

THE UNIVERSITY OF CHICAGO | The College
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A few years ago, I was in Cambridge, England having dinner at high table at Trinity College, one of the oldest and plushiest colleges at Cambridge University, dating back to the times of Henry VIII. After dinner, you came out to the inner courtyard, where you realize that 350 years earlier Isaac Newton walked across those very lawns. It does not take an apple to hit you on the head to deduce that you are part of an incredible tradition of inquiry and intellectual endeavor. There is a visceral sensation of connection to scholars whose ideas have shaped our understanding of the world, whose discoveries have survived for centuries and continue to be handed down from intellectual generation to intellectual generation.

Welcome to one of the great universities of the world, The University of Chicago, where you will study, unpack, critique, and confront the work of these scholars and their discoveries, and add your own distinctive voice to the canon. This evening I have the great honor and daunting task of attempting to contextualize the educational experience that lies before you, where more quickly than you can imagine you will be officially received at graduation ceremonies into the “company of educated men and women.” The task this evening reminds me of the aphorism about Washington, DC and Congress: “while everything has been said, not everyone has said it.” Nonetheless, I do hope to convince you that not only are you about to enter into a world rich in tradition and deeply connected to the greatest achievements of humanity, but also a world that is dynamic and changing and ready to be sculpted by the power of your ideas.

of William Rainey Harper, the founding president of the then nascent University of Chicago: "His University would be a late nineteenth-century German University ... with elements of Oxford and Cambridge added for good measure ... it would also be a western revival of Yale... In spite of a strangely hybridic quality, Harper was deeply confident that his University, unlike many eastern institutions, would have ‘a life that forms a complete whole.’ In its capacity for radical experimentation and innovation, in its reshuffling of traditional academic boundaries, in its melding together of collegiate and graduate education to the advantage of both...the new University was very much an American institution..." [1]

What does it mean for an institution to have, in Harper’s phrase, “a life that forms a complete whole?” Reaching for the highest aspirations of the American credo, the University of Chicago welcomed all for the quality of their minds, for what they had to say, rather than what they looked like or who they knew. From its inception, the University of Chicago admitted both

women and men. The first African-American woman to earn a Ph.D. earned her Ph.D. in 1921 in German philology at the University of Chicago. Asian-American scholars helped shape the great Chicago school of urban sociology in the 1920s. Jews matriculated at the University of Chicago without encumbrance from the strict quotas common to the day. The first gay liberation organization in the City of Chicago formed at the University of Chicago. The University opened its doors wide because it has sought from the beginning – and continues to seek even more intently today – those individuals whose quality of mind can transform a discipline or create a new one. Talent at this level is rare and uncorrelated with external markers. Only by casting a net widely does an institution stand a chance to succeed.

Diversity by itself, however, does not realize Harper's concept of institutional wholeness. A heterogeneous assembly of scholars, students and faculty alike, necessarily brings to bear a broad range of perspectives and methodologies to the problems of the day and of the ages. This diverse population of scholars, namely you, your peers, and your teachers, must be nurtured in an environment in which you are free to express your ideas boldly and fully, and have those ideas challenged and rebutted, shaped and honed. Iron refined by fire becomes steel, not because it becomes purer, but because additions to the mix, elemental carbon in this case, strengthen it. Refining by the fire of ideas, drawn from diverse perspectives, rigorous argument, and data-driven claims, leads to transformation.

The first take home message about your education then is the necessity to engage with a wide diversity of peers and teachers, and together to test and sharpen your ideas. There is a story about a Ph.D. student that deftly illustrates this point. One sunny day a rabbit came out of her hole in the ground to enjoy the fine weather. She was thinking hard about her work and in the sun and breeze became careless. A fox snuck up behind her and caught her.

"I am going to eat you for lunch," said the fox.

"Wait," replied the rabbit. "You should wait at least a few days."

"Why should I wait," said the fox.

"I have almost finished my thesis," said the rabbit. "It is on The Superiority of Rabbits over Foxes and Wolves."

"You are crazy," said the fox. "Everyone knows that a fox will always triumph over a rabbit."

"Not according to my research," said the rabbit. "If you don't believe me, you can come into my hole and read the thesis for yourself. If you aren't convinced, then you can eat me for lunch."

The fox was curious and had nothing to lose, so he went with the rabbit into the hole. The fox was never seen again.

A few days later, the rabbit was out on another stroll and distracted by great thoughts was set upon by a wolf. “Wait,” cried the rabbit. “You can’t eat me right now.”

“What are you talking about?” said the wolf.

“I am almost finished writing my thesis on The Superiority of Rabbits over Foxes and Wolves.”

The wolf laughed so hard it almost lost its grip on the rabbit. “Maybe I shouldn’t eat you after all,” said the wolf. “You could be sick in the head and contagious.”

“Come and read it yourself,” said the rabbit. “You can eat me afterward if you disagree with my conclusions.” So the wolf went down into the rabbit’s hole. The wolf was never seen again.

The rabbit finally finished her thesis and was out celebrating. Another rabbit came along and asked what she was so happy about. “I just defended my thesis on The Superiority of Rabbits over Foxes and Wolves.”

“Are you sure? That doesn’t sound right.”

“Oh yes. Come and read it yourself.”

Together they went down into the rabbit’s hole. The hole was strewn with papers from the rush to finish the thesis. In one corner was a pile of fox bones, picked clean. In the other corner was a pile of wolf bones. And in the middle was the rabbit’s thesis adviser, a large, well-fed lion.

The moral of the story: It doesn’t matter what the subject of your thesis is. It doesn’t matter how outlandish your ideas may seem at first. What matters are the people you work with.

The ability to express unpopular ideas (rabbits and foxes and wolves aside) is essential to the rigorous discourse that leads to intellectual progress, but it can be a surprisingly vulnerable quality of the academic environment. The need to create an environment where scholars feel free to let their imaginations run wild and challenge the accepted wisdom, however politically unpopular those tenets may be, lies behind the creation of the tenure system. Tenure shields scholars from the most egregious attacks on academic freedom. But there are more subtle threats to the atmosphere of open discourse, productive argument, and unfettered inquiry that undergirds discovery. For example, it is only natural for individuals to want their institution to take an official position on topics about which they care deeply. However, by taking an official institutional position on a political or social issue outside of its direct responsibilities the University can chill discourse; the members of its community who adopt contrary views may feel constrained in their ability to probe and challenge if the institution to which they belong has announced a conclusion on behalf of its members. This may seem like a minor constraint, but the effects can be cumulative and systematically undermine our culture of unflinching

inquiry. Even the smallest erosion of principle represents a danger to the foundation upon which the University of Chicago is built.

There is another aspect to this particular University of Chicago ethos, captured by the Kalven principles. These principles emanate from a 1967 faculty report chaired by Law Professor Harry Kalven, Jr. in response to then University President George W. Beadle's request to prepare "a statement on the University's role in political and social action." We hold a profound belief that our students and faculty can contribute to society in special ways as a community of scholars, doing what we can do best: challenge the accepted wisdom, rigorously analyze problems, refine them in the fire of discourse, and devise solutions based on data. As the members of the Kalven Committee put it [2]: "In brief, a good university, like Socrates, will be upsetting. The instrument of dissent and criticism is the individual faculty member or the individual student. The university is the home and sponsor of critics; it is not itself the critic." The University qua University should not take an official stand, however popular it may be at the moment, to divest from a category of investment or sign a petition to Congress, but the individual members of the University remain free and, in fact, are encouraged to take whatever stands and propose whatever analyses and remedies they see fit, from the widest possible diversity of views. If our intellectual atmosphere remains robust, then we are positioned to take full advantage of the many talents and varied perspectives of our community for the commonweal.

The second take home message about your education is your responsibility to understand and protect the unique elements of the University of Chicago academic environment and to leverage its values to embark on your own intellectual adventures.

I have talked about modes of discourse that stretch back to the University's founding. It may seem under these circumstances that your ambitions to create something new are at risk of being ground up in the mills of tradition. After all, universities as institutions go back to the Middle Ages. They outlast almost all businesses and a good many states. At your convocation a few years hence you will dress up in robes more fit for Thomas Aquinas than a 21st century, stylish Chicagoan. Yet, universities can be surprisingly dynamic. Their essential element – the people who constitute their ranks – turns over at a rapid pace. Half the University of Chicago faculty turn over in a decade. Most graduate students receive their degrees in a decade. Essentially all College students graduate in half a decade. With new faculty, students, and staff, new ideas and new approaches can take hold, even while each succeeding class commits itself to protecting the fundamental values of the institution.

I have now been at the University of Chicago for 30 years, arriving here straight from graduate school as a newly minted Assistant Professor in 1983. The University continues steadily on its path of realizing Harper's vision of a complete whole, distinctively positioned and firmly committed to creating knowledge for the ages. At the same time, the University has changed enormously over the last decade, most profoundly in my view in its embrace of new and

broadened modes of inquiry. It is this evolution, which you are entering and which you can shape, that I wish to address in the remainder of our time together this evening.

There is a famous University of Chicago T-shirt that proclaims: “That’s well and good in practice, but how does it work in theory?” Conceptualizing broadly disparate observations is a hallmark of a University of Chicago education, but only part of what you can learn here. Let me illustrate this point with three examples: Education, Engineering, and The Arts.

The University of Chicago is the home of the great American educator, John Dewey, and yet we no longer have a School of Education or even a Department of Education. We did away with them because we felt that our structure was neither competing effectively with disciplinary departments nor achieving the impact to which we aspired. This did not mean that we abandoned our studies of education. Rather, we have developed a new model for urban education – one of the great challenges for the United States – mixing disciplinary strength with application.

The University of Chicago operates four public charter school campuses for the City of Chicago, serving nearly 1,700 students on the South Side of Chicago, prekindergarten through 12th grade.

We do not do this as a public good, although it is a public good, but because we are committed to establishing new, effective, and scalable models of urban education that cannot be developed without the experience gained from actual classrooms. Coupled to the University of Chicago Charter School is the Committee on Education, a collection of faculty with primary appointments in the Departments of Economics, Comparative Human Development, Mathematics, Psychology, and Sociology, the Schools of Social Service Administration and Public Policy Studies, and the Urban Education Institute, faculty members whose interests are in teaching and learning. All the charter school campuses are neighborhood schools with admission by lottery, providing a scientific sampling and controls. Moreover, we train teachers in the Urban Teacher Education Program. They, and many students in the College, spend time in our charter school classrooms.

Last but not least, the Chicago Consortium on School Research, an arm of our Urban Education Institute (UEI), has collected unparalleled, longitudinal data over decades from the Chicago Public School system to analyze what works and what does not. They have distilled this knowledge into the “Five Essentials:”

1. Effective Leaders, principals working strategically with teachers,
 2. Collaborative Teachers, working to improve their skills and their schools,
 3. Involved Families, encouraging learning,
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4. Supportive Environment, high expectations in a safe environment, and
5. Ambitious Instruction, engaging students.

The traditional mode of scholarship is to write a book. University of Chicago authors indeed have written the monograph on the subject. But we also spun out a non-profit company, UChicago Impact, to introduce these empirically-based tools to a broader community. Every school in the State of Illinois, plus schools in 18 other states and 33 cities, have adopted the Five Essentials as a measuring device for success. We have spun out the people. John Easton, the former Director of the Consortium on School Research, is now generalizing the Consortium model as Director of the Institute of Education Sciences of the US Department of Education. We have spun out the concepts. Coming out of UEI is the University of Chicago Crime Lab, which helps government agencies and non-profit organizations develop innovative approaches to reducing violence, and works with them to test interventions using randomized trials. All in the spirit of experimentation of the Laboratory Schools introduced by John Dewey more than a century ago in his quest to understand the relationship between the individual and society.

Let me now turn to engineering. As you may know, the University of Chicago eschewed investment in engineering for most of its existence. A few years ago, President Robert Zimmer and I posed the question of engineering to a faculty committee chaired by Professor of Chemistry, Steve Sibener. We did not ask whether we should establish an engineering presence per se, but rather, we asked whether our traditionally strong efforts in the basic sciences – biology, chemistry, and physics – would be viable a few decades down the road if we did not have engineering. The faculty committee unanimously averred that the distinction between “basic” and “applied” was no longer a good one in many areas of science and engineering, and in order to realize the potential of the rapidly growing ability to measure and manipulate entities on the molecular scale, it was necessary to pursue the science fully to the point where novel technologies emerge. Most important, the Sibener committee concluded, was the opportunity to attract people with a different sensibility, people committed to adding design and invention to the discovery of underlying principles, people addressing societal needs in energy, healthcare, information technology, sustainability and more. This was a theme fully consonant with a university whose strategy has always flowed from a desire to maximize human capital.

As exciting a proposition as molecular engineering appeared, it also seemed reasonable to ask actual engineers what they thought! To that end, we constituted an external advisory committee of prominent engineering faculty from across the country, chaired by Robert Langer, Institute Professor at MIT. They too were excited by the possibility. Admittedly the University of Chicago did not have an engineering infrastructure, but at the same time we were not hidebound by the traditional departmental configurations. It would be possible to reconceptualize what an engineering effort could look like, mixing chemical engineers,

bioengineers and materials engineers without distinction, all dedicated to translating molecular science into technology, engineering systems from the molecular level on up. Critical from our vantage point was the belief that if done correctly the University of Chicago could become a world leader in molecular engineering. Otherwise there would be little point to getting in the game. The faculty agreed and, by unanimous vote in the Council of the Faculty Senate, established the University's first official engineering body 120 years after its founding.

Rising phoenix-like from the ashes of the Research Institutes on Ellis Avenue, the once great laboratory building that grew out of the Manhattan Project, is the William Eckhardt Research Center, which will house the new Institute for Molecular Engineering (IME). Our first hire was IME's Director, Matt Tirrell, former Dean of Engineering at the University of California, Santa Barbara. Matt is a distinguished polymer engineer who, among other projects, devises ways that polymers can be harnessed to deliver therapeutic drugs in the body directly to the source of disease. He is charged with developing the separate identity and culture of the new Institute, while at the same time connecting to the strengths of the University in the natural and social sciences. Juan de Pablo, another early faculty hire, conducts simulations of protein aggregation and its poorly understood relationship to type-2 diabetes and neurodegenerative disorders. Juan is unusual for a theorist and representative of a sensibility that always keeps in mind possible applications from the laboratory in that his patents on the preservation of bacteria by complexing with sugars prior to freeze drying are essential to nearly all domestic sales of yogurt! Giulia Galli has developed the computational tools necessary to apply quantum mechanical principles to "real" materials, from determining the structure of water at interfaces to modeling the capabilities of quantum dots to perform as solar cells. David Awschalom is a leader in the study of quantum information and has come closest so far to developing a quantum computer that could sit on your desktop. I will resist the temptation to launch into a physics lecture, but suffice it to say that by taking quantum-mechanically entangled bits, so-called "qubits" where each qubit is simultaneously a 1 and a 0, a magnetic spin simultaneously pointing up and down, enormously complex calculations can be performed in manifestly parallel fashion. We aim for the same superposition of disciplines as the new Institute develops.

My final example is the arts. As with engineering, we are exploring as a university what it means for academic departments to engage with professional practitioners for their mutual benefit. This is not as simple a question as it may seem. What are the distinctive and unexpected intersections between scholars and artists, given that each is proficient in different modes of expression and each subscribes to different systems of evaluation?

The Gray Center for Arts and Inquiry is a forum for experimental collaborations between scholars and artists: Arts Lab, if you will, for musicians and musicologists, composers, graphic artists, media artists, actors, playwrights, choreographers. One of my favorite collaborations was that between New York architect James Carpenter and University of Chicago Physics Professor Sidney Nagel. Jamie Carpenter designed the Midway Crossings, the light sabers that will guide you between the north and south parts of campus at night. He designs and crafts the

play of natural light on structures, treating light like any other building material. Sid Nagel is the master of the tabletop experiment, probing natural phenomena like droplet snapoff and granular flow. Carpenter and Nagel jointly taught a course on the aesthetics and physics of light, cross-listed in the catalogue in the arts and humanities and in the physical sciences. They went to Greenland to better understand the play of light at northern latitudes, but could only go in winter, so in good experimental fashion the focus of the course and the subject of the hands-on student projects became the effects of the absence of light! The value of the course, however, derived as much from the confrontation between different perceptual approaches to the world, for students and instructors alike, as from the subject matter itself.

The University of Chicago boasts two professional arts organizations on campus: the Smart Museum of Art and the Court Theatre. The Smart has a fine collection, but it cannot compete with the Art Institute of Chicago, for example, and must find ways to distinguish itself by taking advantage of the greater university. A good example of what can be created at a university and nowhere else is the Smart's exhibit, *Echoes of the Past: The Buddhist Cave Temples of Xiangtangshan*. University of Chicago Ph.D. student Katherine Tsiang first trekked to the remote set of cave temples dating to 550 C.E. in China's Hebei province in the late 1980s. These caves once housed fine examples of Buddhist sculptures, but were badly damaged and looted in the early 20th century. Building on Tsiang's doctoral dissertation, the Smart hunted down what pieces they could from museum and private collections, and then teamed with Professor of Visual Arts and Fellow of the Computation Institute Jason Salavon to create "Digital Cave," an immersive experience of the untrammelled cave temples. The real and virtual objects were combined with a video of the environs of the caves, produced by Judy Hoffman, Professor of Practice in the Department of Cinema and Media Studies. After the Smart Museum, this exhibit traveled to the Sackler Gallery at the Smithsonian and then went on national tour.

The Court Theatre has sown similar seeds. The playwright Tony Kushner has collaborated with Court Artistic Director Charles Newell on a number of original interpretations of his work, most recently *Angels in America*. The attraction of the University for Kushner, however, is much broader, involving for example one of the world's foremost experts on Goethe, University Professor David Wellbery. The first stage production of Ralph Ellison's *Invisible Man*, a 2012 Court Theatre presentation, resulted from delicate negotiations with the Ellison estate and the collaborative efforts of Newell and Ellison expert and Professor of English, Ken Warren, coupled to a jointly taught course. Kushner himself has testified: "What's going on at the Court seems to me to be the platonic ideal of a relationship between a really superb theater company and a great institution of higher learning." [3]

This platonic ideal has its physical manifestation in the Reva and David Logan Center for the Arts. This is a building of discovery, whose corridors you should wander, funneling together the various academic streams of the arts into a performance tower. The mix of theory and practice is captured by talents like Professors of Music Shulamit Ran and Augusta Read

Thomas, both noted composers and scholars, who teach, guide, and perform in this special place. The Logan Center affords opportunities for our own community and outreach to our neighboring communities through its public programming.

The great philosopher, Yogi Berra, aptly sums up this section of the Aims of Education.

Berra ordered a pizza. He was asked what kind of pizza he wanted. "Cheese," he replied.

"Would you like it cut into four pieces or eight?"

"Four," he said. "I couldn't possibly eat eight."

It is the same intellectual pie, but you can cut it up in original and valuable ways. The third take home message is while remaining committed to the long-term creation of knowledge in your research, look for opportunities to apply your discoveries to the natural and human world around you.

This theme returns us to the genesis of the University. We are, after all, the University of Chicago, embedded in the City of Chicago and founded with an endowment that amplified Rockefeller philanthropy with matching funds from the civic leaders of Chicago. From the outset, the University reached out to the denizens of the city via a formidable extension program, which grew to enroll more than 3000 non-residential students annually and offer 350 courses taught by 125 instructors [4]. The extension program continues today as the Graham School of Continuing Liberal and Professional Studies, engaging the community in classrooms and online.

By virtue of our urban setting, the University is especially well positioned to address some of the most formidable problems facing society: education, health, crime, energy and the environment. We have not always realized this potential, and for long times in the University's history, we walled ourselves off. In the last decades, we have broken down many of these barriers and established vibrant partnerships that permit the University to extend its reach. The continuing challenge will be to identify those educational and research areas where the University has a discriminating advantage, honoring both the congenital compulsion to push the boundaries of established knowledge and the University of Chicago's urban roots.

In reflecting about the University of Chicago, student, professor, dean, provost and University president Edward H. Levi wrote: "The University of Chicago, in all probability, could not be created today. The task would be too great and beyond reach. But the University can be refounded and recreated as is the necessity for all institutions if they are to endure. The challenge to the University and its friends is to carry forward for our time this extraordinary tradition and instrument. Which began all at once, assumed a unique combination of research, teaching and professional training and over its history has departed very little from the values it seeks. Perhaps this is why it carries also that magical sense of wholeness." [5]

Levi's "magical sense of wholeness" echoes William Rainey Harper's institutional "life that forms a complete whole." You chose the University of Chicago aware of its extraordinary tradition and values, and paramount dedication to rigorous inquiry. You now have the opportunity to create your own experience of magical wholeness, navigating constancy and change as befits your needs and inclinations. Ever present will be captivating ideas as you explore the Core and choose a major. Become transfixed by ideas, but retain your connections to the incredible wealth of talent at arm's reach. The story is told that the famous mathematician Paul Erdős met a colleague at a conference and asked him where he was from.

"Vancouver," said the mathematician.

"Oh, you must know my good friend, Elliott Mendelson," said Erdős.

"I am your good friend Elliott Mendelson," was the reply.

Ideas obtained in vacuo are small recompense for your years of study to come. Get to know one another and your professors. Challenge and refine each other's ideas and subject them to the most rigorous scrutiny. Remember that you are an important part of a dynamic intellectual environment that needs to be nurtured and protected. Search for the lessons that will withstand the test of time, but see if they can be informed by engagement with the community around you and the broader world. It is an astounding adventure that you are embarking upon together as the Class of 2017, and it is a privilege to accompany you on it.

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1. J.W. Boyer, "Broad and Christian in the Fullest Sense: William Rainey Harper and the University of Chicago." *Occasional Papers on Higher Education*, vol. XV, pp. 97-98 (2005).
 2. Kalven Committee: Report on the University's Role in Political and Social Action, *The University of Chicago Record*, Vol. 1, No. 1, November 11, 1967.
 3. *Time Out Chicago*, Interview printed on April 17, 2012.
 4. T.W. Goodspeed, *A History of the University of Chicago* (University of Chicago Press, Chicago, 1916), p. 150.
 5. Edward H. Levi, "The University and the Modern Condition," in *Point of View: Talks on Education* (University of Chicago Press, Chicago, 1969), p. 19.