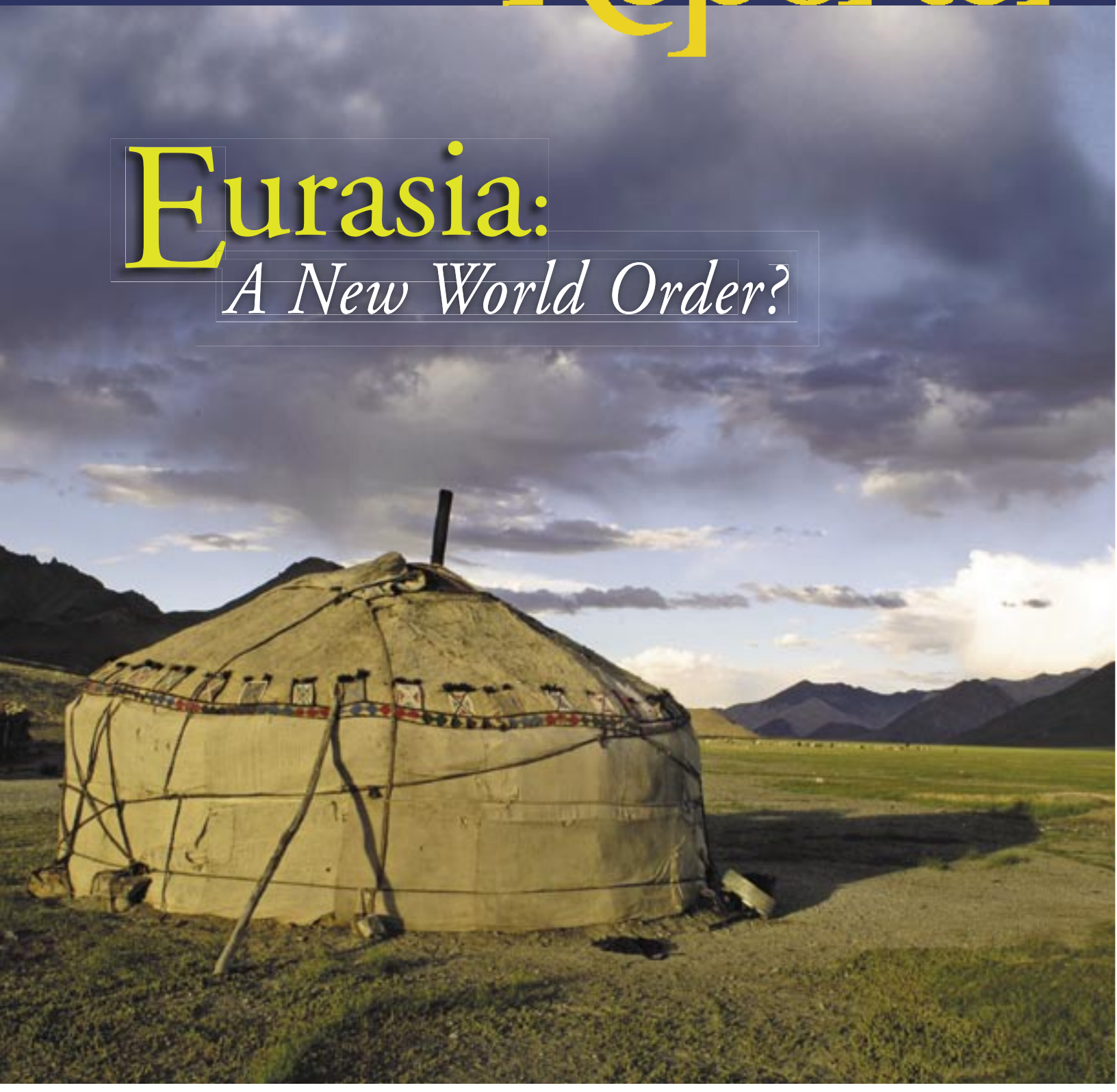
Carnegie Corporation of New York
VOL. 3/NO. 4
Spring 2006

CARNEGIE Reporter



Eurasia: A New World Order?

become citizens after a number of years. Many others, however, enter the country illegally. Despite laws and enforcement efforts to the contrary, their presence is tolerated, at least tacitly. Evidence of this fact is that best estimates suggest the population of unauthorized immigrants has grown to more than 11 million people, and that once beyond the border region, they face little risk of apprehension. By law, the undocumented are prohibited from working, from receiving most public services and from ever seeking citizenship, yet they readily find employment, albeit in the lower reaches of the labor force, and are essentially free to live here as long as they like.

By any measure, this is a sizeable population and arguably, the only one that is now systematically excluded from full participation in society. There are now more illegal migrants living in the United States than there were blacks living under Jim Crow in the states of the old Confederacy at the time of the *Brown v. Board of Education* decision in 1954—and this cohort represents a sizeable portion of the Hispanic population. About one-out-of-every-five Latinos is undocumented, including about one-half of all foreign-born Hispanics. Nearly one-out-of-every-three Latinos lives in a family with at least one undocumented relative. And, for the past several years, the number of unauthorized immigrants has exceeded the legal flow. Thus, illegality has become one of the defining characteristics of the Latino population.

Though drastically different than the kind of discrimination suffered by African Americans or Mexican Americans prior to the civil rights era, because it is a status that is chosen rather than imposed, being undocumented is a marker of exclusion and marginalization. It is the basis for an identity as a people apart. No matter to what extent an illegal immigrant learns English and adopts American ways, he or she faces an insuperable barrier to full inclusion and participation in American society. And then again—though it may seem an unlikely prospect—a single act of Congress could simply erase that barrier.

The New Dividing Lines

Immigration status is a new boundary line, one that confronts Latinos like no other group and that is likely, over time, to condition the ways that newcomers are incorporated into American society, or not. But at the same time, the "old" boundary lines of race and ethnicity are also undergoing change because the United States is a fundamentally different place than when either African Americans or the immigrants of the trans-Atlantic era were forming group identities. In both those cases, there was a dividing line drawn sharply through American society. On one side sat a white majority that set societal, political and cultural norms, and those norms were overwhelmingly Anglo-Saxon, Christian and male. Now, women, blacks, Jews and all kinds of other folks are involved in defining American norms, there are several different kinds of dividing lines and they are blurry in places and sometimes even zigzag. Immigrants today, like immigrants before, are busy absorbing American ways; the difference is that nowadays there are many more ways to be an American, many more accepted flavors and variations. The Latino immigrant influx arrived as the United States was in the process of establishing a more diverse vision of itself. The process seems irreversible but is not finished, nor is it fully codified or digested. Latino immigrants and their offspring are adapting to a United States that is already immersed in a process of transformation that may be further impacted by the Latino immigrants themselves. This is a demographic coincidence that may well be of profound historical impact.

For example, in the 1970s, as the Baby Boomers became adults, they put off having children; many never did and many had just one or two. In the same decade, as noted earlier, the influx of immigrants from Latin America, especially Mexico, began to grow. These two trends, entirely unrelated in their origins, gathered momentum across decades and produced effects that continue to reverberate throughout American society: the first created a dearth of people while the second resulted in an abundance. Without this confluence—meaning,

While it would be easy to overstate the potential leverage represented by the size of the Latino population, their numbers—and standing as America's largest minority group—are already too big to ignore.

absent Hispanic immigration and high fertility rates—the United States might well begin to resemble nations such as Italy or Japan, which have quickly aging populations that are also shrinking in size. When the Boomers retire, Hispanics will be there to fill out the workforce. Thus, the significance of Latino population growth has to be measured not just by the sheer size of their numbers but against what is happening with the rest of the population.

While Latinos make up 14 percent of the total population, they account for 21 percent of all children under the age of 10. Look at another key segment of the population: young adults. Between 2000 and 2005, the number of non-Hispanic whites between the ages of 20 and 35 declined by nearly 800,000. Meanwhile, the number of Latinos in that age range increased by more than 1.7 million. The Latino population is not only growing fast, it is accelerating while the rest of the population is getting older and hardly growing at all. That context enormously leverages the significance of the Hispanic numbers. The fact that Latinos are the only population in the United States that can be cited as fast growing not only defines their size but also helps to highlight their place in American society, bestowing a particular degree of status, as well.

While it would be easy to overstate the potential leverage represented by the size of the Latino population, their numbers—and standing as America's largest minority group—are already too big to ignore. Employers, marketers and politicians increasingly seek out Latinos as workers, consumers and voters. This attention may be self-serving, but it is attention nonetheless, and probably ripe for future spin. Latinos are the rare group whose position in society is defined less by who they have been than by who they will become.

In the public policy arena, the size and projected growth of the Hispanic population has already had a notable impact. The banking industry, for example, was so concerned about keeping immigrant Latinos as a potential source of new consumers that it successfully lobbied the Bush Administration to block Congressional efforts to keep undocumented immigrants from opening bank accounts. Indeed, concerns over the future political clout of the Hispanic population have acted as a brake on a variety of efforts to adopt restrictive immigration policies. And, when the Supreme Court decided in 2004 to preserve affirmative action in university admissions, one of the rationales was the growing size of the minority population in the coming years. This perception of demographic significance is not going to resolve all of the hardships or remove all of the barriers faced by Latinos but it is widespread enough in the majority society that the position of Latinos today is more positive than that of blacks in the 1970s or Italians, for example, in the 1920s. Group identities are powerfully shaped by the majority, and in this case, demography is a critical factor. Moreover, Latinos themselves absorb some of this sentiment, generating a feeling of demographic pride, even demographic triumphalism, at times.

The picture I've tried to paint in this essay is not one of a racial minority group cordoned off from the rest of society. Nor is it the picture of an immigrant ethnic group at the gates waiting for admission into a society that will absorb it and wash away its differences. As I noted earlier, this phenomenon is something different than we have seen before. Latino/Hispanics comprise a group with an identity that sets them apart, but not permanently. The boundaries that define the group are shifting and they are permeable, which is characteristic of a society that values homogeneity of purpose but also embraces cultural, religious and ethnic diversity. Still, the societal contradictions faced by Latinos abound: for example, they intermarry with a freedom unimaginable for blacks fifty years ago, one signal of the ongoing assimilation process, and yet, at the same time, a large Latino cohort—the undocumented—live in the shadow of the law. It is unlikely that this range of experiences will narrow any time soon.

So what conclusions can we reach after considering the many factors impacting the lives that Latinos/Hispanics live in the U.S. today? Surely at least one thing is clear: the Latino/Hispanic identity is one that allows for multiple and varied expressions. Latinos have arrived on the scene as American notions of identity continue to evolve and they have brought with them the kind of identities that may be well suited to the moment. The result, the combination of the two—a nation with less rigid boundaries and a people with a more fluid identity—will undoubtedly change both the host society and the newcomers. In the past, the United States has tended to either reinforce group differences or negate them, but now it seems headed into a future where it will do neither. Instead, the prospects are for a society that sometimes embraces, even celebrates, some aspects of group identities while at the same time fuses people of different sorts together in pursuit of common purposes and goals. It is an uncertain and potentially confusing prospect—but promising, as well—and one that has only just begun to unfold.

Now, which is it, "Latino" or "Hispanic?" The answer is that "Hispanic" is the preferred choice of about a third of the group and is most popular in Texas and Florida. "Latino" is preferred by a bit more than a tenth, mostly in California and New York. But the majority has no preference and will use both. How could it be otherwise in 21st century America? ■

by Karen Theroux

Linking African U

State-of-the-art experiments at Massachusetts Institute of Technology (MIT) are a click away from students in Africa—thanks to an engineering A-Team with truly global vision.

"This is the Stata Center—what do you think of it?" The question comes from Jesus del Alamo, electrical engineering and computer science professor, as he leads the way through MIT's rambling new Frank Gehry-designed building. Full of twisting stairways, towers, odd angles and unfinished surfaces, the vast structure is fitted with labs, lofts, open work areas and casual meeting spaces, most of which can be reconfigured any way the students and researchers headquartered there decide. It's an ingenious design, surprising yet entirely in sync with the academic culture of MIT. Here, experimentation and ad hoc collaboration are the norm, and the overarching mission of advancing knowledge to benefit the world is practiced openly, in inventive and pragmatic ways.

A visitor comes to MIT, known for 140 years of world-changing discoveries and 61 Nobel Prize

---

Karen Theroux is an editor/writer in the Corporation's Public Affairs department with many years' experience in educational publishing.

MIT's new landmark structure, the Stata Center for Computer, Information and Intelligence Sciences in Cambridge, Massachusetts.

PHOTO BY PIOTR MITROS

Oduduwa Hall, the centerpiece of Obafemi Awolowo University in Ile-Ife Nigeria.

niversities with MIT iLabs

winners, expecting to be impressed. While its accomplishments are awesome, even more impressive is the institution's philosophy of applying science and technology to meet human needs, a viewpoint that informs the everyday work of innovators like Jesus del Alamo. In an effort to address today's global challenges, del Alamo and his team of MIT technology aces are focusing on Africa, in a groundbreaking effort linking state-of-the-art facilities in the United States with students in Nigeria, Tanzania and Uganda. As a result of their efforts, African students can conduct complex experiments in the same Web-based labs used by students at MIT. Because of MIT's iLab program, which has received support from Carnegie Corporation of New York, all the African students need is a computer and access to the Internet.

High Tech Takes a Human Touch

"If you can't come to the lab, the lab will come to you," says del Alamo, who, together with several graduate and undergraduate students in his lab, developed the Web-based experiments. "Many people are surprised to learn that even the most advanced universities cannot afford to offer their students all the lab experiences they would like to have. But with a lab setting that's accessible via the Internet, you have access anytime, from anywhere in the world. Instead of all institutions having all labs, sharing allows costs to be pooled. The result is better labs with better equipment and better pedagogical experiences."

Online laboratories, known as iLabs, are real labs, not virtual labs or canned experiments. The iLab designed by del Alamo and his students is used to measure the electrical characteristics of transistors and other microelectronic devices. The lab itself consists of instruments for taking current-voltage measurements plus computer hardware and software components that bring the laboratory experience onto the Web. Students log onto the lab and set up their experiments by entering the desired specifications, or test vectors, executing them and, in a matter of seconds, view-

PATRICIA A. SAMPSON, MIT/EECS

ing the obtained data, which is downloaded onto their computer. They can then compare measured characteristics (actual results) with theoretical predictions and reflect on discrepancies, limitations and design criteria.

By making it possible to perform real-time experiments via the Internet, these labs allow students to study the characteristics of real and state-of-the-art devices regardless of how restricted their school's resources may be. The information covered in the microelectronics iLab is essential preparation for working in the semiconductor or telecommunications industry, for example. For hundreds of African students, these online lab activities could instantly open up a new world of scientific discovery and provide an opportunity to see the true power of the computer as an engineering tool. "African nations have eager students and eager faculty," says del Alamo, "but they do not have resources. So we start with what they do have: people. In engineering, when you work with people you need a close rapport. Different cultures and infrastructures make it critical to spend a lot of time together learning to understand. That's why human exchange is the key."

FAR LEFT PHOTO COURTESY OF JESUS DEL ALAMO.

Jesus del Alamo, Ph.D., MIT Professor of Electrical Engineering, demonstrates the iLab to students at OAU.

Engineering graduate student Kayode (Peter) Ayodele.

That "human exchange" brought Kayode (Peter) Ayodele and Olumide (Olu) Akinwunmi, graduate engineering students from Obafemi Awolowo University (OAU) in Ile-Ife, Nigeria, to MIT in June 2005. Ayodele, with a master's degree in electronics, and Akinwunmi, a Ph.D. student, are part of a dedicated team that runs OAU's growing computer network. Described by del Alamo as "energetic and entrepreneurial," the Nigerian students left their sprawling university, with its 25,000-plus students on a tropical campus about the size of Manhattan, to spend quality time in Cambridge, Massachusetts, absorbing MIT's collaborative culture while learning the nuts and bolts of iLabs. If all goes according to plan, not only these labs, but new ones designed to meet uniquely African needs, will be accessible online in Nigeria in the very near future.

"Peter and Olu have learned how research is done here," del Alamo explains. "We've shared all our technology and our know-how. We've helped them scope out the labs they will eventually want to develop and provided the entire software architecture they can bring back home to do it." Ayodele rates the project "very exciting…and very useful to Nigeria. It will be the first time we could actually conduct this type of experiment. Working with the MIT team has opened new horizons and I've learned how to get a lot done with a lot less stress," he says. "There's a very friendly, open approach to research and sharing that we'll take back and hope it will catch on." Akinwunmi is just as enthusiastic, acknowledging that the MIT experience "changed our point of view and improved our educative standards. Back home, we'll be looking for things to improve. Now we can keep up with anybody, anywhere in the world."

Two weeks after they'd arrived, the visitors had left for Ile-Ife to "take back home" the lessons learned in Cambridge. Ayodele, with a particular interest in iLab design, aimed to help create several new online electrical engineering labs at OAU. Akinwunmi, who focused on pedagogical applications of the MIT lab, planned to support its integration into various OAU classes. He has also been involved in producing a comprehensive package of documentation for teachers and lab users.

More recently, two MIT graduate students, 26-year-old Piotr Mitros, from Poland, and 23-year-old Samuel Gikandi, from Kenya, took off for Nigeria in the second phase of the student exchange. Mitros, who previously worked on Internet technology projects

in China, is fascinated by the possibility of helping Africa modernize in "a different way than the U.S. We'll be starting with a clean slate," he says, "and I'd like to see if we can do things better." One improvement he is taking along to OAU is the "Mini," a scaled-down version of a microelectronics iLab (which costs upward of $100,000 to build) that, remarkably, can be assembled for

PHOTOS BY PIOTR MITROS.

Olumide Akinwunmi, Ph.D. student in engineering at OAU.

$40. "The Mini is much less sensitive, but the theory is the same," he says, "and because it's so cheap, many more students would be able to get access to the experiment." Gikandi has traveled to Ghana to help run a programming course for high school and college students, and he considers the iLab exchange a good way to "stay in touch with Africa." The students' to-do list is a long one, and includes a number of complex and critical tasks: assessing the capacity of the Internet at OAU; determining the skill level and training needs of the engineering students; building relationships with the OAU Information and Communications Technology (ICT) team; determining how well the MIT iLabs meet the needs of African institutions—and looking for ways to change what isn't working.

In Nigeria, the MIT students are overseen by del Alamo's opposite number, electronic engineering professor Kunle Kehinde, who, in addition to coordinating the launch of the African iLabs, heads OAU's Information Technology and Communications Unit (INTECU). Kehinde welcomes the opportunity for his students to access new experimentation techniques and learn about new hardware and software. He sees OAU as an ideal start-up location because "the university prides itself in being the best…and has a history of trying to stay on top in many fields. For example, the Nigerian Universities Commission last year judged OAU the number-one research university in Nigeria. OAU is also generally accepted as number one in ICT, and has staff and students who are highly motivated to achieve. OAU has more than the critical mass of staff with good knowledge of instrumentation, software and computation, having undergone training within and outside the country."

Kehinde, like del Alamo, believes student exchange is key: "Rubbing minds together brings out better results," he believes, and "the cross-cultural aspect is also of great value." An international mindset is a must for anyone in the tech sector, del Alamo feels, or, for that matter, any educated person in the 21st century. "Engineering has become a global endeavor," he stresses. "MIT is working hard to provide international internship opportunities for our students around the world. MISTI [the MIT International Science and Technology Initiative] routinely sends students to Japan, China, Mexico and Western Europe. Before the iLab-Africa project was launched, the opportunities for MIT students to work and do research in Africa were very limited. Our project in some way represents a beachhead in Africa. We hope that as we establish contacts and build relationships, we will be able to broaden the range of opportunities there. We also hope to expand the opportunities for African students and teaching staff to work on projects at MIT."

As products of cross-cultural exchange themselves, both Kehinde and del Alamo make a strong case for its payoffs. Born in Spain, del Alamo attended college in Madrid, did his doctoral work in California at Stanford University, then worked in the telecommunications industry in Japan for several years. He came to MIT as a junior professor in 1988 and has been there ever since. Kehinde enrolled in OAU as a student in 1968 and several years later was employed as a graduate assistant. Through the years, he took leaves to do further graduate work in various engineering fields in other countries, attending the University of Sussex, in Brighton, England, to study control engineering and completing his postdoctoral work in nuclear instrumentation at the University of California, Berkeley.

These two globally aware engineers know well the level of technology required for countries to compete in today's marketplace, and they believe iLab's potential to boost Africa's tech sector can't be overstated. Asked what the project might mean for OAU, Kehinde quickly ticked off the following benefits: "A new lease on life for performing relevant experiments on state-of-the-art instrumentation over the Internet; getting access to real-life experimental setups online, where cost would otherwise have prohibited availability; creating an avenue for training of African staff in technical, software, hardware and curriculum development; and, importantly, creating an atmosphere for collaboration among staff of MIT and African universities in the first instance, and among staff in African universities in the second instance."

Del Alamo confirms that iLabs' are "an avenue for a deeper collaboration between the participating institutions

that can go beyond its formal scope." Yet although he's optimistic, he sees some weak spots, too. "The greatest risk we face," he warns, "is that the project might not be a good fit, meaning it might not actually enrich progress in Africa. Building and maintaining new labs, as our Nigerian partners plan to do, could prove too hard or too costly. The local culture could simply override the requirements of the project. At the end of the day," he points out, "transforming education in Africa is not about us, it's about them." This observation sums up what's really at stake for iLabs and other ambitious projects aimed at improving the developing world and clearly illustrates the promise, and the pitfalls, of international technology transfer—the movement of critical knowledge between countries.

Spreading the Wealth

It's accepted wisdom that the developing world, sub-Saharan Africa in particular, desperately needs to bridge the digital divide in order to stimulate economic growth, eradicate poverty and boost living standards. In a knowledge-based global economy, international development experts stress, the wealth of a nation is directly linked to its capacity for innovation, which, in turn, depends on the strength of its science and technology sector. But despite willingness to transfer Western technology to Africa, countries there have had a hard time absorbing and adapting that technology, and most have not managed to set up sufficient capacity-building institutions to create a critical mass of researchers, engineers and other essential human resources.

What's behind these disappointing results? Typically, the problem is poor planning and unrealistic expectations on the part of the developed world. Simply providing African countries with access to unfamiliar technologies will not guarantee reaping the desired social and economic rewards. Unless strategies uniquely suited to each targeted region are hammered out well in advance—taking into account infrastructure, costs of acquiring and mastering new technology, degree of difficulty involved and the training required—projects often end up creating more problems than they solve.

One way to improve the odds is to choose the strongest prospect on the receiving end. In this case, OAU stands out for its flagship technology resources. The pilot educational and research network, OAUnet, was established to promote science and technology at the university and to fan out to other institutions across Nigeria. Most importantly, OAU has acted on its own initiative and set priorities for building technological capacity—a step that can make all the difference in getting the right technology, at the right time, to the right people. Mohamet H.A. Hassan, president of the African Academy of Sciences, puts it this way, "If sub-Saharan Africa is to join other developing nations and regions that have learned to harness science for development, it must set its own agenda and be willing to see it through. Others can help, but sub-Saharan Africa's science and technology renaissance must ultimately begin—and end—at home."

While it's vital for Western donors to support African institutions, "we can't push the development process faster than the universities are pushing it themselves," cautions Andrea Johnson, Carnegie Corporation International Development Program Officer. "Otherwise, we risk mismatched priorities. Few universities in Africa will turn down offers of assistance, but would they always select that particular activity if they had a complete list of options from which to choose, or if they had their own resources to invest? The iLabs project is a case in point. Vice chancellors of the universities the Corporation works with have been exposed to many ideas, but rarely have I seen a reaction as enthusiastic as when the iLabs project was presented to them. We opted to act on their enthusiasm, and I think the project has been relatively successful to date because of it."

MIT graduate student Piotr Mitros in the workshop where the "Mini" was born.

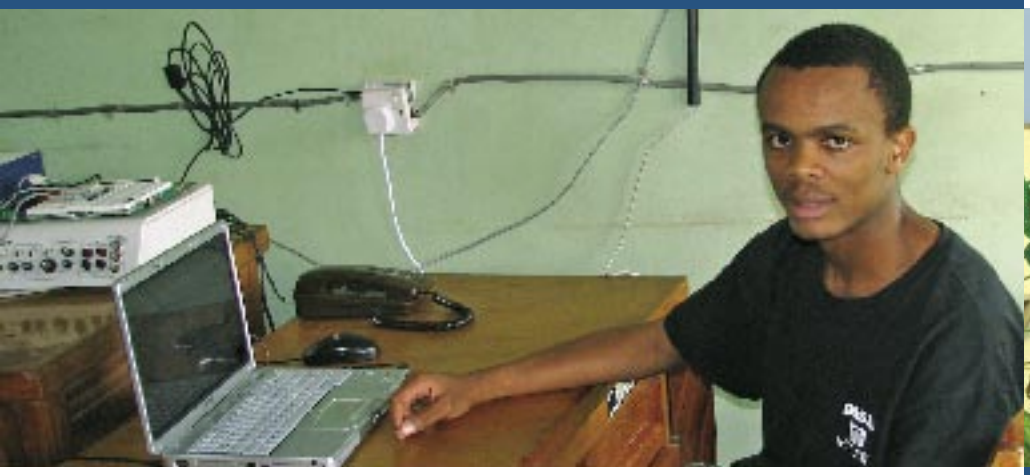
Even when recipients seem ready, willing and able to deal with new technology, establishing close ties between the giving and receiving teams helps pave the way for success. According to Kehinde, collaboration among staff, in the form of conferences, training sessions and personnel exchanges, is one of the iLab project's biggest pluses, along with "exceptional cooperation of the MIT team with African universities whenever there is a need for assistance." That works both ways, in del Alamo's view. "Some of the most critical feedback that we have received from users of our lab was that the documentation was inadequate," he recalls. "This summer, we launched an effort to overhaul all our documentation. As a newcomer, Olu's fresh look at our lab as been invaluable for us to understand the challenges that

new users face as they attempt to operate the lab for the first time."

"I have great hopes for this program," del Alamo says, having seen it through the kick-off phase in Africa early in the summer of 2005, then two rounds of student exchanges and the first stages of setting up the initial African iLabs. "Commitment and determination on the part of the staff involved is the vital ingredient that can make or break this project," says Kehinde. "Combining iLab research with their regular job schedule has been very tough for our staff," he explains, adding, however, "the excellent team taking leadership roles in the project means work is progressing very well. Students will be performing new experiments on the Internet and our initial attempt at setting up our own experiments should be concluded soon."

Signs are good that this project will integrate successfully into OAU's overall development strategy, as well as the other African partner universities in Tanzania and Uganda and, someday, throughout the continent. Also important is the fact that "a good number of MIT students will have had the privilege of working in Africa and being engaged in a worthwhile technical project that chips at the digital divide from the other side. By the time we are done," del Alamo predicts," there will be several iLabs in place, dozens of African students will have participated in the design and construction of iLabs, and hundreds of physics and engineering students will be routinely exposed to laboratory experiments through the Internet." It's a scenario he could hardly have imagined almost eight years ago when the notion of an Internet accessible lab at MIT first entered his mind.

MIT graduate student Samuel Gikandi in OAU's iLab.



OAU engineering professor Kunle Kehinde.

PHOTOS BY PIOTR MITROS

Anywhere Anytime iLabs

It all began because of frustration. "I was teaching my students using books and charts, just as I had been taught microelectronics," del Alamo recalls. "But I was frustrated because I felt they should be working with actual transistors in an experimental setting." Hands-on characterization of transistors and other devices substantially enhances the educational experience, he believes, but courses usually do not include a laboratory component because of equipment, space, user training, safety and staffing constraints.

It occurred to del Alamo that the Internet might hold the answer. He then made what he calls "one of the decisions I am most proud of in my technical career." He hired an MIT sophomore majoring in electrical engineering and challenged him to build a prototype of a semiconductor test lab that could be operated through the Internet—something del Alamo wasn't sure was even possible. And the student simply did it! Within a few months, he had devised a system for testing and probing various microelectronic devices online—which could be utilized 24 hours a day from any location with Internet access. The lab functioned beautifully, students loved its ease of use and del Alamo knew they had a winner.

"Once the lab is set up, you can lock it up and go," he explains. "No one needs to tinker with the complex equipment, which can get in the way of learning and detract from higher-level goals. There are no logistical issues, such as bringing people to the labs, so it can serve far more students. They may spend quite a bit of time online setting up the experiment or analyzing the data, but because the measurements go so quickly, users are burning very little instrument time. And there are open-ended opportunities for trial and error, which creates an ideal environment for learning." For all these reasons, del Alamo's initial online lab was so successful it caused the spread of Internet-based labs to other disciplines. iLabs then became a key part of MIT's ambi-