Achieving Innovation

How three college leaders have created change on their campuses

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Mark P. Becker is president of Georgia State University, which has gained recognition for its work in raising graduation rates and decreasing educational disparities based on students' race, ethnicity, and income. Before becoming president in 2009, he served as provost and executive vice president for academic affairs at the University of South Carolina.

Michael M. Crow, president of Arizona State University, arrived there in 2002. Under his leadership, the university has established 24 transdisciplinary schools and earned a national reputation as an innovator in higher education. Previously he was executive vice provost at Columbia University.

Bonnie H. Ferri, vice provost for graduate education and faculty development at the Georgia Institute of Technology, was co-chair of its Commission on Creating the Next in Education, a campuswide effort to examine where higher education should be in 25 years. She is also a professor in Georgia Tech's School of Electrical and Computer Engineering.

MODERATORS

Goldie Blumenstyk, a senior writer with *The Chronicle*, is a nationally known expert on the business of higher education and higher-education policy. She writes "The Edge," a weekly column on innovation in and around academe.

Scott Carlson covers the cost and value of college as a senior writer at *The Chronicle*. In 19 years there, he has written about a range of issues: college management, campus planning, energy, architecture, and sustainability.

Jennifer Ruark is a deputy managing editor at *The Chronicle*. She directs production of advice content and special sections, including *The Chronicle*'s annual Trends Report, and oversees coverage of how colleges are innovating to solve problems.

Colleges and universities need to change. On this there is widespread agreement. The challenge, of course, is how to make changes at institutions steeped in venerable traditions and, at times, resistant to transformation.

To explore how to solve this problem and spur campuswide innovations, *The Chronicle of Higher Education* joined with Arizona State University and Salesforce to hold a forum with presidents, provosts, and other senior administrators. On April 7, 2019, they gathered in San Diego to discuss how they have successfully adapted to growing business pressures, shifting student demographics, and the changing landscape for learning and teaching.

The ASU|Chronicle Leadership Forum examined key questions: How to generate new approaches? How to involve faculty members and others on campus? How to work with, or around, those who resist change?

More than a dozen college leaders spoke at the forum. This report highlights interviews with three of them: Mark P. Becker, of Georgia State University; Michael M. Crow, of Arizona State University; and Bonnie H. Ferri, of the Georgia Institute of Technology. The report also includes *Chronicle* articles that provide further insight into how those institutions and their leadership teams have managed change.

The report's goal is to give readers advice and ideas on how to generate the fresh thinking needed to ensure their campuses can be prepared for the opportunities and challenges of the 21st century.

The interview excerpts have been edited for length and clarity.

The campus of Georgia State U. in Atlanta.

Innovation for Student Success

Closing student-achievement gaps is a complicated and often frustrating goal. There are no easy fixes to raise retention and graduation rates, no easy solutions to help achieve parity between, say, low-income undergraduates and those who come from wealthier families.

One institution that has made strides in this area is Georgia State University. It raised its six-year graduation rate from 32 percent in 2003 to more than 54 percent in 2017.

At the ASU|Chronicle Leadership Forum, Scott Carlson, a *Chronicle* senior writer, and Mark P. Becker, the university's president, discussed the ways in which Georgia State has approached student success, how to deal with students' financial issues, and ways to take on institutional bureaucracy.

Following the interview is an opinion article with advice from Timothy M. Renick, senior vice president for student success at Georgia State, on how best to use technology to improve student retention and graduation rates.

NEW INTERVENTIONS

Scott Carlson: Can you tick off some of the things Georgia State is doing to help students?

Mark P. Becker: It's all aspects of how the students leave the university. Most students leave Georgia State for financial reasons; it has nothing to do with academics. So in looking at that, we've overhauled the entire freshman experience.

All students are required to be in a freshman-learning community. It's done in a college-to-career framework. They start thinking about their careers and how they prepare themselves to get the jobs they want in their freshman year.

On top of that is an academic-advising system that is grounded in technology. We track 800 variables. If a variable changes, it flips up a flag and says this student is at

> ## "We've overhauled the entire freshman experience."

risk. Then an interaction happens between the student and the adviser. This can be as simple as, "You just signed up for a residence-hall room that you can't afford. So we

need to talk about your financial risk."

For every major in the institution, we have identified a course that you take in your freshman year that suggests whether or not you are in the right major. If it suggests you're not in the right major, that will lead to a conversation with an adviser.

Now we've layered on top of that another new technology: chatbots. They help solve the problem of summer melt. Hundreds and hundreds of students every year admitted to the university paid their deposits, and in some cases even enrolled and signed up for their courses, but didn't show up on campus. We launched a chatbot system and found that students are more willing to text a question than they are to ask a human being. And we found that the overwhelming majority of the questions were financial.

Carlson: You have people visit your campus, and they hear about all the things that you're doing. What do they say to you?

Becker: It's a typical pattern. Day one: "This is really cool. I want to do that." And by the end, it's like, "I don't think I can do that at my institution."

Carlson: Why is that?

Becker: Bottom line is you've got to be willing to change what you do. And if you're not willing to change what you do, you're not going to get different results. It's one definition of insanity — keep doing the same thing over and over again and expect to get different results. Change is hard for most people, and it's extremely hard for higher-education institutions, particularly established ones with long histories.

Carlson: Is there something about the structure of higher education that make it difficult to shake things loose?

Becker: I have not met any university president who doesn't say that student success is one of their top three priorities. But how many of those presidents have the person responsible for that on his or her cabinet, reporting to the highest levels of the administra-

tion on a regular basis and being held accountable? This person shouldn't be reporting to the provost. This person should be reporting to the president. And that is not the case at very many institutions.

Carlson: Bridget Burns, of the University Innovation Alliance, often talks about the presence of people lower in the organization who see what's wrong, but their perspectives just don't filter up to the decision-makers.

Becker: That's exactly the point. Often the person who is being charged with doing this work is not in a position to have the greatest opportunity for success, because their work is going to get filtered through one or more layers. The person whom it's filtering through has other priorities.

SHAKING UP THE BUREAUCRACY

Carlson: When you got to Georgia State, you must have encountered some of this bureaucracy. How did you shake it loose?

Becker: First, hire a new provost. The provost that was there basically walked in shortly after I arrived and said, "It's time for me to retire, and you need your own provost anyway." So

> ## "We launched a chatbot system and found that students are more willing to text a question than they are to ask a human being."

I hired a new provost, and we got started in strategic planning.

I'd never seen a university actually use their

strategic plan. I said, "Well, if we're going to do this, we're actually going to do something we're going to use." And so we kicked it off with a public event and talked about what were the goals of the strategic plan — not the goals of what would be in the plan, but the goals for getting to the plan.

First, there were no more than five goals, so that everybody in the institution would know what was going to drive the financial decisions of the institution for the next decade. Second, whatever it was that we decided was going to require us to change. I drove this home really hard.

Carlson: You're empowering risk-takers in the organization. There has to be accountability, too.

Becker: You've got to fund what you're going to commit to, and you've got to evaluate it. And if it doesn't work, you stop doing it. For this you got to have data. For example, one of the interesting things that my team did without me being smart enough to ask them to do it was building a data warehouse. All of the institution's data is in one place. Until you get all the data in one place, you can't have the accountability.

Carlson: To loosen up the bureaucracy of an institution, do you need to be a new president, or do you need to be facing financial exigency for a kind of reset?

Becker: You need a call to action. It doesn't have to be financial exigency. We would have done this anyway, because our graduation rates were abysmal. The work had started six months before I arrived. It wasn't a financial crisis that sent us down this road. It was the fact that one out of three freshmen made it to graduation — the other two didn't. We knew that that was wrong and unsustainable, and that we had to do better.

How to Best Harness Student-Success Technology

By TIMOTHY M. RENICK

Ten years ago, I faced what seemed to be an insurmountable challenge. I had just been appointed head of student-success programs at Georgia State University, one of the most diverse public research universities in the nation. Among our 52,000 students, 67 percent are nonwhite and 58 percent are eligible for Pell Grants. Each year, thousands of students were enrolling with high hopes and quickly confronting a tangle of bureaucratic obstacles, academic challenges, and financial pressures. With little institutional support to help them navigate the maze, two-thirds of students were dropping out, with the highest attrition suffered by our low-income and minority students.

We knew what we needed to do. We needed to intervene earlier and far more proactively. We needed to deliver timely, individualized support for our students at scale. We just didn't know how to do it. At the time, the kind of personalized attention our students required was the exclusive purview of institutions with hefty endowments and low student-to-faculty ratios. It was found at elite private colleges and a handful of well-resourced public flagships. Georgia State was neither.

How times have changed. Last year, we tracked every student at Georgia State for more than 800 analytics-based risk factors on a daily basis. We monitored each time a student registered for classes and let students know immediately if they had signed up for a course that did not apply to their degree programs. We tracked academic performance as early as three weeks into each semester, assessed final grades earned by our undergraduates, and systematically intervened with students whose performance in prerequisite courses put them (according to the historical data) at risk of struggling in their next-level classes.

Our academic advisers conducted 54,000 in-person interventions with students prompted by alerts generated by our analytics platform, and they delivered another 100,000 individualized contacts by email, text, and phone. Students were guided through complex registration and financial processes by one online portal, and they could view metro Atlanta job statistics for hundreds of careers, updated daily, on another. More than 250,000 student questions about registration, financial aid, and academics were answered automatically by a newly launched chatbot — an AI-enhanced texting platform — with an average response time of seven seconds.

I am often asked how we made so many technological changes so quickly. How did we adopt, integrate, deploy, and scale multiple new platforms in such a short period of time? While the transformation seems far from sudden from my perspective — it is the result of, no joke, participating in an estimated 10,000 meetings with faculty, staff, vendors, and others — I have learned several lessons over the years about the selection and deployment of new student-success technologies.

First, don't wait for the newest technology to be perfected before you act. At Georgia State, we have been very willing to get in on the ground floor of new technological advances, often before all of the questions have been answered. We signed on with a vendor to support the use of predictive analytics in advising before our partner even had a demo product to show us, and we were the first university nationally to sign a contract with the start-up vendor that supports our chatbot. In both cases, this approach allowed us to help shape the development of the product to better fit our needs and to acquire the systems

for lower costs.

More important, the approach has allowed us to make changes to our failed traditional approaches much more quickly. While I would have liked for some other campus to do the work of blazing the trail, waiting would have delayed implementation by years, disadvantaging thousands of our students in the meantime.

Second, be wary of claims that you can solve big, complex problems that have vexed higher education for decades with home-grown technologies. Large companies have considerable bandwidth not merely to develop solutions but to offer continual updates post-implementation. I have seen many universities delay to act on the promise that "we will figure it out for ourselves." Too often, the home-grown solution never materializes or is outdated soon after deployment.

This does not mean that campuses should rush into partnerships with technology companies. If all goes well, your relationship with a vendor can last for years. You obviously need to choose your partners carefully. But how? We have always selected companies that show that they genuinely understand the problem at hand. If you need to explain the problem to a vendor, it is highly unlikely that the vendor has developed a comprehensive solution. While our IT staff members are critical partners in the process, they do not lead the selection. The staff in functional areas such as advising and financial aid will be using the technology (you hope) years after your IT team has finished putting it into place.

Third, make sure that the solution makes sense to the users. By placing the functional teams front and center, you also will help to ensure that the new system interfaces with end users effectively. An all-too-common shortcoming of today's technology vendors is a lack of attention to how their technologies will be used day to day. When faced with the choice between higher-powered capabilities with weaker user interface, and weaker capabilities with stronger user interface, I choose the latter every time.

The reason is simple. The success of any new platform depends 10 percent on the features and 90 percent on the effectiveness of the implementation. Your students, staff, and faculty will ultimately determine the impact of the new technology, so put the bulk of your efforts into changing existing behaviors.

When we started predictive analytics in advising, we asked our president to meet personally with our advising staff to promote buy-in, and we worked with the human-resources department to revamp adviser job duties to reflect the use of the new technology. When we implemented our chatbot, we hired a respected external researcher to conduct a random control trial to document the impact of the new approach.

We also run return-on-investment analyses of all of our programs — a step that has illustrated, more often than not, that the platforms pay for themselves by keeping more students enrolled, thus generating additional revenue from tuition and fees. Universities are indeed slow to change. With each new technology, you need to develop a plan to change not only platforms but attitudes.

Is all the work worth it? You decide. In part

Don't wait for the newest technology to be perfected before you act.
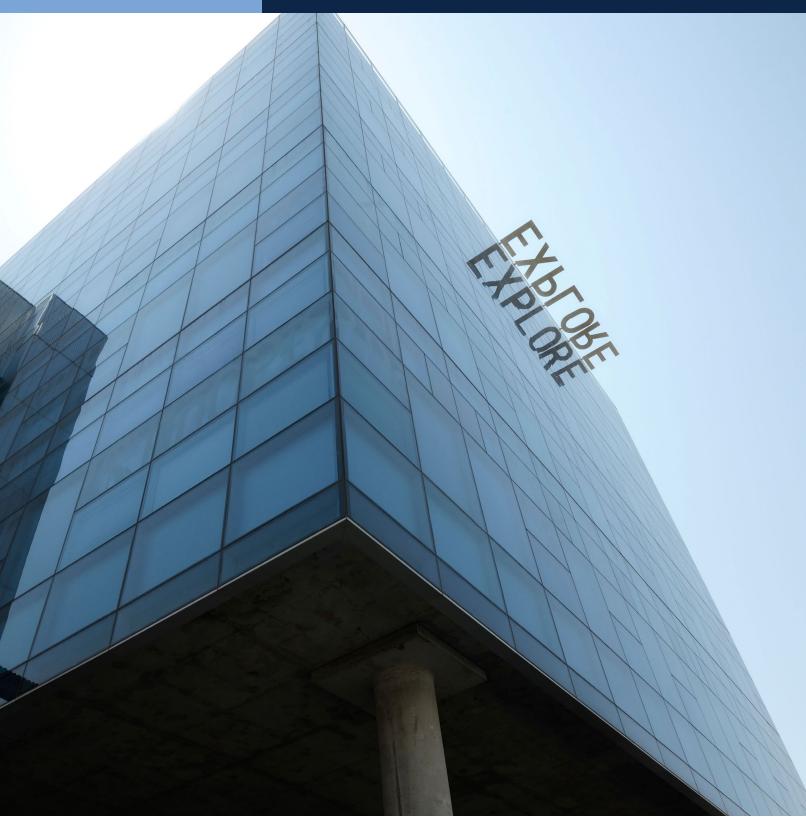
through delivering greater personalized support to our students at Georgia State, we have raised graduation rates by 22 percentage points and eliminated all achievement gaps based on race, ethnicity, and income level. We are graduating 2,800 more students every year than we were before we began these efforts, and more African-Americans than any other nonprofit college in the country.

Adopting new technologies can be frustrating, even overwhelming. On the other hand, what is the alternative? How can we explain to thousands of students that we might have made the difference between their dropping out and graduating, but we were reluctant to tackle the hard work of change?

Timothy M. Renick is senior vice president for student success and a professor of religious studies at Georgia State University.

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Lattie F. Coor Hall at Arizona State U., in Tempe, Ariz.

Transformation by Design

Transforming a college must be a deliberate effort. If the effort is loosely focused or poorly defined, it will achieve only incremental change or will fail.

But how to remake an institution that is built on decades of teaching and research practice?

For Michael M. Crow, it requires a redesign in how presidents, senior leaders, faculty and staff members, and other constituents conceive of the university.

Crow, president of Arizona State University, sees himself as a "knowledge enterprise architect." In this role, he has sought to upend traditional approaches to academic research and the notion that prestige somehow flows from enrollment selectivity.

In a conversation at the forum with Goldie Blumenstyk, a senior writer at *The Chronicle*, Crow explains his design thinking, how he promotes it on campus, and where his university has fallen short when it comes to innovation.

Following the interview is a *Chronicle* profile of Crow.

THE STUDENT-CENTERED U.

Goldie Blumenstyk: You've talked about how higher ed has this inability to innovate. I don't think you meant anybody in this room.

Michael M. Crow: I mean everybody in this room, including me. It's damn hard.

Blumenstyk: I expect there are people out there who don't feel they have the political environment to do it, who don't have the financial cushion to do it, who don't feel it's the institution's historic mission to be innovative. What would you say to that?

Crow: Initially at ASU, for years and years, we never talked about innovation. What we talked about was duty to students. What we talked about was changing the institution from being faculty-centric to student-centric. What we tried to do was put up a logic for what a university or a college is supposed to be. So what we tried to do is change the logic.

Blumenstyk: There are design principles on placards all around the campus. There are eight. They talk a lot about what this institution is and what it isn't.

Crow: It's aspirational. So if you want to be something, you must change your design. It's not about innovation. We are producing exactly the outcome of the present design. Many public universities have low graduation rates. That's what they're designed to do. If you don't have design aspirations for the goals that you're working toward, you'll never change anything.

You can work through every strategic committee for years and decades, but it will mean nothing unless you change the design.

MAKING A DESIGN CHANGE

Blumenstyk: What triggers a design change?

Crow: For us, one of the things was empowerment of the faculty. Our faculty members are now empowered as intellectual architects. They're designing new schools, new programs, new initiatives, new ways of doing things, new ways of organizing things.

Blumenstyk: Let's be frank: Not every faculty member at your institution loved that idea.

Crow: There's nothing wrong with argument. If it's disciplined, if it's focused, if it's respectful, argument is fantastic. But what we don't have is empowerment of design thinking inside institutions of higher education. They are an archaic, medieval, even premedieval, ancient-Greek structure built around one of my least favorite philosophers, Plato. He's an unbelievable elitist. We live in a much more complicated society than he could have ever imagined.

So we have an academic-core problem: Our faculty members do not feel empowered today to be intellectual leaders, to be intellectual architects — and they should be.

Blumenstyk: And the best way to empower them? They're feeling kind of beleaguered right now.

Crow: They're feeling beleaguered because they're surrounded by bureaucratic constraints. There's no aggregate mission. There is only the mission of the individual faculty member rising within the individual discipline and then aggregating around institutions on the mercenary scale that can give them the most resources for them to be successful. I'm not being cynical; I'm being completely descriptive.

Blumenstyk: What are you seeing in industry or in other spheres of society that makes you think they've done a better job of achieving better equity?

Crow: There's lots of not-for-profits that have become unbelievably sophisticated, and you can see them working on on social-equity outcomes and issues. The military, for all of its strengths and weaknesses and faults, has been a leader in at least thinking through the idea of egalitarianism. There's lots of ideas to be garnered from a range of institutions.

INNOVATION FAILURES

Blumenstyk: One thing I think that would be inspiring is to know the places where Arizona State stumbled. You're often presented as sort of a juggernaut.

Crow: We made some adjustments in what we thought would work in freshman retention and went down six percentage points in one year from our mistakes. Then we recovered and readjusted and found those kids and tried to bring them back in.

Blumenstyk: Do you know what you did wrong?

Crow: We didn't understand the sociocultural differences as we were trying to find pathways for incoming freshmen. It's all about family income. It's all about how much money was in the home as the student was evolving. And we didn't understand it.

Another example: If we have pockets of the institution that take off and become very innovative, the resources start flowing towards those units. Well, that's good. But we have other units. And it's been hard for us to keep the balance because of differences in behavior inside the institution entrepreneurially.

Michael Crow, president of Arizona State U., sees himself as a "knowledge enterprise architect." His populist prescription for colleges amounts to a finger in the eye of the higher-education establishment.

The Making of a Higher-Ed Agitator

Michael Crow's prescription for colleges divides and inspires

By JACK STRIPLING

For michael m. crow, president of Arizona State University, this is hallowed ground. It is the site of Taliesin West, Frank Lloyd Wright's low-slung winter home in the foothills of the McDowell Mountains. The residence's slanted redwood beams and walls of native stone appear to be natural extensions of the desert landscape.

Mr. Crow, a stocky figure in a blue blazer and an open-necked shirt, strolls toward the prow of the property, where a gravel walkway juts to a tip on the southern side of the residence. From this vantage point, Wright intended his home to resemble a ship on the desert, draped with a canvas roof

reminiscent of a sail. The deliberateness of it all, Mr. Crow says, carries the signature of a master designer bending the natural world to his aims.

Mr. Crow, 59, considers himself a designer, too, convinced he has a new, more populist blueprint for universities. With his ideas, he seeks to upend the natural order of academe, in which universities derive prestige from the proportion of students they exclude.

Rather than a university president, Mr. Crow sees himself as a "knowledge enterprise architect." In this role, he has assessed what he believes universities are meant to do and drawn up an organizational structure best suited to meet those goals. If a college aims to produce more graduates and make research breakthroughs, Mr. Crow says, it should be designed so that a policy of near-open access enhances the prospects that professors will cure cancer or build flying cars.

Mr. Crow's prescription for colleges amounts to a finger in the eye of the higher-education establishment, which has for decades used selectivity as a proxy for greatness. His thesis challenges conventional wisdom, which suggests that the nation's greatest research accomplishments will come from highly selective institutions with established reputations — not 80,000-student behemoths like Arizona State.

Designing the New American University (Johns Hopkins University Press), which Mr. Crow recently wrote with the historian William B. Dabars, is the most thorough exploration to date of themes the president has espoused since his appointment at Arizona State, in 2002. The book has brought new attention to Mr. Crow's arguments, which implicitly indict some of his peers.

He does not typically name names but vaguely defines his opposition as a nameless, faceless cohort of colleges that imitate the exclusionary policies of Harvard in the destructive pageantry of rankings. In so doing, he argues, these institutions function as engines of inequality, perpetuating a system in which young people are consigned to lives of fulfillment or struggle well before they take their first standardized tests. In other words, just about every institution but Mr. Crow's has some major "design" flaw.

His disciples, of which there are many, see Mr. Crow as a thinker on a par with the late Clark Kerr, the University of California president credited with helping to create the modern model for public colleges. But Mr. Crow's ascendance in higher education, propelled by an uncommon blend of intellectual curiosity and ambition, raises important questions about whether his proposals for the sector can or should be emulated. His success at Arizona State is a product of what even some supporters describe as a top-down style of administration likely to meet resistance elsewhere.

For all of the attention his ideas are paid, skepticism lingers about whether Mr. Crow is a revolutionary or simply an able marketer, casting conventional ideas of interdisciplinarity and scale with the high gloss of a great design thinker.

THE first sketches of the New American University were drawn well before anyone knew the designer's name.

Mr. Crow's ideas were rooted in a working-class childhood, shaped by a graduate program that connected organizational theory with design, and tested during an unlikely stint as an Ivy League administrator empowered to make big bets that did not always work out.

In August 1973, a Plymouth Belvedere station wagon pulled up to Friley Hall, a dormitory at Iowa State University. As Mr. Crow remem-

Lessons for Leaders:

•**Find unlikely influences:** Michael Crow, president of Arizona State University, looks to Frank Lloyd Wright and science fiction to inspire his thinking.

•**Failure happens:** While now known as a champion of innovation, during his time at Columbia University, Mr. Crow led an online-education project that was later abandoned by the institution.

•**Skeptics abound:** Mr. Crow has his fair share of critics. Even supporters admit that he is a polarizing figure and can push through unpopular changes from the top down.

bers it, he and his father had made the 350-mile drive from Chicago without exchanging a word. Indeed, they had barely spoken for the past six months.

George E. Crow, a petty officer in the U.S. Navy, had envisioned things differently: His firstborn would attend the U.S. Air Force Academy, where he had been offered a full-ride scholarship that covered room, board, and clothing. Instead, Mr. Crow had come to a state university to throw a javelin on the track team.

The college freshman, who had achieved Eagle Scout status at age 13, pulled from the car a green trunk emblazoned with a Boy Scout symbol. Everything he owned was inside.

By opting against a military life, Mr. Crow was shunning an organizational structure that tended to reinforce distinctions of class and rank. As the son of an enlisted man, he knew his place: the bottom of the pecking order.

Mr. Crow's mother died while in treatment for cervical cancer when he was 9 years old, after which George Crow designed an unconventional curriculum of moralism and masculinity for his son, one of five children.

One night his father took him to a Chicago morgue, paying an attendant to show the boy the corpse of a man killed in a drunken-driving accident. This is what happens if you screw up, his father told him.

There were journeys down to skid rows, where George Crow paid homeless drunks a few bucks to tell his son how their lives had fallen apart.

And there was the time George Crow tried to cure his son's nightmares. He slipped into a raccoon coat, donned a ghoul mask, crept into Michael's room, and awoke his son, hovering over him with the visage of a monster.

"I remember that like it was 10 seconds ago," Mr. Crow said. "I don't think I had any more nightmares after that."

The backdrop of these lessons was a childhood of constant disruption. Mr. Crow, who was shuffled among relatives after his mother's death, moved 21 times and attended 17 schools before he went to Iowa State. The experience, he says, instilled in him a skepticism of rigid curricular design. He would sometimes arrive in a class at midyear, cobbling together enough projects to persuade teachers that he merited advancement to the next grade.

Now, decades later, Mr. Crow argues that students are most likely to succeed in self-paced classes tailored to their needs. At Arizona State, he has been a champion of "adaptive learning," a technology-driven form of instruction in which students progress through general-education courses only after demonstrating mastery of key concepts.

> ## By Mr. Crow's late 30s, less than a decade after earning his Ph.D., he had become one of the most powerful people at Columbia.

After his father dropped him off at Iowa State, Michael Crow began a remarkable trajectory through higher education. He earned a Ph.D. in public administration at Syracuse University and returned to Iowa State as director of the Office of Science Policy and Research under Gordon P. Eaton, the president. When Mr. Eaton left for an administrative post at Columbia University, in 1990, he all but insisted that it also hire Mr. Crow, who had proved adept at procuring grants.

By Mr. Crow's late 30s, less than a decade after earning his Ph.D., he had become one of the most powerful people at Columbia.

IN 2002, professors at Columbia were getting restless.

An administrator named Michael Crow, tenured but hardly known in the School of International and Public Affairs, had become chief architect of the university's first significant online education venture, known as Fathom. For this project, paid for with money from patent royalties, Mr. Crow seemed to have unlimited discretion. He derived his authority from Columbia administrators, who by this time were impressed with his record of patenting and selling the rights to researchers' discoveries.

But Mr. Crow was short on answers about how or when Fathom, a for-profit entity, would ever generate revenue.

"It simply looked like an annual drain on the university's budget going forward with no predictable end in sight," says Richard W. Bulliet, who co-chaired a University Senate committee formed to look into Fathom.

Before Mr. Crow went to Columbia, the central administration did not have tens of millions of dollars at its discretion to take chances on uncertain ventures with little faculty buy-in. But Fathom — like other projects paid for with the Strategic Initiatives Fund — was a clear-cut example of how much things had changed since Mr. Crow's arrival, in 1991.

The university had reshaped its intellectual-property policies, at his urging, so that more and more revenue from discoveries would flow into the provost's office, where Mr. Crow worked. Deans scoffed, but Mr. Crow was in a protected class. Through a variety of titles, culminating in executive vice provost, he spoke with the implicit authority of Jonathan R. Cole, the provost, who was widely viewed as heir apparent to the Columbia presidency.

"He was very assertive about what he knew, and I had his back," Mr. Cole says. "And they knew that."

Fathom promised to use the internet's vast untapped potential to share the intellect of Columbia's scholarly community with the rest of the world. It is easy to view the project as an early example of Mr. Crow's egalitarian ideals in action, "scaling" up the Ivy League experience for the masses.

The concept of Fathom is not much different from the Cheesecake Factory model that Mr. Crow discusses in his new book. The theory, which has been used in relation to health care, argues that scaled-up colleges could mimic the restaurant chain's efforts to make a "gourmet culinary experience" broadly available at a reasonable price. Fathom was Mr. Crow's first attempt to cook a more affordable "Glamburger."

If there is a central pillar to the New American University, it is the concept of scale. There is no good reason, Mr. Crow contends, that students at big public universities with relatively low admissions standards cannot have the same enriching experiences as those at small colleges.

Skeptics argue that raising enrollments will inevitably mean that more students get lost in the system, but Mr. Crow is a believer in the power of technology to mitigate those problems. Electronic advising systems, designed to track the progress of tens of thousands of students toward degrees in real time, are just one way in which colleges can mitigate the perceived challenges of scale, he says.

> There is no good reason, Mr. Crow contends, that students at big public universities with relatively low admissions standards cannot have the same enriching experiences as those at small colleges.

Mr. Crow condemns elite colleges for being "aloof from society."

The notion that universities should be designed to reach more people, and thereby maximize societal good, is in keeping with ideas that Mr. Crow started to formulate at Syracuse's Maxwell School of Citizenship and Public Affairs. The beginnings of this line of thinking, his mentors say, can be found in a 1998 paper, "Public Administration as a Design Science," which he wrote with R.F. (Rick) Shangraw Jr., a classmate who is now president and chief executive of Arizona State's foundation.

One of their central arguments in the paper is that the thinkers in public administration should stop postulating theories and start offering prescriptions for complex organizations. Their responsibility is to design institutions that "convert collective will and public resources into social profit."

But Fathom was not entirely about social profit. It was about financial profit, too. In 2001, Mr.

Crow told *The Chronicle* that the project was poised to exploit an untapped niche market of adult learners with disposable income, allowing Columbia to "use knowledge as a form of venture capital."

Columbia officials were also motivated by fear. The nightmare scenario was that the likes of MIT or Stanford would plant the flag online first. Worse yet, Microsoft or some other tech giant might start poaching professors for a private education venture.

Egged on by Mr. Crow, Columbia went headlong into Fathom without fully recognizing the costs. Not to mention that about half of Fathom's potential customers still used land lines with their computers, which made accessing the content difficult at best.

By the end of Mr. Crow's time at Columbia, the university was pulling the plug on Fathom.

"It was a failure because of what we did," says Mr. Cole, who conceded that the venture lacked a clear business plan. "But it was not a failure of concept. It was a phenomenal concept that will get recreated, I guarantee you, in the next 10 years."

This is a common defense of Mr. Crow. Failures are couched as ideas that simply came before their time or died because entrenched academic interests lacked the foresight or the spine to follow through.

Supporters will also say that Fathom and Biosphere 2, an ill-fated living laboratory that Mr. Crow championed, have to be viewed within the context of Columbia's successes. The university's Earth Institute, which Mr. Crow helped to dream up and first directed, has earned a reputation as a model for interdisciplinary approaches to complex global problems, such as climate change.

"This might be true of the projects I become involved in: They are reach ideas," Mr. Crow says. "I'm a huge believer in launching many boats, because some boats won't make it and some will."

The abandonment of Fathom was a "strategic blunder," he insists. If he thinks he bears any responsibility for what went wrong, he describes it in the most theoretical of terms. "I hadn't broadened the design opportunity to enough individuals in the institution to survive whatever kind of perturbation might come along," he says.

By the time Arizona State started courting Mr. Crow, a changing of the guard was immi-

nent at Columbia. The board made no move to promote Mr. Cole to the presidency, opting instead to make a splash with the appointment of Lee C. Bollinger, president of the University of Michigan at Ann Arbor, who had been in the running to lead Harvard.

Mr. Cole was losing his influence in the university's inner circle. "Mike saw the handwriting on the wall for himself, too," Mr. Cole says.

Mr. Crow characterizes things a bit differently: "I ran the course of my design contributions at Columbia."

AFTER a decade at Columbia, Mr. Crow quickly cast the university as a foil for what he planned to do next.

On November 8, 2002, four months after becoming president of Arizona State, Mr. Crow delivered his inaugural speech in ASU Gammage, an auditorium designed by Frank Lloyd Wright.

It was there that he described Columbia and its ilk as "the gold standard of the past." Other universities, he said, slavishly mimic these "elitist institutions," fashioning their departments and admissions policies in a futile quest for comparison.

Undergirding the new leader's speech was a candid acknowledgment: If defined by the old order, Arizona State did not stand a chance. To

> "I'm a huge believer in launching many boats, because some boats won't make it and some will."

be influential, it would have to be redesigned and rebranded as an audacious experiment without any peers. That meant new departmental configurations, lumping together disciplines under some common theme, such as "Human Evolution and Social Change." It meant unbridled enrollment growth. It meant teaming up with

Michael Crow's Influence List

Arizona State's president says his ideas for higher education are drawn from philosophers, designers, and scientists, including these:

John Dewey (1859-1952) Philosopher associated with pragmatism, who challenged traditional models of education by promoting active learning over rote memorization.

José Ortega y Gasset (1883-1955) Spanish philosopher who wrote about the dynamics of social change and the mission of universities.

Herbert A. Simon (1916-2001) Social scientist and Nobel laureate known for his pioneering work in economics, decision-making theory, and artificial intelligence.

Frank Lloyd Wright (1867-1959) Rebellious and influential architect, known for organic designs that blend with the natural world.

Rachel L. Carson (1907-1964) Conservationist whose book *Silent Spring* is acknowledged as a catalyst for the environmental movement.

Thomas S. Kuhn (1922-1996) Physicist and historian best known for his book, *The Structure of Scientific Revolutions,* in which he argued that scientific thought is shaped by periodic paradigm shifts.

wealthy private companies that could help expand the university's reach beyond state borders.

Since Mr. Crow's arrival, enrollment at Arizona State has risen from 55,000 to 83,000, a 50-percent increase buoyed by an online education program with a fierce national marketing campaign. Half of the university's students take all or some courses online, according to the most recent federal data.

On the main campus, in Tempe, about one in three undergraduates is eligible for federal Pell Grants, which are designated for low-income students.

Seeking more students who might not otherwise go to college, Mr. Crow recently struck a deal with Starbucks. Under the arrangement, Arizona State will discount online tuition for the company's employees. In turn, Starbucks will reimburse students for any tuition costs not covered by need-based financial aid.

This week Arizona State announced that it would join edX, a nonprofit online venture founded by Harvard and MIT, in a program called the Global Freshman Academy. Students can enroll for a full year of credit-bearing classes without going through an admissions process,

and they pay for only those courses they pass, organizers said.

The arrangement, designed to remove barriers to entry, appears to be a crystallization of Mr. Crow's philosophy. Notably, the program carries the imprimatur of two of the nation's most selective institutions, the likes of which he might have dismissed as yesterday's universities not long ago.

In terms of institutional design — Mr. Crow's personal passion — Arizona State is experimenting with new departmental configurations, which he says will stimulate interdisciplinary research. Since his arrival, the university has eliminated 74 academic units and created 38.

The first and most expensive such arrangement is the Biodesign Institute, which is housed in a $150-million facility on the Tempe campus. Stuart M. Lindsay, a physics professor who works in the institute, starts to chuckle when he describes how the project came together under Mr. Crow. "Biodesign was Michael's invention. It was top-down executive action," he says.

Mr. Crow would expect that sort of talk from Mr. Lindsay, a British immigrant whom he describes as a "natural-born cynic of the high-

est order." But Mr. Lindsay is among the president's allies, illustrating a curious thing about Mr. Crow: Even his friends on the faculty say he tends to shove his ideas down the throats of professors. The question is whether that matters. To Mr. Lindsay, it does not.

"Great departments are never built on democracy," he says.

With biodesign as an anchor, Arizona State's research spending has tripled during Mr. Crow's tenure, totaling more than $367 million in 2013, according to the most recent data available from the National Science Foundation.

Those results have transformed faculty recruitment, Mr. Lindsay says. "We used to say, 'How far down the applicant list do we go before someone will take an offer?' Now the institute often gets its top choices, who bring with them publications from major journals and independent funding, he says.

But the top professors, recruited with generous start-up packages, are only part of the story. Among Arizona State's 2,800 instructional faculty members, 36 percent are ineligible for tenure. This contingent work force helps teach the tens of thousands of new students who have enrolled during Mr. Crow's tenure.

The reliance on adjunct professors, who have limited job security, reflects a national trend. Arizona State introduced new guidelines this winter that would allow the most experienced instructors to secure multiyear contracts, officials said, as opposed to the year-to-year agreements most common in higher education.

But concerns about contingent faculty have been acute at Arizona State, which has seen budget cuts in tandem with its growth spurt. Faculty members in the English department, for example, pushed back in recent months against a proposal that would increase teaching loads to five courses per semester for nontenured composition instructors.

Asked about the concerns, a university spokesman said that instructors carrying heavier teaching loads will have their service obligations "shifted elsewhere."

Mr. Crow's reshuffling of academic disciplines has also been opposed by some professors, who question whether it makes any difference in what faculty members do. The creation of the School of Historical, Philosophical and Religious Studies, for instance, is remembered by some as a particularly messy example of Mr. Crow jamming through one of his big ideas.

"None of the three units forced into the marriage wanted it," says Mark von Hagen, the school's founding director and now a member of the history faculty. "That didn't make any difference."

Questions linger about whether Arizona State has really been transformed at all, or merely rebranded itself. Skeptics look no further than Wrigley Hall, home of the School of Sustainability, to make their case. The building's most noticeable features are six wind turbines, mounted on the roof.

These turbines, which together cost about $45,000, actually provide a negligible amount of energy to the building, university officials concede. Peter Rez, a physics professor, grimaced as he looked up at them on a recent spring morning. He called the turbines mere "ecosymbolism" and said they were a good example of how the president makes an empty show of the university's inventiveness. "It's the quote from *Macbeth*," he said. "A tale told by an idiot, full of sound and fury, signifying nothing."

Solar panels, which supply 14 percent of the campus's electricity needs, are the largest source of sustainable energy at Arizona State, university officials say.

But Mr. Crow has seized a national platform, and in so doing he has accumulated both supporters and opponents beyond the university he leads.

"Great departments are never built on democracy."

True believers often start conversations by announcing their allegiance, precisely because they know the president can be polarizing. Bridget Burns is one such person.

As a fellow at the American Council on Education, in 2013-14 she spent a year working under Mr. Crow. She chose him because he was invariably described as the most innovative president in higher education. But what she'd heard about him gave her pause: He won't make

time for you. He's "arrogant."

In her first interview with Mr. Crow, Ms. Burns laid out her trepidations. "You come across like you've never experienced a moment of vulnerability in your life," she recalls telling him. "I'm here to find out if you might be crazy."

What followed was a steady conversion to Team Crow. Ms. Burns could barely keep up with him, she says, observing that the president's life is structured in 15-minute increments that may stretch from 6 a.m. to 10 p.m. He eschews caffeine and alcohol, describing his job as an extended act of "energy preservation," she says.

"Ideas are his energy source," Ms. Burns says.

The ideas come from untraditional places. One night during Ms. Burns's fellowship, Mr. Crow took in a midnight showing of *Elysium*, a science-fiction film that imagines a future in which the planet's wealthiest inhabitants live on a utopian space station while the rest of humanity toils back on Earth. The president was so enthralled by what he saw that he insisted Ms. Burns check it out for herself.

"Don't watch the movie for the story," she remembers him saying. "Watch it for the technology. I want you to think about the technology needs of the future and call me back."

Ms. Burns now is executive director of the University Innovation Alliance, a consortium of 11 institutions that Mr. Crow helped to organize under the shared goal of graduating more students at lower costs.

His national ambitions distinguish him from many of his peers, who spend most of their energy consumed with the needs of the institutions they lead. That broader focus has invited comparisons to higher-education leaders of the past, most notably Mr. Kerr, architect of California's master plan.

Christopher Newfield, an English professor at the University of California at Santa Barbara, says the comparison with Mr. Kerr goes only so far. Unlike the California leader, who galvanized public support for his vision, Mr. Crow has not fully acknowledged the necessary role that state aid must play if public higher education is to expand its reach and maintain quality, Mr. Newfield says.

Rather than grapple much with those thorny issues, Mr. Crow euphemistically describes his consolidation and elimination of programs as a "design" strategy, the professor says.

"He overemphasizes design as a nicer way of talking about efficiencies," Mr. Newfield said in a recent interview. "His whole generation of university leaders has really undersold the need for continuous large-scale public investment in these mass-scale institutions."

Mr. Newfield reviews *Designing the New American University* in the *Los Angeles Review of Books*, arguing that the design solutions Mr. Crow proposes would create the same costly and bloated "all things to all people" institutions that saddle students with debt today. The book, he writes, "doesn't offer a novel public university structure as much as it revives the grand mission of the postwar public university in all its primordial ambition."

In his book, Mr. Crow condemns elite colleges for being "aloof from society, and inaccessible to the majority of Americans." His children, as it happens, have attended colleges decidedly unlike the large-scale, affordable research institutions he says the nation needs. Mr. Crow's daughter earned a bachelor's degree at Bard College, and his son went to Bowdoin College. Each institution has fewer than 3,000 students and a sticker price approaching $50,000 a year.

> "His whole generation of university leaders has really undersold the need for continuous large-scale public investment in these mass-scale institutions."

Mr. Crow says he sees no inconsistency between his public positions and his family's personal choices. He told his children they could attend any college, so long as they agreed to major in two unrelated subjects — a nod toward the value that he places on interdisciplinary thinking.

"It turns out that's where they wanted to go," he says, "and I happen to have the resources."

Mr. Crow's total compensation was nearly $675,000 in 2012-13, well above median presidential pay of about $480,000 for public college presidents, *The Chronicle*'s most recent analysis found. Thirty presidents earned more than Mr. Crow that year.

The reach of Mr. Crow's influence hinges in some ways on whether the bully pulpit will be sufficient to effect change beyond his one institution. The recent edX deal suggests a desire to work directly with other universities on a worldwide scale, and Mr. Crow's tutelage of rising higher education leaders may be felt in years to come.

Since 2013, two women who consider Mr. Crow a mentor have been named college presidents. Laurie A. Leshin, who developed Arizona State's School of Earth and Space Exploration, is president of Worcester Polytechnic Institute. Mariko Silver, a former senior adviser to Mr. Crow, leads Bennington College.

Ms. Leshin describes Mr. Crow as "the voice in my head," one that conveys two complementary but seemingly contradictory messages. On one hand, the voice of Michael Crow pushes protégés to take big risks and to rethink everything that has come before. On the other hand is the reminder that big bets are not without cost.

"Resources are scarce," Ms. Leshin says. "And we don't have infinite resources to fail if we're not going to fail smart."

Whether or not one agrees with Mr. Crow, she says, he has become impossible to ignore. "When he arrived, ASU was not a leader in higher education. And now almost everyone would say it is."

Mr. Crow is the type of executive who seems to believe that criticism of his decisions only proves that he is on the right path. The attacks mean that people are listening.

Frank Lloyd Wright, the president notes, had his detractors, too. So does I.M. Pei. So does Frank Gehry.

"That's been true," Mr. Crow says, "of every revolution that's ever occurred."

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GEORGIA INSTITUTE OF TECHNOLOGY

Embracing the Future of Higher Ed

To evolve, higher-education institutions need to experiment. But to do that well requires planning, testing new ideas, and pivoting when they fail. All such tasks are made more difficult because colleges are constantly busy with enrolling students, pursuing research, teaching, and so on.

To develop academic experiments framed around the future needs of higher ed, the Georgia Institute of Technology took an intentional approach. Four years ago, it formed the Commission on Creating the Next in Education, responsible for figuring out one question: What should Georgia Tech be doing to educate students and fulfill its academic mission in 20 years?

Jennifer Ruark, a *Chronicle* deputy managing editor, interviewed Bonnie H. Ferri, vice provost for graduate education and faculty development, and a co-chair of the commission. She discussed how the effort broadened the college's vision, achieved practical outcomes, and overcame campus resistance.

After that is a *Chronicle* interview with Rafael L. Bras, Georgia Tech's provost and executive vice president for academic affairs, about the commission's results and and what the future may hold for public universities.

A THINK-TANK APPROACH

Jennifer Ruark: Tell us about Georgia Tech's Creating the Next in Education plan and what its goals are.

Bonnie H. Ferri: With CNE, we were given the freedom to look out at a long horizon and ask, What do we want it to be in 20 to 25 years? How can we create that? And what should we be doing right now to get us there?

There are a number of themes that came through, and we did not want this to sit as a report on the shelf. We realized that we had to address the culture. We had pockets of innovation at Georgia Tech, but it was just pockets here and there. How do we create a culture where these innovations would take hold?

So a year after the report was finished, we've got 80 projects that are active now.

> "We had pockets of innovation at Georgia Tech, but it was just pockets here and there. How do we create a culture where these innovations would take hold?"

Ruark: Some of that is a result of the ways in which you structured the commission itself, right?

Ferri: We wanted to make sure we had representation discipline-wise, so people in policy and business and engineering and science as well as students, staff, and alumni. And the provost gave us a charge, which was, again, creating the future. He said, "Be bold." A lot of the reason it worked is the atmosphere around it. It wasn't a task force. It was is more like a think tank: Let's sit back and think intellectually about this.

We approached it from the point of view of a design process, but not only a design process. We brought change-management ideas into it very early.

Ruark: Can you talk about what the design process looked like?

Ferri: One was the discovery phase, where we said, Let's understand the current state of higher education. We visited universities. We looked at demographics and trends in the work force. We also had an intermediate report, which informed our community about why we needed to do something.

The next phase was ideation. This was the brainstorming. This was the messy part. Some people would get frustrated because it was a blank canvas. And that's difficult when you're thinking really far in the future.

We said, "No naysayers. Don't say why it can't be done." If you draw boundaries around things, then ideas tend to be way in the center.

FACULTY RESISTERS

Ruark: Faculty members tend to have a reputation for being naysayers, to be very analytic, to be cautious about changes that might end up affecting their roles. What other strategies did you use with faculty members besides saying, "Think big and don't say no"?

Ferri: This is where we brought in the change-management strategies. We brought in the implementers. So you think about who are implementers for change on campus. It's not really the school chairs or the deans. We thought about the people who actually would be thought leaders in their programs. We had people who were already doing educational innovation on campus. We brought them together several times

a semester and had them work in small groups. We said, "Here are ideas so far, can you help flesh them out?" They helped to design these things.

We did that same thing with the associate chairs on campus. These are the people on the ground who actually can make change happen. The chairs can delegate it, but these people make the change.

We presented them with 10 near-term ideas. We wanted something concrete that they could see. They came up with how we would fill in an idea and what direction it would go. We said, "Fine, go do it. Don't wait for this report. Go do it." And they did.

> "We said, 'No naysayers. Don't say why it can't be done.' If you draw boundaries around things, then ideas tend to be way in the center."

Ruark: You also told me that along the way, some faculty resistance was dispelled.

Ferri: Some of the early successes helped put more trust in the process. We also made everything optional. We said, "We're not going to force this on you." Those people who would be really resistant, just stay by the wayside. Those who really want to go, they don't have to keep addressing these naysayers.

Ruark: You need to provide incentives to faculty members to innovate. What are some of the structural incentives that you've created?

Ferri: We've re-examined the annual performance reviews in terms of the types of questions that are being asked in how they are doing innovation. We also have a group

that is monitoring what's going on on campus on the CNE projects.

EXPANDING THE POCKETS OF INNOVATION

Ruark: You alluded to the pockets of innovation at Georgia Tech before this endeavor got started. What would you say to your colleagues in the audience who might despair that there are no pockets of innovation on their campus, who are asking, "How in the world can I get something like this started?"

Ferri: There are pockets of innovation on all of your campuses. One of the things that we've studied as part of the deliberate innovation is when we do have those pockets of innovation, why were they successful. What were the conditions there that made them successful, and what were the some of the unnecessary barriers? As an administration, what can we remove and what can we encourage?

Ruark: How do you determine what barriers are unnecessary and what barriers are essential in terms of accountability and control of the pro-

cess? It seems like it might be a fine line to walk.

Ferri: That is true. It's not like, Oh, everybody try everything! You do have a responsibility to the students. There's got to be some people looking and saying, "Is this a good idea? What are the data to support this? What's the rationale to support this?"

And also to allow for some risk. You can't have innovation without risk. There's got to be an ability to try things and then say, "We may not succeed." We may pivot it and be able to test or assess whether this was worthwhile or not.

And sometimes it means alternative pathways. If you want to make a big change in a curriculum, you say, We're going to have this experimental curriculum, and we will allow people to go through the original one, but those who want to try this can. They know that there is some risk involved, both for the students and for the faculty. And if it's a good innovation, things will move in that direction.

Ruark: It's kind of like teaching somebody to swim but letting them swim near the wall.

Ferri: Exactly.

This Is What Georgia Tech Thinks College Will Look Like in 2040

By BETH MCMURTRIE

The Georgia Institute of Technology has a fondness for bold experiments. It created the nation's largest online master's program in computer science, which won praise for its quality and low cost. It is home to the Center for 21st Century Universities, a "living laboratory" for educational innovation. It introduced artificially intelligent tutors in the classrooms. And it is reimagining the campus library to focus less on books and more on teaching, research, and collaboration.

Three years ago, the university took this experimentation a step further when it established the Commission on Creating the Next in Education, asking it to imagine the public research university of 2040 and beyond. Which business and funding models will become outdated? How will Georgia Tech best serve the next generations of learners?

The commission's report, recently released, contains a number of provocative ideas. Among them: new credentials that recognize continuous learning, a subscription fee model instead of tuition, "education stations" that bring services and experiences to students, and worldwide networks of advisers and coaches for life.

These ideas make sense, says Rafael L. Bras, Georgia Tech's provost and executive vice president for academic affairs, when you consider the institute's public mission. "A lot of our discussion is shaped by the concept of the iron triangle: affordability, accessibility, and excellence," he says. "In many ways you could say this is radical. In other ways you could say this is unavoidable. In time, if we read the world correctly, this is something that demands and need will call for."

Bras spoke with *The Chronicle* this week about

GEORGIA TECH

Rafael Bras, provost of Georgia Tech

the commission's report and what the future may hold for public universities. Here are excerpts from that conversation, condensed and edited for clarity.

Q. In your report, one line in particular stood out to me: "The Georgia Tech Commitment imagines a future not marked by arbitrary entries on a calendar, but one with numerous entry and exit points where students associate with rather than enroll at Georgia Tech."

A. To me it is the heart of the idea, and it shapes

everything else. It is quite evident to us that, after graduation, students and learners everywhere will probably have 10 jobs, 10 professions.

On our residential side, we see that many of our students are really and truly developing their own businesses. Our goal is to spin out in the reasonably near future no less than 100 companies of students a year. They are beginning to commingle their education with their work, with their job, with their profession.

So all this is blurring, and that is what the Georgia Tech Commitment is all about. It is recognizing that it is already happening and will happen more.

Q. What is the role of the traditional university in this future? Is it a question of rebalancing what you have now, to put more emphasis on a virtual university, or do you see a dismantling of the traditional undergraduate experience?
A. I don't believe in dismantling the undergraduate experience. I believe there will still be a significant demand for high-quality residential experiences. What this says is that it will possibly be more hybrid. Not in the delivery of education, but in the activities of the students.

The campus will remain very strong, because in that age bracket you will probably still see significant interest from people maturing in that type of environment. But I do believe it will be a more porous environment, and more porous in that it will bleed more in and out in the K-to-12 arena and reach out into the older population.

Q. What's the hypothetical student journey going to look like? Would a student take a year or semester on campus, stop out, then continue later?
A. You could imagine increasing engagement in the K-to-12 arena, where the teachers themselves are engaged with us all the time, where students in 10th, 11th, 12th grades are potentially taking some courses, if they are advanced enough, that put them in the college environment.

Then they may choose to come to Georgia Tech. Some would spend four years, others come for a couple of years, develop a company, and then may choose to stop out for a semester, while being mentored by us, and develop their business. They come back and optimally grad-

uate and finish that period in life.

Then they go out for five years in a company, realize they want to do something else, and engage with us via other offerings. The question is what offerings are out there for them, and how do we establish a link that is beyond the digital or cyber?

Q. The report mentions something called the Georgia Tech atrium. What exactly is that? Is it an entrepreneurship lab? Or is it a place where someone could take a class?
A. We're beginning to define it. Imagine us with a presence — not a large presence — in a shared space with entrepreneurs. That presence becomes a gathering place for individuals, some alums, some not, who are looking for a number of things. It could be access to information. It could be mentoring. It could be traditional lectures with visiting faculty. It could be a place where you participate online, but rather than doing it from your house, you sit there in a group that works together in going through this program.

We found already in many of our professional master's degrees that students self-organize and love to be together. Just like start-ups want to be together. You could imagine self-organized cohorts that are going through a computer-science or analytics program, and that all occurs in the Georgia Tech atrium.

> "It is quite evident to us that, after graduation, students and learners everywhere will probably have 10 jobs, 10 professions."

Q. The report also proposes a subscription model, like Netflix. Do you think higher ed might benefit from moving toward this model?

A. It's something we need to explore seriously. You could imagine that, as you move with the Georgia Tech touchpoint throughout your life, that in essence once in, you're in forever. Part of a possible business model for that would be a subscription basis that you pay ahead or pay as you go. I don't know what the answer to that is yet, but how do you make it happen?

People have thought of that before, I don't know that anybody has tried it. And maybe it's not the perfect answer, but it has to be considered.

Q. The report also talks about the importance of artificial intelligence in executing this vision, through AI-enhanced services like advising and tutoring.
A. There is a role for AI agents for all types of things. Not to take the place of humans — in fact, we want to increase that, but in some dimensions and not in others.

We had an experiment with a teaching assistant that was an AI agent ("Jill Watson"). That was an eye-opener. It was very successful. We are increasingly doing that. The great majority of exchanges [between students and professors] are easily handled by that type of tool. Now, as you push the envelope for a more sophisticated tutor, I think there's still work to be done. But it's very feasible.

There are some things that an AI tutor is not going to be able to do, and that's where we warm-blooded humans must come in. But we are moving in that direction, and that will allow better service to more people.

Public universities are public for a reason: It's access. And we believe in that. So we need to find a way to provide excellent access information and tutoring in a different way. Because we cannot do it with the old model.

Q. Do you expect that external partners will come along as well — accreditors, employers, government agencies? How optimistic are you that they will say, Sure, let's try this new thing?
A. Employers I'm not worried about as much. Our online programs show that employers are willing to accept quality no matter how it was delivered. Accreditors and the government and all that, they're seeing the same things we are. It will require some conversation, but none of this is insurmountable.

Q. Given how cash-strapped many public universities are right now, and the pressure they are under just to graduate the students they have on campus, do you think such a radical rethinking of higher education is feasible?
A. I think it is. Everything we have suggested in there, and certainly everything we're doing is still guided by that concept that we want excellence that is affordable and accessible.

Yes, everybody will say, If I have a little bit more, it will be easier. But I don't believe it's going to stop us from doing the right thing.

> "Public universities are public for a reason: It's access. And we believe in that. So we need to find a way to provide excellent access information and tutoring in a different way."

Q. But how do you do it when public institutions are under so much pressure just to get the job done they have in front of them? How do you create the space, money, or staffing to create these new structures?
A. You may need to think a little bit out of the box, in terms of the model of delivering education and how you deliver it more efficiently. Maybe that's part of the messaging. We cannot look at higher education as just one model any longer. I really believe that it will be a hybrid in time and space, and it will be a hybrid of offerings and delivery methods. And when you begin thinking that way, it gives you more flexibility in how to achieve things with the resources you have.

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