, showed up in many lunar samples, not only the rocks but also the fines (the lunar dust or regolith).

We were all grateful to Harold Urey and others who convinced the US Congress and NASA to support the analysis of lunar samples with all available techniques.

Caroline Herzenberg, SM'55, PhD'58
CHICAGO

Population control

Since College I have been taken by how the Christian notion of an apocalypse has maintained its emotional force in an increasingly secular age. It may well be that the Reverend Thomas Malthus significantly contributed



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LETTERS

to this secularization when he published “An Essay on the Principle of Population” in 1798. By using available data to buttress his arguments on sustainable limits to population, he employed scientific reasoning rather than references to scripture. Although the specifics of his argument have been discredited, the general claim of human population being subject to natural limits remains logically appealing. However, while the specifics of contemporary discussions on those limits differ from Malthus they inevitably remind the reader of an impending apocalypse if the suggestions presented are not followed.

A good example is the recent letter from Jane R. Shoup, PhD’65, and Stefan P. Shoup, AM’64 (Letters, July–Aug/15). They decry attempts to solve the growing water problem and suggest the money would be better spent reducing demand. In describing the problem the Shoups write, “there

are five billion too many people on this planet” rather than a more neutral “current estimates suggest that a global population of around 2.5 billion is the maximum the planet can sustain.” The solution to the overpopulation problem is implied: let’s get rid of five billion people, the quicker the better.

Almost 70 years before Malthus, the irrepressible Reverend Jonathan Swift published his “A Modest Proposal for Preventing the Children of Poor People from Being a Burden to Their Parents, or the Country, and for Making Them Beneficial to the Publick.” Swift was rather more open in his proposal than the Shoups. However, their concern for “a meaningful future for our children” suggests that Swift’s proposal needs to be revised for our times.

Swift concentrated on the lamb end of the spectrum. Perhaps the Shoups could have “A Modest Proposal” revised to concentrate on the mutton end of the population. Such an approach would provide an appealingly straightforward way to attain a population sustainable within the limits of the planet as we currently imagine them. It would have the added benefits

of taking care of some of our most intractable contemporary political issues such as funding public pensions and, as most occur toward the end of life, the high costs of health care.

H. Stuart Cunningham,
AB’64, MBA’68

WARRENVILLE, ILLINOIS

Jane R. and Stefan P. Shoup refer to an estimate made by David Pimentel of Cornell University that “there are five billion too many people on this planet.” That caught my eye and started me thinking.

Just as the Reverend Thomas Malthus was wrong, who knows or can reliably predict how many are too many? Science has a way of finding ways to extend that number. However, most people would agree that at some point there is a maximum number, whatever it may be (to use an extreme example, when people have to stand on others just to have a foothold). Science fiction readers, such as I, have hoped this conundrum could be solved by sending many representatives of *Homo sapiens* to the stars. Maybe that will eventually happen, but economi-

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cally and technologically it is probably a long way off.

Thus, for argument's sake, let's assume there is a finite number of people in the world who can be sustained, whatever that number might be, and that it may not be that far in the future (a few hundred or thousands of years). The question is then how we maintain that number, and I have no answer.

Abortion might be one way, but I find that morally reprehensible because at some point, at least in my view, a fetus becomes a person. I do not pretend to know at what point in a human pregnancy this becomes so. Contraception is another possibility, but what if people choose not to observe that solution? Many people want to produce progeny to perpetuate their personal genetic code. China has tried the one child solution, but that doesn't work either (on a trip to China people with whom I spoke told me how easy it was to evade that rule—"we had twins," even though these 'twins' were several years apart in age).

However, assuming governments could not only find a reliable way to regulate births, but could also enforce it, then what? Many economists believe that if a country's birthrate is below a certain number per family (I have seen 2.1 and 2.2 children per family used a number of times, and most developed economies are well below that today) there will not be enough people of working age to sustain a gross national product needed to support its population, and as people live longer this number has to increase. Do we sanction euthanasia of the older population? I find this equally reprehensible, and as a member of the older generation obviously personally distasteful. What if an attempt is made to control the populations of certain national, ethnic, racial, or religious groups? Wars begin over such issues. Of course, wars, lack of food and other essentials, or plagues might solve the problem for us.

I don't have a solution. The phrase in their letter simply initiated a chain of thoughts and implications. I would be interested in other thoughts on this issue.

Peter O. Clauss, AB'55
NEWTOWN SQUARE, PENNSYLVANIA

SOCIAL UCHICAGO



Dr. John Mayer @drjohnmayer • Oct 21
ParentTip: #Mathphobia in kids? Try this: Bedtime math stories! Yes, really! <http://mag.uchicago.edu/law-policy-society/mind-body-problem>



Gene Killian @genethelawyer • Oct 19
The first Heisman winner graduated from ... where? <http://mag.uchicago.edu/university-news/genius-gridiron>



UChicagoAlumni @uchicagoalumni • Oct 15
Life of the mind lives on. Alumni can access 1000s of journal articles for free: <http://guides.lib.uchicago.edu/alumni> #lifelonglearning (via @UChicagoMag)



Dr. Janelle Peters @JanellePeters • Oct 9
"Thaler: Most of my tweets are really retweets." Amen. <http://mag.uchicago.edu/university-news/power-tweeters>



UChicago Global @UChiGlobal • Sept 23
Afua Osei, MBA'13, MPP'13, launched @SheLeadsAfrica—an accelerator for early-stage women-led companies <http://mag.uchicago.edu/economics-business/continent-possibility>



Alec Michod @AlecMichod • Sept 13
Norman Maclean's brilliant essay about Albert Michelson, "Billiards Is a Good Game" is online. <http://mag.uchicago.edu/science-medicine/billiards-good-game>



Andrew Flowers @AndrewFlowers • Aug 26
I'm very proud of my alma mater, @UChicago, for their stance on free expression: <http://mag.uchicago.edu/university-news/opening-inquiry>



Social UChicago is a sampling of social media mentions of recent stories in the print and online editions of the Magazine and other University of Chicago publications. To join the Twitter conversation, follow us @UChicagoMag.

70th celebration

Preparations are being made for a birthday dinner for Anna Linchevskaya Linden, PhD'05, who taught in the Slavic Department from 1986 to 1996 and will turn 70 in April 2016. If you are interested in attending, please contact me at lindvicjul@gmail.com or at 312.608.5827.

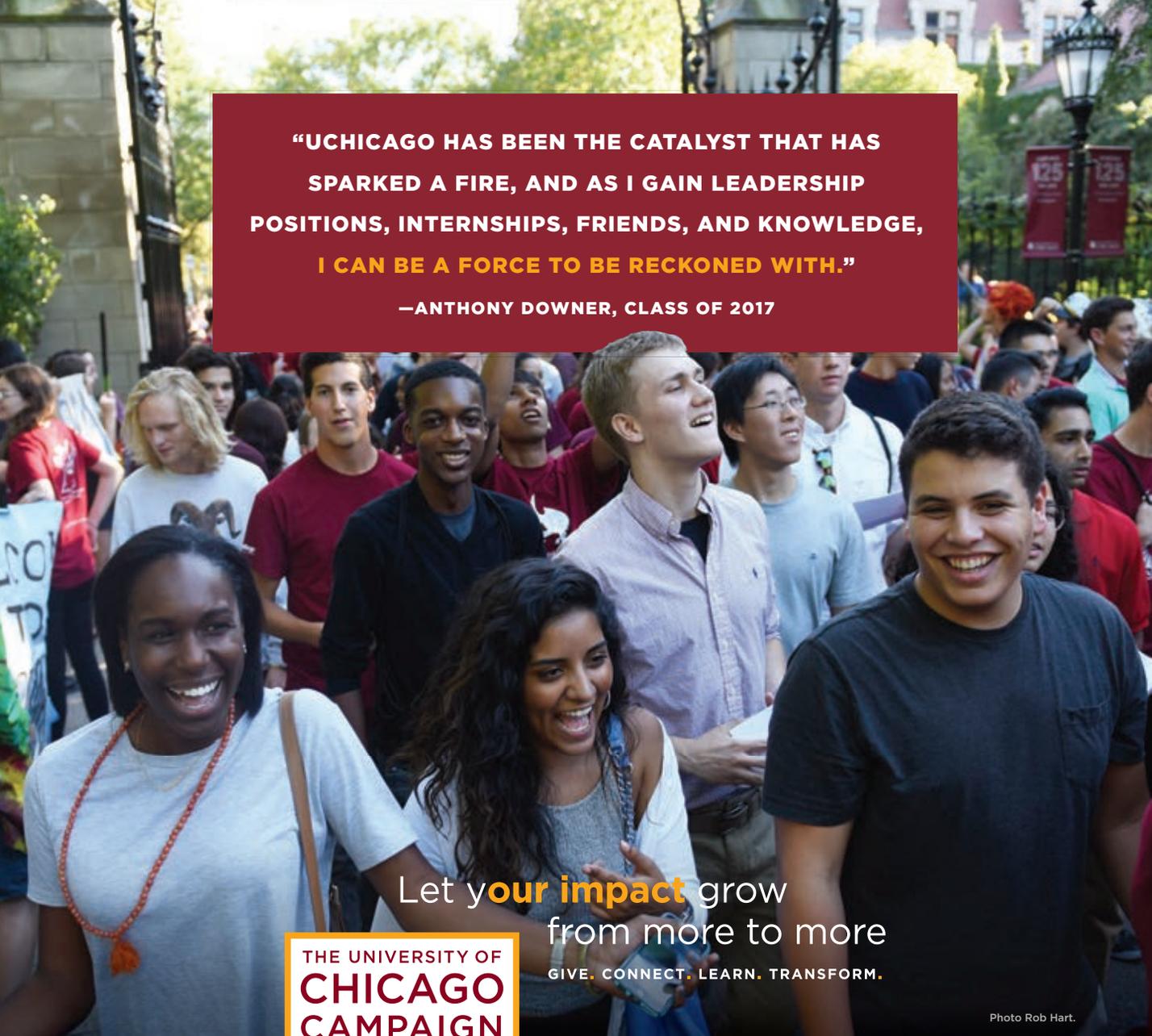
Julia Linchevskaya Linden
NEW YORK CITY

Corrections

In "La Vie Est Belle" (the *Core*, Summer 2015), the address of Renee Granville-Grossman Residential

Commons was misstated. The correct address is 6031 South Ellis Avenue. We regret the error.

The University of Chicago Magazine welcomes letters about its contents or about the life of the University. Letters for publication must be signed and may be edited for space, clarity, and civility. To provide a range of views and voices, we encourage letter writers to limit themselves to 300 words or fewer. Write: Editor, The University of Chicago Magazine, 5235 South Harper Court, Suite 500, Chicago, IL 60615. Or email: uchicago-magazine@uchicago.edu.



**“UCHICAGO HAS BEEN THE CATALYST THAT HAS
SPARKED A FIRE, AND AS I GAIN LEADERSHIP
POSITIONS, INTERNSHIPS, FRIENDS, AND KNOWLEDGE,
I CAN BE A FORCE TO BE RECKONED WITH.”**

—ANTHONY DOWNER, CLASS OF 2017

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UChicago Journal



GABRIEL SIERRA, INSTALLATION VIEW AT THE RENAISSANCE SOCIETY, 2015, PHOTOGRAPHY BY TOM VAN EYNDE

Gabriel Sierra's 2015 installation at the Renaissance Society, the title of which changed hourly, included suggestions for how visitors could engage with each of the 14 structures or areas.

ART

Avant guard

For a century, the Renaissance Society has focused on artists and the ideas that inspire them.

In 1935 the Renaissance Society hosted the first US exhibition of Alexander Calder's mobiles. "Something must be wrong," the exhibition brochure said: Calder's work induced smiles. "This is not the way one usually feels in a roomful of sculpture."

In 100 years of bold commissions and exhibitions, the Ren has shown work by Henri Matisse, Jeff Wall,

Félix González-Torres, Gabriel Sierra, and many more artists who went against the tide. During its centennial season this fall, visitors to the gallery on the fourth floor of Cobb Hall can take in Paul McCarthy's provocative figure sketches; performances by jazz artist Wadada Leo Smith, who composes with colors, lines, and shapes; and more.

A show opening in November, *Let Us Celebrate While Youth Lingers and Ideas Flow, Archives 1915–2015*, presents artifacts from the Ren's rich history. Executive director and chief curator Solveig Øvstebø wanted the anniversary lineup to demonstrate both "what the Ren is and has been."

Founded by UChicago faculty as a home for lectures on art and beauty,

the Ren strives to be "a place where art is not only shown but also discussed," says Øvstebø. It doesn't have a permanent collection but devotes its resources to giving each artist free range and extensive support. The goal is to focus less on the art object and more on "what kinds of ideas and discussions art raises in our society."

The Ren is independent, but being on campus means continual interaction with students and scholars from across disciplines. "We want more voices in the discussion" about each exhibition or event, says Øvstebø, and "we are in a fantastic place for that."



For more on the Renaissance Society, visit mag.uchicago.edu/rensoc100.



The University's history, Boyer writes, "has been marked by extraordinary continuities of normative values and educational practices."

UNIVERSITY HISTORY

Past and present

College dean John W. Boyer turns a historian's eye to the University.

In the summer of 1996, Dean **John W. Boyer** began what he thought would be a small summer research project, never imagining that his efforts would span nearly two decades and result in a new history of the University of Chicago.

At the time, the UChicago community was debating an expansion of the number of students in the College. The issue provoked passionate discussion among faculty and administrators, who turned to Boyer for his opinion. As dean of the College, "there was no wiggle room," recalls Boyer, AM'69, PhD'75. "I needed to have an answer."

He spent the summer meticulously investigating the University's archives, piecing together the story of the College, its evolving size and demographics, and its ties to the wider University. Boyer presented his findings to the faculty that fall—and even those who opposed the growth of the College were grateful for the context.

It was never intended as anything more than a one-time endeavor. But

the following year, with the start of a conversation about revising the College's storied Core curriculum, Boyer turned to the archives once again. In the years that followed, he released 17 monographs on topical issues in the institution's history, including fundraising, the arts, and student housing.

These monographs were, he explains, an exercise in "pragmatic history, an attempt to shed some light on the history of this fascinating place, from a scholar's perspective."

And at a certain point, "it became kind of fun," Boyer admits.

As the University began celebrating its 125th anniversary this September, the University of Chicago Press published Boyer's *The University of Chicago: A History*, which knits together his years of research and offers new perspectives on the women and men who created and sustained the institution. Boyer chronicled the University's history even while adding his own distinguished chapter, with an unprecedented five terms as dean of the College and 23 years of service in that role so far.

Boyer's research revealed the ebb and flow of recurring themes in the University's history: debate around student life and the rigor of the undergraduate experience, the challenges of maintaining financial stability, and efforts to engage more deeply with the surrounding community and the city. But his book is also a study of people and personalities and an exploration

of presidential leadership, from the University's innovative and determined first president, William Rainey Harper, to the cautious Harry Pratt Judson to the pragmatic realist Lawrence Kimpton. One leader stands out: "If you were to ask me who is the most fascinating character in the book, it's clearly Hutchins," Boyer says.

Wunderkind Robert Maynard Hutchins was only 30 when he became president in 1929. He made sweeping changes to the administrative structure of the College. He also instituted the "New Plan," an overhaul of the undergraduate program that included five yearlong general education courses.

"I sometimes get the sense that Hutchins got up in the morning and said, 'How can I drive the faculty up the wall? What can I do today?'" Boyer says. "And a great leader has to have that quality, to push boundaries and challenge the faint of heart, to exert a kind of natural leadership—Hutchins had all of that in spades."

Boyer starts *The University of Chicago: A History* with the story of the first University of Chicago, an institution that collapsed in penury and embarrassment in 1886, less than 30 years after its founding. Harper and a small cadre of believers, including fundraiser in chief Thomas Goodspeed, resurrected the University in 1890 after a long, anxiety-ridden struggle to raise money and recruit faculty.

It makes for a somber beginning to the University's story, but is, Boyer argues, an essential reminder of the contingencies of history and how easily today's University of Chicago might never have existed at all. "People like Harper and Goodspeed were profoundly conscious of the fact they were starting on a second chance—that they weren't going to get a third chance." Risk, he says, has been a hallmark of the University since its founding.

In his unprecedented tenure as dean, Boyer has developed an intimate perspective on the history he wrote. Despite his personal stake in the issues, "one has to be as objective as possible," Boyer explains. "To write the history, one has to stand on the outside."

Yet he also believes his very closeness to the subject affords certain advantages. "I think the best history is a history that's passionate."

—Susie Allen, AB'09

Critical care

Sinai Health System and the University of Chicago Medicine partner to provide trauma care services at Holy Cross Hospital

In a move to create a more comprehensive system of needed trauma and emergency care for Chicago's South and Southwest Side communities, Sinai Health System and the University of Chicago Medicine are partnering to build and operate a level 1 adult trauma center and to expand emergency services. The new trauma center will be at Holy Cross Hospital, part of the Sinai Health System. Holy Cross, at 68th Street and California Avenue, is near some of the highest incidence of trauma injury and gun violence in the city.

Under the University of Chicago Medicine-Sinai Health System partnership, Holy Cross will renovate and expand its emergency department and build a state-of-the-art level 1 adult trauma center; UChicago Medicine will provide capital to help fund the facility improvements at Holy Cross Hospital, which are estimated to be in the range of \$40 million; Sinai Health System, which operates a trauma center at Mount Sinai Hospital, will provide specialists dedicated to trauma care along with trauma care support services; and UChicago Medicine will provide specialists dedicated to trauma care, including general trauma, neurological, orthopedic, and plastic surgeons; urologists; and others.

In addition to the new trauma center at Holy Cross, UChicago Medicine plans to increase access to emergency services on its Hyde Park campus by expanding and building a state-of-the-art adult emergency department.

"This new level 1 adult trauma center is a true community and civic effort," said Mayor Rahm Emanuel. "I commend the University of Chicago, Sinai Health System, and Holy Cross Hospi-

tal for working collaboratively to meet an important need on the South Side. This partnership will strengthen their long-standing commitment to their communities and proves once again why these institutions are an asset to our great city."

All three institutions bring significant experience and expertise to the partnership. Holy Cross Hospital, which serves many communities, including Englewood, Auburn Gresham, and Marquette Park, is one of the largest providers of emergency care in Illinois. Sinai Health System and UChicago Medicine run high-volume emergency departments. Sinai Health System has provided level 1 trauma care for more than 25 years, and UChicago Medicine has had a dedicated level 1 pediatric trauma unit at its Comer Children's Hospital as well as a burn unit for over a decade.

Sinai Health System and UChicago Medicine have a long-standing collaborative relationship, sharing the care of patients and their communities through both clinical services and dedicated programs that promote wellness and prevention. Both organizations

believe collaboration and shared responsibility are critical to addressing the overarching health care needs of the South and Southwest Sides, especially when it comes to emergency and trauma care and prevention of violence.

"This important opportunity allows us to extend our commitment to invest our resources where we can have the greatest impact on the critical health needs of our communities," said UChicago Medical Center president **Sharon O'Keefe**. "This collaborative partnership, a model for other care providers, leverages our collective experience and resources to expand access to life-saving, quality health care for the communities we serve."

The approval processes and construction are expected to take at least two years. Both organizations will use that time to recruit additional highly trained medical staff, nurses, and other health care professionals. Next steps also include meetings with community leaders to develop companion community programs focused on wellness and prevention.

THIS NEW TRAUMA CENTER IS A TRUE COMMUNITY AND CIVIC EFFORT.

WILLIAM RAINEY HARPER'S INDEX TOUGHDOWN

First-quarter points allowed by the Maroons during the first six games of the football season:

0

Average number of points scored per game by the 5-1 Maroons, compared with opponents' average of 22:

29.5

Head football coach Chris Wilkerson's career win record with the Maroons:

.792

UChicago football players who achieved University Athletic Association All-Academic honors for 2015:

34

Maroons named Southern Athletic Association or UAA Athletes of the Week so far this season:

4

Rushing yards by running back and second-year Chandler Carroll during a Sept. 26 win, breaking a 1985 school record by Bruce Montella, AB'86, MD'90:

311

Share and protect

Craig Futterman and his students work to make police departments more transparent, starting in Chicago.

In March 2014 clinical law professor **Craig Futterman** and his students in the Law School's Civil Rights and Police Accountability Project won a stunning legal victory when an Illinois appellate court ruled that the Chicago Police Department's misconduct records be opened to the public. It was a watershed moment. Thousands of documents that Futterman and his students had sought, files pertaining to citizen claims of police abuse, were suddenly available for anyone to access. They revealed what Futterman called a "broken system" that for decades had allowed abusive officers to act with impunity.

Futterman knows that system well: in 2000 he founded the Civil Rights and Police Accountability Project at UChicago, the first of its kind in the nation. In the years since, he has worked alongside hundreds of law students, coaching them as they strive to free clients falsely accused of crimes and as they litigate—and very often win—civil lawsuits

over false arrests, kidnappings, beatings, and other civil rights violations by police.

The appellate victory in *Kalven v. Chicago*, a Freedom of Information Act lawsuit filed on behalf of Hyde Park journalist and activist Jamie Kalven whose success opened up the misconduct records, was the culmination of a 10-year litigation fight for Futterman and his students. But he is careful never to call it an ending. "I don't want to diminish it—this is real reform," he said in August 2014, "but by itself it doesn't fix the system. By itself it doesn't end abuse; it doesn't end racism; it doesn't end the police code of silence."

Fifteen months later, Futterman is on the verge of that next step. He and his students will return to the courtroom to defend the *Kalven* decision. In December 2014, as city officials prepared to hand over a complete list of abuse allegations from 1967 to the present—"a staggering, unprecedented amount of information," Futterman says—the police officer organization the Fraternal Order of Police secured a temporary injunction barring the release of any records dating back farther than four years. Now it is seeking in court to have that older data destroyed, citing collective bargaining agreements between the city and the police union. Futterman and his students are fighting that

effort. "You can't privately agree to keep secret what the law requires you to share," he says.

In late October Futterman and Kalven launched an open database to collect and organize police misconduct information. The database, accessible at cpdb.co, currently includes 54,581 complaints for 8,337 officers during the periods May 2001 to December 2008 and March 2011 to March 2015—records obtained in the Kalven lawsuit and by a series of FOIA requests filed in the wake of the decision. Futterman and Kalven plan to add more records as they become public. "Now we can have honest conversations with common data sets, common pools of information—the department's own information," Futterman says. "This fundamentally redistributes power."

The clearinghouse, as Futterman calls it, allows users to analyze misconduct information by geography—neighborhoods, wards, police districts, and schools—and by category of complaint.

Users can see which officers are implicated together in alleged abuse. They can also see digital copies of the original documents. One unmistakable finding, says Kalven, is that a tiny fraction of officers provoke most of the complaints. Some accumulate them by the dozens, to little or no consequence. The vast majority of other officers, by contrast, have between zero and four.

**YOU CAN'T PRIVATELY
AGREE TO KEEP SECRET
WHAT THE LAW REQUIRES
YOU TO SHARE.**

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Craig Futterman meets with students in the Civil Rights and Police Accountability Project at the Law School.

Futterman hopes the database will foster an “ethos of sharing” among lawyers, journalists, researchers, and others who come into possession of police records through their own FOIA requests. “We hope people will contribute the documents they obtain, and help make the database more and more robust,” he says. Wide and free access was the original intent of the lawsuit, Kalven adds: “We’re not proprietary about any of these documents. When we said public, we meant public.”

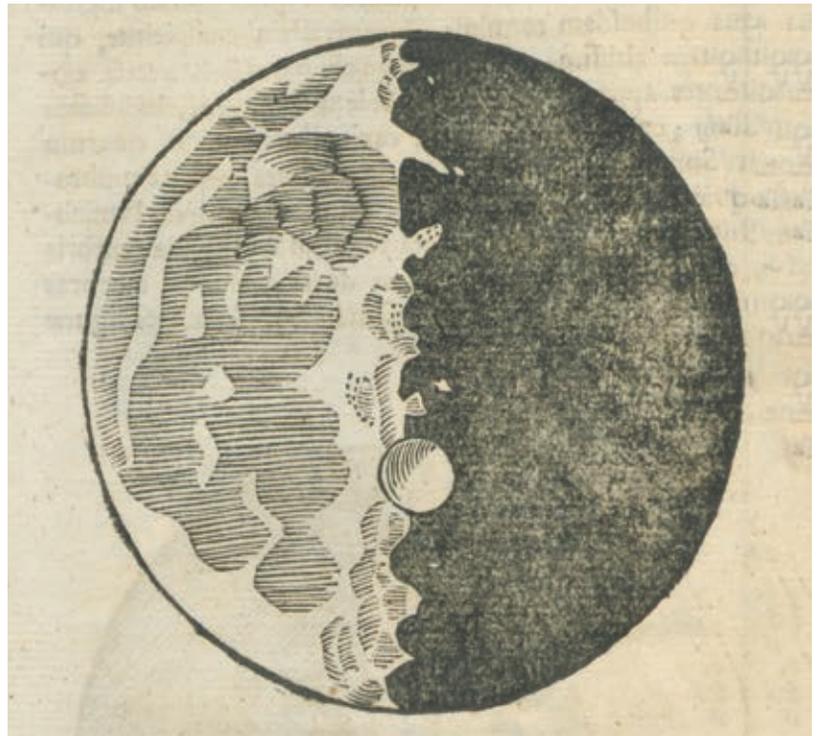
Futterman also hopes to encourage more police officers to report their own concerns about abuse. The database includes a function that allows people to share information with the clinic confidentially. “What police departments don’t do is protect officers from retaliation when they break the code of silence,” Futterman says. He offers an example of the difference it can make when police officers do speak up: the case of Laquan McDonald.

In October 2014, McDonald, a 17-year-old African American, was shot and killed by a police officer in the Chicago Lawn District on the Southwest Side. McDonald was shot 16 times, and the incident was captured by another police car’s dashboard camera. Representing an independent journalist named Brandon Smith, Futterman and his students have filed suit to have the video released to the public. He has not yet seen it, but confidential sources within the city alerted him to its existence and described what it shows, he says, as “an execution.” Investigating the incident further, he and his colleagues interviewed other witnesses who corroborated that description. (The Chicago City Council approved a \$5 million settlement with McDonald’s family before a lawsuit was filed.)

In April the US attorney’s office announced a criminal probe, which could result in the first-ever criminal prosecution of a Chicago police officer for an on-duty shooting. Crucial information that fueled his investigation, Futterman says, came from law enforcement officials who “stuck their necks out and had the courage to report abuse,” he says. “The database will provide the means for others to do so with less personal risk. . . . This is something that can fundamentally transform policing and the relationship between police and communities.”—*LydiaLyle Gibson*

ORIGINAL SOURCE

NEW MOON



Although Leonardo da Vinci famously made realistic sketches of the moon’s surface spots in the early 16th century, the first published images of the moon as seen through a telescope were Galileo Galilei’s. Based on observations through an instrument that the Italian polymath had refined to magnify celestial objects 30 times, the engravings appeared in his 1610 volume *Sidereus Nuncius* (*Starry Messenger*). Their publication caused a stir. They “were disturbing to some because they showed that the moon is not a perfect object,” says Daniele Macuglia, AM’10, a doctoral student in the Committee on Conceptual and Historical Studies of Science who teaches about Galileo.

In the Aristotelian worldview of Galileo’s Europe, he says, the universe was harmonious and its objects, except for Earth, were perfect. Ancient and medieval observers were aware of the apparently irregular surface of the moon—discernible by the naked

eye—but found creative ways to discount the irregularities. Some “thought the moon had different densities in different parts, and this was an optical effect,” says Macuglia. Others believed the moon was a mirror reflecting Earth’s uneven surface.

In addition to evidence of an imperfect moon, *Sidereus Nuncius* reported Galileo’s observations of a sky filled with many more stars than can be seen by the unaided eye, and of moons revolving around Jupiter.

Galileo was eventually confronted by the Roman Inquisition for later studies that supported Copernican heliocentrism. The church sentenced him as a suspected heretic in 1633, a measure Macuglia calls unfortunate but unsurprising. “They were facing the unknown,” he says. “It was something that created remarkable tensions and that called into question the integrity of the medieval worldview.”

—*Laura Demanski, AM’94*



Doctoral student James Crooks works with a nine-year-old visitor to Artifice's Woodlawn location.

SCIENCE AND TECHNOLOGY

Artifice

Graduate students offer hands-on science and technology education to local youth.

Pete Dahlberg stands before a classroom of eager elementary school students. He's poured liquid nitrogen into a deep steel pot, and the resulting steamy vapor makes the PhD student in biophysical sciences seem like a wizard with a magic brew.

Dahlberg's magician status derives from his participation in Artifice, a nonprofit organization dedicated to STEM (science, technology, engineering, and math) education and staffed largely by University of Chicago doctoral students in the Graduate Program in Biophysical Sciences. They teach at the organization's headquarters, a community tech center in the Woodlawn neighborhood where local youth learn to create websites, make video games, build robots, and repair computers.

They also take their mission into local schools. On this day, students at William H. Ray Elementary School in Hyde Park gather around Dahl-

berg. He invites them to add cream and sugar; then he stirs, sprinkling in science questions while the concoction thickens.

"Who knows the freezing point of water?" Dahlberg asks. The students peer into the pot; they can see that liquid nitrogen, at minus 321 degrees Fahrenheit, is much, much colder—cold enough to freeze cream and sugar practically on the spot. A few more seconds of stirring and poof! Dahlberg is serving up ice cream.

"We try to make the learning tactile and the technology fun and accessible," says Dahlberg, who cotaught the 20-week after-school course with fellow doctoral student **Will McFadden**. (The two also taught a course at the University of Chicago Charter School Woodlawn Campus.)

Additionally, students in the Ray Elementary School course learned how to build home security systems and constructed and programmed small robots equipped to skirmish with one another. "The focus is not so much on how electrons are moving through the wires," Dahlberg adds, "but more on, 'wow, I can make an alarm go off or make something move.'"

Artifice began two years ago as the vision of doctoral student **James Crooks**, a computer programmer and physicist, and **Ashley Lane**, AB'11, who was familiar with STEM initiatives through her work with nonprofits serving at-risk youth. "I saw projects that weren't going to change anyone's trajectory," Lane says, "projects where the outcome was making a T-shirt."

She and Crooks approached **Adam Hammond**, PhD'01, director of curriculum in the Graduate Program in Biophysical Sciences. The three imagined a neighborhood center for youth that could empower them to find jobs

WE TRY TO MAKE THE LEARNING TACTILE AND THE TECHNOLOGY FUN AND ACCESSIBLE.

in an expanding technology sector or simply to use technology to help attain other goals. "Back then this was all just speculation, a what-if," Crooks says. "We never intended to start a nonprofit."

But once they put the word out, the community responded quickly. The UChicago Office of Civic Engagement, through its Community Programs Accelerator, helped Artifice find space and forge a partnership with Woodlawn East Community and Neighbors, which provides a storefront at 6460 South Stony Island

PHOTOGRAPHY BY ROBERT KOZLOFF

Avenue. Other UChicago departments donated used computers, and a television segment that aired on WTTW-Channel 11 helped secure office furniture and other resources. By December 2013, a two-week pilot program was launched with students from Hyde Park Academy, yielding the center's first wave of young techies.

Now on weeknights and Saturdays, the center's side door is propped open. Neighborhood kids ages 10 and up drop in for classes or free exploration at any of the center's 12 computers. Hammond, Dahlberg, Crooks, other graduate students, and some under-

graduates rotate teaching classes, tutoring, and simply being there to help kids with whatever interests they bring in the door.

"You might see kids making their own electromagnets, taking apart a 1990s Mac, or playing Minecraft," says Hammond. "I might say to the kids, 'I want all of the resistors out of this motherboard,'" he adds. "The 'take-this-apart' approach is a great way to learn."

DaQuohn Owney, a high school senior who dropped into Artifice on the first day it opened, didn't expect to like it. "I'm a writer," he explains, "and I want to be an actor." But tech-

nology caught fire with Owney, who attends Hyde Park Academy, and who now is able to maneuver among three different coding systems—HTML, CSS, and JavaScript. He's become skilled enough to work as an assistant teacher at the center and has used his coding knowledge to create a website for actors containing style tips, a blog, and celebrity news.

It's precisely the kind of outcome Artifice's cofounders had hoped for. "One of our goals is to help kids figure out how to use technology to do what they want to do," Crooks says, "to use it as a tool in whatever path they choose."—*Mary Abowd*

CITATIONS

DATA-DRIVEN DECISIONS

The Research Opportunity Index (ROI), a computational model developed by University scientists, could help better allocate US biomedical research resources. Described in the August issue of *Nature Biotechnology*, the data-driven model looks for discrepancies between human and financial resources dedicated to a disease and its relative burden on society as measured by frequency of diagnosis and insurance and other costs. The ROI helps identify diseases like Hashimoto's thyroiditis, the most common cause of hypothyroidism, that have the most investment potential. "Resources are finite and attention to each problem

ideally should be proportional to the need," said senior study author **Andrey Rzhetsky**, professor in genetic medicine and senior fellow at the Institute for Genomics and Systems Biology. Associate professor of sociology **James A. Evans**, director of the University's Knowledge Lab, also collaborated on the study.

DUSTY PLANETS

Those dust clumps in your bedroom have something in common with newly forming planets. UChicago researchers used such dust-sized particles to observe zero-gravity particle collisions in order to simulate events such as the formation of new planets. The study, led by graduate student **Victor Lee**, AM'15, along with

Scott Waitukaitis, PhD'13; **Marc Miskin**, PhD'14; and **Heinrich Jaeger**, the William J. Friedman and Alicia Townsend Professor in Physics, found that the electrical charges of these particles cause them to form orbital patterns around each other. Bonds are formed as more particles pass nearby, causing them to accumulate into larger masses. Such formations had been previously hypothesized, but by using a high-speed camera to record the particles in a vacuum chamber, the research team was able to observe them for the first time. Their findings were published in the August *Nature Physics*.

CRYSTAL-CLEAR VISION

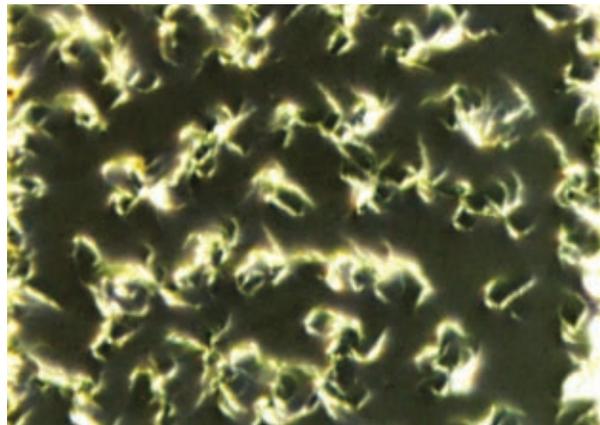
The liquid crystals used to make computer displays and TVs may be able to help in the early detection of type 2 diabetes and neurodegenerative diseases like Alzheimer's. The protein aggregates associated with the diseases' development are too small to be seen with a microscope, but researchers from the Institute for Molecular Engineering and colleagues from the University of Wisconsin used a film of liquid crystal molecules to make an amplified imprint of the proteins that could then be studied. Their work, which was published online September 9 by the journal *Advanced Functional Materials*, could

lead to less elaborate and costly early-detection tests for patients and new ways to study the long-term effects of treatments, said research group leader **Juan de Pablo**, the Liew Family Professor in Molecular Engineering.

GUT REACTION

The composition of gut microbiomes, or the communities of mutually beneficial bacteria that live in the gastrointestinal tract, may influence the development of food allergies in children, according to research published September 22 in the *ISME Journal*. University of Chicago researchers, led by Bunning Food Allergy Professor **Cathryn Nagler**, working with researchers from the University of Naples in Italy, found that the gut microbiomes of infants without a milk allergy and those whose intolerance had been treated with a probiotic formula contained higher levels of certain bacteria that help maintain homeostasis in the digestive system. Identifying the bacteria that could prevent or treat food allergies is "a fundamental advance," said coauthor **Jack Gilbert**, associate professor in the Department of Ecology and Evolution. "Translating these findings into clinical treatments is our next goal."

—*Lydialyle Gibson and Helen Gregg, AB'09*



Liquid crystals can help scientists see and study protein aggregates linked to neurodegenerative diseases.

COURTESY ADVANCED FUNCTIONAL MATERIALS, SADATI, ET AL.

FOR THE RECORD



LANDMARK GIFT

A \$100 million gift from The Thomas L. Pearson and The Pearson Family Members Foundation will establish a research institute and annual global forum devoted to the study and resolution of global conflicts. Housed at Chicago Harris, The Pearson Institute for the Study and Resolution of Global Conflicts and The Pearson Global Forum will use data-driven, analytical approaches to inform better policy solutions around the world.



LEGAL LEADER

Thomas J. Miles, AM'96, PhD'00, has been appointed dean of the Law School, effective November 1. A widely published scholar of criminal justice, judicial behavior, and other contemporary legal issues, he has been on the Law School faculty since 2005 and is a recipient of the Graduating Students Award for Teaching Excellence. "The Law School is my intellectual home," said Miles. "My scholarship is steeped in ideas that were developed here. The continuation and extension of the Law School's leadership in legal thought and education

therefore have a particular personal importance to me."

ENGINEERING CHANGE

Starting in Autumn Quarter 2015, the College is offering a major in molecular engineering, the first undergraduate engineering degree program in the University's 125-year history. The major, designed and administered by the Institute for Molecular Engineering, has two tracks, one for biological, chemical, and soft materials engineering, and one for applied physics. A three-credit design course gives students the opportunity to work with a faculty member to tackle a real-world engineering challenge. The University began offering a PhD and an undergraduate minor in molecular engineering in Autumn Quarter 2014.



NEW TRUSTEE ELECTED

In May **Emmanuel Roman**, MBA'87, CEO of London-based investment managers Man Group, began a five-year term as a University of Chicago trustee. A longtime UChicago supporter, he has served on the Chicago Booth Global Advisory Board since 2006, and a major gift from him in 2013 endowed the directorship of the Neubauer Collegium for Culture and Society. "Manny's leadership transcends global boundaries, and we are excited to welcome him as a trustee," said board chairman **Joseph Neubauer**, MBA'65.

REAPPOINTED

Two professional school deans have been reappointed to second five-year terms: **Sunil Kumar** at Chicago

Booth and **Neil Guterman** at the School of Social Service Administration. During his first term at Booth, Kumar expanded scholarship opportunities, established the Social Enterprise Initiative, moved the Executive MBA Program Asia to Hong Kong, and strengthened alumni engagement. Guterman, the Mose and Sylvia Firestone Professor at SSA, developed new social welfare and urban research initiatives, recruited new faculty, and established three international educational exchange programs.

NEW VICE PRESIDENTS

John Longbrake has been appointed vice president for communications, and **Katie Callow-Wright** has been named vice president and chief of staff in the Office of the President. Longbrake is responsible for developing strategic communications for academic programs, University initiatives, and institutional priorities. Callow-Wright's responsibilities include strategic planning, analysis, and policy development, as well as management of day-to-day operations for the president.



GOVERNING PRINCIPALS

University trustee **Liz Thompson** is the new governing board chair of the University of Chicago Charter School, effective August 20. A veteran of several nonprofit and educational organizations, Thompson will head the 21-member governing board that oversees the school's four South Side campuses. "I'm honored to have this

opportunity to help guide the progress of a school that is delivering such impressive results for its students and is so committed to ensuring that every one of them not only earns a college degree but becomes a critical thinker and leader in the process," said Thompson.



GUIDING THOUGHT

The Stevanovich Institute on the Formation of Knowledge, founded in April 2015 to support interdisciplinary inquiry into how human knowledge emerges, evolves, and affects the modern world, has named an executive director. **Macol Stewart Cerda** will draw on her experience from previous positions with USAID and the National Oceanic and Atmospheric Administration to help foster scholarly collaboration at the institute. "Her work will be essential to our success, and we look forward to an extremely productive partnership," said inaugural faculty director **Shadi Bartsch-Zimmer**.

PEDIATRICS CHIEF

Donald N. Pritzker Professor **John M. Cunningham** has been appointed chair of the Department of Pediatrics, effective August 1. Cunningham, who had served as interim chair since 2014, is an expert in childhood cancers and blood disorders. After joining UChicago in 2006, "he rapidly built up our pediatric cancer program," said Biological Sciences Division dean **Kenneth Polonsky**, by expanding research efforts and clinical trials, recruiting new faculty, and improving community relationships.

News You Can Use

Alisa Miller, MPP'99, MBA'99, thinks public media can change Americans' worldviews

Think of the last news story you encountered. Maybe you watched it on TV or heard it on the radio or skimmed it on your phone. However you experienced it, there's a good chance it focused on events in the United States—and that a man was being interviewed or profiled.

United Nations Entity for Gender Equality and the Empowerment of Women statistics show that women account for only 24 percent of news subjects in print, radio, and television; and international coverage makes up just 21 percent of the news Americans consume, according to a 2008 analysis by the nonprofit media company Public Radio International (PRI).

The startling lack of geographic scope and gender diversity in US media coverage was something **Alisa Miller**, MPP'99, MBA'99, knew she wanted to tackle when she became CEO of PRI in 2006. PRI produces and distributes radio programs including *The World*, *Studio 360*, and *Science Friday*.

Miller says the American news media's limited focus can be seen clearly in the coverage of events like the 2007 death of former *Playboy* Playmate Anna Nicole Smith. That story dominated the news for weeks, while major floods in Indonesia and a key report on climate change went relatively ignored. The cycle repeated itself month after month, with coverage of celebrities and scandals eclipsing discussion of serious international issues. As the media fretted over the death of Michael Jackson, "other huge things were happening in the world that impacted millions and millions of people's lives that no one was hearing about," Miller says.

The skewed coverage has given Americans a heavily distorted worldview, Miller argues. She is particularly troubled by the media's treatment of women. "When you have a broader news media environment where wom-

en are literally absent as experts, as people who are being interviewed ... that is not an accurate picture of the world," she explains. "There are so many places where women are impacting the world, yet they are not who is being shown or being interviewed."

In 2014 PRI launched *Across Women's Lives*, an initiative aimed at highlighting the stories of women and girls from around the world, particularly in areas like Africa and India that receive little attention from American media. Recent stories in the series include a piece on female sake brewers in Japan and an analysis of efforts to curb sexual violence in Nicaragua.

Through these stories, Miller hopes to show that covering women isn't just a symbolic gesture—it can be good for business too. "PRI's audiences are growing," she says. "We are reaching millions more people across social media because we engage women and we have content that includes women."

Gender diversity is a personal issue for Miller, who is the first woman CEO of a major public radio network. Miller credits her parents for giving her the confidence to take on a challenging leadership role. When she was growing up in Lincoln, Nebraska, "[my parents] never said, 'Why don't you try doing this, because that's something that girls do?'" It was always, "You can do whatever you want and make it happen."

After graduating from the University of Nebraska, Miller briefly worked in consulting before enrolling in a joint MBA/MPP program at the University of Chicago. The balance of policy expertise and business acumen spoke to her. "I've always been interested in media and technology as a business,

and I've also been interested in how media and technology can transform society," she says. To weave her passions together, she needed the language of both business and policy.

At Chicago Booth, Miller founded a group for students interested in media and entertainment. She launched a short-lived media start-up through the New Venture Challenge focused on the lifestyle and resort magazine industry and then took her first position in public media as director of business and product development for *SesameStreet.com*.

She never left the public media sector, which she calls "a place of great quality, mass reach, and ability to have a transformative effect on people's lives." Miller joined PRI as a senior vice president in 2001 and became CEO less than five years later. Keeping a level head and clear vision wasn't easy at first. "I treated it like it was finals week every week," Miller says of her early days as CEO.

Like many media companies, PRI has had to adjust to increasingly tight budgets and the disruptive influence of technology. It's not obvious what role a program development and distribution company like PRI should play in an age when podcasters can create and disseminate their own content.

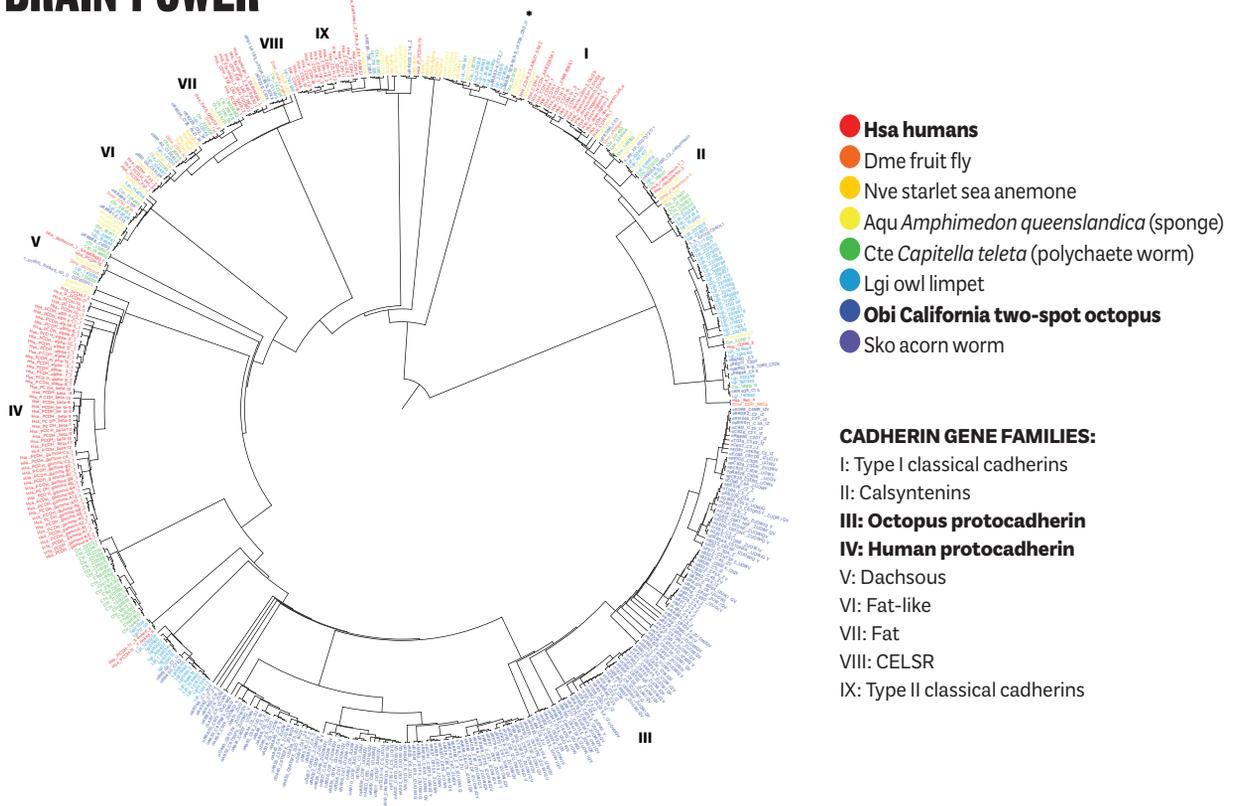
As she looks to the future, Miller sees both possibility and risk for the company she leads. "The opportunities have never been greater in terms of reaching and serving and engaging people deeply," she says, nor have the economics of public media been more challenging. But "I gravitate towards that kind of complexity."

—Susie Allen, AB'09



Miller received Chicago Booth's 2015 Distinguished Public Service/Public Sector Alumni Award this past spring.

FIG. 1 BRAIN POWER



As a researcher, Caroline Albertin, SM'12, a PhD student in organismal biology and anatomy, has always been partial to weird animals: mussels, centipedes, cave fish—and cephalopods. On a 2009 campus visit as a prospective student, she got a tour of UChicago's octopus facility from neurobiologist Clifton Ragsdale. Usually the aquariums are full of animals, but that day there was just one little egg. "And as we're peering over it, watching," she recalls, "suddenly it hatches out, changes color, inks, and swims away." She's been an octopus researcher ever since.

Albertin and Ragsdale were part of a team that recently sequenced, for the first time, an octopus genome: the California two-spot octopus, *Octopus bimaculoides*. Albertin was lead author on the study, published August 13 in *Nature*, which sought a better understanding of the genetic and molecular mechanisms underlying

traits specific to cephalopods, a 500-million-year-old class of predatory mollusks that includes octopuses, cuttlefish, and squids. She was especially interested in how the animals developed their large and complex brains. With the equivalent of a spinal cord running down each of their eight arms, octopuses are highly intelligent; they demonstrate a strong ability to learn and to solve problems.

Among the study's findings was an unexpected abundance of a family of genes called protocadherins, which until recently were thought to exist only in vertebrates. "Cadherins are cell adhesion molecules," Albertin says. "They stick out from a cell and allow that cell to glue itself to other cells that have a cadherin domain sticking out too." Protocadherins—a subfamily—regulate neuronal development. "They're expressed during the early development of the brain," says Albertin. "It's thought that they act as little

signposts important in setting up the wiring" by determining which neurons should stick together. The octopus genome contains a whopping 168 protocadherin genes, vastly outnumbering those in other animals' genomes. Humans, for example, only have around 60 protocadherins.

This phylogenetic tree of cadherin genes is separated by type (the protocadherins are at the bottom half of the circle, labeled III) and color-coded by animal. The brackets inside the circle show taxonomic connections between individual genes. Looking further, the researchers found that the octopus's protocadherins were most expressed in neural tissues. "Exactly what role they're playing—we have a lot of work to do to find out," Albertin says. "But we speculate that this is part of the molecular bar code for setting up the cephalopod nervous system, and that this is why they have big brains."—LydiaLyle Gibson

GRAPHIC COURTESY ALBERTIN, ET AL.

Continuing education

Questions for doctor, businessman, and quadruple degree holder Robert Behar.

Robert Behar, LAB'81, AB'83, MD'87, MBA'11, had earned three of his four UChicago degrees by age 23. The son of Cuban refugees, Behar enrolled in the College at 16 and in the Pritzker School of Medicine at 19. Decades later, he returned to attend the executive program at Chicago Booth. A cancer specialist, Behar is now chairman and CEO of North Cypress Medical Center in Cypress, Texas.

Behar serves on the Visiting Committee on the College and Student Activities and was the first to name a house in the new Campus North Residential Commons, which will open in 2016 on the site of Pierce Tower, where he lived (unhappily) as an undergrad. The *Magazine's* interview with him has been edited and adapted.

—Carrie Golus, AB'91, AM'93

You have a degree from Lab but never attended. How did you manage that?

I had placed out of the advanced classes at Niles North High School and didn't have much to do my senior year, so I applied to the University of Chicago. They gave me a high school diploma after my first year in the College. Otherwise I would still be a high school dropout.

I graduated in three years and applied to the medical school. During my interview the dean of students looked at me and said, did you grow that mustache to look older? I said, as a matter of fact, yes. He said, we need to check with the Law School to see if it's legal for you to be in the medical school because you're under 21. But it was fine.

What was your undergraduate experience like?

I started out in Pierce Tower. The food was absolutely horrible. I don't want to say anything bad about the University of Chicago, because it's really changed my life, but I lost a lot

of weight. After the first couple of months I asked if I could go back home and commute. The following year I was in the Shoreland, a really cool place. It was an old hotel and there were still some elderly residents.

Everybody should have the opportunity that I had of being influenced and impacted by an amazing university, and I'm a huge ally of Dean Boyer's quest to make a transformative impact on the residential life of College students. That's why I chose to name Behar House in Campus North with a gift of \$2 million through my foundation. Behar House is going to be not just a home but a place where students will be able to relax, socialize, study, and really improve the quality of their life. That's the goal that we all have.

How did you find the College academically?

Very difficult. In my first year I was in organic chemistry, biochemistry, linear algebra. It was frightening, but I decided to confront it.

The classes that made the biggest impact on me were not in science, because I went on to be so specialized. But the anthropology, sociology, psychology, and psychoanalysis courses gave me a reference to deal with human beings, which I use to this day in medicine and business.

Who were your favorite professors?

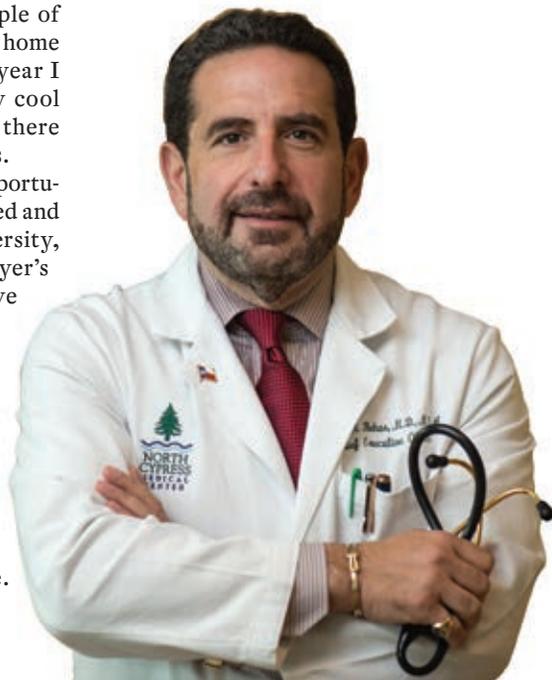
Bernard Brown [DB'55, AM'65, PhD'73], sociology professor and dean of Rockefeller Chapel. His Core course introduced me to Clifford Geertz and Victor Turner and Lévi-Strauss and Freud. He introduced me to a series of ideas I would not have otherwise come across.

Were you involved in any clubs?

The College Republicans. Even then I was a Republican. Coming from parents who were communist Cuban refugees, I would immediately spar with everybody, including the professors. But they accepted me.

How did you get interested in cancer?

The thought of cells going berserk, just attacking people and ruining their lives, gave me the grand scheme to go to warfare and try to help.



What was it like to return to UChicago after so many years?

For my entire life, I was always the youngest person in the class. When I got to Booth, I was one of the oldest. But I still acted like one of the youngest—youthful enthusiasm.

Business students tend to be better rounded than science people. They partied a lot. But I was running a hospital and a practice and had a family. When I flew back to Houston, I just didn't have any time to do homework. So I didn't go to the Cubs, the pubs, and all that stuff.

Why get an MBA?

I was recruited to start a cancer center in Houston, which I grew to four cancer centers. Then I opened a hospital that very rapidly grew into a large company. It employs 1,500 people and brings in about \$1.5 billion in revenue. I also became the real estate developer for the hospital. At that point, I'd had no formal business or legal education.

You volunteered for your College reunion. How do you choose which reunion to attend?

The College is really where it all started for me. I learned different things at different points of my life. At the College of the University of Chicago, I learned how to think. That's pretty big. I owe the College a lot because of that.

COURSE WORK

POLITICAL SCIENCE

Gaming the vote

BY HELEN GREGG, AB'09

As the 12 graduate students in her Applied Game Theory course return from their five-minute break, finishing snacks and stowing cell phones, **Monika Nalepa** grabs a dry-erase marker to illustrate the concepts of strictly and weakly dominated actions.

“So imagine you’re driving a car or riding a bicycle in Hyde Park,” she begins. The associate professor of political science sketches the situation on one of the writable-surface walls in the first-floor Saieh Hall for Economics classroom. “You’re on a road with two lanes each way and you’re getting to an intersection, and there’s a car in the right lane and you want to go straight.” There’s no indication whether the car in the right lane is turning (he’s a Chicago driver so he doesn’t signal, says Nalepa).

The left lane is clearly the best choice for maximizing speed, Nalepa says, writing out formal notation to show that choosing the right lane would be a strictly dominated action—whether the other car will slow and turn or keep going straight, the left lane will always be fastest.

Nalepa then adds a car to the left lane of her drawing. Now, she explains, only if the right-lane car is turning will the left lane be the faster path through the intersection. She modifies the notation to show that here, choosing the right lane is a weakly dominated action—there are only some scenarios in which there’s a benefit to playing the other strategy—but a rational decision maker will still use the left lane.

As Nalepa continues to clarify strict and weak dominance, formal game theory notation proliferates

across the whiteboard. These action profiles, utility functions, and payoff matrices are the foundation of the course; it’s an introduction to game theory, or the study of strategic decision making, for students in political and other social sciences.

Game theory has its roots in economics, devised as a way to logically predict people’s actions based on their individual costs and payoffs and the actual or presumed actions of others. Formal game theory models are increasingly used in the social sciences, says Nalepa, and she wants the students in her class to be able to understand, and question, proofs in academic journals.

Nalepa’s eyes light up when she talks about game theory—it’s a topic that’s fascinated her since she took decision theory as a philosophy under-



Basically, when I first started learning game theory, the whole world made sense.

graduate in Poland. “Basically, when I first started learning game theory, the whole world made sense,” she says. “It’s sort of like an aha moment—when you finally get a tool that allows you to understand a lot of social interactions that have been going on around you.” She proceeded to take every course that professor offered, add a major in sociology, and eventually earn a PhD in political science from Columbia University in 2005. She’s been teaching game theory ever since. She even knew her husband, **Suyash Agrawal**, JD’02, was special when his first words to her on their first date were about Arrow’s theorem, an important idea in social choice theory.

Nalepa wipes the board clean and starts to talk about voting. She introduces a situation, or game, where there’s an electorate with a large number of voting citizens, a majority of whom prefer Democrats over Republicans. “Now if I’m one of those citizens in the majority, if I prefer D over R,” says Nalepa, “how can I use this vocabulary that we just learned to describe the relationship between voting for D and voting for R? Is one of them weakly dominated by the other?”

A student puts down her pen to offer an answer: “Yeah, voting for R would be weakly dominated from the perspective of a person voting for D.”

“Exactly,” says Nalepa. In this situation, one Democrat pulling the lever for a Republican probably won’t matter—the Democratic candidate will likely win anyway. However, if other Democrats start doing the same, one voter could end up casting the pivotal vote and giving the election to the Republicans, making it an irrational choice. “Given this, don’t you think it would be reasonable to eliminate those weakly dominated actions from consideration?” asks Nalepa, erasing the strategy profiles that would have a voter casting a ballot for a nonpreferred candidate. After all, “who would ever vote for R if they preferred D, right?”

However, a game presented during last Thursday’s class showed there can be a strong incentive against voting at all. “The players are N citizens,” Nalepa said, and half support Party A while the other half support Party B. Players can either vote or abstain,

ILLUSTRATION BY ALLAN BURCH



Nalepa leads a discussion on game theory's applications in political science in a Saieh Hall for Economics classroom.

and if a player's preferred candidate wins or ties, there are payoffs for that player, but there's also a (smaller) cost associated with voting, said Nalepa, like taking the time to go to the polls.

In the first scenario, there are just two citizens: one supporter of each party. Each player has an incentive to vote, no matter what the other player does—neither would want to potentially hand the election to the other party by staying at home. The class determined that both people voting is a Nash equilibrium, a stasis named after the Nobel Memorial Prize-winning mathematician John Nash in which no player has an incentive to change their course of action, regardless of what the other players do.

"What is annoying about this equilibrium?" asked Nalepa.

"They're worse off than if they had just abstained," observed one student.

"Right," said Nalepa. "If they abstained, they could end up here," pointing to the payoff matrix to show that if neither had voted, they still would have gotten the benefits of a tie without the cost of voting. "But it's not an equilibrium, because here each of the voters has an incentive to deviate and vote. So what game does this remind you of?"

A chorus of students answered: the prisoner's dilemma, a famous game in which two criminals are incentivized to serve as witnesses against each other, even though they both would be better off remaining silent.

It seems strange to compare a voting game to the prisoner's dilemma "because it seems like they're doing something good," said Nalepa. "We're so

socialized to think of voting as our obligation," not as an illogical use of time.

Nalepa then increased the population of the imagined electorate, keeping the number of supporters equal. When the election is tied or one candidate is winning by one vote, everyone has an incentive to go to the polls because a single ballot is still pivotal to the outcome, she explained. No one on the losing side would sit out the election if voting could improve his or her payoff by turning a loss to a tie or a tie to a win.

Things change when a candidate is winning by more than one vote. Nalepa drew out the scenario, increasing the number of voting Party A supporters and increasing the number of nonvoting Party B supporters. "Since Party A is winning," said Nalepa, "none of the supporters has an incentive to change their strategy—"

Several students protested with variations of, "Yeah, they do!"

Nalepa quickly clarified. "This guy," she said, indicating a nonvoting Party A supporter, "does not have an incentive to change," as he's getting the full payoff without the cost of voting. His fellow Party A supporters who are voting do have an incentive to not vote, she said, nodding to the students who had objected; they're "overpaying" for their candidate's win. But the number of voters for each party won't start to even out, as one student then suggested—voting supporters of Party B are also being incentivized to stay home "because their party is losing and their vote is not pivotal," said Nalepa. Voter participation drops in both parties.

These effects are even more pronounced when the electorate is not evenly divided between parties, or is as large as the United States electorate, said Nalepa. To get people to the polls, "the only thing we can count on is civic duty." ♦

SYLLABUS

The twice-per-week class uses Martin J. Osborne's *An Introduction to Game Theory* (Oxford University Press, 2004), and grades are derived mostly from weekly problem sets—there are no exams. Students are also required to attend a session on formal modeling at the Midwest Political Science Association's annual meeting in Chicago.

Recognizing that formal modeling can be daunting (students seemed relieved when teaching assistant **Junyan Jiang**, AM'10, offered to arrange a calculus review session), Nalepa has a strict "no student left behind" policy—she doesn't move on until she's sure everyone understands what was just covered. That often means the class doesn't finish everything

on the syllabus; right before Jiang offered the review session, Nalepa told her students to cross two topics off their syllabi. "I always make sure that there are some topics I can just omit" on the syllabus, she says. "It's more important to me that, you know, someone who is lost at week four catches up by week five."

—H.G.



research

PROVING GROUND

UChicago's Urban Labs turn promising ideas for helping cities into hard evidence of what works.

BY MAYA DUKMASOVA

PHOTOGRAPHY BY MAYA DUKMASOVA



On a sunny Tuesday morning in early June, with the end of the school year already palpable, three girls were hard at work in a Chicago Vocational Career Academy classroom. The Chicago Public Schools high school is a sprawling Art Deco building on the southernmost edge of Avalon Park, on the South Side of Chicago. About 98 percent of its students are African American, and nearly 94 percent come from low-income families.

The school opened in 1940 to serve 6,000 students, but today fewer than 1,000 flow through its cavernous hallways as the population of the surrounding neighborhood declines. CVCA is still largely a vocational school, with majors in carpentry, cosmetology, and culinary arts, and only about half its graduating seniors are college bound.

In 2011 the school's test scores and graduation rates had gotten so low that CPS intervened, overhauling the staff and introducing new programs to help students stay on track to graduate. CVCA now has an intensified science, technology, engineering, and mathematics curriculum that offers college credit, but many students who arrive as freshmen fell behind years earlier and still haven't mastered middle school math.

While most of their peers were in traditional classrooms—one teacher, 25 students—the three girls sat face to face with personal tutors in the Math Lab. They attended the elective in addition to their normal math class. Their tutors were recent college graduates spending a year doing public service: Nichole Jannah, a neuroscience major from the College of William and Mary, and **Amelia Hansen**, AB'14, a UChicago biology major. That afternoon they were doing division with unknown variables on small dry-erase boards. "Number 23 is a little curveball but I bet you can do it," Jannah encouraged her student.

IF YOU CAN SHOW THE GOVERNMENT HOW TO SPEND ITS \$200 BILLION BETTER, YOU START TO HAVE A REALLY BIG IMPACT.

Veronica, a freshman, started the year with a D in math. Walking into class, she says, felt "horrible." She began working daily with her tutor this year, reviewing foundational concepts in arithmetic and algebra to catch up to the material being covered in her math class. Her grade by June was a high B, three points shy of an A.

Sarah, also a freshman, transferred to CVCA in the middle of the school year. Her math grade rose from a C to an A with the help of her tutor. She hadn't felt good in math class since sixth grade. After a few months of tutoring, she's confident: "When I go into math class, I fly through work," she said, snapping her fingers.

The tutoring Veronica and Sarah are getting could alter the course of their lives. Foundational math classes are a "key gatekeeper" for high school diplomas in many urban school districts, says **Jens Ludwig**, the McCormick Foundation Professor in Social Service Administration, Law, and Public Policy. Succeeding in those classes makes it much more likely that the girls will graduate. Graduating, in turn, will give them better prospects as adults in everything from their earning power to their health.

Their experience is also helping UChicago researchers learn how tens of thousands more students citywide, and beyond Chicago, can improve their chances of graduating. CVCA's Math Lab, one of 14 across CPS, is part of a large policy experiment being conducted by the Education Lab—part of the University of Chicago Urban Labs. The Education Lab's scholars, analysts, and practitioners model studies like this one after the randomized controlled trials that provide gold-standard evidence in medicine. Participants in the Math Lab are chosen randomly from a pool of low-performing students thought to be at high risk for dropping out. Researchers can compare their gains to the academic progress of a similar group of CPS students who have access to the city's regular support services, but not the tutoring program.

The five Urban Labs focus on education, health, energy and the environment, poverty, and crime, using rigorous social science methods to evaluate potential social interventions. The idea, says Ludwig, is to produce data about the effectiveness of programs and policies to help kids stay in school, for example, or reduce shootings, or provide better health care. When there's strong evidence of positive impact, the Urban Labs can use that data to mount powerful arguments for city or state governments to administer the programs on a larger scale, and can work with the labs' web of partners to influence policy. The labs then support cities in scaling up the most effective and cost efficient, ultimately contributing to social change on a large scale.

Ludwig cofounded the Crime Lab in 2008 and continues to serve as its director. The first of the Urban Labs, the Crime Lab branched out last winter to add an office in New York City, embedded in the Mayor's Office of Criminal Justice. Its success helped spur the creation of the other four labs this April, each led by a senior faculty member. Ludwig also codirects the Education Lab with Northwestern professor Jonathan Guryan and UChicago's **Timothy Knowles**, the Pritzker Director of Urban Labs.

The five labs forge partnerships with government agencies and nonprofits "to target the most critical challenges" for cities, says Knowles, who is also the chairman of the Urban Education Institute and John Dewey Clinical Professor in the Committee on Education. Bringing Math Lab to CPS students, for instance, was a joint effort between Urban Labs, CPS, the City of Chicago, and Boston-based Match Education, where the tutoring program originated.

When philanthropy focuses on direct support, Ludwig explains, "The people you help are the only people you help." But having hard data and acute analysis of a program's success and cost efficiency means being able to make a case for governments to adopt such programs, scale them up, and reach many more people.

"Nationwide, the US spends \$200 billion per year on the criminal justice system and \$500 billion on K-12 education," Ludwig says. "If you're a philanthropist, anything that you can give to provide direct services to kids is just a drop in the bucket. Our theory of change is if you can show the government how to spend its \$200 billion better, or its \$500 billion better, that's how you start to have a really big impact."

Some of that impact can already be seen. A 2012-13 Crime Lab study, for example, determined that Chicago's dropout and violence prevention program *Becoming a Man* reduced violent crime arrests by 44 percent among participants during the program year. *Becoming a Man*, which offers in-school and after-school sessions to build boys' social-cognitive skills, now serves about 2,000 students in Chicago. The results of the study also helped inspire President Barack Obama's \$200 million *My Brother's Keeper* initiative, announced in 2014.

The labs, Ludwig says, are "trying to help the government spend its money in a way that generates more social good per dollar spent." Or, as Knowles puts it, to "make smarter choices to improve the human condition, at scale."

In any school system, differences in students' academic skills grow larger and larger as they progress through the grade levels. The effect can be particularly pronounced in systems serving many students from economically disadvantaged backgrounds. Middle schools and



Tutor Amelia Hansen, AB'14, works one on one, a fundamentally different method than classroom teaching.

high schools in such systems are trying to educate students who are "all over the map in terms of what they need academically," Ludwig says.

"Everything in education policy right now is about getting teachers to do a better job teaching grade-level material," he adds. "Let's fire the crummy teachers, let's hire the better teachers, let's incent teachers with accountability systems that hold their feet to the fire." But no amount of pressure on high school teachers to teach algebra better will help their students working at third-grade level who haven't yet mastered multi-digit arithmetic.

One solution to this problem has been recognized for a long time: individualized instruction. The Math Lab, Ludwig points out, follows the same educational model that has been used at the University of Oxford for centuries. "What the people who founded Oxford knew was that one-on-one instruction, or two-on-one instruction, is the most effective way to teach anybody anything." The challenge has been not about solving a pedagogical problem so much as an economics problem: how to give Oxford-style instruction at CPS prices?

Match Education may have found a way. "The key a-ha moment that Match had," says Ludwig, "was to realize that teaching one or two kids is fundamentally different from teaching 25 or 30 kids. What you need to be able to do to be a good tutor is massively different from what you need to be a good classroom teacher."

Being able to successfully teach in the classroom involves years of practice and training in pedagogy and classroom management. Several studies, Ludwig says, have shown that most teachers perform quite badly in their first couple of years. But the steep learning curve is worth it for a classroom teacher who makes a lifelong commitment.



By recruiting a large pool of tutors who serve for one year, Match Education may have solved a key economic problem that has stood in the way of bringing individualized instruction to urban public schools.

To get results as a tutor, he says, requires only knowledge of the material, good rapport with people, and commitment, “so you can expand the pool of people who tutor, lower the costs, and thereby solve the key economic problem at the heart of all this.” Because a tutor doesn’t need special training or years of on-the-job learning to become good at it, Match can recruit recent college graduates or older career switchers who are willing to work for a modest salary for a year as a public service, in the same spirit in which new college graduates join Teach for America or the Peace Corps. The Match tutors—about 85 across the test schools—work full time, teach 12 to 14 students each, and are paid \$17,000 for the year plus benefits.

If the Education Lab and its partners can persuade cities to invest in tutoring on a large scale, thousands of students who have fallen far behind could catch up to grade level, reengage with regular classroom instruction, and begin to have real hope for a diploma. Ludwig calls the tutoring a safety net for those students, and a potential solution to what’s been an intractable systemic challenge for urban school districts across the country.

When principal Douglas Maclin arrived at CVCA four years ago, just 44 percent of the freshman class was “on track” for graduation—that is, passing all their classes. Math and English classes were particular obstacles. After Maclin’s first year that rate improved into the low 70s. Now, since the Match tutoring program arrived at the school in fall 2013, the freshman on-track rate has risen to more than 86 percent, and the sophomore rate to 87 percent. “The only thing different in our school is Match,” says Maclin. The program has helped the most lagging freshmen and sophomores so much that

this past summer, for the first time, CVCA did not need to provide any credit-recovery classes for failing students. Instead the school focused on offering higher-level math and honors courses.

Tutor Marian McElroy, a retired attorney, works with a total of 10 students. Tutors are required to contact parents or guardians at least once a week, and she talks with some of the parents almost every day. That’s crucial, she says, “so that you’re not just always giving them the bad news. Nobody wants the bad news all the time.” One of her students, Michael, was in a special needs math classroom until this year. Now his performance has reached the level of his peers, and he’s even participated in a math competition at the school. He shyly reported that his mother bought him a cake after McElroy called to tell her that he had won two rounds of the contest.

SINCE THE MATCH TUTORING PROGRAM ARRIVED IN FALL 2013, THE FRESHMAN ON-TRACK RATE HAS RISEN TO MORE THAN 86 PERCENT.

Michael diligently attends his daily tutoring sessions with McElroy and has gotten into the habit of eating his lunch in the Math Lab classroom. Felipe Alaniz, the site director of the Match program at CVCA, works to create an environment where students have a second home. The boys' Math Lab (separate from the girls' classroom because Urban Labs is tracking their data separately) is decorated with posters showing every tutor's picture, educational background, and favorite foods and hobbies. Chicago native Miss Cooper recently graduated from Syracuse University and loves chicken Alfredo. Mr. Cooman studied biochemistry at IIT. Miss Richards went to Northwestern University and likes to knit.

Each 50-minute Match session starts with a five-minute silent written quiz. This assesses the student's skill level on the concept he is studying in his regular math class, or that he will learn in that day's Match session. No one, not even the tutors or Alaniz, can speak in the classroom during this time. At the end of the session a second five-minute assessment informs the tutors of their students' progress and allows Alaniz to collect data on the tutors' effectiveness.

Alaniz jokes and laughs easily with the students, but he can become serious quickly when holding them accountable. He uses what he called "success rhetoric" to motivate the students, addressing each as Mister or Miss and using their last names even when speaking about them to colleagues. The main reason some students continue to perform poorly despite Match, he says, is missing school frequently. Alaniz tries to get to know each student's family and personal situation so he can stay attuned to their moods and help when they get discouraged.

"A lot of students are going through a lot," he says. "Sometimes they'll come in and I can already tell, because you get to know their ways and their mannerisms. That's really my role. I want my tutors to have all their authority; they rule their tables. But I'm that support where, if they have two students at a time and one student just needs to vent or talk, I'm the one that will take them and talk to them outside."

About halfway through the study, the students in CVCA's Math Lab doubled the amount of math they would have been expected to learn without tutoring, and many caught up with grade level. Data from across the 15 test schools tells a similar story. Math Lab students fail math courses half as often as students not in the program, and fail other courses 23 percent less often. They also closed the black-white test score gap by 30 percent—an improvement previously considered unlikely at the high school level. The results are particularly heartening to the Education Lab given the scale of the study, with more than 1,000 students participating last year.

In the education policy world, Ludwig says, it has been widely thought that helping more at-risk youth from low-income backgrounds stay and succeed in high school is nearly impossible. Many experts have suspected that adolescence might already be too late to substantially improve the academic outcomes of children in poverty. But the Match study's early results indicate that teens like Veronica, Sarah, and Michael still have a chance.

Many more students may get that chance. After seeing the first year's results, CPS took over stewardship of the program for 2015–16 and hopes to expand it in coming years. And after the *New York Times* covered the program last winter, cities across the United States contacted Match about implementing the model, including New York City. Ludwig and Knowles hope that eventually the program will draw government funds now supporting programs with less evidence of ef-

fectiveness, multiplying the number of students who benefit.

At CVCA, Math Lab continues this fall, growing to include 120 students from 80 last year. Again it serves freshmen and sophomores who are at the highest risk for dropping out due to poor academic achievement. Asked if they wanted to continue with the tutoring program next year, all the students interviewed for this story said, without hesitation, yes. ♦

Maya Dukmasova is a freelance writer and photographer based in Chicago. She writes about issues of social justice and social inequality for local and national publications.

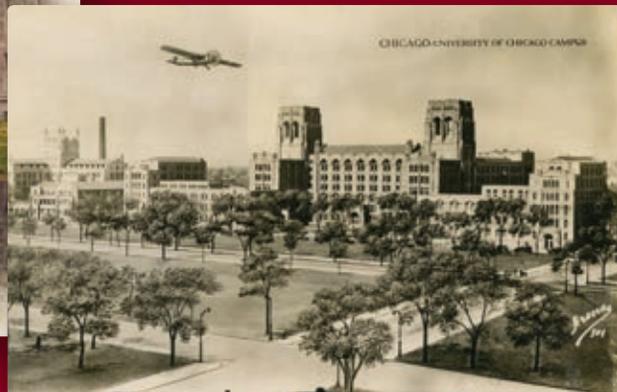


What makes the University of Chicago Urban Labs' approach distinct, according to Pritzker Director Timothy Knowles:

- Rigorous research that aspires to improve the human condition at large scale
- Close partnerships with leading government and not-for-profit agencies to maximize the chances that encouraging results translate into social impact
- A commitment to helping promote broad-scale adoption of promising solutions



To support the Urban Labs, visit mag.uchicago.edu/support-urban.



125 years

DÉJÀ VIEWS

Historical postcards capture UChicago as it was and as it wanted to be seen.

BY LAURA DEMANSKI, AM'94



The picture postcard is older than the University of Chicago, but its ascent began in this very neighborhood. Souvenir cards were sold in large numbers at the 1893 World's Columbian Exposition on the Midway. The "golden age" of privately published postcards soon followed, when the cost of mailing them dropped from two cents to one. UChicago was well represented in their ranks.

At the Logan Center through January 3, more than 200 cards from the collection of longtime staffer **Michael H. Levine** appear in the exhibition *Greetings from the Midway: A Postcard History of the University of Chicago*. They span 12 decades, capturing football heroes, panoramas and bird's-eye views, campus landmarks, and scenes of daily life. Flip them over and many reveal the more personal pen-and-ink historical records of a student's routines or a tourist's impressions—mailable glimpses of the life of the University from its infancy to today. ♦

University of Chicago, Marshall Field, Football Team, Chicago.



Come on have a game the first. P.H. And!



Copyright, 1906, by U. S. P. O. No. 11

*Livingly
Admitted*



W. EARL BERRY
Chicago! Chicago! Chicago! Go!
Go! Chicago! Chicago! Chicago!



6319 please Chicago

Chi-ca-go!
Chi-ca-go!
Chi-ca-go-go!
Go Chi-ca
Go Chi-ca
Go Chi-ca-go!

*Describe your next to be here. Do answer my letter in
January*



Captain WALTER H. REICHBALL,
UNIVERSITY OF CHICAGO

COPYRIGHT, 1906, BY
H. F. NEWMAN & CO.,
CHICAGO.



Chicago. (31). Football game at Marshall Field.

An illustration featuring a large, stylized telescope with three lenses, set against a background of a globe and clouds. A small black silhouette of a person stands on a red pedestal, looking through binoculars. The overall style is graphic and modern, with a color palette of red, teal, and cream.

125 years

FUTURE TENSE

As the University celebrates its 125th anniversary, the *Magazine* asked campus experts to speculate about what challenges, discoveries, and new research paths will define their fields after another quarter century of inquiry and impact. What do they foresee in the year 2040? Read on.

LIBERAL ARTS EDUCATION

John W. Boyer, AM'69, PhD'75

*Martin A. Ryerson Distinguished Service Professor,
Department of History, and Dean of the College*

The future of the liberal arts at elite colleges has been highly visible in public discussions in the last year, inspiring commentary in the press and on college campuses across the country. Some of this has come in response to pieces by William Deresiewicz (*Excellent Sheep: The Miseducation of the American Elite and the Way to a Meaningful Life* and a recent *Harper's* article), who argues that elite institutions, under the sway of educational “neoliberalism,” have reduced the value of the liberal arts to their economic utility. Where higher education once sought the formation of character and intellectual autonomy, it has conformed to the language and values of the marketplace. This, the argument goes, is perilous to the work of self-discovery, and even more so to the humanities themselves, which are being eclipsed by more lucrative majors in the STEM (science, technology, engineering, and math) fields and economics.

This is a potent and in some ways arresting argument. Yet as reviewers have noted, it is more prophecy than careful diagnosis, and recapitulates many of the charges of educational corruption that have surfaced regularly about American higher education since the early 20th century. It supposes an institution whose curriculum and mission are shapelessly adapted to new fads, lacking the legitimacy of a campus culture that is itself suffused with scholarly values. Fortunately, that institution is not the University of Chicago.

One of the themes of our 125-year history has been thoughtful curricular innovation, rooted in the values of interdisciplinary thought, rigorous meritocracy, and intellectual analysis. These values lie at the heart of the Core, which introduces every student, regardless of major, to the practices of humanistic reflection as a basis for further study. The Core has been able to accommodate many challenges since the 1930s.

A fascinating example of this innovation lies in the Redfield-Singer Project of the 1950s, which introduced the idea of comparative cultural studies to our general education. Conceived during the Cold War, the project created new sequences (beginning with Islamic, Chinese, and South Asian Civilizations) to be studied alongside Western Civilization, in part to enable students to scrutinize their own cultural heritage. The Redfield-Singer Project embraced the idea that all knowledge is comparative and that cognitive distance from

one's own culture and assumptions is beneficial for self-understanding. But it did so from a standpoint that emphasized the value of new research, based on rational argument and the protection of diverse patterns of thought and meaning.

As a result of this capacity to innovate in creative, but rigorous and disciplined ways, the liberal arts at Chicago are today stronger than ever. College alumni from all disciplines reflect upon the Core as the most formative part of their undergraduate experience. The years to come will see the emergence of more new Core sequences that reflect new traditions of scholarship but also rededicate the faculty's commitment to general education.

When we describe Chicago as an ideal university, we are referring to its commitment to the logic and purpose of what a true university should be—it is not a trade school, an NGO, a kindergarten, an ideological advocacy group, and it is certainly not a shopping mall. It seeks not to shelter its members from hard and discomfiting facts but to enable them to attain disciplined self-enlightenment. Nowadays all great universities claim such norms, but our success in embracing, enhancing, and sustaining them is deeply rooted in our own history, a history of early failure that led our founders to be willing to take great risks in the name of creating something very different from what had gone before. The new University was particularly dedicated to the ideal of academic free-

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dom at a time when such ideas were not well understood in American society. The right to stare new and uncomfortable realities in the face, and to respond with reason and argument and not with emotion, came not because such notions were pleasing and attractive, but because they were fundamental to the pursuit of basic scholarship.

Our students profit enormously from the intellectual excitement, the willing devotion to scholarly research, and learning and seriousness of purpose that have marked and shaped our community from its very conception. The Core curriculum that emerged in the 1930s would have been unthinkable without the prior creation of a campus academic culture that took undergraduate learning seriously. Many worry today about the fate of the liberal arts, but such fears are misplaced at a university like Chicago that is not only resolutely devoted to research and teaching in the humanities but has students who believe in that mission as well.

MEDICINE

Eugene B. Chang, MD'76

Martin Boyer Professor, Department of Medicine, and Associate Director, Academic Programs and Training in Gastroenterology

One challenge of this millennium will be dealing with the onslaught of “new age” disorders, that is, diseases less prevalent 50 to 100 years ago but now increasing in frequency despite the many advances in modern medicine. These include complex immune disorders like inflammatory bowel diseases, type 1 diabetes, Celiac disease, asthma, and rheumatoid arthritis, as well as more common diseases such as colon cancer, type 2 diabetes, and obesity.

The rapid pace of these developments cannot be explained by genetic drift but is likely due to shifts in environmental factors and societal norms brought on by cultural Westernization. Accompanying these are dramatic changes in the collective human microbiome of the gastrointestinal tract, a community of trillions of microbial organisms that together function as an “acquired” organ of our bodies, essential to sustaining health.

The gut microbial organ plays a vital role in shaping our immune and metabolic systems. Like any other organ of the body, perturbations in its development and function caused by environmental, dietary, or lifestyle factors can have disastrous repercussions and result in the development of acute and chronic diseases.

This knowledge can now be exploited to gain a better understanding of how immunological and metabolic homeostasis can be restored. As a result, we are approaching a new era of discovery that will lead to microbiome-based interventions and diagnostics that will become the future tools of precision medicine—and ultimately lead to improved clinical outcomes and the prevention and cure of many diseases.

KNOWLEDGE

Shadi Bartsch-Zimmer

Helen A. Regenstein Distinguished Service Professor, Department of Classics, and Inaugural Faculty Director, Stevanovich Institute on the Formation of Knowledge

The mission of the Stevanovich Institute is to unite scholars from many different fields to study the process of knowledge formation and transmittal from antiquity to the present day and, in correlation, to explore how this history shapes our modern world.

The questions we ask include: What are the sites from which discourses of knowledge emerge and derive legitimacy? What is the impact of the conditions and restrictions upon the constitution of knowledge, its circulation, and its transmission to the future? How are (and were) political life, religious belief, and scientific exploration shaped by assumptions about what knowledge is? As just one very obvious example, one might consider the history of the “disciplines” in the West, each of them a form of knowledge that has been legitimized within the context of the university, but each of them still subject to formation and obsolescence.

We hope that 2040 would see widespread acceptance of the idea that our state of present knowledge, with its particular focuses, biases, fields, and even its faith in science, is the direct product of particular historical, cultural, and political developments. Awareness of this feature, which is rarely studied or acknowledged, can add nuance to our acceptance of our cultural and intellectual status quo, and to our ability to contextualize both ourselves and others within a longer view. One can conceive of the implications for modern diplomacy, for example, if diplomats were properly acquainted with some of these large-scale issues of context. The Stevanovich Institute would like to raise these questions in the hope that they can encourage a deeper and richer understanding of the modern world through both its connection to and dissociation from underlying and age-old modes of thought.

COMPUTING

Andrew A. Chien

William Eckhardt Professor, Department of Computer Science, and Director, CERES Center for Unstoppable Computing

A Message from the Future

In 2015 the wonders of computing filled us with amazement. Instant, continuous communication, worldwide information access, a “nervous system” to control and connect large societal endeavors (company, cause, community) across space and time. Email, www, Twitter, Facebook, Snapchat, Uber, Instacart. It was hard to see the limits of computing, but from our perspective in 2040, they are clear.

Power. 2015: Batteries, daily charging, heat. Today: Breakthroughs in custom architecture and thrifty, approximate, and volatile computing mean a postjoule era where computing is effectively unlimited.

Networks. 2015: Jerky video, wait for download, dropped connections. Today: Breakthroughs in cognitive and converged networks achieve multispectrum harmony and deliver the anytime, anywhere broadband vision in an anytime, most places flavor.

Dependability. 2015: Weekly crashes, monthly security exploits, constant updates. Today: Breakthroughs in unstoppable computing create disciplined modular structure, enable self-repair, and enforce behavior limits. Computing devices, from internet-of-things to wearable to medical,

achieve life-critical reliability and 100-fold trust and durability improvements.

Human Interaction. 2015: Tedious poking, dragging, and pinching on tiny flat screens. Today: Breakthroughs in 3-D sensing, computational geometry, and distributed computing enable human actions of any scale, gesture, or expression, providing broad natural cyberphysical interfaces and rich, natural user experience.

Applications. 2015: Pedantic control of specific actions, step-by-step detailed control, and simple automation. Today: Breakthroughs in deep, dark, and wide learning and big data enable applications to undertake subtle, complex tasks, negotiating nuance, personality, and circumstance to do what we really want.

More profoundly, computing has matured into an art and science based on our growing understanding that perspective, aesthetics, inspiration, and taste play a critical role in the design of large-scale software, global-scale systems, and user interface. The information architecture of big data sets has become the foundational infrastructure for modern society—more essential than water, electricity, and internet infrastructures. Students who study this integrated field examine great works and great masters, and the trajectory of new ideas and schools of thought and style. These trends are informed by profound creativity and insight as well as the constraints of computing science and technology.

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MUSIC

Martha Feldman

Mabel Greene Myers Professor, Department of Music

When the year 2040 comes around we will be living on a planet so different from the present one that it's hard to imagine what music scholars will be doing. But two things seem certain. For one, they will stop fighting over how politically engaged they might be, for vast waves of migration and radical alterations in the anthropocene will render such battles moot. For another, they will be responding evermore to a posthuman landscape in which the human body interacts fluidly with technology. What will that mean? Recreating Beethoven or Michael Jackson in holographs exchanged via the internet, accessing library information systems from chips in their wrists, demonstrating musical perception via robotic interaction, and much else.

INNOVATION

John Flavin

Executive Director, Chicago Innovation Exchange

One hundred and twenty-five years ago innovators were developing commercial automobiles and attempting air travel, while scientists were discovering radioactivity and X-rays, and suggesting that manmade CO₂ emissions might cause global warming.

Just 50 short years ago, people were developing fiber optics, creating the first microprocessor, inventing the first car phones and voicemail systems, and establishing the era of modern computing (including sending the first emails). Scientists were significantly advancing our understanding of molecular biology, bacteriology, virology, and genetics, paving the way for developments like the Human Genome Project.

We've achieved an incredible amount in a short timeframe. And yet I maintain that technology will evolve even faster over the next 25 years, perhaps doubling the speed of innovation we saw over the past 50 years. And I believe entrepreneurs will be the trailblazers driving us forward. Small teams can now tap into the speed of computation necessary to address these challenges, while continued urbanization and the development of innovation ecosystems will connect multidisciplinary teams in new ways, ensuring that discoveries and ideas developed in the lab will have a better chance of reaching the marketplace.

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By 2040, I think we'll have cured diseases that we thought impossible to cure and created new solutions for energy storage and water purification that far surpass anything we imagine today.

CITIES

Timothy Knowles

*Pritzker Director, University of Chicago Urban Labs, and
Chairman, University of Chicago Urban Education Institute*

The world is facing the highest rate of urbanization in human history. The number of people living in urban areas grows by approximately 60 million every year. By 2050, the urban population is expected to nearly double from 3.9 billion to 6.4 billion, with explosive growth occurring in Africa and Asia.

This massive urbanization creates significant opportunity. Cities generate jobs and income—nearly 80 percent of all goods and services worldwide are produced in urban areas. Cities can empower the disenfranchised and catalyze social mobility. With good governance cities can deliver schooling, health care, and other essential services more effectively and efficiently than rural areas. Of course urbanization also creates unparalleled challenges: concentrated poverty, crime, environmental degradation, inadequate housing, and poor-quality schooling.

In the 25 years ahead, Urban Labs will help cities make smarter bets, build knowledge about what matters most, and improve human lives at scale.

HIGHER EDUCATION

Mark R. Nemeck

*Dean of the Graham School of Continuing Liberal and
Professional Studies*

The beauty of higher education institutions in the United States is found in their ability to adapt and remain relevant while staying true to their long-standing values. We're now in a period of redefinition—perhaps the largest since the emergence of the research university 125 years ago. The forces at play today

are the same ones that drove these universities' emergence in the 1890s: demographics, urbanization, globalization, and the advent of technology.

Alumni are increasingly going to expect an experience based not just on nostalgia but also on continued learning. Technology will be critical in facilitating this, and in supporting effective delivery of genuinely lifelong learning. The median age of people engaging with education will continue to rise, both because we'll continue to live longer and because we'll continue to demand higher education throughout our lives. At the Graham School we have PhDs and MBAs coming back to do professional master's degrees in newly emerging interdisciplinary fields. As in years past, institutions of higher learning will need to adapt to these new realities.

Higher education always reflects its society while also trying to advance that society. The University of Chicago is uniquely positioned to help shape what the next 25 years will look like. You could argue that UChicago defined the last 125 years, in part by establishing the first extension unit in this country (and arguably the first in the world). Today we are very much focused on defining the future.

The next 25 years are going to bring a very rapid acceleration of these trends. But it's going to enhance what we do, not disrupt it—because of our ability to lead. The strength of our greatest universities will be seen in their capacity to adapt and advance society in the face of those forces of change that are at once new and very familiar.

PHILOSOPHY

Gabriel Richardson Lear

Professor and Chair, Department of Philosophy

Twenty-five years from now philosophers will be asking “What is justice?” “What is knowledge?” “What is happiness?”... just as they have for the past 2,400 years (2015 is the 125th anniversary of the University of Chicago; 2016 is the 2,400th anniversary of Aristotle's birth).

But seriously, we are in a moment of transition in the way philosophers raise traditional questions and in the sorts of answers they take to be adequate. In recent years, some philosophers have begun incorporating the methods and findings of empirical social science more closely into their work. I expect this trend to continue so that 25 years from now it may be difficult to distinguish a difference.

Meanwhile, other philosophers will continue becoming

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more self-consciously humanistic, treating the concepts of ethics, philosophy of mind, and even logic as ones through which we understand ourselves and our world as meaningful. They will continue a trend of reinvigorating philosophy through conversation with the past and with other cultures. This splitting of philosophy into scientific and humanistic strands has happened before—for example, the scientific and philosophical revolutions of the 16th century—and it will happen again. All in all, this is a cause for celebration.

LEARNING

Sian L. Beilock

Professor, Department of Psychology, and Vice Provost for Academic Initiatives

I see us having a much clearer understanding of the brain—how it underlies our ability to learn, remember, and perform. In turn, the way we educate our children in the classroom will have changed based on this enhanced understanding of learning. Each child will be in a better position to reach his or her potential—regardless of race or income level—because we will have greater knowledge of how children take information in and apply it to new situations they encounter. This new knowledge will also help teachers and parents bring out the best in their children.

LANGUAGES

Salikoko Mufwene, PhD'79

*Frank J. McLoraine Distinguished Service Professor,
Department of Linguistics*

As well expressed by the late Stephen Jay Gould, the study of evolution looks into the past, not into the future! The reason is that evolution is subject to various ecological factors that may no longer apply in the future. It is reluctantly that I express the following speculations.

If the distribution of economic powers around the world remains what it is now, it's quite likely that, 25 years from today, Mandarin will not take the place of English as the world's foremost lingua franca, though more and more people will be learning it in school. One of the reasons is that more and more Chinese will be learning English too, as will more and more Indians, as long as the USA and the British Commonwealth remain the greatest buying markets for raw materials and other commodities produced around the world, and the United States and the United Kingdom remain the leaders in science and technology.

Despite the increasing long-distance population movements facilitated by the worldwide globalization of economic systems, by relatively more affordable long-distance transportation, and by more integrative communication networks, English will continue to speciate into regional varieties, which may become less mutually intelligible. The factors that shape their norms are very local, despite the globalization of communication technology, which, by the way, is still inaccessible to large segments of Third World populations. That technology is supported by electricity, which they do not have. Nor do they have

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the economic power to afford the technology itself, despite its decreasing costs.

Refugeeism may weaken the demographic strengths of some languages, while it is also doubtful that new, lasting linguistic diasporas will emerge that are comparable to those of imperial European languages today. The real impact of refugeeism will depend on whether or not the refugees, most of whom relocate to neighboring territories, will assimilate to population structures of their host countries, if they remain there permanently. This factor will determine whether the linguascape of Africa, for example, will change.

THE BRAIN

John Maunsell

*Professor, Department of Neurobiology, and Director,
Grossman Institute for Neuroscience, Quantitative Biology,
and Human Behavior*

We can anticipate dramatic progress in neuroscience over the next two and half decades, but those advances might not be the ones most people expect. A common theme in movies and books is that we'll soon be able to connect hardware to our brains to upload memories, enhance performance, or enter into lifelike virtual worlds.

The first steps toward interfacing directly with machines exist today in the form of prosthetics that can let deaf patients perceive sound or allow paralyzed patients to move a robotic arm. But these devices can tap only a tiny fraction of the signals flowing into and out of the brain, and the fantastically intricate, inaccessible, and fragile nature of most of the brain's wiring will make increasing such artificial data transfer exponentially difficult.

Instead, neuroscience is likely to have its greatest influence on society by improving medicine and contributing to fields as diverse as education, law, and public policy. Impressive developments are being made in revealing the molecular and cellular mechanisms associated with brain function in normal and diseased states, and in the coming decades this understanding will open the door to molecular medicine that could address a range of brain diseases.

On a different front, a better grasp of the computations the brain performs to let us feel, think, and move could enrich our lives in many ways. Treatment of disturbed mental function could be greatly improved once we understand the nuts and bolts of normal cognition. A detailed under-

standing of how brains learn could lead to substantial improvements in education. Finally, there is the prospect of a scientific understanding of human biases and fears that lets us better anticipate and counter the foibles of our personal and political interactions.

RELIGION

Richard A. Rosengarten, AM'88, PhD'94
Associate Professor and Interim Dean, Divinity School

The next 25 years of religion at first blush will concern its organization in space. The equator will be a useful divining (not dividing) line: Christianity's center of gravity will be southerly, and its diminishing numbers to the north will have as a complement the migrations of peoples who bring Islam, especially, but also a variety of other traditions and practices, into societies where words like "toleration" will be challenged, in theory and in practice, afresh.

So far so good, and not terribly surprising. But this shifting of the religious tectonic plates will place ever more explicit pressure on the relation between the category "religion" and the traditions that are Judaism, Buddhism, Hinduism, and—most keenly, given their sizes and international span—Islam and Christianity. Generalizations about "religion" will more directly than ever encounter, for example, the self-understanding of a Muslim car dealer in Morehead, Kentucky. Governments north and south of the equator will have to address the place of religion in public life to both general naysayers to any such role, and to the particular, variegated understandings of such a role held by the religions in their midst. Religious leaders will need to articulate their faiths' histories and traditions without devolving either into simplistic "our way or the highway" rhetoric, or into claims for exceptionalism that will only—and often not wrongly—play to the skepticism of the naysayers.

Such a scenario will call for decidedly new leadership for governments and religions. Prime ministers and presidents, popes and rabbis and ayatollahs will alike need to limn anew modernity's vexed negotiation of its true equator: the state and religion. For this the splendid human qualities of the Lincolns and Gandhis and Kings—principled patience, steadfast practicality, compelling articulation—will need to be in the service of new articulations of religious fealty, loyal citizenship, and their relation. I anticipate political leadership that will show its religion,

and religious leadership that engages politics.

Last but not least, a caveat. For one to lead, others must follow; and nothing has been more dynamically expressed in religion today than the mobility of ostensible followers.

LAW

Geoffrey R. Stone, JD'71
*Edward H. Levi Distinguished Service Professor,
Law School*

The most important Supreme Court decision in the next 25 years will be the decision that overrules *Citizens United v. Federal Election Commission*. This will certainly happen. History will judge that *Citizens United* was the worst decision in the history of the Supreme Court—worse even than *Korematsu v. United States* (which upheld the internment of Japanese Americans during World War II), worse even than *Plessy v. Ferguson* (which held that racial segregation was constitutional), worse even than *Dred Scott v. Sandford* (which held that African Americans could not be American citizens).

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Although *Citizens United* was a bad First Amendment decision at the time it was decided in 2010, the error of the court's ways has become increasingly clear with the passage of time. Even now, only five years later, some 80 percent of the American people disapprove of the decision. By holding that government cannot constitutionally regulate the impact of money in politics, the five-justice majority in *Citizens United* opened the floodgates to a handful of billionaires to control the outcomes of the American electoral process.

Moreover, because those billionaires now have that freedom, it is impossible to imagine a scenario in which the American people could amend the Constitution to overrule the decision. The amendment process is affected by the same corrupting influence of money.

If American democracy is to be saved, it will therefore have to be saved by five future justices of the Supreme Court who will see the damage their predecessors have wreaked on American democracy and who will right the wrong by overruling *Citizens United*. And this, I am confident, will happen.

But the question is: what then? Even if our elected representatives are finally freed to exercise sound judgment and enact laws designed to restore American democracy, will they actually do so? After all, by then—and, indeed, perhaps even already—our elected officials are the beneficiaries of the existing system of corruption. Will they really change the rules that benefit them as individuals? By 2040, we surely will know.

PUBLIC OPINION

Tom W. Smith, PhD'80

Senior Fellow and Director, NORC at the University of Chicago

In 2040, I'll be 91 (which just might happen since my father made it to 93). Certain science-social predictions can be made with a high degree of confidence given well-established demographic patterns. For example, America will be more racially, ethnically, and religiously diverse. The US Census Bureau projects that America will no longer be a majority "white" nation by 2043. Moreover, greater diversity is being socially recognized as multiracial and multiethnic identities are increasingly being reflected both in official statistics and in how people see themselves.

A little more speculative are other well-established trends such as a decline in people identifying with and practicing a specific organized religion. But this indicator of seculariza-

COHORT TURNOVER IS A POWERFUL AND CONTINUING ENGINE OF SOCIETAL CHANGE.

tion will be partly (maybe mostly) offset by an expansion of people who classify themselves as spiritual but not religious, and those following personal religions and blended religions.

Attitudes and public opinion are even harder to reliably predict, but cohort turnover is a powerful and continuing engine of societal change. It has led to greater acceptance of racial and ethnic diversity, modern gender roles, and equality across differing sexual identities. It is likely that those trends will continue. Of course these are all largely normal-state predictions, discounting cataclysmic upheavals from pandemics, nuclear war, or other global catastrophes. Hopefully, such won't be in our next 25 years.

ENGINEERING

Matthew Tirrell

Dean and Founding Pritzker Director, Institute for Molecular Engineering, and Deputy Laboratory Director for Science, Argonne National Laboratory

Molecular engineering means designing and building useful devices and processes from the molecular level up. Since 2011 the University of Chicago has been driving a new approach to engineering education and research via the Institute for Molecular Engineering. The essence of this approach is capitalizing on convergence among traditionally different disciplines. Our idea is that engineering is the application of science to develop useful approaches to problems of society. Where traditional engineering focuses on developing distinctive tool sets, the IME's approach brings together different tool sets to solve problems.

What can we expect it to deliver in the next 25 years? Some of the answers will stem from the applied science themes of the IME. In the realm of information technologies, we will see an increasing implementation of quantum

technologies replacing digital technologies, leading to more powerful computing and more secure communications, as well as unprecedented new sensors for biomedical applications. Engineering applied to the immune system, with approaches ranging from synthetic vaccines to control of fluid movement in tissues, is a rich and underexploited route to dealing with intractable medical conditions, from cancer to diabetes. The IME is leading the way in developing new therapies via immuno-engineering. Computational science is moving from the study of small “toy” models of systems to a priori design of new materials on the computer, with applications in new polymers, semiconductors, and devices. The next 25 years will see a dramatic change in how we develop and preserve our precious water resources, with a strong focus on the nexus among the food, energy, and water sectors. Agriculture demands water but also threatens water with fertilizer and pesticide runoffs. It takes water to generate useful energy and it takes energy to purify water. Ongoing research in IME will contribute to new solutions to these issues.

CULTURAL IDENTITY

Vu Tran

Assistant Professor of Practice in the Arts, Department of English

I came to the United States from Vietnam in 1980, when I was five, and in the last three decades, I’ve seen America’s cultural views of Asians change in ways I would have never expected. I remember casually calling myself “oriental” in grade school, something that would escape no Asian American’s lips these days, unless ironically. I’ve seen Vietnam become a desired tourist destination and Vietnamese cuisine attain high culinary status. I’ve seen sriracha sauce—a secret staple in my family—become the hot sauce of choice for many Americans. And most interestingly, I see Caucasian/Asian relationships so regularly that it’s actually rare to meet a couple who are both Asian. We’ve even arrived at the point, problematically or not, where some people argue that Asian/White Americans should simply be considered white.

I can’t help seeing a significant increase in intermarriage—especially for my fellow Vietnamese—in the next 25 years and, as a result, an inevitable shift in the way Asian faces and narratives are presented in our culture.

The result, I think, is that ambiguity will thrive, similar to how it has for African American artists in the past cen-

ASSIMILATION BRINGS BOTH UNDERSTANDING AND MISUNDERSTANDING, BOTH PROSPERITY AND PITFALLS.

tury—writers like Nella Larsen, Ralph Ellison, and Toni Morrison. As I’ve experienced myself, assimilation brings both understanding and misunderstanding, both prosperity and pitfalls. And the more children born of Asian and non-Asian parents, the richer and more complex the material will be for our next generation of Asian American artists. Nothing creates more compelling art than the ambiguity of liminal existence, of uncertain and indecisive identity.

PUBLIC POLICY

Marci Ybarra

Assistant Professor, School of Social Service Administration

In 25 years we will have moved from immigration policy that’s individually based to one that’s family based, with visas and laws for nuclear families. One immigration-related policy that’s received a lot of attention recently is the Deferred Action for Childhood Arrivals, launched in 2012. It’s essentially a visa for those who entered the country with their parents prior to their 16th birthday and are undocumented. The visa has to be renewed every two years, but as long as they are in school or working, the visa is supposed to be renewed. Ideally, this is a pathway to citizenship. But it doesn’t take care of the citizenship statuses of other family members. From a research perspective we know that if someone in a family, especially a parent, is undocumented and at risk of deportation and the child is a citizen or has a visa, the psychological impact and the choices that have to be made around resources are critical to the family, but especially to the kids. So from a family perspective, it would make sense to view immigration as a “family policy.”

I also think paid family leave will be the law of the land. But we shouldn't assume that will be a panacea for work-life balance. Coupled with paid family leave, we will see—and will need to see—movement on other social insurance programs like temporary disability insurance. The nature of work is changing and for too many workers the safety net is becoming more frayed. Families, particularly lone parents, are increasingly vulnerable when there's a new baby, or a disability that keeps them temporarily out of work, or difficulty finding a job. For the safety net to become more of a safety "mesh," so to speak, is going to have to happen on the social insurance side: paid family leave, temporary disability insurance, and the expansion of our unemployment insurance system, which addresses the needs of low wage workers who are left increasingly unprotected by the laws in the United States.

GLOBAL CONFLICT

Ethan Bueno de Mesquita

Professor and Deputy Dean for Research and Strategic Initiatives, Chicago Harris

Over the past generation, scholars have been trying to understand the so-called root causes of conflict. That is a deep question—why do people resort to violence to resolve political, economic, religious, or other disagreements, when there are less costly ways forward?

In the past, empirical scholars tried to answer these big questions with cross-country data sets that captured both which countries experienced conflict and the possible correlates of conflict—for example, facts about a country's economy, ethnic fractionalization, colonial legacy, and political institutions. We've come to understand that it is hard to make much progress in this way. Such comparisons don't credibly uncover the causal relationships posited by theories of conflict.

A new generation of conflicts scholars is focusing on fine-grained, within-conflict data. In partnership with governments or NGOs, scholars have managed to engage in actual experimental manipulation in conflict settings from Afghanistan to the Philippines. And even when experimentation is impossible, a research team with deep knowledge of a particular conflict and a bit of luck can often find a natural experiment—some change in the world (e.g., in the value of a country's commodities, the availability of weapons, the flow of information) that shocks the system and allows the author to learn about causal mechanisms. Such approaches, when melded with careful theorizing, are a powerful tool for

understanding what drives the behavior of armed groups and governments in conflict settings.

This is a better way to approach the questions about root causes that motivated the previous generation. And the fine-grained data that today's researchers collect allows us to ask a host of new questions—about how, rather than why, conflicts are fought—that are of great interest in the post-9/11 world. Understanding intrastate, asymmetric, and irregular conflicts requires new theories and data. Providing more credible answers to the questions of the past, and turning our attention to rigorously addressing these new questions, are the great challenges for the next generation of conflict researchers.

FINANCIAL MARKETS

Lars Peter Hansen

David Rockefeller Distinguished Service Professor, Departments of Economics and Statistics, and Research Director, Becker Friedman Institute for Research in Economics

We know that financial crises have been recurring events in the past. Many academics and policy makers thought that in developed economies the macroeconomy was more insulated from financial market disruptions. The recent crisis, however, exposed some gaps in our understanding of the interplay between financing impediments on investors, the role of financial markets, and the performance of the macroeconomy. Many of the quantitative macroeconomic models that were featured six or eight years ago had a rather passive role for financial markets.

Since the recent financial crisis, there's been a rush to build macroeconomic models with more interesting roles for financial considerations, but it's been done in a very hurried way. I would like to see a much better understanding of the connections between finance and the macroeconomy unfold in the coming years. We may never design a system that's fully insulated from shocks to whatever form financial markets take in the future, but it will be good if we expand our understanding and build a better set of models to guide policy. I really hope progress can be made, and I'm cautiously optimistic that this will be the case.

Not all big disruptions in financial markets translate into big events in the overall economy, although some of these disruptions have an important macroeconomic component. So understanding better which disruptions end up being isolated with minor macroeconomic consequences, and which ones have broad impacts, remains an important challenge to be addressed.

I also think paid family leave will be the law of the land. But we shouldn't assume that will be a panacea for work-life balance. Coupled with paid family leave, we will see—and will need to see—movement on other social insurance programs like temporary disability insurance. The nature of work is changing and for too many workers the safety net is becoming more frayed. Families, particularly lone parents, are increasingly vulnerable when there's a new baby, or a disability that keeps them temporarily out of work, or difficulty finding a job. For the safety net to become more of a safety "mesh," so to speak, is going to have to happen on the social insurance side: paid family leave, temporary disability insurance, and the expansion of our unemployment insurance system, which addresses the needs of low wage workers who are left increasingly unprotected by the laws in the United States.

GLOBAL CONFLICT

Ethan Bueno de Mesquita

Professor and Deputy Dean for Research and Strategic Initiatives, Chicago Harris

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EMPLOYERS WILL FACE INCREASED PRESSURE FROM LABOR AND THE PUBLIC TO SHARE BOTH THE RISKS AND REWARDS OF THE MARKET MORE EQUITABLY WITH EMPLOYEES.

Right now terms such as “speculative bubbles” and “fire sales” are almost buzzwords. If prices go up and come shooting down, you say a bubble has burst. If prices look to be too low we refer to them as fire sales. There are researchers building models that hopefully down the road will have more quantitative meaning and will help our understanding of how struggles or challenges reflected in financial markets play out more widely.

COSMOLOGY

Abigail Vieregg

Assistant Professor, Department of Physics

We are at a fortunate time in cosmology, when there are important outstanding questions about the evolution and composition of the universe, and many of these questions seem tractable.

One of the major pursuits in cosmology today is to figure out what happened in the first tiny fraction of a second after the big bang. Evidence from a variety of observations, including from measurements of the Cosmic Microwave Background, seems to point toward an unimaginably violent moment of expansion of the universe in the first moments of time. We will continue the search for a unique signature of

this inflationary period and, if the signal is strong enough, determine the physics that drove the expansion.

Another major pursuit in cosmology is to find out what makes up the universe—it sounds so simple, but some of the biggest mysteries today revolve around this question. Based on many different pieces of evidence, we know that the universe is mostly made not of the ordinary matter that we are familiar with but of what we call dark energy and dark matter. We have some ideas about what these components are, but we have not yet discovered the exact nature of either. Going forward, we will characterize the nature of these mysterious components, and perhaps even discover dark matter directly with laboratory experiments.

WORK

Susan Lambert

Associate Professor, School of Social Service Administration

Growing income inequality within the United States and around the world is already fueling social unrest and action to distribute wealth and opportunity more equitably. Over the next 25 years, employers will face increased pressure from labor and the public to share both the risks and rewards of the market more equitably with employees; currently, the risks incurred as a function of fluctuating demand are transferred mostly onto workers while the rewards of surges in demand are captured mostly by employers. The past few years have seen an explosion of legislative initiatives at municipal, state, and federal levels that are designed to establish new employment standards for a range of basic workplace conditions: higher wage rates, more predictable and stable work schedules, greater access to full-time employment, and the right to paid time off for illness and caregiving. My prediction is that within 25 years, these efforts will coalesce into major federal legislation that establishes employment standards for a 21st century economy. This legislation, and other efforts resulting from the broader social movement undergirding it, will go some distance toward improving job quality at the lower levels of the labor market and reviving our middle class. However, only if new employment protections are accompanied by reduced racial, ethnic, and gender segregation in education, housing, and occupations will all US residents benefit from this revival. ♦



See the full responses online at mag.uchicago.edu/2040.

history

CHARTERED PHILANTHROPY

As the historic document turns 800, David M. Rubenstein, JD'73, reflects on preserving a Magna Carta in the United States.

BY LAURA DEMANSKI, AM'94

One evening in December 2007, University trustee **David M. Rubenstein, JD'73**, found himself in a small side room at Sotheby's New York City auction house, the new owner of the only copy of the Magna Carta in America. The \$21.3 million purchase was nearly a surprise even to him; he had learned of the sale only the day before—and of the wrinkle that inspired him to bid, the expectation at Sotheby's that the document was destined to leave the United States.

The first Magna Carta contains 63 clauses enumerating the rights of 40 rebel barons whom King John sought to appease when he put his seal on the document in 1215. Only 10 weeks later, the charter was annulled by Pope Innocent III at John's request. In 1297 King Edward I enrolled a revised version on the statute books; this is the version that Rubenstein bought.

This year, the Magna Carta's 800th, saw much celebration of the document, whose declaration of rights is widely regarded as a foundation of American democracy—widely, but not universally. “It is hard to think of an historical event in which the divide is any greater between the general treat-

COURTESY DAVID M. RUBENSTEIN

ment and scholarly treatment of the same document,” wrote **Richard Helmholz**, the Ruth Wyatt Rosenson Distinguished Service Professor of Law, in a recent essay. “The ‘popular view’ holds that contemporary principles underpinning democratic liberties can be traced back to Magna Carta,” he elaborated. “The ‘scholarly view’ takes pretty much the opposite position. Magna Carta was a baronial document, occasioned by a conflict with King John and aimed at entrenching baronial privileges.”

But, Helmholz argues, “an old precedent can be given new life.” From 1215 to 1297 to the 17th century, when English lawyer Edward Coke resurrected the document, championing it as a way of checking the power of the Stuart kings, the history of the Magna Carta shows its ongoing capacity to inspire support for civil liberties “in circumstances very far removed from its original context.” Those circumstances include the American colonies’ fight for independence and many present-day political causes.

Rubenstein’s Magna Carta, written in iron gall ink on sheepskin parchment, is on long-term loan to the National Archives. There it is the centerpiece of the David M. Rubenstein Gallery. The gallery is also home to the permanent exhibit *Records of Rights*, which traces the history of immigrants’, African Americans’, and women’s rights in the United States. The first thing you see on approaching the gallery, the Great Charter seems to glow from beneath its protective low light. Its state-of-the-art airtight case is also on loan from Rubenstein, who hired the National Institute of Standards and Technology to develop the best possible housing for the fragile document.

The purchase and loan of the Magna Carta is just one facet of Rubenstein’s prolific philanthropy. A signatory of the Giving Pledge started by Warren Buffett and Bill Gates, he has committed to donate the majority of his wealth to philanthropic causes. Many of Rubenstein’s causes are centered in Washington, DC, where he supports the National Zoo’s panda program, led the effort to repair the Washington Monument after it was damaged in an earthquake, and chairs the board of trustees of the John F. Kennedy Center for the Performing Arts.

At UChicago, he established the Law School’s David M. Rubenstein Scholars Program in 2010, citing his gratitude for the scholarship he received when he attended. In 2013 he renewed the program, which provides full-tuition, predominantly merit-based scholarships to 20 students in each Law School class. The Rubenstein Forum, an innovative facility for conferences and collaboration on campus, will be named in recognition of his generous gift last year. When it opens in 2018, the building will “contribute significantly to the University’s character as an intellectual destination,” said President **Robert J. Zimmer** in announcing the gift.

In an interview adapted and edited below, Rubenstein, cofounder and co-CEO of the Carlyle Group investment firm, spoke to Helmholz and the *Magazine* about the Magna Carta’s history and legacy, the other documents it has inspired him to collect for public display, and the broader “patriotic philanthropy” he is known for.

SYMBOLIC WEIGHT

The Magna Carta probably means more to people in the United States than in England in many ways. The 1215 document was abrogated and never went into effect. The 1297 version did go into effect, but in the 1300s and 1400s, the parliament was becoming more important than the king, so the Magna Carta, which checked the powers of the king, held less sway.

It wasn’t until Edward Coke came along in the 17th century, and William Blackstone [who published the first scholarly edition] in the 18th century, that its importance grew again. They revived it. And our founding fathers, when they started getting taxed, kept saying, “No taxation without representation.” That was in the Magna Carta. In effect they were saying, “We have the rights of Englishmen.”

That was what really led, I think, to the Revolution. People said, “We have these rights, and you’re violating them.” It’s more complicated than that, of course. But the early writings of the founding fathers do reference the Magna Carta, particularly when they’re making pleas to the king of England and others to get rid of the taxes.

MAKING A DOWN PAYMENT

I was flying from London to New York and going through my mail that had accumulated. One email was from an investment banker who said, “We’d like you to come to a reception at Sotheby’s.” It was that night, to look at the Magna Carta.

IT SEEMED LIKE A GOOD IDEA TO TRY TO KEEP IT IN THE COUNTRY. I THOUGHT ONE OF 17 SHOULD BE HERE. SO I DECIDED TO COME BACK THE NEXT NIGHT.



In October Rubenstein received the Carnegie Medal of Philanthropy in honor of his longtime charitable giving.

So I said, “OK, you got my interest.” I’d go, I’d meet the investment bankers, maybe some good business would come, and I’d see the Magna Carta. Because of delays, I got there late. It was only about 10 minutes before the exhibition was over and everybody was gone except the curator.

She explained to me that there were 17 copies, and this one was likely to go to somebody outside the country. It seemed like a good idea to try to keep it in the country. I thought one of 17 should be here. So I decided to come back the next night. I didn’t want to tell anybody, because I didn’t want to seem presumptuous. They put me in a little room, put in a telephone, and I listened. And, honestly, I couldn’t hear that well. I couldn’t tell what the bids were. Then when I put the final bid in, they said, “Sold.” I wasn’t clear if it was me or not.

David Redden, the auctioneer and head of books and manuscripts at Sotheby’s, came in. He said, “Okay, you won, who are you?” I’d never been there before. Then he said, “You can slip out the side door, or there are reporters.” I went out and talked to the reporters. I said I was happy to tell them I was going to give it as a down payment on my obligation to repay my country.

SPUR OF THE MOMENT

If I’d said, “How do I want to help my country in some way? I have some money, what can I do?” and hired McKinsey or BCG or Bain to do a study, I’m sure they would have come back with lots of great ideas. But I’m finding that the best ideas often come to one spontaneously.

It’s like many things in life—you don’t know where

they’re going to lead. Afterward people started calling me with other rare documents. I said, “I only did this as a one-time thing.” But I started buying them: a Declaration of Independence, the 13th Amendment, the Emancipation Proclamation. I had the idea to never put them in my house, but instead put them on display in places around the city. I make them on permanent loan, and this is the reason: If you give something to an organization, once it’s theirs, they can display it or not display it, and you lose control. My goal is to make sure that people can see them and learn about them.

VIRTUE IN KNOWLEDGE

Recently there was a survey of Americans that asked which river George Washington crossed in 1776. And 35 percent of Americans said the Rhine River, which happens not to be in our country. Who was the first treasury secretary? The answer of about 30 percent of Americans was Larry Summers, which is not the case.

Another survey, of high school sophomores, showed that more could name the Three Stooges than could name any three founding fathers. So I’m trying to do a little bit to get people to know more about history, on the theory that if you know more about history, you’ll be a better citizen, and that better citizens make a better country.

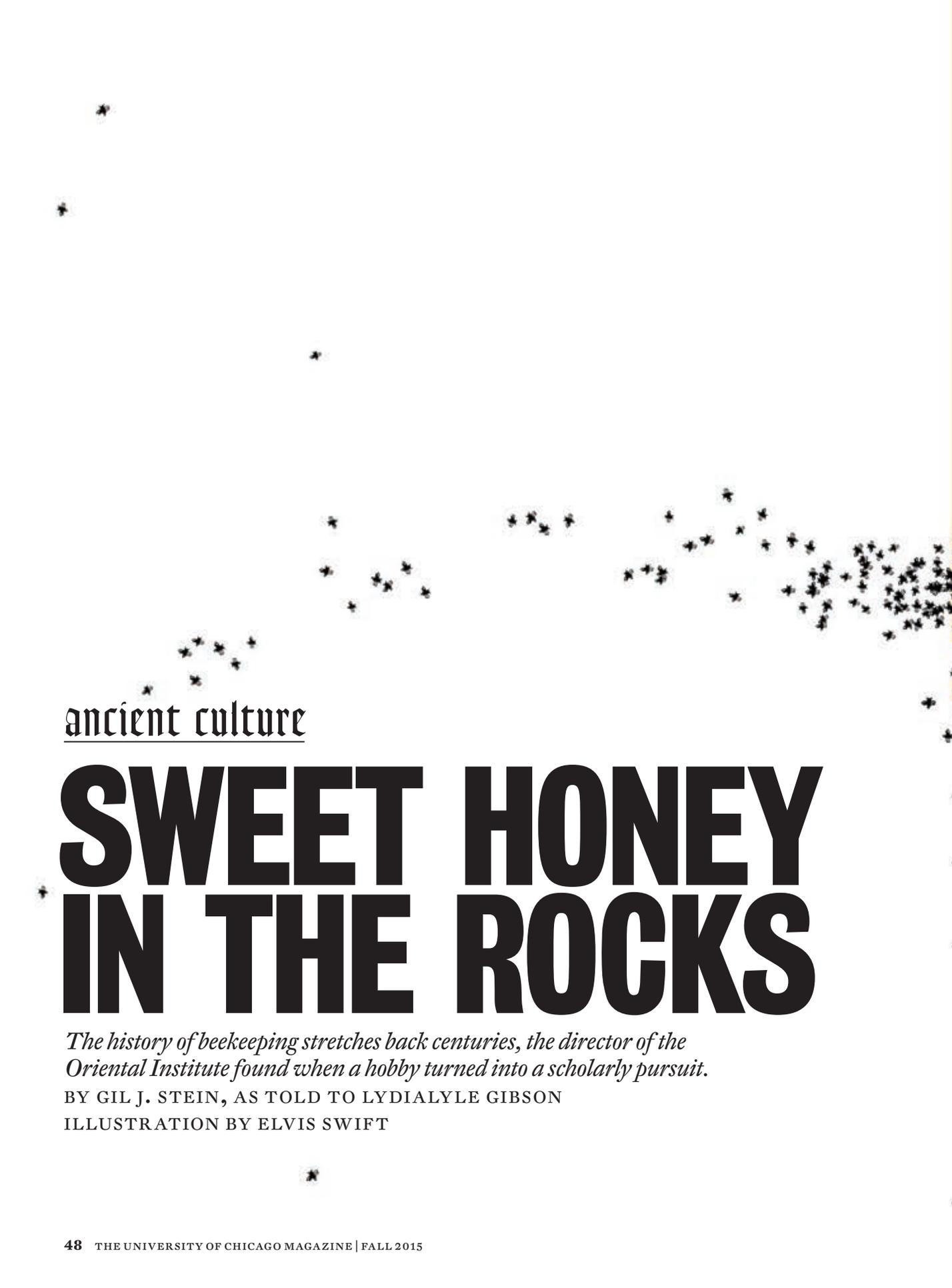
DECLARATIVE ACTS

Recognizing that the Declaration of Independence was fading, John Quincy Adams, when he was secretary of state, said, “We ought to have a perfect copy of this before it fades completely.” They hired William J. Stone, a printer from Washington. Over three years he came up with a printing process to make a perfect copy. It was, essentially, taking a wet cloth and putting it on the original document, which took off half the ink. He put that on a copper plate, and they made 201 copies.

When you see a copy of the Declaration of Independence in the *New York Times* on the Fourth of July, it’s not the original document, which has faded too much. You’re seeing one of the Stone copies. There are about 30 left, and I own a few of them. I’ve put one in the National Archives, which didn’t have one; one at Mount Vernon; one at the State Department; and one at the Constitution Center.

PHILANTHROPY IN ACTION

Philanthropy is an ancient Greek word that means “loving humanity.” You don’t have to be wealthy to be a philanthropist, although we’ve bastardized the word. I tell people, give your time, your energy, your ideas. You can help other people. I also say, you’ll probably get to heaven more quickly. Now, I can’t prove it, but why would you want to take a chance? So try to help other people. ♦



ancient culture

SWEET HONEY IN THE ROCKS

The history of beekeeping stretches back centuries, the director of the Oriental Institute found when a hobby turned into a scholarly pursuit.

BY GIL J. STEIN, AS TOLD TO LYDIALYLE GIBSON

ILLUSTRATION BY ELVIS SWIFT





A wall painting in the Tomb of Rekhmire, reproduced on paper by Nina de Garis Davies in 1926, shows Egyptians gathering honey from the cylindrical clay hives that were used across the ancient Near East.

Archaeologist Gil Stein is director of the Oriental Institute and professor of archaeology in the Department of Near Eastern Languages and Civilizations. From 1992 through 1997, he led excavations at Hacinebi, a Mesopotamian colony in Turkey, part of the world's first-known colonial system.

Stein is also a beekeeper. He and his wife have about a dozen hives, and their experience raising bees and collecting honey sparked his interest in the history of beekeeping, particularly in the ancient Near East. Stein spoke to the Magazine about the insects and their Old World story.

My wife, Liz, is the one who really got me interested—she's been a beekeeper for more than 10 years. She and I are both archaeologists, and for me it was a natural progression from intense curiosity about bees and beekeeping, and thinking how strange and wonderful this practice is, to wondering about its history. Beekeeping is pervasive in our culture and in cultures around the world. How old is it anyway? What's the archaeology of

it? How did people keep bees and think about honey in the ancient world? What did it mean to them?

So I started to investigate. As I talked to people—friends who are colleagues at the Oriental Institute, who are specialists in the textual record of ancient Mesopotamia and ancient Egypt—I'd say, "Do you have any material about honey and bees and beekeeping?" And they'd say, "Yeah, we have material about honey everywhere." I'd say, "Great! Can you steer me to articles that give an overview?" And they all said no. It's just bits and pieces here and there.

Sometimes those are the most interesting problems: when something is so completely pervasive in our lives, we don't even think about it; we don't question it. Once you start looking, you realize that honey and bees and beekeeping are everywhere in the Old World—in ancient Europe and Eurasia and Africa and in the ancient Middle East. Honeybees are an Old World group of species.

Honey was considered an almost magical substance in the ancient Near East. People used it for everything: as a food and as a raw material to make alcoholic beverages like mead and honey wine. There was honey in the alcoholic beverages found in the tomb of King Midas, he of the fabled golden touch. And it's the most common ingredient in ancient medicine in Mesopotamia and Egypt. It has anti-

microbial and antibiotic properties; honey will kill *Staphylococcus* and *E. coli*. It will suck the moisture out of wounds. And it's invaluable in treating burns. Ancient people also used honey as a universal sweetener, of course, because it's one of the sweetest substances in nature. They even used it for mummification. When Alexander the Great died in Babylon in 323 BC, he was preserved in honey and placed in an enormous golden sarcophagus drawn by 64 mules.

There are representations of ancient Egyptians beekeeping—tomb paintings that show people managing beehives, using techniques that are recognizable today. Once you know the artistic conventions, you can easily see it. They're applying smoke to pacify the bees and then drawing honey out of the hives. One of the clearest examples is from the Tomb of Rekhmire in ancient Thebes, which dates to the 15th century BC. That was almost three and a half thousand years ago. Beekeeping is really deep in culture.

You see honey in literature and religious texts as a common metaphor for love, for God's love for his people, and for God's law. Psalm 19 says that the Lord's ordinances are "sweeter also than honey and drippings of the honeycomb." In Exodus, God talks about delivering his people from Egypt and bringing them to "a land flowing with milk and honey."

Then there's the big question: how did beekeeping originate? The Egyptians seem to have taken it up, at an industrial scale, long before the Mesopotamians did. The earliest evidence we have of beekeeping in the Near East is from Egypt—those tomb paintings. They were also keeping bees very early on in Anatolia, which is now Turkey. Hittite laws dating to the 13th or 14th century BC contain severe punishments for thieves of bee swarms or beehives. Honey was commonly used in rituals there, and it was readily available and inexpensive; "honey bread" sold for the price of a single portion of lard or butter.

WHEN SOMETHING IS SO COMPLETELY PERVASIVE IN OUR LIVES, WE DON'T EVEN THINK ABOUT IT; WE DON'T QUESTION IT.



An apiary found at the Tel Rehov site in Israel offered the first archaeological evidence of biblical-era beekeeping.

The first known mention of beekeeping in the Mesopotamian cuneiform record is centuries later. It comes from the stele of Šamaš-reš-uzur, a regional governor on the Syrian Euphrates in the middle of the eighth century BC, who claimed to have been the first among his people to capture and domesticate wild bees: "I, Šamaš-reš-uzur, governor of the land of Suhu and Mari, I brought bees—that collect honey and which from the time of my fathers and forefathers no one had seen nor brought to the land of Suhu—down from the mountains of the Habha people and settled them in the gardens of the town of Algabbaribani."

So, did beekeeping develop independently in different parts of the ancient Near East, or did it spread from one place to another? That's one thing I'm trying to find out. I think probably there were two independent centers of invention, in Egypt and Anatolia, because there's no evidence of beekeeping in Israel for several centuries after those two places. But we don't know for sure. The evidence is spotty and scattered around.

One thing we do know is that the shapes of beehives in the ancient Near East seems to be a common technology used all over: clay cylinders laid on their sides, with a lid at one end where you would reach in and get the honey, and a little hole at the other end where the bees would fly in and out. It makes sense; that shape mimics the hollow of a tree, where many wild bees build their hives. In modern-day Egypt you can still see some of these traditional cylindrical hives, stacked up in rows.

One of the first people to pull together the information we have about ancient beekeeping was Eva Crane. Her *Archaeology of Beekeeping* [Duckworth], a wonderful book, is essentially the standard work on the subject. Since it was published in 1983, we've gotten more information. Several years ago, Israeli archaeologists working at a site called Tel Rehov, in the Jordan River Valley, excavated the remains of an Iron Age beekeeping complex, a huge apiary. At one time, there were stacks and stacks of ceramic hives. They found about 100 hives, which could have housed as many as 1.5 million bees.



For archaeologists, a huge part of the work is simply knowing what you're looking for. These ancient cylindrical beehives don't look like the box hives that most of us are used to seeing today: the Langstroth hive, which was invented in the 19th century by an American. Many people would see the remains of these ancient cylindrical hives and think, "Oh, those are roof tiles," because you see a curved shape. Or, "Those are drainpipes." I'm certain that there are many, many ancient beehives out there misidentified as drainpipes. That's why we're so lucky to have these Egyptian tomb paintings. It's undeniable proof.

I read a little bit about beekeeping almost every day. My wife and I have 11 or 12 hives, which is really small scale but still an amazing experience. Bees are such an alien species, so different from all the other domesticated animals that humans have been breeding and exploiting for millennia. We're used to cattle and pigs and chickens and goats. But enormous colonies of insects? And this stuff they create, which we steal from them? Honey and pollen, beeswax and propolis, the resin-like substance that bees use to seal the hive and keep out pests and predators. It's a very hard glue that also has incredible antibiotic properties to it, just like honey does.

And bees' social intelligence is incredible. For bees, the unit is not the individual, but the collective. A beehive has 50,000 bees, and they communicate with each other using

IF YOU WERE ON THE ROAD IN THE ANCIENT NEAR EAST, YOU MIGHT COME ACROSS A BEE CARAVAN.

Many beehives from the ancient world have been misidentified, Stein believes. Egyptian tomb paintings and the apiary discovered at Tel Rehov in 2007 provide evidence of their true function.

pheromones and with what's called a "waggle dance"—used by the scout bees to tell the rest of the colony where a good source of nectar is located. The Austrian ethologist Karl von Frisch won a Nobel Prize in 1973 for figuring out the waggle dance. Bees have a division of labor and a complex social hierarchy. Virgil describes it vividly in the *Georgics*: "Some supervise the gathering of food, and work in the fields to an agreed rule: some, walled in their homes, lay the first foundations of the comb, with drops of gum taken from narcissi, and sticky glue from tree-bark, then hang the clinging wax; others lead the mature young, their nation's hope, others pack purest honey together, and swell the cells with liquid nectar: there are those whose lot is to guard the gates."

The population of a hive is not constant through the year. It peaks at about 50,000 to 60,000 in the summer, during the honey flows, and then it drops off in October and November. During the winter, a solid basketball-sized clump of bees will cluster, huddled tightly together for warmth. And they're all beating their wings constantly. Inside the hive, it can be 92 degrees in the dead of winter.

In keeping bees and doing this research, I've learned wonderful and surprising things. One of my favorites relates to the apiary at the eighth century BC site of Tel Rehov, whose excavation tells a very interesting economic story. The Jordan River Valley, where Tel Rehov is located, has a native honeybee: the Palestinian honeybee. But when entomologists looked under the scanning electron microscope at the bees they found in the residue inside the hives, those were Anatolian honeybees—a different subspecies. So the people in ancient Israel were importing honeybees all the way from Turkey, easily 1,000 kilometers away, bringing them across Syria and into the Jordan River Valley, and keeping hives of Anatolian honeybees. Because they're gentler bees and they make more honey.

So that tells you something about how economically important these insects were. People were raising them on an industrial scale and importing colonies from across the region. You can just picture some caravan transporting these bees for weeks, all the way across Syria. How could they do that? How did they keep the bees alive? But they did. If you were on the road in the ancient Near East, you might come across a bee caravan.

That's what my wife and I do too, in a way: we buy boxes of bees that get shipped to us from California. People were doing the same thing almost 3,000 years ago. That's fascinating. And what I love is, when you ask the right question, archaeologists can actually find the answer. Not every time, but often. It's amazing. ♦

peer review

Members of the University community celebrate UChicago's 50th anniversary in 1940. This year, we celebrate the 125th. For more, see page 30.



UCHICAGO PHOTOGRAPHIC ARCHIVE, APP3-01130, UNIVERSITY OF CHICAGO LIBRARY

NOTES

ARTISTIC EXPRESSION

Composer, performer, and multimedia artist **Francisco Castillo Trigueros**, PhD'13, won the University's 2015 Claire Rosen and Samuel Edes Prize for Emerging Artists, given to a recent graduate. The \$30,000 prize will allow Trigueros to spend a year completing his current project, a song cycle about the town of Xilitla, Mexico.

NORTH TO THE FUTURE

James R. Johnsen, AM'96, has taken the helm as president of the University of Alaska. A former business executive and administrator at the university, Johnsen is focusing on diversifying revenue sources and streamlining administrative services, graduating more educators, and supporting research that benefits the State of Alaska.

MAKING A BIG BANG

Jeremiah P. Ostriker, PhD'64, is a recipient of the 2015 Gruber Prize in Cosmology. Presented by the Gruber Foundation at Yale under guidance from the International Astronomical Union, this year's prize honors Ostriker's theoretical contributions to the big bang theory, including his early formulation of what is now called dark matter and dark energy. Ostriker is professor emeritus at Princeton University, where he has taught for five decades.

STUDYING HUMANITIES

The Clemente Course in the Humanities, a series of college-level classes designed to improve the lives of low-income adults, has received a National Humanities Medal. Founded in 1995 by Earl Shorris, EX'54, at Manhattan's Roberto Clemente Family Guidance Center, the series currently offers 30 Clemente Courses at colleges and universities nationwide.

ENERGY EXPERT

Mark Peters, PhD'92, is the new director of the Idaho National Laboratory, which focuses on nuclear energy research and development.



TOP CHEF

Former White House chef Sam Kass, LAB'98, AB'04, is now a senior food analyst for NBC News. Kass, who was also a senior policy adviser on nutrition in the Obama Administration and the executive director of First Lady Michelle Obama's Let's Move campaign, provides commentary on *Today* and *NBC Nightly News with Lester Holt* and writes a monthly online column for *Today Food*.

Formerly the associate laboratory director for Argonne National Laboratory's energy and global security division, Peters is also a senior adviser to the US Department of Energy and a 2015 fellow of the American Nuclear Society.

CONSTITUTIONAL AUTHORITY

Michael Gerhardt, JD'82, has become the first independent scholar to advise the Library of Congress in updating the US Constitution Annotated (CONAN), the official documentation of the Constitution and its legal interpretation over time. A professor at the University of North Carolina at Chapel Hill School of Law, Gerhardt has advised congressional leaders and White House officials on a variety of issues, and is the only legal scholar to have participated in the confirmation hearings of five out of the nine current Supreme Court justices.

FATHERLY LEADERSHIP

John Kartje, AB'87, SM'89, PhD'95, has been appointed rector and president of Saint Mary of the Lake/Mundelein Seminary, the principal seminary and school of theology in the Roman Catholic Archdiocese of Chicago. Trained as an astrophysicist at UChicago, Kartje became a priest in 2002 and has been on the seminary faculty since 2009.

MUSIC MAN

Composer **Philip Glass**, AB'56, has two major works premiering next year. *The Witches of Venice*, an opera-ballet for children, is scheduled to have its American debut at Opera Saratoga's 2016 Summer Festival. Glass is also composing the score for a 2016 Broadway revival of Arthur Miller's 1953 play *The Crucible*.

CULTURAL LEADER

The DuSable Museum of African American History has appointed attorney and architect **Perri Irmner**, JD'91, as president and CEO. Irmner is seeking to expand the museum's reach through partnerships with cultural and educational organizations and businesses. As a lifelong Hyde Park and Kenwood resident, she says she has a "vested interest in the museum's success, in maintaining its independence and preserving its philosophical mission."

STAR POWER

Warner Bros. is developing a film about astrophysicist Carl Sagan, AB'54, SB'55, SM'56, PhD'60, particularly known for writing and hosting the TV show *Cosmos* and for his research on extraterrestrial life. The movie will be produced by Sagan's widow, Ann Druyan, and a producer of *Contact* and *Interstellar*.

—Helen Gregg, AB'09

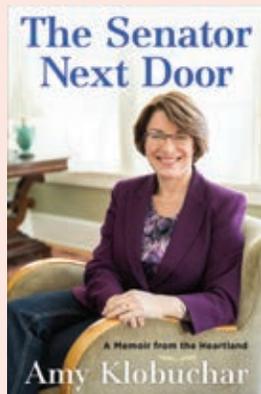
RELEASES

The Magazine lists a selection of general interest books, films, and albums by alumni. For additional alumni releases, use the link to the Magazine's Goodreads bookshelf at mag.uchicago.edu/alumni-books.

READING CLAUDIUS: A MEMOIR IN TWO PARTS

By Caroline Heller, AB'72; The Dial Press, 2015

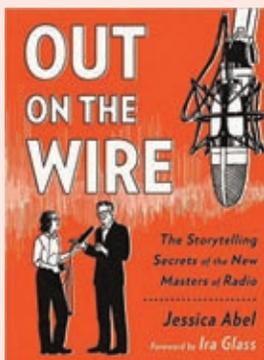
Caroline Heller's mother, Liese, had fallen for Erich Heller while studying in prewar Prague, but Erich's brother, Paul, remained in love with Liese even during the six years he spent in concentration camps. Paul and Liese were later reunited and married in the United States, where their daughter, Caroline, grew up with the ghost of her parents' past. In *Reading Claudius*, she combines their story with her own and shows how two generations found solace and strength in literature.



THE SENATOR NEXT DOOR: A MEMOIR FROM THE HEARTLAND

By Amy Klobuchar, JD'85; Henry Holt, 2015

In 2006 **Amy Klobuchar** became the first woman elected to the US Senate from Minnesota. This frank memoir chronicles her life thus far and shows how the challenges she's faced, from her father's struggles with alcoholism to tough battles in Congress, have molded her into a determined politician with an unshakable faith in our government. Political courage, she believes, is "stand[ing] next to someone you don't agree with for the betterment of this country."



OUT ON THE WIRE: THE STORYTELLING SECRETS OF THE NEW MASTERS OF RADIO

By Jessica Abel, AB'91; Broadway Books, 2015

Cartoonist and writer **Jessica Abel's** graphic novel takes readers behind the scenes of seven popular narrative radio shows and podcasts. With a foreword by *This American Life's* Ira Glass and plenty of insider anecdotes, Abel illustrates how shows like *Serial*, *Planet Money*, *Snap Judgment*, and *RadioLab* find and construct compelling stories that engage growing audiences.

SWEDISH DESIGN: AN ETHNOGRAPHY

By Keith M. Murphy, AB'99; Cornell University Press, 2015

Furniture and household goods manufacturers like Ikea have spread iconic Swedish design around the world. But the simple, functional style is about more than aesthetics. Since the 19th century, Swedish politicians and social planners have used design to promote egalitarianism, responsibility, and other social democratic values. With an anthropological focus, University of California, Irvine, associate professor **Keith M. Murphy** investigates the political and social power of design in Sweden.

CONTRABAND: SMUGGLING AND THE BIRTH OF THE AMERICAN CENTURY

By Andrew Wender Cohen, AM'92, PhD'99; W. W. Norton, 2015

Smuggling tested Americans' patriotism in the 18th and 19th centuries, tempting citizens to dodge protectionist tariffs to procure foreign luxuries. Focusing on the Gilded Age, Syracuse University associate professor **Andrew Wender Cohen** uses the history of smuggling in America to illuminate larger ideas about US economics, culture, and power.

STREET POISON: THE BIOGRAPHY OF ICEBERG SLIM

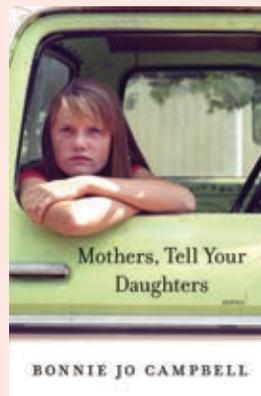
By Justin Gifford, AM'99; Doubleday, 2015

In 1967, after decades as a pimp and criminal, Robert Beck released a gritty memoir, *Pimp*, that launched him as one of the best-selling and most influential black writers of the 20th century. University of Nevada associate professor **Justin Gifford** presents a nuanced biography of the man known as Iceberg Slim, from his life on the streets to his subversive writing to his wider impact on "street," and American, culture.

REVOLUTION: MAPPING THE ROAD TO AMERICAN INDEPENDENCE, 1755–1783

By Richard H. Brown and Paul E. Cohen, AM'75; W. W. Norton, 2015

Rare book dealer **Paul Cohen** helps provide a cartographical account of the American Revolution, using historical maps and drawings to illustrate how, and where, the conflict unfolded. From maps of land claims in North America before the war to a battlefield diagram of Yorktown, the 60 images and accompanying essays in *Revolution* provide a fresh perspective on America's beginnings.



MOTHERS, TELL YOUR DAUGHTERS

By Bonnie Jo Campbell, AB'84; W. W. Norton, 2015

The female protagonists in **Bonnie Jo Campbell's** latest collection of short stories inhabit a brutal rural American landscape, full of traumatic pasts and limited dreams. From an abused wife who takes revenge on her bedridden husband to a mother searching for a warm home for her family, the women are flawed but strong, fighting for the best lives they can get.

—Helen Gregg, AB'09

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Phoenix Society members lead the way in supporting the University's students, faculty, resources, and facilities through estate commitments and life-income arrangements. Such gifts provide important ways to strengthen and sustain the University's future. The names below represent members welcomed into the society from July 1, 2014, through June 30, 2015. All names are listed per member request.

We invite you to join the Phoenix Society by providing for the University in your financial and estate plans. Please visit phoenixsociety.uchicago.edu, email phoenixsociety@uchicago.edu, or call 866.241.9802 for more information.

Thank you.

Anonymous	Professor Lorelei H. Corcoran, PhD'88	Joanna Hayward Frodin, AM'71
Anonymous, AB'53		Myron Gaylord, MBA'73
Anonymous and Anonymou, MD'53	Karin Cramer, AM'77, AM'80	Gertrude Gordon and Charles Gordon, AB'63, JD'67
Anonymous, LAB'57	Brian David, AB'81, MBA'91, and Ted Hopkins	Howard Gottlieb, PhB'47
Anonymous, JD'60	N. Benjamin Davidson, MPP'96	Mary Gottschalk, AB'66
Anonymous, PhD'75	Lucy Day, AB'65	Myra Harms and William Harms
Anonymous, PhD'85	Hendrik de Jong, AB'66, JD'69	Barbara Hazenfield and Hugh Hazenfield, AB'64, MD'68
Anonymous, MBA'86, and Anonymous, MBA'86	Debra Oliver Dewing, MBA'80, and Bob Dewing, MBA'79	Richard Helmholz
Anonymous, PhD'07	Carol Drolen, AM'74	Vincent Hillery, AB'81, JD'84
Albert Allen, SB'80, SM'80	Janet Duchossois and Craig Duchossois	Michael David Ilagan, AB'88, MBA'92
John Baran, AB'51, SM'53	Alexandra Egan and Pranav Ramanathan	Raye Isenberg, AB'67, and Sheldon Isenberg, AB'63, AM'67
Margaret Benjamin and Lawrence Benjamin	Michael Einisman, AB'62, MBA'63	Carol Janoff and Norman Janoff, MBA'80
Linda Blondis, AB'64	Ivette Estrada	Brenda Lee Johnson and Jeffery Kizilbash
Camille Blume and Roger Blume, MBA'67	Diane Lind Fenster, MD'78, and Bruce Fenster, MD'78	Michael Johnson, EX'73
Ellen Bradley and Andrew Bradley, AM'73	Eugenie Fitzgerald and John Fitzgerald Jr., AM'60, PhD'69	Jon Koplik, MBA'80
Sandra Chasalow, SB'61	Michael Flaim, AB'03, MBA'10	
Sean Colligan, AB'88	James A. Foster, AB'81	
Agnes Dahlen Cooper		



PHOENIX SOCIETY

THE UNIVERSITY OF CHICAGO



- Elizabeth Kraus, AB'82, MBA'87,
and Lee Kraus Jr., MBA'84
- Peter Kretzmer, MBA'82, PhD'85
- Dorothy Sasak Kroko, AB'49
- Bonnette Kurlander and
Donald Kurlander
- Barbara Leibundguth, EX'75
- Richard Levinson, AB'51, SM'54
- Katherine Linehan,
LAB'61, AB'65, and
Glenn Loafmann, AB'65
- Kerry McClanahan, EX'70
- James McDaniel, AB'68,
and Kevin Hochberg,
AM'78, JD'84
- Wayman Merrill, AB'68, MD'74
- Susan Milligan and
Philip McGuire
- William Mixon, SB'62, SM'65
- Jean Mosheim, AM'42*
- Kristin Motyka, MBA'95, and
Tom Hinton
- Victoria Ocholla
- Elizabeth Orndorff
- Jean Perkins, MBA'76, and
Leland Hutchinson, JD'73
- Wendy Posner, AM'76, PhD'86
- Myrtle Potter, AB'80
- Nina Petrosky Priebe, AM'80
- Jill Reichman, AM'95, PhD'03
- Kevin Robbins, AB'94
- Katherine Robinson, AM'85,
and Jayme Lahut, AM'85
- Sharon Rubin, AB'65, AM'66,
and David Rubin
- Sharon Sadow, AB'80, JD'84,
and Andrew Alper, AB'80,
MBA'81
- Donald Schacker, AB'56, SM'58
- Mary Schloerb and Robert
Schloerb, JD'51
- Penny Sebring and
Charles Lewis
- Brenda Silverman and
Michael Silverman, MD'73
- Susan Sloan
- Kristin Stevens and Stanley
Stevens, JD'73
- Isabel Stewart and Don Stewart
- Elizabeth Sultan and Allen
Sultan, AM'62
- Karin S. Tenny and Alfred M.
Tenny, PhB'49, SB'59, SM'63
- Cheryl Thaxton
- Joanne Waghorne, AM'70,
PhD'76, and William
Waghorne, AM'70
- Lisa Walker, MBA'91, and
William Rudnick, MBA'97
- Nancy Walpole, AB'68, AM'69
- Denise Weintraub and Joseph
Weintraub, AM'67, PhD'73
- James White, JD'69
- Bradford Wilson, PhD'77
- Susan (Loth) Wolkerstorfer,
AB'72, and J. Terrence
Wolkerstorfer
- Laura Woodruff, AB'64

*Deceased

DEATHS

FACULTY AND STAFF

Raul Hinojosa, associate professor emeritus of surgery, died April 26 in Morelos, Mexico. He was 86. Hinojosa taught pathology and histology in Mexico before joining the otolaryngology section of the University's surgical faculty in 1962. An expert on ear diseases, he consistently earned research funding from the National Institutes of Health, published and lectured widely, and gathered one of the world's largest collections of temporal bones and related tissue for scientific study. Hinojosa retired from the University with emeritus status in 1998. He is survived by his wife, Berta; two daughters; two sons, including **Raul Andres Hinojosa-Ojeda**, LAB'75, AB'80, AM'80, PhD'89; two sisters, including **Maria L. Hinojosa**, LAB'79; and four grandchildren.

Norman W. Ingham, professor emeritus of Slavic languages and literature, died April 27 in Wilbraham, MA. He was 80. An expert on medieval Slavic and early-modern Russian literature, Ingham joined the faculty in 1971. He spoke Polish, Russian, Czech, Spanish, French, Italian, Old Church Slavonic, and Greek, and published widely on the work of Gogol, Turgenyev, and Tolstoy. For nearly two decades, he organized the annual Midwest Medieval Slavic Workshop at UChicago. Known for his attentiveness to students and his dry sense of humor, he retired in 2006. He is survived by two nieces and five nephews.

Philip W. Jackson, the David Lee Shillinglaw Distinguished Service Professor Emeritus in Education, Psychology, and the College, died July 21. He was 86. An expert on education pioneer and Laboratory Schools founder John Dewey, Jackson joined the faculty in 1955, later chairing the Department of Education and holding administrative roles at the Laboratory Schools. Jackson's research focused on pedagogical methods and how children learn as well as how schools influence children's moral development. He is survived by his wife, Josephine; a daughter, **Nancy Jackson**, LAB'73; two sons, **David Jackson**, LAB'76, and **Steven Wesley Jackson**, LAB'79; and a granddaughter.

Amy Kass, AB'62, senior lecturer emerita in humanities, died August 19 in Washington, DC. She was 74. Kass taught high school and participated in civil rights advocacy before returning to UChicago in 1976 to teach humanities in the College. Along with her husband, **Leon Kass**, LAB'54, SB'58, MD'62, she cofounded the Human Being and Citizen course in the Core curriculum and developed a class on courtship and marriage, and she served as an adviser in the Fundamentals: Issues and Texts major. Known for helping students apply the teach-

ings of classic texts to their own lives, she received a Quantrell Award for Excellence in Undergraduate Teaching after just four years as a lecturer and received the Alumni Association's Norman Maclean Faculty Award in 2010, the year she retired. She is survived by her husband; two daughters, including **Miriam R. Kass**, LAB'89; a sister; two brothers; and four granddaughters.

John "Sean" Mullan, the John Harper Seely Professor Emeritus in Surgery, died June 4 in Chicago. He was 90. Mullan joined the faculty in 1955, becoming a full professor in 1963 and later the neurological surgery section chief and acting chairman of the surgery department. A pioneer in neurosurgery, he developed several minimally invasive methods, variations of which are still in use. He published widely and was a past president of the Society of Neurological Surgeons. He is survived by his wife, Vivian; a daughter, **Joan C. Mullan**, LAB'78, MD'91; two sons, **John C. Mullan**, LAB'79, MD'87, and **Brian Mullan**, LAB'81, MD'91; a granddaughter, **Caitlin Goldwater**, LAB'12; and four grandsons.

Yoichiro Nambu, the Harry Pratt Judson Distinguished Service Professor Emeritus in Physics and the Enrico Fermi Institute, died July 5 in Osaka, Japan. He was 94. An influential theoretical physicist, Nambu joined UChicago in 1954, becoming a full professor in 1958 and chairing the physics department from 1974 to 1977. He shared the 2008 Nobel Prize in Physics for a theory about the behavior of large groups of subatomic particles and was also known for his work on string theory and the forces that bind matter in atomic nuclei. The winner of the J. Robert Oppenheimer Prize, the Wolf Prize in Physics, the Benjamin Franklin Medal, and other honors, Nambu retired in 1991. He is survived by his wife, Chieko, and a son, **John J. Nambu**, LAB'68, AB'73.

David Raup, SB'53, the Sewell L. Avery Distinguished Service Professor Emeritus in Geophysical Sciences, died July 9 in Sturgeon Bay, WI. He was 82. A paleontologist and authority on evolution and mass extinction, Raup taught at several institutions before returning to UChicago as a visiting professor in 1977. He joined the University faculty in 1980 and chaired the Department of Geophysical Sciences from 1982 to 1985, retiring in 1995. Known for challenging accepted paleontological principles, Raup used the fossil record to develop theories about biodiversity and introduce approaches like computer and mathematical modeling to paleontology. He is survived by his wife, Judith Yamamoto; a son, **Mitchell D. Raup**, AB'80; a grandson; and a stepson.

Charles Rubin, associate professor of pediatrics, died of heart failure on July 17 in New Lenox, IL. He was 62. An expert on the genetic aspects of pediatric cancer, Rubin came to UChicago in 1985 as a fellow in Janet Rowley's (LAB'42, PhD'45, SB'46, MD'48) laboratory, joining the faculty of the Cancer Research Center in 1987. He co-

founded UChicago Medicine's Cancer Risk Clinic in 1991, directed the pediatric hematology/oncology fellowship and the pediatric neuro-oncology program for many years, and helped lead the University's efforts to bring pediatric cancer care to local communities. He is survived by his wife, Gretchen; four daughters; and three brothers.

Che-Lin Su, associate professor of operations management at Chicago Booth, died July 31 of cancer. He was 41. Su was a postdoctoral fellow at the National Bureau of Economic Research and Northwestern University before joining the Booth faculty in 2008. Also a scholar with the Becker Friedman Institute, Su researched structural estimation, optimization, and computational economics, and earned grants from IBM, the Initiative on Global Markets, and the National Science Foundation. He is survived by his wife, Bella; his parents; a sister; and a brother.

Pera Wirszup, lecturer in Russian and longtime resident master, died August 20 in Chicago. She was 100. Pera and her husband, Izaak Wirszup, PhD'55, both Holocaust survivors, came to Hyde Park in 1949 when Izaak joined the mathematics faculty. They served as resident masters of Woodward Court from 1971 to 1985. Pera worked at women's clothing store Peck & Peck, rising to a management position, before teaching conversational Russian (one of the six languages she spoke) at the University from 1980 to 1992. Izaak died in 2008, and Pera is survived by their daughter, **Marina D. W. Tatar**, LAB'54, AB'59; three granddaughters, including **Carolyn Beth Tatar**, MBA'86, and **Audrey Michelle Tatar**, MD'88; and six great-grandsons, including **Jacob Rosenbacher**, LAB'12, and current Lab student **Reed Rosenbacher**.

1930s

Frances O. Kelsey, PhD'38, MD'50, died August 7 in London, Ontario. She was 101. Kelsey joined the US Food and Drug Administration in 1960 and is best known for her work preventing the approval of thalidomide, a drug used to alleviate morning sickness in pregnant women that was later linked to birth defects. She was honored with the President's Award for Distinguished Federal Civilian Service in 1962 and spent the rest of her 45-year career at the FDA strengthening the country's pharmaceutical testing regulations. She was inducted into the National Women's Hall of Fame in 2000, and a day before her death, her home country recognized her with the Order of Canada. She is survived by two daughters, a sister, and two grandchildren.

Theodore "Ted" Caplow, AB'39, died July 4 in Charlottesville, VA. He was 95. A World War II veteran and Purple Heart recipient, Caplow taught at the University of Minnesota and Columbia University before joining the University of Virginia in 1970 as chair of the sociology department. He is known for his work on the "Middle-

town” studies, which used Muncie, IN, as a microcosm from which to examine 20th-century American life. The author of several books, Caplow retired from UVa in 2005. He is survived by his wife, Margaret; seven children; a sister; 10 grandchildren; and two great-grandchildren.

1940s

Harriet Bachman, AM’41, of Lenox, MA, died July 25. She was 100. After a brief stint at Henry Holt Publishing Co., Bachman joined *Time* magazine, where she was copy desk chief for more than 30 years. She was the author of the *Time* stylebook, which was used by two generations of staffers. In 1997 she was honored by her home state with her induction into the Indiana Journalism Hall of Fame. She is survived by two sisters and eight nieces and nephews.

William E. Frye, PhD’41, died April 15 in Palo Alto, CA. He was 97. Frye joined the Naval Research Lab in Washington, DC, the day before the attack on Pearl Harbor, and took a job at North American Aviation in Southern California after the war. In 1956 he began working in research and development at Lockheed Missiles and Space, retiring in 1990. His wife, Betty Frye, AB’35, died in 1990. He is survived by a daughter, a son, three granddaughters, two grandsons, and a great-grandson.

Clara R. Johns, MD’41, died May 18 in Umpqua, OR. She was 98. Johns spent her medical career providing care to underserved populations on the West Coast, from migrant children in Santa Clara County to Native Americans living on remote tribal lands. Following her retirement as medical director of a home care program in 1982, the State of California commended her for her service to the community. Her husband, William A. Hall, MD’44, died in 2002. She is survived by three daughters, one son, two granddaughters, two grandsons, and two great-grandchildren.

Raymond C. Crooks, SB’42, of Oklahoma City died May 7. He was 94. For 39 years, Crooks was a meteorologist with the National Weather Service in the United States and Ireland, retiring as chief meteorologist of Oklahoma City in 1981. He enjoyed traveling and hosting international visitors. He is survived by his wife, Lois; three daughters; two sons; 11 grandchildren; and 10 great-grandchildren.

Bette (Hinkel) Dorge, SB’43, of Lake Forest, IL, died June 27. She was 94. An American Red Cross worker in Japan and the Philippines from 1945 to 1947, Dorge pursued a career in nutrition before marrying and raising a family. She enjoyed playing golf, tennis, badminton, paddle tennis, and bridge; volunteering with her church; and hosting friends and family. She is survived by her husband, Donald; two daughters, including **Pamela D. Russell**, MBA’86; a sister; a granddaughter; and four grandsons.

Helen Tyler Parisi, AB’43, died June 16 in Chicago. She was 92. Parisi worked in the

armaments industry during World War II and later in administration at Northwestern University. A believer in the power of education, Parisi endowed scholarships at UChicago, Sarah Lawrence College, and DePaul University with her husband, Dominic G. Parisi, EX’43, MBA’48, who died in 2010. She is survived by three daughters; a son; a sister, **Ann T. Fathy**, AB’56; a brother; a granddaughter; and four step-grandchildren.

Elizabeth (Dickson) Eberhard, AB’46, of Santa Fe, NM, died September 2, 2012. She was 95. Proud her entire life of completing college in two years, Eberhard worked as a writer and editor at organizations including Walter Reed Army Medical Center and the National Institutes of Health. She is survived by a daughter and two grandsons.

Olga Giacchetti Fineman, SB’46, died April 20 in Idaho Falls, ID. She was 92. Fineman worked as a laboratory technician for the Manhattan Project and later as an encyclopedia saleswoman and a livestock auction cashier. A homemaker, PTA president, Cub Scout den mother, and theater usher, she enjoyed playing bridge and tennis. She is survived by two sons, three grandchildren, and five great-grandchildren.

Don Yoder, DB’45, PhD’47, of Devon, PA, died August 11. He was 93. Yoder taught American, religious, and folklife studies at the University of Pennsylvania for 40 years, retiring with emeritus status in 1996. An expert on Pennsylvania Dutch culture, he was also dedicated to its preservation, helping to establish the Library of Congress’s American Folklife Center and the Kutztown (PA) Folk Festival and cofounding the Pennsylvania Folklife Society.

Marvin L. Shapiro, SB’47, SM’49, died May 19, 2014, in Houston. He was 90. A World War II veteran of the US Navy, Shapiro worked on geological projects at BP Amoco for 33 years, then spent the next 20 years as a geologist for a Texas oil company. He is survived by his wife, Lou; one daughter; two sons; a brother; eight grandchildren; two great-grandchildren; two stepdaughters; and a stepson.

Clara Magnusson Weaver, PhB’47, SB’52, of Inverness, FL, died August 9, 2014. She was 86. A registered nurse, Weaver worked for many years at Citrus Memorial Hospital and Seven Rivers Hospital, both in Florida, and was a consistent supporter of social and environmental advocacy groups. She is survived by three daughters, a son, eight grandchildren, and two great-grandchildren.

Nathaniel Sisson Eek, AB’48, died April 30 in Santa Fe, NM. He was 87. Eek spent his career in arts education, working as a theater director at the University of Kansas and an assistant professor of speech at Michigan State University before being appointed director of the University of Oklahoma’s drama school in 1962. He became dean of the fine arts college in 1976. A volunteer with many arts education organi-

zations, in 1997 Eek was inducted into the Oklahoma Higher Education Hall of Fame. He is survived by two sons, a brother, and four grandchildren.

Irwin A. Rose, SB’48, PhD’52, died June 2 in Deerfield, MA. He was 88. Rose was on the faculty at the Yale School of Medicine before moving to Fox Chase Cancer Center in Philadelphia, where he studied how cellular proteins are broken down. His work led to better understanding of many diseases and to the development of a new class of cancer-fighting drugs, and earned Rose and two collaborators the Nobel Prize in Chemistry in 2004. He is survived by his wife, Zelda; three sons; and five grandchildren.

1950s

Mirl Wesley Whitaker, AM’51, died June 10 in Springfield, IL. He was 93. A School of Social Service Administration graduate, Whitaker worked in children’s homes in Illinois, Washington, and New York before becoming executive director of the Child Care Association of Illinois in 1968. He later earned a real estate license and sold residential properties. He is survived by three sons, including **Stuart M. Whitaker**, AB’77, MBA’80; three sisters; six grandchildren; and four great-grandchildren.

James I. Doi, AM’50, PhD’52, of Seattle died June 5. He was 92. Detained in a Japanese internment camp during World War II, Doi went on to serve in the US Army’s Military Intelligence Service in occupied Japan, for which he received the Congressional Medal of Honor in 2013. He completed his dissertation at UChicago and later held professorships at several universities before being appointed dean of the University of Rochester’s school of education in 1971. In 1979 he became dean of the education school at the University of Washington, retiring in 1988. He is survived by a daughter and two sisters.

Robert H. March, LAB’49, AB’52, SM’55, PhD’60, of Madison, WI, died August 4 in Fitchburg, WI. He was 81. For more than 40 years, March was a physics professor at the University of Wisconsin–Madison, where he conducted high energy physics and astrophysics research and helped to redesign the science component of UW’s liberal studies program. He was also a folk musician and a member of the Union of Concerned Scientists. He is survived by a son; two brothers, including **William James March**, PhD’75; and a grandson.

Frank M. Byers, PhD’55, died July 12 in Longmont, CO. He was 99. Byers worked for the US Geological Survey from 1941 to 1980, conducting fieldwork in Alaska, Nevada, California, and Colorado. He then joined Los Alamos National Laboratory where he worked as a full-time research geologist until 1988, continuing to consult for the laboratory and the USGS until 2006. He is survived by two daughters, two sons, three granddaughters, four

grandsons, one great-granddaughter, and two great-grandsons.

George William Lang, AM'55, of Sioux Falls, SD, died June 4. He was 86. Lang was a Baptist minister in Chicago and lived in several areas of Cameroon, moving to Sioux Falls in 1971. There, he worked as a library administrator and instructor for the North American Baptist Seminary until retiring in 1999. He served as a deacon at his church and enjoyed photography, gardening, and stamps. He is survived by his wife, Lenore; two daughters; two sons; a brother; five granddaughters; two grandsons; and three great-grandsons.

James Schoenwetter, AB'55, AB'56, died in Tempe, AZ, on August 22. He was 80. A professor of anthropology at Arizona State University for more than 30 years, Schoenwetter was a pioneer in the application of pollen analysis to archaeology and a proponent of preserving sites untouched for future scientists with better tools. He is survived by his partner, Jan Jacobs; a son; a brother, **David M. Schoenwetter**, SB'65; and two grandchildren.

Laurie Martin Gunter, PhD'59, died June 15 in Seattle. She was 93. Gunter taught at the University of Washington for five years before joining the faculty of Penn State's College of Human Development in 1971. An elected member of the Institute of Medicine and the National Academy of Sciences, Gunter focused her research on nursing care for the elderly, a topic on which she published widely. She retired from Penn State with emerita status in 1987. She is survived by two daughters, two granddaughters, and three great-grandchildren.

Theodore S. Piwowar, SB'59, of Chicago, died July 13. He was 85. A Korean War veteran, Piwowar worked as a chemist for the US Food and Drug Administration for three decades. He is survived by four sisters, a brother, and many nieces and nephews.

1960s

David B. Straus, EX'51, PhD'60, died June 11 in Gardiner, NY. He was 84. Straus was a chemistry professor at the State University of New York in Buffalo (1965–72) and at SUNY New Paltz (1972–99), as well as a longtime councillor for the American Chemical Society. He contributed to social justice causes and was active in Gardiner's local government. He is survived by his wife, Harriet; a daughter, **Lisa Straus**, AB'78; two sons; and eight grandchildren.

Barbara E. Spitzer, AB'60, of Stamford, CT, died July 5. She was 78. Dedicated to helping others, Spitzer was a clinical psychologist and active in various political, peace, and humanitarian causes. She is survived by her husband, **Donald P. Spitzer**, PhD'60; three sons; a brother; and seven grandchildren.

Christopher M. Mould, JD'61, died July 10 in Scarborough, ME. He was 78. In 1965 Mould joined the US Department of Justice's Community Relations Services as

a principal negotiator and conciliator for race and civil rights, and later helped develop the Model Cities Program. He was part of the original organizing staff of the National Urban Coalition and the first director of the US Office of Voluntary Action, where he helped oversee the Peace Corps, VISTA, and other programs at the resulting agency, ACTION. From 1973 until his retirement in 1997, Mould held leadership roles with the national YMCA. He is survived by his wife, Martha; two daughters; a sister; a granddaughter; a stepdaughter; a stepson; and five step-grandchildren.

Gerhard E. Spiegler, DB'56, AM'60, PhD'61, died August 24 in Wynnewood, PA. He was 85. A religious studies scholar, Spiegler taught at Haverford College and served as its provost and interim president before joining Temple University as provost, later becoming a professor and department chair. In 1985 he was appointed president of Elizabethtown College, from which he retired in 1996. He is survived by his wife, Ethel; a daughter; two sons; a sister; and two granddaughters.

James Ely Shrauner, PhD'63, died June 1 in Chesterfield, MO. He was 82. A student of Yoichiro Nambu [See page 80.—Ed.], Shrauner joined the physics department at Washington University in 1965, retiring as professor emeritus in 2001. He was a trustee of the Universities Research Association panel for Fermi National Accelerator Laboratory and a consultant for the URA's Superconducting Super-Collider Central Design Group. He is survived by his wife, Barbara; a daughter; a son; a brother; and four grandchildren.

Robert K. Dewar, SB'64 (Class of 1965), PhD'68, died June 30 in Bennington, VT. He was 70. Dewar joined the computer science faculty at New York University in 1975, becoming a full professor in 1976 and later chair of the department. Involved with the Ada programming language since its earliest stages, he implemented the first validated compiler for Ada 83 at NYU. In 1994 he cofounded AdaCore to commercialize Ada language compiler technology, serving as CEO until 2012 and president until his death. His wife, Karin E. Dewar, AB'65, died in 2013. He is survived by a daughter, a son, and two grandchildren.

Donald C. Wellington, AM'61, PhD'66, died March 12 in Winter Park, FL. He was 85. A specialist in economic history and thought, Wellington taught at San Diego State University (1964–67) and then at the University of Cincinnati (1967–2001). He published widely in the field of economics and also wrote two novels. He is survived by his wife, Jean; a daughter; a sister; and four grandchildren.

Douglas Neil Upshaw, MBA'67, died July 18. He was 84. Upshaw began working at International Harvester in 1957 and rose through the ranks, retiring as vice president of international operations in 1985. He went on to serve as manager of international trade for the State of Ari-

zona, department director at Thunderbird University, and vice chancellor at Western International University, and also volunteered with the International Executive Service Corps. He is survived by three sons, a granddaughter, and two step-granddaughters.

John A. Marino, AB'68, AM'70, PhD'77, died December 3 in San Diego. He was 68. A scholar of early modern European history, Marino joined the University of California, San Diego, as assistant professor in 1979. He went on to chair the history department and published widely, including two influential monographs on 16th-century Naples. He retired from UCSD with emeritus status in 2014. He is survived by his wife, **Cynthia Maria Truant**, AM'72, PhD'78; a daughter; and a son, **Marc J. Marino**, AB'11.

1970s

Helen Hughes, PhD'70, died May 26 in Belfast, ME. She was 93. Hughes was a longtime psychology professor at Governors State University, where she was also the founding editor of the *Creative Woman*, a journal for women from many fields to share ideas and creative works. She maintained a private practice in neuropsychology and was active in social justice movements throughout her life. She is survived by a son, a sister, four grandchildren, and four great-grandchildren.

Elizabeth Hedwig Floyd, AB'76, MBA'77, died on March 15 in Hunterdon County, NJ. She was 61. A business executive, she had retired in 2006 as managing director of Concurrent Industries Group in New York City. She was an avid equestrian, a student of the political economy, and proud owner of a smooth collie. She is survived by her husband, **Randolph Floyd**, AB'79, MBA'83; a brother, **Andrew Kleczek**, AB'64; four nieces, including **Julie (Kleczek) Cohen**, AB'00; and two nephews.

1980s

Charles H. Howell, AB'84, of Staten Island, NY, died of a heart condition on July 5 in Boulder, CO. He was 53. Howell worked in Boston's Department of Public Welfare before becoming an Episcopal priest and spending 11 years serving a church in Grand Rapids, MI. In 2006 he was called to be the rector at Christ Church New Brighton on Staten Island. He is survived by his wife, Elizabeth; a daughter; two sisters; a brother; and his stepmother.

2000s

Timothy W. Doede, AM'98, MBA'00, of New York City, died March 26. He was 41. Doede spent his career in finance, working most recently as portfolio manager for a series of small funds. He is survived by his wife, Rebecca Hornstein Doede; a daughter; and a son.

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Meet and tweet

Between them, professors **Richard H. Thaler**, **Peggy Mason**, **Neil Shubin**, and **Harold Pollack** have more than 57,000 followers on Twitter. **Carrie Golus**, AB'91, AM'93 (@carriegolus), talked to them about their tweeting life. Here, a few snippets of the conversation reveal how they use the social media site and what advice they have for Twitter fledglings.



Read the whole Q&A at mag.uchicago.edu/university-news/power-tweeters.



Richard H. Thaler, @R_Thaler

Charles R. Walgreen Distinguished Service Professor of Behavioral Science and Economics, Chicago Booth

Coauthor of *Nudge: Improving Decisions about Health, Wealth, and Happiness* (Yale University Press, 2008) and author of *Misbehaving: The Making of Behavioral Economics* (W. W. Norton and Company, 2015)

Advice: Spend some time just reading. Find out what you like and don't like. Then you can start tweeting in an informed way.



Peggy Mason, @neuroMOOC

Professor, Department of Neurobiology

How I tweet: It's definitely an acquired taste. I use it to talk to my Neuro MOOC (massive open online course) students and share neuro things. The other categories I permit myself to write about are cats, the environment, and science.



Neil Shubin, @NeilShubin

Robert R. Bensley Professor, Department of Organismal Biology and Anatomy, and Associate Dean for Academic Strategy, Division of the Biological Sciences

Author of *Your Inner Fish: A Journey into the 3.5-Billion-Year History of the Human Body* (Pantheon, 2008) and *The Universe Within: Discovering the Common History of Rocks, Planets, and People* (Pantheon, 2013)

Advice: Stay positive. Don't try to go viral. Don't get in arguments.



Harold Pollack, @haroldpollack

Helen Ross Professor and Deputy Dean for Research and Faculty Development, School of Social Service Administration

Coauthor of "The Index Card: Why Personal Finance Does Not Have to Be Complicated" (Portfolio, forthcoming), based on an actual index card that went viral in 2013

How I tweet: My favorite use of Twitter is complimenting people. All of my TAs and many of my students follow me covertly. So I can say something nice about one of my TAs and they can forward it to their mom.



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