ESSAY

A Better Measure of a College Education?

A longtime Rochester academic leader makes the case for a more robust analysis of the value of higher education.

By Peter Lennie

The typical college graduate can readily point to how she grew and matured over her four years as an undergraduate. Parents, who send a teenager off to college as a freshman and see an adult emerge as a graduate prepared for life in a complex world, are probably even more aware of the transformation.

Colleges and universities have long been happy to take the credit for this, and for the bright future that awaits graduates. In almost every dimension of life, college-educated adults are better off than others: they're more employed, they're higher paid, they're more civically engaged, they're healthier, and they live longer.

But how much can those of us who are professionally involved in higher education legitimately claim to have contributed to this outcome?

LENNIE: A comparative analysis may help sharpen ideas about the benefits of a college education.

For most of the history of Western colleges and universities, particularly for elite institutions, the value of higher education has been considered self-evident. But it's surprisingly difficult to articulate precisely how institutions influence the success of their students.

Consider the high school graduates who attend college: they generally have social and economic advantages over those who don't, and these advantages propagate through college into life beyond. None of this is surprising, but it makes clear why it's not straightforward to identify the benefits of a college education. If incoming students are already talented and often accomplished, how much difference does a college education make to their future trajectory?

Can we, as colleges and universities, do a better job not only of articulating our contribution, but also of refining the college experience so that it remains the life-changing investment so many of us believe it to be?

These are important questions for the future of higher education. To answer them well, we need to look broadly at the experience of students and graduates over the course of their lives. It's not sufficient to limit our attention to basic measures—like average salary—that have long been popular.

Some would argue—and it's an argument that has been recently

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drowning out other voices—that the purpose of education is to prepare students for jobs. Many institutions of higher education are happy to trumpet their success in this regard, and it's undoubtedly an important indicator of value.

But major universities—especially elite ones in which the foundation of the undergraduate curriculum is a broad, liberal education that draws on the pillars of critical reasoning and analysis and effective communication—have been careful to avoid talking narrowly in terms of employment. We see our mission as equipping graduates with an armament of intellectual skills that will serve them well across the spectrum of opportunities that await them beyond college, regardless of the particular jobs they may hold.

Articulating and demonstrating that value is now more important than ever. As the costs of higher education have continued to rise and affordability has decreased, and as it has become harder for graduates to find secure, well-paying jobs, prospective students and their families have become increasingly skeptical about the value of a college education—or at least the kind of education traditionally offered by elite universities.

In a world in which skilled white-collar jobs, not to mention the professions, are increasingly in danger of being occupied by machines, it's not enough for universities to take it as self-evident that they add value of the right kind. Colleges and universities need to address more directly the concern—reflected in burgeoning enrollments in engineering and declining enrollments in the humanities—about whether investment in a liberal education brings sufficient benefit.

The fundamental issue is a complicated one because "going to college" means much more than simply immersing oneself in courses. In describing themselves to prospective students, universities draw attention not just to the curriculum, but also to the broad range of things they offer: a favorable faculty-student ratio; research opportunities; the diversity of the student body; opportunities for community service; athletics; and many other things.

Students who spend four years at elite, residential colleges and universities often talk in similar ways about the richness of that broader experience. What they learn from rubbing shoulders with classmates from around the country or around the world and from immersion in activities outside of the *(Continued on page 15)*

FACTS & FIGURES

Transformative Tenures

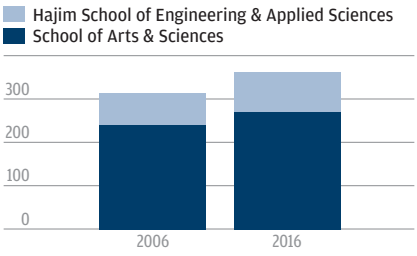
The last day of June marked the end of the tenure of two of Rochester's academic leaders. Peter Lennie, the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences & Engineering, and Richard Feldman, dean of the College, both took on their administrative roles in 2006. As dean of the faculty, Lennie oversaw the academic and administrative operations of Arts, Sciences & Engineering, one of the University's primary academic units, home to more than 350 faculty members, 5,200 undergraduates, and 1,200 graduate students. As dean of the College, Feldman led the academic and cocurricular programs for undergraduates within Arts, Sciences & Engineering.

Beginning in July, Richard (Rick) Waugh, a professor of biomedical engineering, will serve as interim dean of the faculty, while Jeffrey Runner, a professor of linguistics, has been named dean of the College (see page 16). Both Lennie and Feldman will take sabbaticals during the 2017–18 academic year, but are remaining on the faculty—Lennie as a professor in the Department of Brain and Cognitive Sciences, and Feldman as a professor in the Department of Philosophy.

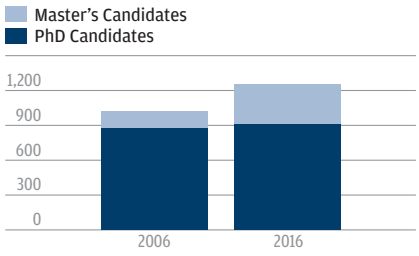
Arts, Sciences & Engineering

Lennie is credited with leading Arts, Sciences & Engineering through a remarkable period of growth, emphasizing efforts to increase the number of faculty, strengthen research endeavors, and put a spotlight on Rochester as part of a global community.

Faculty



Graduate Student Enrollment



Improving Academics

As a measure of the academic strength of undergraduates, the average two-score SAT for the entering class for 2017–18 is expected to be above 1,400 for the first time. That puts Rochester students in the 97th percentile for the SAT, a rise from the 86th percentile in 2005. More than 18,000 students applied for admission for the 2017–18 year, up from 11,293 students in 2005.

Strengthening Research Initiatives

As part of a strategic planning effort, leaders in Arts, Sciences & Engineering are developing initiatives that leverage research strengths in traditional and emerging fields. Recent endeavors include:

- Goergen Institute for Data Science brings together faculty throughout Arts, Sciences & Engineering and other units to explore how data can inform research in science, medicine, the arts and humanities, social science, engineering, and business.
- Center for Energy and the Environment, with leadership in the Department of Earth and Environmental Sciences, explores the interaction between Earth systems and energy technology.
- Humanities Center, which has a new home in Rush Rhees Library, supports multidisciplinary engagement with literature, history, the arts, and philosophies of past and present cultures.
- Augmented and Virtual Reality draws on Arts, Sciences & Engineering faculty in the sciences, engineering, and the humanities, as well as other vision-oriented programs across the University, to explore computer-generated environments.
- High Energy Density Physics is an initiative to explore the behavior of matter at pressures many millions of times that of Earth's atmosphere. The research involves the Laboratory for Laser Energetics as well as engineering and physics and astronomy.

Engaging Internationally

During Lennie's tenure, Arts, Sciences & Engineering has developed 27 new international agreements for research collaboration and student exchange. Up to a third of undergraduates have an international experience—studying abroad or taking part in research or internships—before graduating. And led by Lennie, Rochester joined the Worldwide Universities Network, a consortium of 20 universities to bring a global perspective to research initiatives.

FACTS & FIGURES

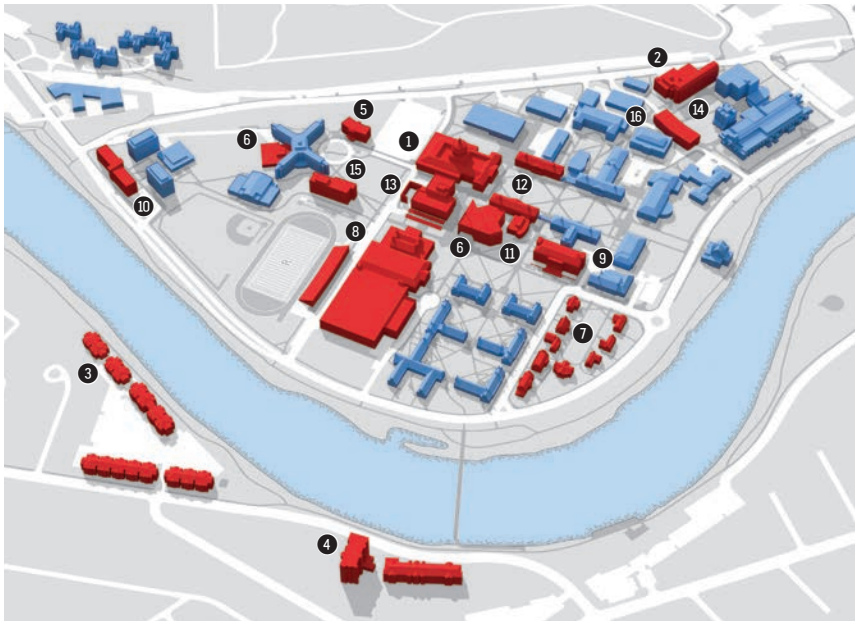
The College

As dean, Richard Feldman was responsible for the academic and student life programs for undergraduates in Arts, Sciences & Engineering. He helped develop new academic initiatives, particularly interdisciplinary courses and degree options. With a focus on the campus experience of students, Feldman worked to improve diversity, increase retention and graduation rates, and establish a support system called the CARE Network that has become a model for other institutions.

This spring, the ballroom in the newly renovated Frederick Douglass Building was named in his honor.

Campus Changes

Over the past decade, several building and renovation projects on the River Campus designed to enhance student life were completed. The new facilities include student residences, a newly revamped student life center, a new student health building, as well as renovations to dining centers, the Fraternity Quadrangle, and the Brian F. Prince Athletic Complex. That's in addition to new student-oriented spaces in Rush Rhees Library, academic buildings, and other spaces. The projects were funded through *The Meliora Challenge* Campaign as part of the College's strategic planning process.



❶ **Rush Rhees Library**
Gleason Library, 2007
Messinger Graduate Study Rooms, 2009–10
Lam Square, 2016

❷ **Goergen Hall**
Opened in 2007

❸ **Riverview Apartments**
Opened in 2008

❹ **Brooks Crossing**
Opened in 2008–14

❺ **University Health Service**
Opened in 2008

❻ **Wilson Commons/Danforth Dining**
Renovated in 2010 and 2011

❼ **Fraternity Quadrangle**
Renovations in 2012 and 2013

❽ **Prince Athletic Complex**
Renovations 2012–16

❾ **LeChase Hall**
Opened in 2013

❿ **O'Brien Hall/Jackson Court**
Opened in 2013

⓫ **Rettner Hall**
Opened in 2013

⓬ **Morey and Bausch & Lomb Halls**
Renovated spaces, 2014–15

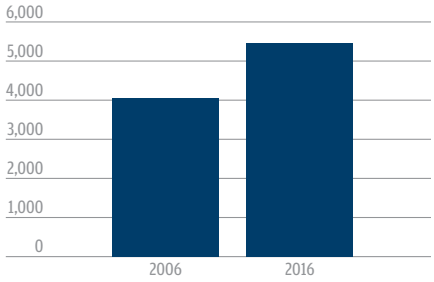
⓭ **Frederick Douglass Building**
Renovated in 2015–16

⓮ **Hajim Science & Engineering Quadrangle**
Opened in 2016

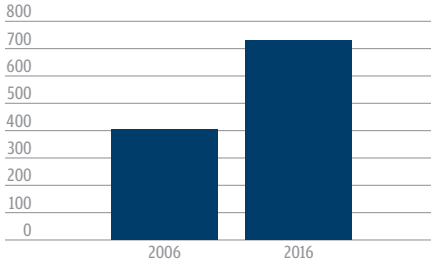
⓯ **Genesee Hall,** including **Boehning Varsity House**
Opening in 2017

⓰ **Wegmans Hall**
Opened in 2017

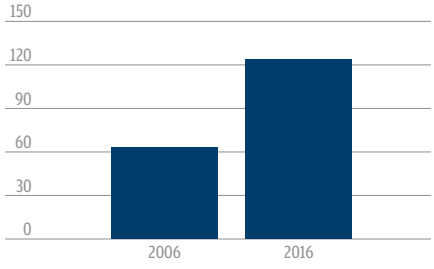
Undergraduate Student Enrollment



Underrepresented Minority Enrollment



Number of Countries Represented



New Majors

As part of an effort to continually update how the College's academic strengths can better meet the needs of students, Feldman and the faculty introduced additions to the curriculum, including new majors, such as:

- American Studies
- Archaeology, Technology, and Historical Structures
- Audio and Music Engineering
- Business (Barry Florescue Undergraduate Business Program)
- Dance
- Data Science
- Digital Media Studies
- East Asian studies
- Financial Economics
- International Relations
- Public Health, including Epidemiology; Health Policy; and Health, Behavior, and Society; Bioethics; Environmental Health

Student Honors

Over the past decade, Rochester undergraduates have been selected for some of the most highly sought honor and award programs, earning selection for Goldwater, Fulbright, Churchill, Gates-Cambridge, and other scholarships.

ADMINISTRATION

Next Chapters

An outgoing dean reflects on his role and on his future as a scholar.

Interview by Jim Mandelaro

For the past 11 years, Richard Feldman has served as dean of the College, overseeing the academic and extracurricular programs that serve undergraduate students. In January, he announced that he would be stepping down from the position at the end of the 2016–17 academic year and returning to the faculty as a professor of philosophy in 2018, after a yearlong sabbatical.

A distinguished epistemologist, Feldman in October 2016 received the Romanell–Phi Beta Kappa Professorship, awarded nationally to scholars in philosophy in recognition of distinguished achievement as well as contributions to public understanding of philosophy.

Feldman arrived on the River Campus as an assistant professor of philosophy in 1975, rising to professor and chair of the department before his appointment as dean beginning in 2006.

ADAPTABLE: The College is always adapting its programs to best equip students, says Feldman.

What's your proudest achievement as dean?
Early on in my time as dean, we looked at the graduation rates of our students. They weren't what we wanted them to be, and we set out to find out why and what we could do to improve them. They've gone up notably, and I'm delighted by that.

What will you miss most about the role?
I will miss the interactions with the students, the faculty, my colleagues in the dean's office, and the College staff I work closely with.

The thing I've come to appreciate as dean in a way I didn't before is how much all the people on the College staff contribute to the education of our students to make it all work. All the things beyond the classroom that contribute to the students' experience have really made an impression on me.

What challenges remain for the College?
There are different kinds of challenges. There are challenges about continuing to attract and enroll the strongest students, issues about affordability of college—the structure of the curriculum, the offerings. It's never a finished product. You're always adapting.

Years ago, you went to college, you studied something and got a degree, and had confidence that something would work out. We have to be more intentional now in understanding what skills our students need and keep getting better about making sure our education equips students for the world they're entering.

As the Romanell–Phi Beta Kappa Professor in Philosophy, you'll present public lectures this fall. What will you be talking about?
The lectures will broadly be about topics on rational argument and public discourse. Kind of an interesting topic to think about these days.

(Continued from page 13) classroom can be as important as what happens in it.

Which aspects of the undergraduate experience, then, are the most important? Can we disentangle key factors from less influential ones? Could we eliminate some of the things we do and (at lower cost) equip students just as well for life after college?

This is tough territory in which to be a pioneer. In part, this is because we don't know much about the relative importance of the different opportunities we provide. It's also fraught because the university that cuts something no other is cutting risks loss of enrollment, even if what was cut resulted in lower costs.

To untangle this problem—to better understand the relative importance of some of the things we provide for students—we can look across systems of higher education and ask whether the differences among them result in different outcomes. For example, at major universities and colleges in the United States an undergraduate degree routinely requires four years or more of study. Elsewhere (notably in the UK and many Commonwealth countries) a degree program is completed in three years.

The different durations generally reflect differences in content: the US degree is, in the liberal tradition, typically less specialized, while the UK degree is more narrowly focused. Universities in the United States generally offer residential education, housing students on campus and providing an array of facilities and services for them. Other countries (England and some Commonwealth countries as well as China) do this too, but generally less richly. The differences between the United States and elsewhere—the commitment to a liberal education and the heavy investment in residential life—make the United States a relatively more expensive place to be an undergraduate.

That invites the question of whether US graduates are better equipped for success than those elsewhere—whether their education has added greater value. To answer that question we must identify equally well-prepared students who entered universities in different countries, then look broadly at their success after graduation. Finding freshmen of comparable standing is relatively straightforward, because a great deal of comparative work has been done on secondary schooling and its outcomes in different countries. Comparing post-graduation success is harder, and brings us back to the question of how we should capture the value that a residential college education adds to the lives of students.

Discussions of value-added often focus on "learning gain," a broad measure of the change in students' intellectual performance over the course of their studies. Reassuringly for universities, studies indicate that students generally demonstrate considerable gains in knowledge as well as other developmental attributes while in college. Less reassuringly, we know little about the relevance of these gains to success in life beyond college.

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COLLEGE LEADERSHIP

New Dean Named

A linguistics professor who has helped lead efforts to increase faculty diversity has been named dean of the College.

Jeffrey Runner, who joined the faculty in 1994 and who has chaired the Department of Linguistics since 2014, was introduced this spring.

As dean, he oversees academic and cocurricular programs for undergraduates in Arts, Sciences & Engineering. He succeeds Richard Feldman (see pages 14–15).

As faculty development and diversity officer for Arts, Sciences & Engineering, Runner has worked with University leaders and faculty to develop strategies for the hiring and retention of underrepresented faculty.

He has also directed the Center for Language Sciences and has been a faculty associate of the Susan B. Anthony Institute for Gender and Women's Studies.

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This has led to interest in putatively more "relevant" measures, such as earnings after graduation. Several surveys, including the College Scorecard published by the US Department of Education, and others such as the PayScale College Salary Report, compare colleges and universities on graduates' average salaries. Salary is an important measure of success, but absent context is a flawed and misleading indicator. First, the published measures take no account of the fact that some universities admit much better-prepared students than others, and those better-prepared students are likely to do better after graduation; second, for students who attend graduate school (as do a majority of Rochester students and students from similar universities), a focus on early years after graduation will catch many at points that don't give a meaningful indication of their careers; third, measures of average salary obscure large variations across occupations, so, for example, universities that graduate many engineers will look more potent than those that graduate fewer.

These concerns lead to more fundamental questions about what we should evaluate and when to do it. If we want to measure success in equipping students for careers, surely we should be most interested not in average salaries, but in how well a university prepares its graduates for intellectually demanding occupations, not all of which are highly remunerated—and we should make our assessment when their careers are well-enough developed for their trajectories to be clear.

We want to know where people stand 10 to 15 years after graduation, what degrees they obtained, from which university or college they obtained them, their background and qualifications on entry as freshmen, and what activities they pursued. Such information is not easily gathered, though social networks, notably ones like LinkedIn, have a great deal of it and are a potentially rich source of information about where most value is added. Moreover, because social networks embrace a very broad population—including people who never attended college—their data might enable a richer characterization of the benefits of attending college.

A comparative analysis along these lines would help us better understand the value of two key attributes of undergraduate education at major US universities: the liberal curriculum and the residential experience. It might well tell us that US graduates are better equipped than those elsewhere. But that's not enough. For the full picture, we need to compare outcomes in relation to the costs of delivering education. With such information, we would be in a position to decide whether better US outcomes were worth the investment, and we would be in a position to more clearly articulate the value of that investment—to students, to families, to policymakers, and to the public at large. ®

Peter Lennie, who this summer was appointed the Jay Last Distinguished University Professor, served as the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences & Engineering from 2006 to 2017. As a member of the Rochester faculty from 1982 to 1999, he was the founding chair of the Department of Brain and Cognitive Sciences. He returned to Rochester as dean in 2006 after serving as dean for science at New York University. He also served as provost from 2012 to 2016.

Lennie, who also holds a faculty appointment in the Department of Brain and Cognitive Sciences, plans to undertake a project to address the problems outlined in this essay. He will spend the 2017–18 academic year in the UK and Australia, first at the University of Leeds and then at the University of Melbourne, before returning to the Rochester faculty.