

**EDITORIALS**

## Who says how much is enough?

*The salary of the new University of Illinois president has drawn much attention and discussion.*

When Michael Hogan starts his new job as president of the University of Illinois in July, he'll be earning an annual salary of \$620,000 a year, and that has a lot of people upset.

The anger or resentment or whatever one chooses to call it is no big surprise. Big salaries bring out the envy in many people. But the envy is accompanied by anger this time, and not without reason.

The economy stinks, and people are hurting. There have been layoffs and furloughs at the university. Programs and positions are being scrutinized. While the state is essentially broke, our elected officials act as if they are paralyzed. Things may well get worse before they get better.

In that context, Hogan's salary makes an inviting target for those who are distressed, angry, frustrated and even frightened by the current state of affairs.

So where does Hogan's salary fit into all this? The answer is compared to what? Next to the earnings of a major league ballplayer or a Hollywood starlet or even the president of Ohio State University (\$1.5 million in total compensation), Hogan's salary is considerably less.

Compared to a schoolteacher, a bus driver, a middling lawyer or even the average university professor, he's up to his eyeballs in cash.

Salaries always have to be considered in context, and there always are apparent inequities. What's a good teacher worth? Price-

less. What's a bad teacher worth? Too much at any price?

When UI trustees started searching for a new president, they knew they were looking for a top-tier candidate to lead one of the country's top public research universities. Further, they knew they'd be courting someone already holding a good job and attempting to lure that individual to an institution facing significant budget challenges.

Hogan was earning \$615,000 at the University of Connecticut. He was entitled to total compensation of \$745,000 but took a voluntary reduction because of UConn's budget problems.

If Hogan was the guy trustees really wanted, and he obviously was, how realistic is it to think that he'd have made the move here for the \$450,000 paid his predecessor? Not very. A tougher job at a bigger and better school for less money? That's a nonstarter.

Could the UI have found someone cheaper? Sure, there's almost always someone who will work cheaper. Usually, that person has a lesser resume, has worked at a lower level, is essentially unproven and is considered more of a gamble, even though all new hires represent something of a dice roll.

What's the best route to take? Either can work beautifully; either can fail miserably.

Members of the UI's search committee obviously put considerable time, energy and thought into the best way to fill this important job. They found the individual they consider to be best suited and had to pay the price the market set.

It's Economics 101. People don't have to like it, but it's important they understand it.

### **Hogan's cutouts could do much good**

The University of Illinois should not overlook the opportunity to obtain four high-priced presidents for the price of one.

I suggest the University of Illinois purchase and reuse three life-sized Michael Hogan cutouts formerly decorating the University of Connecticut campus. The cutouts should then be swiftly installed around the UI campus.

The average cost of every administrative invoice will drop dramatically. Additionally, the cardboard cutouts can effectively resist any questions or challenges to Hogan's stewardship with pure silence. Also, Illinois gains the potential for four times the leadership. Just don't send any fundraising letters to this taxpayer's door until history's lessons are learned.

MARK L. MIDDLETON  
Champaign

## University heading in wrong direction

We now hear that the University of Illinois must consider borrowing funds to cover everyday expenses, while at the same time, it is still paying our previous president and chancellor, who both resigned in disgrace.

Astonishingly, UI trustees have decided to pay our new president \$620,000 per year with more promised bonuses. This is happening while WILL's TV/radio weather department, which has been instrumental in protecting property and saving lives, and the Cooperative Extension Service, which has improved our lives for generations, face elimination or severe cutbacks. It also seems that the focus on teaching is taking a back seat.

What is happening to the UI's dedication to public service and teaching? It seems that trustees, administrators and some faculty members are interested in milking the bankrupt state for their own benefit while eliminating the programs that epitomize two components of the local campus's mission.

As both an alum and a retiree, I believe it is time for common sense to be reinstated into our great land-grant university.

DOUG ROKKE  
Rantoul

**ILLINOIS CLIMATE ACTION PLAN**

# UI vows to quit using coal by 2017

Officials also will start working on a plan for bicycling

By **JULIE WURTH**  
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URBANA — The University of Illinois pledges to stop using coal within seven years as part of a plan to reduce energy use and cut carbon emissions.

The Illinois Climate Action Plan, finalized this month, also calls for a bicycling master

plan for the campus, tougher energy standards for new buildings, and a halt to investments in coal-fired systems at the UI's Abbott Power Plant.

The plan was developed by the campus Sustainability Council, co-chaired by interim Chancellor Robert Easter and Dick Warner, director of the UI Office of Sustainability. It was submitted to the American College and University Presidents' Climate Commitment, signed by more than 600 schools. The UI is the first Big

Ten school to formally submit a climate plan, Warner said.

Former Chancellor Richard Herman announced broad conservation goals two years ago after signing the climate commitment, and the Sustainability Council was asked to develop more specific target dates and strategies.

The plan calls for the campus to be "carbon neutral" by 2050 — to have a zero net impact on carbon emissions.

Please see **COAL, A-8**

## COAL

Continued from A-1

Other goals include:

— Using renewable energy for a quarter of the campus energy needs by 2025, in line with state standards.

— Significantly reducing emissions from transportation (by up to half) by 2025.

— Implementing a campus bicycling master plan and creating a bike-sharing program by 2012. It also encourages alternative ways of commuting and telecommuting.

— Requiring all new buildings and major renovations to meet the Leadership in Energy and Environmental Design Gold Standards by 2011.

"We think the goals we put out in this agreement are much better informed," Warner said.

During the first seven months of this fiscal year, energy consumption is down by 9.5 percent, saving an estimated \$4 million, he noted.

The campus burned 94,171 tons of coal in fiscal 2009, although that figure has dropped 30 percent in fiscal 2010 to date, said Tom Abram, sustainability coordinator in UI Facilities and Services.

How will the UI cut its reliance on coal? By using less through conservation and by developing alternative fuels that could be used by Abbott Power Plant or another central generation facility, officials said.

University buildings — which

account for 85 percent of the campus's energy use — are primarily heated by steam produced at Abbott. The plant also produces electricity as a by-product, with the UI buying additional electricity from private suppliers, Abram said.

Abbott runs primarily on natural gas and coal, with the fuel mix decided by market costs — which don't take global warming or other environmental costs into consideration, Abram said.

The sustainability team concluded that Abbott's natural gas capacity can provide almost enough steam to meet campus demand by itself and should be able to do so in a few years if conservation trends continue, Abram said.

By 2012, the campus will complete a study on possible alternative fuels, such as biomass, hot-water distribution, geothermal and regeneration systems, he said.

The campus is exploring several options, "but all of them currently include some sort of a central system," he said.

"We will be moving to renewable fuels regardless," Abram said, and that's likely to include additional wind turbines, solar electric and thermal systems, methane and biomass.

Abbott has a backlog of about \$177 million in deferred maintenance, and the hope is to avoid a "significant amount" of that on the coal-fired side, Abram said.

"We'll do the least we need to do to keep burning coal until 2017," Warner said.

That 2017 date was an aggres-

sive but reasonable target, said Steve Sonka, vice chancellor for public engagement, who oversees the Office of Sustainability. It could change as the campus works through the first few years of the plan, he said.

Sonka also expects objections from the coal industry.

"We'd like to figure out a cleaner way to use coal as a resource," he said, adding that "there are much bigger players in the world using coal than us."

The plan doesn't contain any cost estimates, though the next round of planning will be more cost-specific, Warner said. The idea is that any up-front investments will be recouped in annual energy savings from conservation, though that depends on the price of energy, he said.

Neither the national climate commitment nor the plan itself include any penalties if targets aren't met. But the goals are meant to expedite work already being done on campus and will also be included in the UT's strategic plan and tied to employee performance, Abram said.

"Our intention is to meet these goals," he said.

The UI will be required to provide updates to the climate commitment group and reassess its goals, he added.

"It's obviously not as aggressive as we would like it to be, but it's a good plan," said Suhail Barot, a graduate engineering student and president of the student sustainability committee, who helped draft the climate plan. "It sets some good targets."

## South Farms' wind turbine project revived

By JULIE WURTH  
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URBANA — The on-then-off wind turbine project at the University of Illinois is back on, part of a new campus Climate Action Plan.

The UI will build one wind turbine on the South Farms, financed in part by a \$2 million grant from the Clean Energy Community Foundation, offi-

cialists said Monday. A request for proposals will go out after July 1, when a new state procurement law takes effect, said Steve Sonka, vice chancellor for public engagement.

It will be built just west of Philo Road in Urbana, between Curtis and Old Church roads.

The total cost is projected at \$4 million to \$4.5 million. Students have pledged \$500,000,

using income from student clean-energy fees.

The \$2 million grant was set to expire in June, but the foundation has all but agreed to extend it "if we're serious about it," said Dick Warner, director of the UI's Office of Sustainability. "The chancellor decided we needed to

Please see WIND, A-8

## WIND

Continued from A-1

move ahead. We've committed to doing it."

The UI initially agreed to build three wind turbines in 2005, but the price went up dramatically, prompting officials to scale back the project and eventually put it on hold.

Poised to accept a contract with General Electric to build a 1.5-megawatt wind turbine 18 months ago, the UI decided not to sign, citing the university's "deteriorating fiscal condition."

At the time, then-Chancellor Richard Herman and Warner said the campus needed to focus on projects with more immediate cost savings — energy conservation. One official called the turbine a "more symbolic" effort than reducing consumption. It would have provided 1 percent of the campus' energy needs.

Since then, the campus has completed several energy-saving projects — replacing inefficient heating and cooling systems — so "it made sense for the turbine to go forward," Sonka said.

Isn't the UI's budget situation still precarious? "You're always making choices," Sonka said. "It's clearly a factor, but we think we're at a point where it's a good thing to proceed with the turbine."

Supporters credit interim Chancellor Robert Easter, who took over when Herman resigned last fall.

"We have new leadership that is much more sympathetic to student concerns and interested in environmental issues," said Suhail Barot, a UI graduate student and president of the student sustainability committee. That panel and Students for Environmental Concerns have been pushing administrators for months to move ahead with the turbine.

"This is a good financial investment for the university," Barot said, a sentiment shared by Tom Abram, sustainability coordinator for UI Facilities & Services.

"I believe there was some intentional and unintentional misrepresentation regarding the economic viability of the project," Abram said. "Although there are indeed other efficiency programs with better economics, the wind turbine stands as a solid investment on its own merits."

The UI's investment is expected to be paid back in seven years through annual energy savings, a double-digit rate of return, officials said. It will sell bonds to pay for its share, using savings from its energy budget to repay them, Sonka said.

The campus will provide access roads and other infrastructure for three turbines, though only one will be built now, Abram said.

# Quinn may borrow for pension

## But option requires GOP support he's unlikely to get

BY STEVE CONTORNO

Sun-Times Springfield Bureau

SPRINGFIELD — With a May 31 deadline looming to wrap up the budget, Gov. Quinn continued to push a long shot plan Monday to borrow \$3.7 billion for a pension payment while embracing a group of discontented Democrats who introduced their own ideas to cut spending by more than a billion dollars.

While Quinn's plan to borrow to make a pension payment has been pegged as the lesser of two evils, it requires at least some Republican support, which he doesn't seem likely to get. Lawmakers may ultimately decide to skip the payment altogether, an action that will cost the state billions of dollars down the line.

"You have a fiduciary duty to do the right thing, not the political thing," Quinn said.

Quinn refused to consider what would happen if borrowing doesn't get the 71 votes needed to pass, even though only 59 Democrats voted in favor of it earlier this month before a parliamentary ma-



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neuver postponed the roll call.

"I'm not going to anticipate anything other than [it passing]," Quinn said.

However, Quinn did seem to approve of \$1.2 billion in cuts outlined by some Democratic lawmakers unhappy with how the budget process has played out.

"Just about all of the things they've talked about I've tried already," Quinn said. "If there's a renewed vision by members of the Legislature, both houses, majority vote, that they can get done, that's fine by me."

The proposed cuts include \$400 million to education and \$300 million to state agencies — a measure



Gov. Quinn (shown in February) did express approval of cuts outlined by Democrats. | RICH HEIN/SUN-TIMES

that is already a part of the budget that passed the Senate and is circulating the House. Also included is a provision that will require state retirees to pay premiums on their health care, which would save an additional \$100 million.

"I'm not excited about any of these spending reductions. I didn't come to Springfield to say 'no.' I came to say 'yes.' But this is what's necessary in this time," said Rep. Elaine Nekritz (D-Northbrook).

However, the cuts will just make

a dent in the state's \$13 billion deficit. Republican House spokeswoman Sara Wojcicki said GOP legislators have yet to discuss the Democrats' plan and are unsure if they would support it.

Comment at [suntimes.com](http://suntimes.com).

# Northwest Herald

## College costs increasingly beyond reach

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The news has become familiar at state universities throughout Illinois. Tuition is up – way up.

Incoming Northern Illinois University students will face a 9.5 percent tuition increase. Last year, the tuition increase was 8 percent.

The University of Illinois' tuition increase also is 9.5 percent. At Illinois State, it's 9 percent. Eastern Illinois? 6.2 percent.

Officials at the schools covered a lot of the same ground in explaining the higher tuition. The state hasn't come through with funds promised. For instance, NIU is supposed to receive \$107 million from the state for the fiscal year that ends June 30, but the university still is waiting for \$43.3 million, NIU President John Peters said.

That makes the universities' situations difficult.

But what is the long-term plan? Is it realistic to expect that the state's finances will improve dramatically?

Students cannot be expected to continue to pay significantly more each year for a college education.

Wages didn't rise by 8 percent or 9.5 percent over the last two years.

College graduates will face a tremendous challenge just to find a job.

At what point does it become unrealistic for a student to attend a state university?

At some point, the cost of college becomes so high that the potential payoff isn't worth it. At that point, many students simply might have to pass up the opportunity to go to college. That should be galling to leaders at state universities. State officials and college leaders at least appear as if they understand how serious the situation has become.

Illinois State University Trustee JD Bergman told the Pantagraph in Bloomington that "at some point, we've got to stop ... continual increases. We are pricing the middle class out of higher education."

State Rep. Dan Brady, R-Bloomington, told the Pantagraph that "if we're not careful, we will get things to the point in public education where you're preventing some of the students from getting a college education because they simply can't afford it."

Not every state university is hiking rates. Southern Illinois University has a tuition freeze. SIU Carbondale Chancellor Sam Goldman told the Southern Illinoisan that students should not be the ones who deal with the lack of state funding.

"We can no longer look to students to make up the losses in state aid," Goldman said.

SIU President Glenn Poshard said the school will need an increase of 140 students to make up for fees that weren't increased.

Though it might not be enough to cover the cash that isn't coming in from the state, colleges must do the responsible thing and find a way to cut costs. That effort must at least be as intense as the sacrifices that must be made by the families of potential college students.

# Daily Herald

Big Picture . Local Focus

## Madigan's actions are an outrage

No Mention of UIC

Published: 5/22/2010 11:04 PM

After reading the May 9 editorial, I just had to express my outrage at the idea that Michael Madigan and John Cullerton would or could do anything to change or fix what is going on in Springfield. Madigan is no better than the past governor who is under indictment.

Aren't his actions in the University of Illinois admissions program exactly the same as selling a Senate seat? You see, it goes this way. He gets a political contributor's child or relative admitted to a state university with a scholarship, then in return receives a campaign donation to his war chest for providing this gratuity. That to me is "pay for play."

How long have the state taxpayers been supporting Madigan's misdeeds, his unethical practices? How else has he profited from this besides the annual salary, future pension he will receive and other "gifts" that we don't know about? How many young people who had the proper qualifications were passed over who really needed to have the financial support of a scholarship and had played by the right rules?

Mr. Madigan, you should resign your post and get out of Springfield. As for John Cullerton, he also isn't squeaky clean. His law firm has received money for doing tax appeal work for contributors. Isn't that favoritism? Is there any wonder that there is so much apathy towards Illinois government when the very people expected to do the right thing, not only do the wrong thing and for the wrong reasons?

Tom Rajcan

Wheaton



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## Dems propose insurance increases for state retirees

By **DOUG FINKE** ([doug.finke@sj-r.com](mailto:doug.finke@sj-r.com))

**THE STATE JOURNAL-REGISTER**

Posted May 24, 2010 @ 10:01 PM

Last update May 25, 2010 @ 06:45 AM

Retired state employees would be charged premiums for health insurance under budget reforms being pushed by a group of Democratic lawmakers.

The group is also calling for \$1.2 billion in budget cuts for the fiscal year that begins July 1, including \$300 million to K-12 education.

The Democrats presented their ideas Monday, the same day the Illinois House returned to Springfield with a goal of wrapping up a new state budget before the end of the week. Lawmakers must figure out how to deal with a \$13 billion deficit while acknowledging there is inadequate support for tax hikes, deep spending cuts or borrowing, the three major alternatives for balancing the budget.

The House was in session for only about 30 minutes Monday afternoon and did not vote on any bills. Instead, Democrats headed to a caucus to discuss the budget ideas presented by their colleagues.

One of those is charging retired state employees premiums for their health insurance.

"As much as we love our retirees, this is a tough-love exercise," said Rep. Karen May, D-Highland Park. "They have to feel the pain."

May said 25 percent of state retirees are not old enough to qualify for federal Medicare coverage, and 92 percent do not pay health-care premiums.

"We are the only state that is this generous," May said.

### Votes might not be there

Under the Democrats' plan, expected to raise \$100 million a year, rates charged to retirees would be on a sliding, income-based scale.

"A lot of these things are not going to be popular, and I don't know that there will be the votes to pass them," May acknowledged.

Earlier this year, House Democrats were polled on budget issues, including charging retirees premiums for health insurance. Rep. Frank Mautino, D-Spring Valley, said at the time the idea got a poor response, and Mautino said Monday the idea still has "very little support" among downstate Democrats.

Last week, Gov. Pat Quinn's budget director, David Vaught, told The State Journal-Register that Quinn feels collective bargaining with employee unions is the way to approach charging retirees health insurance premiums.

"Director Vaught has ... discussed this issue with Rep. May and will to continue to work with her on this issue, but at this time he does feel collective bargaining is the best way to approach retiree health insurance premiums," Vaught spokeswoman Kelly Kraft said in an e-mailed statement.

### More cuts, borrowing

The Democratic lawmakers said \$300 million should be cut from K-12 education, including \$200 million from special programs such as transportation reimbursements and \$100 million from various education grants.

Another \$100 million would be cut from higher education, \$200 million by instituting changes to Medicaid, and up to \$500 million by canceling, renegotiating and rebidding hundreds of state contracts for everything from professional services to forms.

"Many of these contracts should not be renewed," said Sen. Susan Garrett, D-Lake Forest. "There is a pattern of renewing contracts year after year with no questions asked."

The Democrats also want to reduce the mileage rate paid to employees for personal use of their cars on state business and eliminating salaries, travel expenses and daily expense money for part-time board and commission members. And they want the General Assembly to take an overall 5 percent reduction in its expenses.

None of the ideas can take effect unless approved by the General Assembly and Quinn.

The House could begin voting on parts of the budget plan as early as today. The Senate already approved all of the budget components, but the House hasn't acted on them.

Mautino said it is likely some changes will be made to the Senate budget plan that would require agreement from the Senate, which isn't due to return to Springfield until Wednesday.

Mautino said that while Quinn will be given sweeping emergency budget powers, they may be restricted to six months rather than a full year. He said the House will also be asked again to vote on borrowing \$3.7 billion to make pension payments next year.

Two weeks ago, the borrowing plan failed to get enough votes to pass.

House Republicans have been uniformly opposed to pension borrowing. A spokeswoman said the issue will be discussed by Republicans in a private meeting this morning.

Doug Finke can be reached at 788-1527.

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Comments (76)

# THE CHRONICLE

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## Head Count

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May 24, 2010, 03:00 PM ET

### On Sticker Prices and 'Wishful Thinking'

By Eric Hoover

A majority of students and their parents have ruled out colleges based solely on published sticker prices without considering how much financial aid they might receive, according to a recent survey of college applicants. Most students and parents said they had not used online financial-aid calculators to determine how much they would need to pay at different colleges.

The findings come from the latest installment of Student Poll, a collaboration between the College Board and Art & Science Group, a firm that specializes in strategic marketing and planning for colleges. The survey, conducted in late November and early January, was designed to reveal how students' perceptions of affordability had shaped their thinking about colleges.

Above all, the survey's results suggest that many families make college choices without accurate or sufficient information. Fifty-nine percent of students said they had looked only at the sticker prices, while only 28 percent said they had considered the net tuition price of a college after determining what they might receive in financial aid. About 12 percent said they had not considered the cost of any college.

Next year, the federal government will require all colleges and universities to provide net-tuition calculators, which help families determine what they are likely to pay in net tuition, minus scholarships and need-based grants the applicant would likely receive from an institution. Yet only 26 percent of respondents said they or their parents had used one of the financial-aid calculators currently available, while 58 percent said they had not used one.

Moreover, students from high-income families made greater use of aid calculators than those in the lowest-income group (25 percent compared to 8 percent). In wealthier families, students were more likely to report that their parents had used the calculators; in the lowest income group, students were the ones most likely to have used them. And among those who reported that they, their parents, or both had used aid calculators, a third said they were easy to understand, a fifth said they were not easy to understand, and 45 percent said that some were easier to understand than others.

As anyone who works in the admissions realms knows, choosing a college is not always a rational process. The same is true of perceptions of affordability. Although many respondents said they had ruled out colleges because of price, many students said they were willing to stretch themselves financially to attend colleges they perceived as expensive if those institutions offered something they valued highly, such as a specific academic program, a vibrant social life, or prestige.

Yet the survey's findings also suggest that many respondents have unrealistic expectations about the amount of aid they will receive. Ninety-three percent of respondents said they planned to apply for financial aid. Of those students, 51 percent expected to receive need-based aid, 56 percent expected to receive merit-based aid, and 30 percent expected to receive some kind of aid for their personal achievements.

One striking finding: Nearly two-thirds of students with SAT scores of 1250 or higher expected to receive merit aid. Almost as many respondents with scores between 1000 and 1240 expected to receive merit aid, and so did about 45 percent of students with scores 1000 or below.

The widespread availability of merit aid seems to have created "a climate of expectations" among applicants, says Richard A. Hesel, a principal of Art & Science Group: "You have this sticker-price fear, but there's also a lot going on that raises students' expectations about what they're going to get. I've seen this for a long time, and it's gotten worse."

Students also had high expectations about how far their grants and scholarships would stretch. On average, they anticipated that grants and scholarships would cover 35 percent of their college costs, with loans covering 21 percent, family or personal savings covering 17 percent, and 24 percent coming from the family's earnings during college.

Despite students' concerns about paying for college, most believed that their families would find a way to overcome financial challenges. Twenty-eight percent said that "My family and I will have to stretch a lot to afford to send me to college, but I think we'll make it." Among students who were not certain or who said it would be difficult for their family to afford college, 24 percent said they would "work something out when the time comes" and 15 percent said their family "would try anyway."

The findings add up to a complicated picture. On the one hand, it reveals students' optimism about attending college despite financial hardships. Yet the survey also suggests that many might lack accurate or sufficient information about paying for college. That said, the

findings also suggest that colleges have plenty of work to do in educating prospective students and parents about the admissions and financial-aid process.

"A lot of students and parents stretch more than they should, and then they get into trouble, and this leads to retention problems," Mr. Hesel says. "A college education is such a desirable goal, and people want it so much, there's a lot of wishful thinking that happens."

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The Chronicle of Higher Education 1255 Twenty-Third St, N.W. Washington, D.C. 20037



## News

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### The Aging of Science

May 25, 2010

What if key elements of science policy are based on patterns of discovery that no longer exist?

That's the question behind a paper ([abstract available here](#)) released Monday by the National Bureau of Economic Research. The paper -- by Benjamin Jones, associate professor of management at Northwestern University -- argues that science has changed in key ways. Specifically, it argues that the age at which researchers are able to make breakthroughs has advanced, and that scientists are parts of increasingly larger teams, encouraging narrow specialization. Yet, he argues, science policy (or a lot of it) continues to assume the possibility if not desirability of breakthroughs by a lone young investigator.

Much of the paper focuses on the greater difficulty of making key contributions -- solo -- early in one's career. Jones cites, for example, the growth in the number of journal articles. In 2006, for example, there were 941,000 journal articles published, 90 percent of them in science and engineering, and these articles cited 4,372,000 unique journal articles. With the publication rate growing by 5.5 percent a year, someone able to read only a certain number of articles a year is seeing his or her "fraction of extant knowledge" decreasing by the same percentage.

He then reviews a variety of measures that show the twin trends of an aging and more group-oriented scientist. On age, he notes that:

- During the 20th century, the average age at which researchers made the accomplishments that were later honored with Nobel Prizes in physics, chemistry, medicine and economics increased by 5.83 years.
- During the 20th century, the average age at which researchers made "great" technological achievements rose by 4.86 years, while the age of those achieving a first patent -- for more average inventors -- went up by 6.57 years.

In exploring the data more fully, Jones finds that the gains are not the result of people living longer, but generally of a decline in "great achievement" in scientists' 20s and 30s. "Peak productivity has increased by about 8 years, with the effect coming entirely from a collapse in productivity at young ages," Jones writes.

Then Jones looks at the teamwork trends, focusing on data for journal articles (since 1955) and patents issued (since 1975). He finds here that the mean size of teams is increasing (across both categories) by 15-20 percent per decade. The growth is nearly universal across scientific fields (including the social sciences). By 2005, he finds that more than 80 percent of science and engineering publications, more than 50 percent of social sciences publications and more than 60 percent of patents had multiple authors or inventors.

While Jones notes that some might view the question of collaborating or working individually as a choice, he argues that the most influential science is increasingly done in teams. Between 1995 and 2005, he writes, group papers had twice as many citations as those authored by individuals. And comparing "home run papers" -- those with at least 100 citations -- team papers are more than four times as likely to produce such impact.

A series of changes may be needed in science policy to reflect these shifts, Jones argues. He notes some efforts already under way at the National Institutes of Health and other funding agencies to reward interdisciplinary research and work by young scholars.

But he also argues for changes in the mindset about science, as expressed in the way discoveries are honored. "Celebrated

achievements historically often carry the scientist's name – Euclidean geometry, Newton's laws of motion, Mendelian inheritance, and the Heisenberg uncertainty principle, to name a few," he writes. Those who award prizes and whose opinions confer prestige should consider that "shifting toward high status and/or financial reward 'team prizes' for particular innovations could help undo the incentive challenges that individual rewards impose," Jones writes.

— Scott Jaschik

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