



Raising Up a Fallen Ivory Tower

Myanmar's universities, benighted after decades of isolation and neglect, are striving to make up lost ground and recover lost student bodies

YANGON, MYANMAR—When Ronald Daniels became one of the first Americans in many years to set foot on the campus of Yangon University in January, it should have been a moment to savor. Instead, says the president of Johns Hopkins University in Baltimore, Maryland, the experience was “heart-wrenching.” Before Burma’s military staged a coup d’état in 1962, Rangoon University, as it was then known, “was one of the storied institutions of higher education,” he says. But to the junta, the university was a recurring headache. After crushing protest after protest there, in 1996 the generals banished undergraduates to campuses in the countryside, where they could be kept under surveillance more easily. Higher education spiraled into an abyss.

Today, Yangon University and its charming colonial-era buildings are “basically a ghost town,” Daniels says. “The university has become a powerful metaphor for what happened to the intellectual capacity of the country.”

But Myanmar’s political transformation is giving academics hope that their long, dark night is nearing an end. President Thein Sein, a former general who took office in March 2011, has reintroduced press freedoms, canceled a massive Chinese-led dam project, and released opposition leader and Nobel laureate Daw Aung San Suu Kyi from house arrest.

Now, higher education is about to take center stage. Next week, the country’s top engineering institutions—Yangon Technological University (YTU) and Mandalay Technological University—will admit their first undergrads in more than a decade. “This is a turning point,” says civil engineer Nyi Hla Nge, a former YTU rector. Other universities are slashing enrollment to boost faculty-student ratios and renovating threadbare labs. “We accept that we’re at least 20 years behind our Southeast Asian neighbors,” says Tint Swe Latt, rector of University of Medicine 2 here.



Like-minded. Aung San Suu Kyi and Johns Hopkins President Ronald Daniels want to see Yangon University restored to former glory.

Sprucing up. Yangon Tech prepares for its first crop of undergrads in a decade.

Myanmar’s downtrodden academics got a boost last week from Barack Obama, whose brief stay here was the first by a U.S. president and a milestone on the Southeast Asian nation’s rapid transformation from pariah to budding democracy. In a speech at Yangon University on 19 November, Obama urged the nation to revive what had once been one of Asia’s premier centers of learning. Yangon University, he said, “must reclaim its greatness, because the future of this country will be determined by the education of its youth.”

Under the junta’s brutal reign, health care eroded, ethnic strife exploded, and civil liberties were curtailed. All of this left deep scars in the Burmese psyche. “There’s been no incentive to study since 1962,” says petroleum geologist Soe Myint, president of the Myanmar Geosciences Society. After decades of repression, he says, “few people dare speak freely. That mindset is not something you can change overnight.” Adds Sayama,* a senior professor at the University of Medicine 1 here, “Our people have been closed up so long, they don’t know what it’s like outside.”

Restoring Myanmar’s higher education system “is only going to work if universities are seen as an indispensable asset to the country,” Daniels says. “Ultimately the real test is: Are undergraduates going to be welcomed back to Yangon University?” Aung San Suu Kyi, now a legislator in Myanmar’s increasingly assertive parliament, has taken up that cause. “[O]ur education system has gone in the utterly wrong direction,” she declared in parliament earlier this month, according to *The Myanmar Times*. Overriding the education ministry’s objections, legislators passed a proposal from her to form a panel to oversee Yangon University’s revitalization, including the return of undergraduates. That momentous step may encounter resistance. With nearly 5000 graduate students at Yangon University, “we have no room for undergraduates,” insists physicist and vice rector Pho Kaung.

A moment of truth for Burmese society has arrived. “Some of my colleagues think we are doing OK. But we’re not OK, we’re far behind,” Sayama says. “We need to catch up in a hurry.”

Into the abyss

Sayama was 10 years old when a thunderous explosion in the early morning on 7 July 1962 caved in the roof of her apartment. Security

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forces had just blown up Rangoon University's student union building. "It was terrifying," she recalls. Her parents lived on campus; students had been vociferously denouncing the coup of the previous March. Tanks rolled onto the Rangoon University campus that day, and dozens of students died. It was the beginning of the slow strangulation of Burma's academic life.

As Burmese society turned inward, Sayama was one of the lucky ones sent abroad by the government at that time. She won a scholarship to study at Royal Postgraduate Medical School in London. After earning a Ph.D. in 1990, she could have remained in London for postdoctoral research. "I was happy there," she says. But a few decades earlier, her father, a Georgetown University graduate, had returned to Burma. Sayama couldn't abandon her parents or her country. "If I didn't come back," she says, "I'd break their hearts."

While she was overseas, the atmosphere in Burma had grown even more toxic. In 1988, the military viciously cracked down on pro-democracy protesters, killing thousands, and declared martial law. Back at the University of Medicine 1 in 1990, Sayama was frustrated. The junta disdained foreign ideas; speaking English was frowned upon. "We were so out of date," she says. But when she warned that the rest of the world was leaving Myanmar behind and suggested ways the university could modernize, colleagues complained that they didn't need "some highfalutin person telling them what to do."

Like their compatriots at Yangon University, medical students denounced the junta, and some died in clashes with soldiers. The country's four medical universities got to keep their undergrads, with the proviso that they could not live on campus. (They hope to reopen dorms "in the next few years," Tint Swe Latt says.) The regime understood that disrupting the medical schools "could decrease teaching standards and cost a lot of lives," says Than Cho, rector of University of Medicine 1.

Although the medical universities enjoyed a measure of protection, they ended up in the same plight as Yangon University: impoverished and desperate. On campuses across Myanmar, Western-led sanctions and meager budgets have precluded properly outfitting labs. When universities managed to obtain an instrument, Than Cho says, "if it arrived damaged, there was nothing we could do," as sanctions made it virtually impossible to obtain spare parts or get technical assistance. As part of a national 30-year education plan adopted in 2001, Yangon University acquired \$2 million worth of instruments from Japan, includ-

ing an x-ray diffraction spectrometer and a scanning electron microscope; now, five of the 15 machines are broken and several others are deteriorating fast. Nationwide, universities routinely download textbooks from the Internet and distribute bootleg copies. "The students are very poor, so we cannot comply with copyright law," Nyi Hla Nge says. "We can't stand on our feet now. We need help."

The isolated campuses built in the boon-docks for undergrads are also hurting. The big-



Painful past. Yangon University's Pho Kaung (left) does not know when undergrads will return to his campus. Restoring Myanmar's higher education system "is a task for Superman," Soe Myint says.

gest is Dagon University, 20 kilometers north of the city center. Some 24,000 students make the trek to the campus for classes. Another 40,000 take courses by computer and show up for exams. (The junta preferred distance learning, which constrains restive youth from mingling.) When *Science* visited on a Thursday morning earlier this month, Dagon's barren teaching labs and empty classrooms with barred windows were not nearly as inviting as its outdoor canteens thronged with students.

Poorly equipped as its facilities are, Dagon does have an academic pulse. The university is the only one in Myanmar where students

Online

sciencemag.org

Podcast interview with author Richard Stone (http://scim.ag/pod_6111).

can major in disciplines such as anthropology and nuclear physics, says rector Hla Htay, a geophysicist. A few professors are involved in international projects. For example, zoology department chair Khin Maung Swe has co-authored peer-reviewed articles on the world's smallest mammal, the Kitti's hog-nosed bat. Also known as the bumblebee bat, the bantam creature—it weighs less than 2 grams—has been recorded in three caves in southeastern Myanmar since 2001.

For scientists, Myanmar's remote forests are among the last remaining terra novae.

In the January 2011 issue of the *American Journal of Primatology*, Burmese and foreign researchers unveiled a new primate, the Burmese snub-nosed monkey (*Rhinopithecus strykeri*), discovered in northeastern Myanmar. Cash-strapped academics here are eager to lead expeditions—if foreign colleagues foot the bill. "We have no money for fieldwork," says Khin Maung Swe. Seizing the opportunity, the Chinese Academy of Sciences is funding a 2-week bilateral foray



across Myanmar that is now in progress. They are collecting rocks for tectonic, paleoclimate, and sedimentary studies.

Seizing the initiative

In the early 1950s, Burma, emerging from decades of British rule, sent dozens of top students to the Massachusetts Institute of Technology (MIT) for graduate studies. Returning home, the elite scholars became assistant professors at Rangoon Technological University, later known as YU. "They were pioneers of an American system of education," Nyi Hla Nge recalls. "The intention was to create an MIT of the East."

YTU was poised for a revival in the late 1990s, when Nyi Hla Nge was rector. It launched Ph.D. programs in 1997 as the first step toward becoming a comprehensive S&T university. That plan foundered in 2000 when the junta appointed an army officer as science minister. YU was stripped of undergrads in 2001 and "almost closed," Nyi Hla Nge says. The new minister promptly went on a building spree, opening several universities and technical colleges that mirrored the education ministry's undergraduate universities. As enrollments soared in the new schools, teaching standards plummeted, Nyi Hla Nge says: "Professors taught long hours without rest." In the last decade, Myanmar's 42 technologi-

cal universities have churned out tens of thousands of engineers and technicians, most of whom are poorly qualified, according to the companies who hired them, Nyi Hla Nge says.

When political reforms started to take root here last year, Nyi Hla Nge and industry minister Aye Myint, an electrical engineer by training and YTU alumnus, swung into action. “We tried many different paths” to persuade authorities to resurrect YTU, he says. Their persistence paid off late last summer, when Thein Sein gave YTU and Mandalay Tech the green light to bring back undergrads. Each will take in 250.

YTU faculty members have been busy ginning up a curriculum that accounts for eroded education standards. Freshmen at YTU and Mandalay will take a required “foundation” course to remedy poor secondary schooling, then another 5 years of coursework to complete a 6-year bachelor degree in engineering: “maybe the longest in the world,” says Nyi Hla Nge, who has been busily writing lecture notes in five subjects. The goal, he says, is that by 2020, YTU’s graduates will be as competent as those of Nanyang Technology University in Singapore and other top schools in the region. A wealthy YTU alumnus has donated materials for a physics teaching laboratory, and when *Science* visited, YTU’s main building was getting a facelift to welcome its first crop of undergrads since 2001. “We’re very proud,” Nyi Hla Nge says. “It’s a golden chance.”

Prospects are also improving at the University of Medicine 1. It’s about to build a molecular biology lab thanks to a \$300,000 grant from the China Medical Board, a foundation based in Cambridge, Massachusetts, and health ministry funds. For the first time, Sayama says, “we can buy our own primers, our own gel electrophoresis machines.” The four medical universities together will boost the professor-student ratio next year by slashing freshman enrollment in half, to 1200 students. “This will make teaching more effective,” Than Cho says.

A job for Superman?

Not long ago, a normal academic life in Myanmar was unimaginable. Until this year, “we would have foreign visitors arrive at our gate, but we could not get permission from the government to let them in,” says Myo Win, rector of the University of Dental Medicine here. “For the past 50 years,” says Tint Swe Latt, “we had a closed-door policy.”

Universities now have the right to host whomever they please, as long as they notify their respective ministries. (Thirteen ministries oversee Myanmar’s 156 universities.) But any significant reforms still require



Thinking big. Nyi Hla Nge dreams of establishing an “MIT of the East” in Yangon.

approval from the capital, Naypyitaw. Parliament is drafting a law intended to grant academia more independence and open the door to private universities. Negotiations have been tricky. “Autonomy for universities is a dangerous concept for the government,” says David Maynard, deputy director of the British Council office here. Wrangling over the law’s scope suggests it will not materialize until late 2013 at the earliest, observers say.

Proceeding in parallel is a top-to-bottom review of the entire education system. Launched last month by the education ministry, the 2-year-long Myanmar Comprehensive Education Sector Review “is our own form of educational peace-building,” says Maurice Robson, CESR’s international coordinator. Already, he says, “people have a well-developed sense of what is not working.” One systemic flaw is that young people here receive 11 years of primary and secondary schooling, 1 year less than in many other countries. “That’s a significant problem,” Robson says. Another issue is the dropout rate. Only half of children in Myanmar enroll in middle school, and just 11% go on to university. Higher education, Robson says, “will be elitist for quite a while.”

Remedying the education system’s many woes won’t be easy. “After such a long period of atrophy, where do you start?” Maynard asks. Soe Myint puts it this way: “This is a task for Superman.” The government doubled the education ministry’s budget in 2012 and has pledged to double it again, to 8% of GDP—as much as \$1.5 billion—next year. One investment that would quickly pay dividends is a robust university cyber-network. Better hardware and more bandwidth would enable Burmese researchers “to document and publish more local data and publish more

co-authored papers with other scientists,” says Steven Huter, director of the Network Startup Resource Center at the University of Oregon in Eugene. Huter met government officials and university scientists in Myanmar last May to discuss practical steps for building a national research and education network.

Daniels returned from his trip to Myanmar with a sense of what it will take for Burmese academia to recover. “It’s a long road back. The physical regeneration of the campuses will not be trivial.” Johns Hopkins is reviving a link with Yangon that dates to 1954, when it established the Rangoon-Hopkins Center for Southeast Asian Studies at Rangoon University. Johns Hopkins medical professors are making frequent trips to Myanmar “to engage them in health problems” such as HIV/AIDS, Daniels says. The university has also established graduate fellowships for Burmese students. Success of the overall enterprise of rehabilitating Myanmar’s universities may depend on the deepening of political reforms. “It’s up to the government to commit to the idea that a university is a core institution of Burmese society,” Daniels says.

Thein Sein has signaled that he is ready to embrace that idea. He told United Nations Educational, Scientific and Cultural Organization Director-General Irina Bokova last



A crying need. Like other facilities at Dagon University, the chemistry teaching lab is mostly bare.

August that Myanmar “badly needs support in higher education reform and strengthening universities,” says Sardar Umar Alam, project manager of UNESCO’s Myanmar Education Recovery Programme in Yangon. He suggests that Myanmar start with pilot models and experiments: Reform a few departments in three or four universities.

That’s the approach the science ministry is taking with YTU and Mandalay Tech. The glasnost spreading through Myanmar has even rekindled Nyi Hla Nge’s desire to establish, someday, an MIT of the East. “Our dream is to revive that,” he says. “I would like to dispatch our young teachers to the United States again.”

—RICHARD STONE

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