# Weaving Success

## Voices of Change in African Higher Education

Megan Lindow

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## About the Partnership for Higher Education in Africa

Launched in 2000 under the leadership of four foundation presidents—Susan Berresford (Ford Foundation), Gordon Conway (Rockefeller Foundation), Jonathan Fanton (John D. and Catherine T. MacArthur Foundation), and Vartan Gregorian (Carnegie Corporation of New York)—the Partnership for Higher Education in Africa (PHEA) grew to encompass three additional foundations: The William and Flora Hewlett Foundation, The Andrew W. Mellon Foundation, and The Kresge Foundation. The Partnership was a response to trends towards improved governance, public policy reform, and the increasing participation of civil society organisations in a growing number of African countries. Foundations sought to support the priority given to education in general and especially the indispensable contribution of higher education to social and economic development. PHEA represented both a belief in the importance and viability of higher education in Africa and a mechanism to provide meaningful assistance to its revitalisation. Before closing in 2010, PHEA produced two publications:

**A Case Study of the Partnership for Higher Education in Africa: Lessons from a Ten-Year Funder Collaborative**

**Accomplishments of the Partnership for Higher Education in Africa, 2000-2010: Report on a Decade of Collaborative Foundation Investment**

## Websites for the Participating Foundations

Carnegie Corporation of New York: www.carnegie.org
The Ford Foundation: www.fordfoundation.org
The John D. and Catherine T. MacArthur Foundation: www.macfound.org
The Rockefeller Foundation: www.rockefellerfoundation.org
The William and Flora Hewlett Foundation: www.hewlett.org
The Andrew W. Mellon Foundation: www.mellon.org
The Kresge Foundation: www.kresge.org

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New York

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# Foreword

**THIS BOOK IS A SPECIAL OFFERING. IT LETS US HEAR TALES OF RENEWAL IN AFRICAN HIGHER** education. The voices are those of leaders of higher education, teachers, researchers, and students who let us in on what and how they learned from their own efforts at changing their respective campuses across the African continent through the work they have done. Their stories leave us more confident of the lasting impact of their efforts.

This book makes a bold attempt to persuade all those with a general and professional interest in higher education in Africa to train their eyes on something not habitually associated with that continent: success. It says to us, if you have been made to expect tales of anguish, affliction, and despair about Africa, chances are that you have found plenty of them. The accumulation of woes in time has become the lens through which more woes were seen, confirmed by each subsequent observation. Africa has been framed in this self-sustaining way for a long time.

This is not to imply that a changed viewing perspective miraculously turns woes into success. Rather, our eyes are opened to purposeful, minute, cumulative processes of change that can profoundly alter our perceptions of how meaningful change occurs. Such an experience makes us more ready to discern, in society or in its various institutions, patterns of transformative change that have the potential to replicate success. The many tales of renewal in this book give confidence that the process of renewal is irreversible.

The picture that emerges offers fresh insights for political leaders, government policy-makers, and private sector leaders in Africa and elsewhere. For those on the lookout for long-term engagement with African higher education, this book opens up new prospects for collaboration. It tells a story of innovation based on the persistent efforts of a new generation of researchers in African universities. They are resourceful, focused in their persistence, and seek continuous improvement from their initial successes. Leaders of higher education

in Africa and elsewhere will be fascinated by home-grown stories of success in conditions of change that can lead only to more success.

As part of this experience, readers will also discern new possibilities in partnerships between major foundations and higher education institutions within defined parameters of collaboration. Higher leverage can occur from small interventions. Success can cause a university to review the way in which it is governed and managed such that institutional management is refocused and centred more fundamentally on the academic endeavour. In this manner, the academic endeavour defines management practice in a more focused manner.

Resuscitative interventions can begin between the leadership of universities and foundations and cascade downward institutionally; or it can begin between units within an institution and the university leadership and cascade upward and horizontally. Similarly, catalytic effects can work in both directions. These different sites of intervention suggest a highly dynamic environment.

The African social environment, with all its challenges, is the ultimate source for solutions to the problems it throws up. In such an environment, with universities now more attuned to invention, imported innovations will find a more interactive setting than one in which they are accepted uncritically.

The future of higher education is inseparable from the deep institutional self-awareness that comes from a participative environment in which distributed leadership ensures multiple sites of initiative. If readers can become more perceptive, then institutions can also be expected to deepen their sense of self within the context of their respective societies.

In this regard, what is happening in higher education is reflected also by relative peace and stability across the continent; by the phenomenon of democratically elected governments increasingly becoming the norm in leadership changes; by vibrant market economies; by incredibly youthful populations; and by significantly diminished inter-state conflicts. Of course, enhanced intra-state contestation is to be expected in societies committed to democracy.

The view of higher education in Africa will never be the same after this book's publication. The voices and practices that tell the tale of change recall the iconic Ghanaian kente cloth, which in the book is a powerful metaphor for the variegated complexity of social change. If the landscape of higher education in Africa changes this profoundly, so too do we change as we read the book.

Njabulo S. Ndebele
Writer and Vice Chancellor Emeritus, the University of Cape Town
21 February 2011


The nine countries where universities received support from the Partnership for Higher Education in Africa are highlighted in the above map of Africa. They include: Egypt, Ghana, Kenya, Madagascar, Mozambique, Nigeria, South Africa, Tanzania, and Uganda.

Maphosa Mcebisi, a Zimbabwean doctoral candidate, enjoys his work both for its intellectual stimulation, and for the opportunity it provides to serve farmers.

## Chapter One

# Planting Seeds

**INSIDE A SCREEN HOUSE LOCATED AT AN AGRICULTURAL RESEARCH FACILITY ON THE OUTSKIRTS** of Kampala, Uganda, three students work intently amongst tender young soya plants. Picking out a gnat-sized bud in the tendrils of one plant, Maphosa Mcebisi, a postgraduate student from Zimbabwe, carefully lifts his tweezers and works gently to pry the bud open so that he can impregnate it with dust-like pollen. Over and over again, he and two other colleagues—one from Kenya, the other from Ethiopia—find the minute buds buried in clusters of bright green foliage and perform their delicate pollination exercise, pausing for an occasional break in the afternoon heat.

To the casual observer, it may look as though nothing particularly exciting is happening here. The work is painstaking and repetitive, the movements slow and focused. In fact, the scene encapsulates profound changes that have been steadily and quietly taking root in higher education institutions across the African continent. Participating in a PhD programme that brings students from across eastern and southern Africa to Makerere University, where they can take advantage of its high concentration of plant breeding experts and facilities, Mcebisi is working on producing better varieties of soya, an increasingly important crop for food security in the region.

A decade or two ago, it would have been rare to find someone like Mcebisi working hands-on in a facility like this, where he can train at the highest level while focusing on responding to local needs in a local context. The chronic under-funding and neglect of African universities has long hampered their ability to serve as cultivators and custodians of bright minds and new knowledge. Over decades of economic hardship and political turbulence, deep dysfunctions crept into university systems, preventing them from equipping people to solve problems, springboard growth and innovation, and contribute meaningfully to the massive outpourings of technological and intellectual innovation that the world has witnessed. Consider, as just one

example, that Africa produced about 27,000 scientific papers per year between 1999 and 2008, roughly equivalent to the Netherlands' output over the same time period.[1]

Nevertheless, this book is not another catalogue of Africa's woes. Quite the opposite. For in the midst of all the hardships and challenges, a very different kind of African story has emerged, and that story will be the focus of this narrative. It is the story of countries, university campuses, and individuals finding creative ways to surmount grave obstacles and use their ingenuity and determination to develop effective means of teaching, research, and service in difficult environments. Ultimately, this is a story about how society wins when universities and the people within them are allowed to flourish.

**It was from the groundswells of activity by committed academics and administrators at African universities that the Partnership drew its inspiration.**

### A Partnership for Higher Education in Africa

The purpose of this book is to contribute to the dialogue about African higher education by sharing stories about some of the individuals whose visions and actions have, collectively and in diverse ways, spurred transformation at universities in Africa. This book will focus on nine different countries where universities received support in the first decade of the 21st century from the Partnership for Higher Education in Africa (henceforth referred to as the Partnership): Egypt, Ghana, Kenya, Madagascar, Mozambique, Nigeria, South Africa, Tanzania, and Uganda.

The Partnership was a unique and experimental collaborative between seven major US foundations, all of whom believed in the importance of investing in African universities, yet wanted to see if the impact of their support could stretch further if they pooled their resources. Other publications[2] have detailed the workings of the Partnership, as well as its specific outcomes, so this narrative will provide only a brief explanation of the Partnership.

It was from the groundswells of activity by committed academics and administrators at African universities that the Partnership drew its inspiration. In 2000, four foundations announced the creation of the Partnership: Carnegie Corporation of New York, the Ford Foundation, the John D. and Catherine T. MacArthur Foundation, and the Rockefeller Foundation. They were later joined by The William and Flora Hewlett Foundation and The Andrew W. Mellon Foundation in 2005, and The Kresge Foundation in 2007.

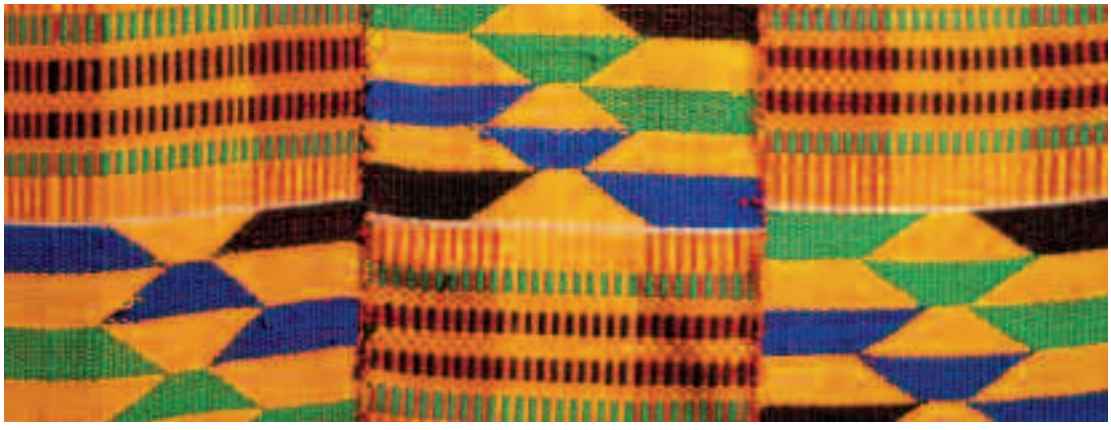
[1] Thomson Reuters *Global Research Report: Africa* (April 2010).

[2] See "A Case Study of the Partnership for Higher Education in Africa: Lessons from a 10-Year Funder Collaborative", by Susan Parker. www.foundation-partnership.org/pubs/pdf/phea_case_study.pdf; also see "Accomplishments of the Partnership for Higher Education in Africa, 2000-2010: Report on a Decade of Collaborative Foundation Investment" by Suzanne Grant Lewis, Jonathan Friedman, and John Schoneboom. www.foundation-partnership.org/pubs/pdf/accomplishments.pdf.

Over the next decade, these foundations collectively invested some $440 million in African higher education, reaching 65 different African universities and an additional 25 regional postgraduate[3] training and research networks. The boundary between the work of the Partnership and the work of the individual foundations was clear yet porous. While the Partnership served as a coordinating body for support in broad strategic areas, the individual foundations supplied funding through both joint and individual grant-making.

As a collaborative of external supporters, the Partnership played an enabling and catalytic role in helping to support the transformations described on the following pages. But the achievements belong to the universities themselves, and to the people within them who had the vision and determination to bring them about.

The following pages contain the voices of people whose lives were touched in some way by Partnership support. These voices also shed light, from many different perspectives, on an important question: What has changed in African higher education over the past 10 years as a result of Partnership support?



**Written in the Cloth**

Complex stories such as this one are often more meaningful if we look through the frame of a metaphor. In the context of this book, perhaps the most useful metaphor to consider is kente cloth, the iconic, colourful, and geometrically patterned woven fabric that is worn on festive occasions by the Asante people in Ghana. The cloth is imbued with meaning: each colour is symbolic (gold connotes wealth, for example, while blue is associated with spirituality, peacefulness, and harmony and black with spiritual maturity and potency).

Kente cloth contains patterns within patterns, and each pattern tells its own story. Likewise, in this book, each chapter follows a different conceptual thread, playing upon a certain theme, but also tying in with larger processes of transformation in higher education.

[3] The term "postgraduate" is used in the British sense, and is equivalent to an American graduate student.

**Chapter 1: Planting Seeds** introduces key issues in African higher education that grantees have sought to address with support from the Partnership;

**Chapter 2: Setting the Context** sketches a quick background of each country, its higher education system, and the principal universities that feature in this narrative;

**Chapter 3: The Invisible Thread** deals with the Partnership's initial core areas of focus: support for higher education research and advocacy and ICT;

**Chapter 4: Innovations in Learning** looks at how universities have used new technologies and ideas to address their pedagogical challenges;

**Chapter 5: From Basic Needs to Broader Impacts** shows various ways in which institutional reforms have strengthened universities to meet their basic needs and focus on larger issues;

**Chapter 6: Journey to Academic Freedom** examines how universities are navigating their relationships to society and the state, often in the midst of profound social and political change;

**Chapter 7: Crossing Boundaries, Building Bridges, Opening Doors** details how a new focus on gender has helped widen access to higher education and sparked cultural change on campuses;

**Chapter 8: New Life Blood** looks at universities' multifaceted efforts to cultivate a new generation of academics, a pivotal task for ensuring the future health of African higher education;

**Chapter 9: Developing Research** explores how universities have surmounted obstacles to producing high-level research despite resource constraints;

**Chapter 10: Dirty Hands, Fine Minds** chronicles the efforts of academics to apply their innovations in ways that benefit society as well as the academy;

**Chapter 11: Networking a Continent** examines how the rise of networks for advanced training and research is helping universities to meet their challenges; and

**Chapter 12: Shaking the Money Tree** ties it all together by looking at how universities are uncovering new ways to sustain their achievements by developing new funding sources.

This story, however, is not one of rigid categories, and all of these different areas are deeply interconnected. Therefore, it may be useful to think of each chapter as a square of kente cloth, in which a particular colour (theme) dominates the overall pattern, but is complemented and enriched by the warps and wefts of other colours. These dominant colours re-appear as they weave throughout the chapters.

Looking at kente cloth up close, one sees the finer details, the different strands of colour, and the texture of the fabric. But take a step back, and a larger set of patterns emerges. The different chapters of this book contain the smaller, finer details of individual transformations, but also add up to tell the larger stories of systemic change across campuses and national boundaries.

## Caught in a Triangle

Let us now return to the question of what has changed in African higher education. To the extent that the world outside holds any popular images of an African university, they are likely to be images of dysfunction: students crammed into broken chairs in dingy, over-crowded lecture halls, scientists working in antiquated labs with broken test tubes. Indeed, decades of under-financing hollowed out the African higher education system, at the same time that demand for higher education swelled with the population bulge of under 21-year-olds across the continent.

Massive population growth and growing middle classes in countries like Nigeria and Tanzania have given rise to huge demands for university education, compelling universities to admit larger numbers of students—often beyond what they can really sustain. This, in turn, has led to overcrowding and facilities that are rundown and inadequate, along with complaints of diminishing educational standards. The provision of free universal secondary education within the last 10 years in countries like Uganda and Tanzania has created even further demand for higher education. Yet often the best students and academic staff leave Africa for the greener pastures of America and Europe. With tired facilities, overcrowded classrooms, and shortages of qualified lecturers, all exacerbated by anemic budgets, universities have strained all the more to cope with their exploding populations. Outages of basic services such as power and water are frequent at even top-tier institutions.

"The problem is, we are caught in a triangle," says Olufemi A. Bamiro, the former vice-chancellor of the University of Ibadan in Nigeria. The three sides of that triangle—access, quality, and financing—are all limiting factors constraining the growth and improvement of higher education both in Nigeria and throughout the developing world.

All of these woes are a product not only of poverty, but also of international and national policies that sidelined African higher education. "The 1990s, or going back [even] earlier than that, were characterised by a total neglect of higher education, and it was ideological," says Narciso Matos, who was secretary-general of the Association of African Universities at that time. "It was not just that there were no resources. Even the World Bank's official policy was that you should rather put money in primary education, where the social return of the investment is higher. In practice, this was read to mean that you should not put money in universities."

## voices of change

### The Energy Returns

Brian O'Connell, Rector, University of the Western Cape, Cape Town, South Africa

We believed, all of us in the struggle, that South Africa was a very rich country, because we had diamonds and gold. Come liberation it would all be available to the oppressed, and we'd all be moved in a tryst to the levels of resourcing available to the white South Africans.

Well, the opposite was true. When we arrive in 1994, this country starts off with a national debt of over 300 billion rand.[4] The problem is that the national debt was not owed externally but internally—which meant that this new government could not repudiate it. From then on, [with] that discovery of just how desperate our world was, it has been a struggle; we inherited incredible social problems as a nation.

So at this critical moment, these Partnership funds arrive, and they are a stimulus. They produce energy. Never underestimate the significance of energy—where there is no energy there is lethargy, death. Many of our universities, we had no energy. And then along come these friends and they would say, "Put in a proposal." You put in a proposal, and suddenly you've got a gender equity unit that was limping along before, now having ideas: "Let's have a seminar, let's have a conference." The energy returns.

And so despite all the difficulties around us, we get research going again. We start building research clusters, getting people to come and work with us, visiting scholars. The entry of the other, and the opening up of your space to include the other—it's an act of transformation. You're changing yourself. There's a willingness to open, there's a willingness to engage. There's a willingness to accept that others may have some significant knowledge that you do not have, and you're embracing that knowledge.

That's an incredible cultural process, and cultures that are open have every chance of being successful. We had lived in a closed world in South Africa for so long. On our own, it's difficult to shift, it's difficult to move. You're surrounded with so much that you have created as the norm while you were dealing with your problems. Now you have contact with new norms, different ways of seeing, different ways of thinking. The opening up is an incredible impetus to cultural change.

It becomes possible for UWC, locked in a coloured[5] existence, to conceptualise itself as a site of high level intellectual endeavour. It is able to engage, it is able to plan. The transformation is an opening to all kinds of change.

[4] About USD $41 billion at the current exchange rate, but it would have been more because South Africa was experiencing a period of rapid inflation at the time.

[5] The local term for a mixed-race South African.

By the year 2000, the short-sightedness of that stance had become abundantly clear to many. The publication of a report produced by a special joint task force of the World Bank and the United Nations Educational, Scientific, and Cultural Organization that year, entitled *Peril and Promise: Higher Education in Developing Countries*, set forth new arguments for greater investment in universities. "As knowledge becomes more important, so does higher education. Countries need to educate more of their young people to a higher standard," it said in the report. "The quality of knowledge generated within higher education institutions, and its availability to the wider economy, is becoming increasingly critical to national competitiveness."

Turning the clock back to Africa's brief post-independence honeymoon, it would have been difficult to predict such a bleak future. Many of the oldest institutions in sub-Saharan Africa, such as Makerere University in Uganda, the University of Dar es Salaam in Tanzania, and the University of Ibadan in Nigeria, were colonial creations that rose to prominence in the last dying days of Empire and then assumed places of pride in newly independent African republics. South African institutions, such as the University of Cape Town, followed a different trajectory, which will be discussed shortly. But for countries to the north, these were days of fervent nationalism, and a new generation of African leaders were seen as the continent's salvation: "Seek ye first the political kingdom, and all else shall be added unto you," Ghana's iconic founding president, Kwame Nkrumah, exhorted his followers.

"The march of African nationalism seemed invincible. Africa, so it was thought, once freed from colonial rule, was destined for an era of unprecedented progress," writes historian Martin Meredith in his seminal work, *The State of Africa: A History of Fifty Years of Independence.* Universities were deeply tied in with this prevailing ideology, and were seen by many as extensions of the state, duty-bound to serve nationalist aims. These early universities were conceived as essential pivots for national development, yet remained bastions for a small elite. Far from an image of doctoral students working shoulder-to-shoulder alongside rural subsistence farmers in the fields, these first universities were places apart, where students lived on leafy campuses, carefully sequestered from the quotidian cares of the masses.

However, as this early optimism gave way to the crushing dictatorship of Idi Amin in Uganda, a line of military rulers in Nigeria, and long winters of stagnancy and strife elsewhere, universities lost both their funding and their connections to the global academic community. They withered away in isolation, their potential dormant. Though political, social, and economic conditions vary widely across the continent, many of the older universities in Africa, taken in broad brushstrokes, have followed similar historical trajectories: a golden age followed by a period of what can only be termed calamity, and, eventually, the period of recovery and renaissance that is currently underway.

South Africa's story is different, but its universities also endured a period of deep isolation, and awoke to face their own dramatic upheavals. To turn back the clock in South Africa to when the Partnership began

work in 2000 is to recall a deeply unsettling chapter in the history of its universities. Before the end of apartheid in 1994, universities were typically grouped into three categories: elite, English-speaking research universities; well-resourced but parochial Afrikaans-speaking universities; and seething, under-funded universities, often in distant backwaters, which catered to the country's black majority.[6]

The University of the Western Cape, located on a barren strip of land outside Cape Town where thousands of mixed-race South Africans were forced to live, fell into the last category. Throughout the 1980s and 90s, the university community fought apartheid and agitated for equal education for blacks, recalls Brian O'Connell, the current rector. While students and academics focused all their energy on beating their fists against the apartheid edifice, they missed out on new advances and paradigm shifts in technology and research that consumed other universities around the world.

**Over the past decade, the period that concerns this narrative, universities have had to re-conceptualise themselves for a challenging new era.**

When that huge and seemingly impenetrable fortress of apartheid finally collapsed, however, instead of coasting to the easy and prosperous future they had envisioned, O'Connell and others discovered to their dismay that the new government had inherited crushing debt from the apartheid regime, leaving the university bankrupt as well as stagnant.

Seen against this historical backdrop of dysfunction, the accomplishments of universities across the continent today appear all the more remarkable. Over the past decade, the period that concerns this narrative, universities have had to re-conceptualise themselves for a challenging new era. They have had to grow in order to serve new purposes that their founders could never have imagined.

Take Mcebisi, the PhD candidate at the beginning of this narrative. One plant, one bud, one minute grain of pollen at a time, he is helping to plant the seeds—quite literally—for a better future. He represents a new generation of African scientists being trained on the continent that possesses the highest levels of scientific expertise, but also understands the needs and challenges of the small-scale farmers who are the lifeblood of the continent's economies.

While the United Nations Millennium Development Goals, which aim to halve global poverty by 2015, have injected a new sense of urgency into global anti-poverty efforts, the challenges to African universities extend far beyond fighting poverty alone. Several African countries currently enjoy robust rates of economic growth. As prospects brighten, universities are finding creative new ways to support this growth, while also rising to the steep challenges confronting the societies they serve. Africa also faces explosive population growth,

[6] In the South African context, the term "black" can be used to refer to all people of African, Asian, or mixed-race descent, as is the case here.

complex environmental and resource challenges, and the imperatives of building more sophisticated and diversified economies—a project that will require significant contributions in expertise and interdisciplinary research from universities. The spread of fragile democracies across Africa, and the recent collapse of the dictatorship in Egypt, has opened up opportunities for universities, but also poses uncomfortable new challenges for them to test the boundaries of free speech and criticism. These are the rich patterns and textures that form the backdrop for the stories to come.


Faculty of Computing and Information Technology at Makerere University in Uganda.

## Chapter Two

# Setting the Context

**IN A BOOK THAT DEALS WITH ACTORS STREWN ACROSS A MIND-BOGGLINGLY LARGE LAND MASS** of some 30 million square kilometres (the world's second-largest continent, with one billion people living in more than 50 different countries), one runs the risk of overlooking the vast differences between the countries whose universities are featured here. Yet, all the different institutions are caught up in their own versions of the access-quality-financing triangle introduced in the previous chapter. All struggle with brain drain and the challenge of building a new generation of academics. And the common threads of themes such as technology, research, financing, and creative coping mechanisms weave a measure of cohesion into the narrative of the whole.

This chapter is about setting the context. Each country has a unique climate, with its own texture and patterns, to expand upon the kente cloth metaphor, and each university has adapted its own particular "survival" strategies. Yet for all their similarities, the universities in the nine countries featured in this book have faced different kinds of problems and have used different strategies to revitalise themselves. This chapter offers a brief sketch of the higher education landscape in each of the countries profiled in this book to provide the reader with a sense of context and place. The snapshots here are not meant to be comprehensive introductions to national university systems, but are intended as guides that provide context to the stories that follow.

## Quick Stats[1]

| | Egypt | Ghana | Kenya | Nigeria |
|---|---|---|---|---|
| Population | 77.8 million (2010 est., CAPMAS Egypt) | 24 million (2010 est., Ghana Statistical Service) | 38.6 million (2009 census, Kenya National Bureau of Statistics) | 140.4 million (2006 census, National Bureau of Statistics) |
| Gross National Income per capita at PPP | $5,690 | $1,480 | $1,570 | $1,980 |
| Human Development Index | 0.620 (Medium, ranked 7 in Africa, 101 globally) | 0.467 (Medium; ranked 17 in Africa, 130 globally) | 0.470 (Medium; ranked 16 in Africa, 128 globally) | 0.423 (Medium; ranked 25 in Africa, 142 globally) |
| Tertiary education enrollment rate | 30% | 6.2% | 4.05% | 10.2% |
| Number of public and private universities | 18 public<br>17 private | 6 public<br>22 private | 7 public<br>11 private | 27 federal, 36 state<br>41 private |
| Institutions supported by the Partnership for Higher Education in Africa | American University of Cairo<br>Cairo University | University of Ghana, Legon<br>University of Education, Winneba | Kenyatta University | Ahmadu Bello University<br>Bayero University<br>Obafemi Awolowo University<br>University of Ibadan<br>University of Jos<br>University of Port Harcourt |
| Partnership foundations involved | Ford Foundation | Carnegie Corporation<br>Hewlett Foundation | Ford Foundation<br>Rockefeller Foundation | Carnegie Corporation<br>MacArthur Foundation |

[1] Sources for all country information: www.geohive.com; United Nations Development Programme's *Human Development Report 2010*; *Accomplishments of the Partnership for Higher Education in Africa, 2000-2010*. Population information is drawn from the latest estimates and census figures available from national statistical agencies; economic data is from the World Bank, and is adjusted for purchasing power parity. All economic data figures are for 2009 unless otherwise indicated.

| Madagascar | Mozambique | South Africa | Tanzania | Uganda |
|---|---|---|---|---|
| 17.6 million (2004 est., Institut National de la Statistique) | 20.3 million (2007 census, INE) | 49.3 million (2009 est., Statistics South Africa) | 40.7 million (2008 est., National Bureau of Statistics) | 31.8 million (2010 est., Uganda Bureau of Statistics) |
| $1,050 (2008) | $880 | $10,060 | $1,350 | $1,190 |
| 0.435 (Medium; ranked 20 in Africa, 135 globally) | 0.284 (Low; ranked 46 in Africa, 165 globally) | 0.597 (Medium; ranked 9 in Africa, 110 globally) | 0.398 (Low; ranked 30 in Africa, 148 globally) | 0.422 (Medium; ranked 26 in Africa, 143 globally) |
| 3.4% (2008) | 1.5% | 15.4% | 1.48% | 3.69% |
| 6 public | 17 public<br>21 private | 23 public<br>49 private | 13 public<br>21 private | 5 public<br>11 private |
| University of Antananarivo | Catholic University of Mozambique<br>Eduardo Mondlane University | Rhodes University<br>University of Cape Town<br>University of KwaZulu-Natal<br>University of Pretoria<br>University of the Western Cape<br>University of the Witwatersrand | University of Dar es Salaam<br>Sokoine University of Agriculture | Makerere University |
| MacArthur Foundation | Ford Foundation<br>Rockefeller Foundation | Carnegie Corporation<br>Ford Foundation<br>Hewlett Foundation<br>Kresge Foundation<br>Mellon Foundation<br>Rockefeller Foundation | Carnegie Corporation<br>Rockefeller Foundation | Carnegie Corporation<br>Ford Foundation<br>Rockefeller Foundation |

## Egypt: Access and Accountability

At first glance, Egypt seems an unlikely candidate for inclusion in a project such as this. This far-northern, Arabic-speaking country is usually bracketed in with the Middle East, divided from sub-Saharan Africa by the massive geographical buffer that is the Sahara Desert, as well as a conceptual wedge that drives the two regions into separate categories. However, Egypt's universities are locked into many of the same struggles facing sub-Saharan universities, starting with the challenge of catering to a rapidly growing youth population. Roughly 60 percent of the population is below the age of 30, according to the World Bank. As underscored by the active role of young people in the political uprising of early 2011, the country's youth are angry and disillusioned with widespread unemployment and lack of opportunity (even for university graduates). While the demand for higher education is enormous, the quality of instruction is often low.

The impact of Egypt's revolt on higher education (as well as on the country at large) was still unclear as this book went to press, but the transition could bring significant change to a landscape where issues of access, quality, financing, and the power of the state have long been fiercely contested. The Egyptian Constitution's guarantee of a right to free higher education, for example, was taken for granted in the past, but appears to be a shakier prospect under current harsh economic conditions. Higher education research published by the Economic Research Forum[2], a Cairo-based independent think tank, makes the case that the policy of free higher education is not only financially untenable, but also discriminates in favour of the wealthy, who enjoy disproportionate access. Meanwhile, an informal sort of privatisation has crept into the system as lecturers and teaching assistants sell their books and notes to students, and in some faculties students pay fees for the privilege of completing their coursework in French or English.

As in other African countries, the humanities and social sciences bear the brunt of the overwhelming student numbers. The state determines the numbers of students admitted into university faculties each year. As a result, academics say, the "low-cost" humanities and social sciences faculties inevitably become dumping grounds for huge numbers of ill-prepared lower-middle class students, who spend four years as chaff running through the mill until they are spewed out, ill-prepared as ever, to compete in Egypt's stagnant job market.

Universities are, however, increasingly putting new quality assurance mechanisms in place, while the government has been working on compiling and publishing new performance indicators. Until recently, a lack of available data posed one of the greatest obstacles to opening a substantive debate on how to develop higher education in Egypt, academics say. But if the new government continues the commitment to publishing extensive data and indicators, the tools for meaningful debate and reform will materialise.

[2] See http://www.erf.org.eg/cms.php?id=publication_details&publication_id=1309

## Ghana: The Next Generation

Ghana has long held deep symbolic importance on the continent. The nation gained independence from Britain in 1957, leading a procession of other African colonies in the struggle to cast off foreign rule and establish nation states. Today, Ghana has a well-developed university system, with a number of different public and private universities and a slightly higher tertiary enrollment rate than most sub-Saharan countries.

In the midst of the optimism that defined Ghana's first decades as a nation, universities were seen as important cornerstones of national development, and enjoyed the according prestige. In those heady days, former vice-chancellor of the University of Ghana Ivan Addae-Mensah recalls, "The starting salary of a lecturer was higher than that of a deputy minister." Addae-Mensah adds that in the current era, by contrast, "A lecturer earns only a fraction of what a middle-level employee in a bank earns."

Although Ghana has recently enjoyed remarkable political stability, the country suffered from economic ups and downs that challenged the viability of universities over the years, particularly during the 1980s and 90s. There was a time when the University of Ghana had to take bank overdrafts in order to pay salaries. As the situation improved in the new millennium, the Ghanaian higher education system was challenged to develop strategies to overcome the lean years of chronic under-financing and investment in universities.

Despite Ghana's relative strengths, the weak overall capacity of the secondary and post-secondary systems has produced an inadequate response to a growing youth bulge. In Ghana, as elsewhere, the higher education sector expanded rapidly, giving rise to widespread complaints about the quality of instruction. Research output also suffered during the lean years, although prospects have brightened with a recent commitment from the government to establish a new fund to boost research. After a long slump, the postgraduate student numbers at the University of Ghana are starting to rise again, although the university has not yet reached its targets of 25 percent postgraduate students or a 60-40 balance in the sciences versus the humanities.

The problem of training and recruiting the next generation of academics is another key issue for Ghana that is shared across the continent. The prestige and the financial rewards of academe have fallen in real terms, making university positions less attractive for young, well-educated Ghanaians. Ghana hosted the Partnership's University Leaders Forum in 2008, which drew academics and university leaders from around the continent to shine the spotlight on issues of training and retaining the next generation, a critical issue in African higher education that will be examined in Chapter 8.

### Kenya: Seizing the Day

Kenya's higher education system has rapidly expanded and diversified over the last decade. Like many African countries, Kenya faces an acute crisis of access that has triggered the expansion and proliferation of both public and private universities, which vary widely in quality. The country's youth bulge is even more staggering than Egypt's or Ghana's, with 74 percent of its population under the age of 34, and 64 percent below the age of 25.

Kenya, Tanzania, and Uganda have all embarked on the regional integration of their higher education systems, as part of a larger process of political and economic integration in the East African community. The plan is to introduce a new regional degree and credit system that will be recognised across these countries—a major step towards harmonising the higher education systems. Kenya has also emerged as a hub of technology-driven innovation in Africa. With the design of an e-readiness framework for higher education institutions, the Kenya Education Network Trust (KENET), a non-profit organisation profiled in the following chapter, has been instrumental in helping universities maximise the benefits of connectivity, which has equipped them to play an important role in developing the country's information and communication technology sector.

Kenya has ridden a political roller coaster over the past decade, and its universities have profited and suffered from these highs and lows accordingly. A decade ago, donors (including the Partnership) passed over Kenyan universities, repelled by the notoriously corrupt rule of then-president Daniel Arap-Moi. A political transition in 2003 accompanied new waves of growth and optimism, which took a hit as political violence consumed the country in early 2008, in the wake of disputed presidential elections. The tribal nature of the conflict, in which more than 1,000 people were killed and 350,000 displaced, spilled over to university campuses, and was a sobering reminder to many of the fragility of the African nation-state. Nevertheless, Kenya's strong recovery has reinforced its position as the undisputed economic powerhouse of East Africa.

In this environment, Kenyatta University, the country's second-oldest university after the University of Nairobi, and the only Kenyan university to receive support from Partnership foundations, has transformed itself from a sleepy institution focused on teacher training into a dynamic and thriving university. In an effort to make higher education more accessible across the country, and under pressure from the government, it has branched into new disciplines and opened seven satellite campuses; this growth has not been without its challenges.

### Madagascar: Battling Instability

Higher education in Madagascar has suffered from serious under-investment, which has been exacerbated by ongoing political instability. Madagascar has effectively become a pariah state, as the current government came to power in a coup staged in March 2009 and faced down another attempted coup in late 2010. Academic activity meanwhile slowed at the University of Antananarivo, the only institution in the country to receive support from Partnership foundations, as academic staff went on strike in 2010, accusing the government of failing to deliver a substantial portion of the university budget and reneging on promises to provide funding to support research.

Under-investment in Madagascan higher education has particularly hindered research and the replacement of academics—two areas where donor support fills critical gaps. The problem, academics say, is not a shortage of willing candidates, but rather the government's refusal to hire more academics.

The University of Antananarivo did hire some 40 new lecturers in 2008, yet academics say the university has hired very few academic staff in the last 30 years, exacerbating an impending "next generation" crisis. As a stopgap measure, university departments have, in some cases, scraped together donor funding in order to temporarily retain postgraduates as research and tutorial assistants.

Madagascar was unusual in the context of the Partnership, in that support came from only one source, the MacArthur Foundation, and focused specifically on conservation. Grants supported research, infrastructure, and the next generation of academics in the areas of conservation biology and forestry.

As producers of research and expertise, universities in Madagascar have a crucial role to play in conservation efforts, which are increasingly threatened by the political instability. The stakes are particularly high because of Madagascar's unique biodiversity. Ninety percent of its plants and ninety-three percent of its mammals are found nowhere else in the world. Yet only eight percent of Madagascar's land remains pristine. It is to these increasingly isolated and threatened pockets of forest (and marine and coastal habitat) that the country's rich biological treasures are confined.

A number of donors have pulled out of Madagascar because they consider the current government illegitimate. While the former government made commitments to increase protected areas, the current situation shows worrying signs of degeneration, with the escalation of illegal logging in protected areas, for instance. While the political situation makes funding for researchers increasingly tenuous, the increasing lawlessness is further jeopardising research by making it more dangerous to work in protected areas.

Bayero University
Kano, Nigeria.

The University of
Dar es Salaam, like
many other African
universities, has
struggled to
accommodate
growing numbers
of students with
dwindling resources.

University of Ghana,
established in 1948
as the University of
the Gold Coast, is the
second university in
British West Africa,
after the University
of Ibadan, Nigeria.

The University of the Witwatersrand in South Africa has redefined itself in the post-apartheid era.

Neglected under apartheid, the University of the Western Cape has flourished in the South African higher education landscape.

### Mozambique: A University for Peace

When its ruinous civil war ended in 1992, Mozambique was one of the world's poorest countries, strewn with land mines and displaced people, and at or near the bottom of the list on just about every development indicator, from schooling to sanitation. As of 1997, a mere 0.3 percent of the college-aged population[3] was enrolled in higher education, and as late as 1992, the Eduardo Mondlane University, situated in the capital city Maputo, offered the only access to university education.

Facing critical shortages of educated professionals, Mozambique made higher education a priority, embarking on ambitious programmes to expand access by opening new universities and polytechnics. The country invested in modernising its information and communication technology infrastructure and expanding research. Since independence, Mozambique has trained some 600 new PhDs, mostly through "sandwich" programmes where doctoral candidates receive part of their training at home and part of it abroad. But the country still needs far more academics and advanced-level professionals if it is to consolidate its post-war gains.

Having made progress with increasing access to higher education, particularly in other areas of the country, one of the key challenges today is to build capacity for postgraduate training in Mozambique, says Orlando Quilambo, the academic vice rector at Eduardo Mondlane University. Mozambique has been able to attract foreign investment and enjoy rapid economic growth, but poverty remains deeply entrenched, particularly in marginalised areas of the country. One key area where the country has made headway is in expanding higher education to these regions. This issue featured strongly in the negotiations to end the country's civil war. An instrumental peace-broker was Jaime Pedro Gonçalves, the Catholic Archbishop of Beira, an important port city and rebel stronghold in central Mozambique. Gonçalves promised that the church would build a university to serve people in the under-developed central and northern provinces.

And so was born the Catholic University of Mozambique, a university whose inception represented the promise of opportunity and prosperity in one of the most impoverished and under-served areas of the world. Given its mission of widening access, the university committed to opening different campuses in each of the country's six northern and central provinces. In 1996, it opened its doors to some 60 new business students in Beira, and another 60 law students in the far northern town of Nampula. In the years that followed, the university has made impressive strides, opening new faculties and campuses across the region and expanding its capacity in postgraduate training.

[9] Source: *Higher Education in Mozambique: A Case Study*. http://www.foundation-partnership.org/index.php?id=21-

## Nigeria: A Sleeping Giant Awakens

Nigeria is the behemoth of Africa, in higher education and otherwise. With some 140 million people, it is the most populous nation in Africa by far, and the eighth most populous nation in the world. Approximately one out of every seven Africans is Nigerian. And an overwhelming proportion of that number is young and hungry for education, particularly higher education.

With 104 universities—27 federal, 36 state, and 41 private—Nigeria's university system is also massive when compared with those of other African countries, accommodating as many as a million students by some accounts. But supply still falls far short of demand. For every three or four high school graduates who qualify to enter university, the system has space for only one. To help ease the demand, the government recently decided to open nine new federal universities and convert two additional polytechnics into federal universities.

In short, Nigeria is a country of extremes, and its higher education system reflects all of the nation's dynamism, diversity, conflict, tension, and potential. "You could not talk about transforming higher education in Africa while ignoring Nigeria," says Narciso Matos, the former secretary-general of the Association of African Universities, who also chaired the International Development Programme at Carnegie Corporation between 2000 and 2007. "There is just the sheer size of the system, but also the capacity, because along with all the problems they have, there is so much capacity in that country."

Nigerian universities were once internationally competitive, but their fortunes took a nosedive as the country was consumed by civil war and a succession of coups and repressive military regimes. During these years, a fiercely anti-intellectual climate prevailed. Universities were intimidated and under-funded, although their enrollments continued to grow.

With the return of civilian rule in 1999, the new government pledged to restore the independence and democratic governance of universities, and significantly increased funding for higher education. The annual higher education budget grew by 643 percent between 1999 and 2007, from $105 million to $676 million.

For the country's leading institutions, which include the University of Ibadan, Obafemi Awolowo University, and Ahmadu Bello University, the arrival of democracy provided a window of opportunity for renewal. For newer universities, it provided a relatively stable foothold on which to build. However, Nigeria's fearsome reputation for corruption and instability remains an obstacle to recovery and growth. Academic unrest also remains an ongoing issue, as was emphasised when the country's academic staff union called a strike in 2009 that shuttered most federal university campuses for six months. Investment from Partnership foundations has supported a number of Nigerian universities in overcoming their deep isolation and trauma, and in leveraging opportunities brought by a new political era. The country's ongoing volatility, however, was underscored in the violent aftermath of elections held in April 2011, as hundreds of people were reportedly killed in riots and religious clashes.

## South Africa: Beyond the Rainbow

In South Africa, the defining moment that set the country's universities on a new course was the collapse of apartheid and arrival of multi-racial democracy in 1994. The country inherited a deeply skewed higher education system, divided along racial lines, with a clutch of well-resourced universities catering to the white English and Afrikaans-speaking minorities, and a separate group of poorly-performing and under-resourced universities catering to South Africa's black communities and former Bantustans[4].

Confronted with these inequalities, the country faced many tough questions: What kind of system should it aspire to? How could it create a fair system given the national landscape and enduring legacy of inequalities? How could it lift standards at the "historically disadvantaged" universities, as they became known, without sacrificing quality at the well-functioning ones? How could decades of intellectual isolation under apartheid be overcome in order to flourish in a new era of globalisation?

In 2003, South Africa sought to address its problems in higher education by instituting a controversial set of mergers, consolidating the country's 36 national universities into 23. The move was aimed at strengthening the weaker institutions, narrowing racial divisions, and minimising unnecessary duplication. Culturally, it threw conservative Afrikaans-speaking campuses together with barely-functional Bantustan universities. A decade later, the results have been mixed: some new institutions are thriving, but others are dysfunctional, and inequalities remain as deeply embedded in the system as ever.

Support from Partnership foundations to South African universities focused mainly on the top-tier institutions, a decision consistent with its continent-wide focus on funding universities that already had certain levels of capacity to absorb and use grant funding to maximum effect. This focus nevertheless attracted critics. South Africa's top universities (the University of Cape Town leads the continent in the global rankings)[5] are potentially world class, but for all their growing links with the African continent, they have yet to find ways of engaging meaningfully with South Africa's more poorly-resourced universities so that all boats may rise.

Elite universities, meanwhile, are grappling with their own processes of transformation. The racial composition of universities has shifted markedly over the past decade, and increasing numbers of black students from impoverished backgrounds are accessing higher education, thanks in large part to an extensive financial aid scheme made available by the government. Black representation has also climbed at all levels of university administration, although racial transformation of the professoriate has been a much slower process. Widespread problems in the South African schooling system also present a formidable challenge for universities, as large numbers of students enter university lacking adequate academic preparation.

[4] "Bantustan" is the term for the separate homelands that were created by the apartheid state, small quasi-independent areas within South Africa, states within the state, mostly in neglected rural areas, where millions of blacks were banished during apartheid.

[5] UCT is currently ranked number 107 globally by the *Times Higher Education* World University Rankings 2010-2011, and is the only sub-Saharan African university to feature consistently in the newspaper's top 200.

The University of Cape Town, in South Africa, is one of the continent's oldest and most prestigious universities.

### Tanzania: Managing Rapid Growth

Tanzania's oldest and most prestigious institution, the University of Dar es Salaam, exemplifies the historic tensions that many African universities have faced in negotiating their relationships with the state through periods of political and social transition. The country's experiment with socialism under the leadership of post-independence president, Julius Nyerere, and subsequent transition to a free-market economy posed deep challenges for the University of Dar es Salaam, which received the bulk of foundation support to Tanzania over the Partnership's lifetime. The university has dominated the country's higher education landscape historically, and continues to do so, even as other public and private universities, led by the Sokoine University of Agriculture (which also received some Partnership funding), began to emerge in the mid-1980s and have since gone on to experience rapid growth.

Although Tanzania suffered no calamitous civil war or explosive coup, the country was rocked by economic instability in the transition to a market-based economy and also experienced rapid population growth—both of which tested the very foundations of the university. Tanzania, like other countries in this book, faced the decline of its flagship university in the 1980s, followed by a decade of grasping for improvement in the 1990s. In the early days, the University of Dar es Salaam was seen as an extension of the state in many ways. An elitist image did battle with a conception of the university as a developmental organ, closely intertwined with, and effectively an extension of, the goals of the state, according to publications documenting the university's history.

From the early 1990s, the university entered a period of rapid change and growth, while coping with diminishing financial resources. The university faced a particular challenge in finding new sources of revenue to reduce the shortfall, often in the face of strong resistance from traditionally-minded academics who held that the state alone should provide for higher education, recalls Matthew Luhanga, who served as vice-chancellor at the time.

The Tanzanian university system has seen rapid recent growth, yet, with only 12 public universities and a handful of new private institutions, still lacks capacity to serve large numbers of youth hungry for higher education. As the University of Dar es Salaam increasingly competes with new public and private higher education institutions, it also has the opportunity—and indeed the obligation—to distinguish itself as a research university responsible for training the next generation of academics to staff these new institutions.

## Uganda: Innovations at Makerere

Makerere University is Uganda's flagship institution, and has long dominated the country's higher education sector. It was also the only Ugandan university to receive support from Partnership foundations. While Makerere leads the country and the region both in reputation and in rankings, new public and private universities are increasingly proliferating in Uganda as they are elsewhere, posing a challenge for Makerere to boost its postgraduate training capacities to provide academic staff for newer institutions. Uganda's higher education system, comprised of both public and private universities, has expanded in the past decade, although not as rapidly as in neighbouring countries such as Kenya.

Once known as the "Harvard of Africa", Makerere journeyed from the brink of collapse in the 1970s to prominence as an innovative university in the new millennium, with a new orientation towards postgraduate training and research. Makerere's initial flourishing was cut short by the brutal dictatorship of Idi Amin during the 1970s, a trauma which scarred the university deeply. The university emerged from dictatorship to face new financial challenges, as Uganda's cash-strapped government chose to invest its meagre resources in primary rather than higher education.

To address the shortfall, Makerere began admitting paying students in 1992. Since then, it has followed a sharp growth trajectory, transforming from a small, elite student body of 3,000 fully subsidised students, to a large—and somewhat unwieldy—student body of 35,000, nine out of ten of whom pay fees. While many have accused the university of outright "commercialisation", it ultimately chose a path that helped it to survive a sustained period of tumult. Many academics now complain that academic standards have dropped, as admissions criteria have changed to reflect not only the best students, but also those who are less qualified but can afford to pay. Nevertheless, many argue that the university's transformations have strengthened it in other ways.

The introduction of a programme called the Innovations at Makerere Committee (I@Mak) helped to sow deep changes and align the university with a new rural anti-poverty programme adopted by the government. Makerere has also committed to increasing its research output and to boosting postgraduate training, in part to help supply fresh academics to new public and private universities springing up across Uganda. Despite its challenges, it retains many long-serving and committed academics, who are bullish about its future. "In a way, it is like a very complex human being," says Lillian Tibatemwa-Ekirikubinza, the deputy vice-chancellor for academics. "It's an overwhelming environment, but there is a way in which it captures you, and it becomes very personal. Whereas sometimes I complain about Makerere, I get very offended when I hear about other people complaining."

The new building that houses the ICT lab at the University of Ghana.

Chapter Three

# The Invisible Thread

**Universities are the bellwether for democracy and development.**

– Jonathan Fanton, former president of the MacArthur Foundation

**THIS BOOK FOCUSES ON THE PERSPECTIVES OF INDIVIDUALS AT AFRICAN UNIVERSITIES WHERE** Partnership foundations gave support, rather than on the Partnership itself. This chapter, however, is the slight exception to that rule, because it touches on the interplay between the universities and the foundations, as well as the processes by which major areas of Partnership investment came to be defined. In that sense, the Partnership is the invisible common thread that weaves through the background of this entire narrative, stitching together the various individuals, universities, and themes of this book. From the universities' perspective, the Partnership, along with its constituent foundations, was a background actor that contributed financial and intellectual resources, as well as the support of its substantial networks, to the complex project of revitalising higher education in Africa.

The Partnership was initiated at a time when visionaries within universities across the continent were steering their institutions with purpose and vitality in new directions, benefiting from an era of increasing political stability, economic growth, and democratisation. In this environment of cautious optimism, universities seized the chance to turn the page after the devastation of the 1980s and 90s, and regain control of their destinies by launching new strategic plans to serve as the blueprints for bold institutional reforms. Yet they still faced the challenge of overcoming the prevailing ideology, espoused by governments and donors alike, which held that higher education was a bad investment for cash-strapped African governments with "bigger" problems.

The inception of the Partnership signalled a new willingness on the part of donors to break with the lock-step of convention.[1] "The Partnership addressed a huge gap in African education policy. On the one hand, governments don't invest enough in higher education, but also donors themselves are not attracted to higher education," says Pundy Pillay, an independent economist focused on education.

This chapter looks at how various actors within universities harnessed the resources and strategic networks offered by the Partnership in order to articulate priorities and develop sweeping new courses of action. It unfolds in two parts, dealing with two major areas of focus that emerged from early meetings and consultation processes facilitated by the Partnership: higher education research and advocacy, and information and communications technology (ICT). Both focal areas addressed core challenges for the universities and attracted the bulk of Partnership investment.

## Part One: What Is a University for?

It is perhaps important to note that some of the Partnership foundations were initially drawn to their work with universities in Africa not by a particular interest in higher education per se, but because their ongoing work in other areas, ranging from agriculture to peace-building, led them to the halls of academe. Given that each foundation has its own targeted set of interests and priorities, it is significant that each came to see the value of strengthening higher education. As the producers of new knowledge and skilled people, universities are complex organisms that play complex roles, and all of their diverse potential is increasingly being recognised as an essential driver for the development of vibrant and prosperous societies in the 21st century.

This section will explore how early case studies of national higher education systems, commissioned by the Partnership as one of its earliest interventions, paved the way for later work developing clear sets of data and indicators that universities could use to guide planning and policy formation. From the beginning, Partnership foundations committed to helping build an empirical base that could serve to illuminate the role of higher education in African development, as well as to document institutional changes. The production of the case studies—and the continent-wide network of higher education researchers that subsequently developed—offered African researchers a forum not only to gather crucial data and perspectives on the state of their national higher education systems, but also to pose tough and important questions about the very meaning of higher education in fragile democracies pressed by development challenges.

[1] It should, however, be noted that certain donors such as Swedish, Norwegian, and Dutch governments continued to support higher education in Africa through the period of general neglect.

## A Dearth of Data

That universities could serve as important drivers for development was a key insight brought forth by the renowned social and communication theorist Manuel Castells in his 1991 paper called "The University System: Engine of Development in the New World Economy"[2]. As the Partnership was getting off the ground nine years later, the African continent was still far from embracing this mind-shift. In consequence, one initial, and substantial, obstacle to developing consensus about an agenda for African higher education was the fact that there existed little comprehensive data or research on African universities and higher education systems—much less their impact on development.

It is not that there was no scholarship on higher education in Africa at all. As the African feminist scholar Jane Bennett noted in her summary of the state of African higher education at the dawn of the 21st century, in the journal *Feminist Africa*:

> *In 1960, sub-Saharan Africa boasted 13 universities, 7 of which were inside South Africa. In 2002, there are about 300 universities on the continent[3]....A cadre of African intellectuals has consistently monitored, interrogated, and analysed this expansion, taking note of the unravelling tensions between local resources and globalisation, between the need for African graduates and the increasing difficulty of assuring employment for those graduates, and between the epistemological need for contextually-driven knowledge and the lure of North-centric analyses of science, labour, government, society and identity.*[4]

However, this research on African higher education itself was often conducted in relative isolation, and in rare and sporadic publications. It was often "a bit of this, a bit of that", without much of the larger context, says Gerald Ouma, a higher education researcher who coordinates the higher education master's degree programme at the University of the Western Cape, in South Africa. To gain a clearer understanding of the higher education landscape in various countries, the Partnership commissioned a series of case studies looking at key issues in Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania, and Uganda. The studies for each country were authored by teams of researchers, many of them local, who examined not only the challenges of their systems, but also their strengths and creative coping mechanisms. The studies also situated the dramatic upheavals and transformations of African universities within a larger national and international context, linking, for example, the neo-liberal structural adjustment policies espoused by the World Bank and adopted by African governments to the precipitous decline in funding of African higher education.

[2] See http://www.greenstone.org/greenstone3/nzdla=d&d=HASH015d118a9ec09212981dca8b.7&c=edudev&sib=1&dt=&ec=&et=&p.a=b&p.s=ClassifierBrowse&p.sa=

[3] The fifth edition of the Guide to Higher Education in Africa, published in 2010 by the International Association of Universities, documents 950 institutions of higher education in 51 African countries.

[4] See http://www.feministafrica.org/index.php/exploration-of-a-gap

"If the 1980s were a decade of decline, then the 1990s can be described as a decade of groping for solutions," wrote the authors of the Tanzania case study. In their own ways, the case studies all delivered fresh expositions of the complex milieus in which universities operate. They examined ways in which universities are caught up in the dynamic ripples and undercurrents of their national political economies as well as their own internal cultures. This is of course true of higher education everywhere, if not always to the same extent—but seldom before had African researchers had the opportunity to map out these complexities in a comprehensive way. As the Ghana case study put it:

> *Universities in Ghana have been challenged both internally by their own publics and externally by governments and communities to address these critical issues: expanding access with equity; quality and relevance; knowledge production and its application to the problems facing society; sustainable funding and resource management, all of which have called into question the roles and mission of universities in Africa.*

**Scholars hoped that new understandings of the dynamics of higher education and its interactions with outside players would yield new tools to be used by universities, governments, and, indeed, donors.**

In short, says Ouma, these case studies laid the groundwork, providing a clearer, sturdier, and more comprehensive foundation of knowledge and understanding, upon which further studies of African higher education could build. "What the publications did was infuse new intellectual vigour and interest" into the discipline, says Ouma. "It was a beginning point for upcoming researchers like myself."

### A Network for Higher Education Research and Advocacy

Scholars inspired by Castells' work on the impact of higher education on development, mentioned earlier in this chapter, began to play with the idea of creating a network that would facilitate a deeper and more comprehensive investigation of the topic. They hoped that new understandings of the dynamics of higher education and its interactions with outside players would yield new tools to be used by universities, governments, and, indeed, donors such as the Partnership itself and its constituent foundations. These tools could be used to hammer out new strategies to shape the nature of engagement between higher education and society in order, for example, to deepen the impact of higher education on poverty reduction efforts.

The result was the Higher Education Research and Advocacy Network in Africa (HERANA), an affiliation of scholars in a range of disciplines, including sociologists, economists, and higher education scholars such as Ouma, scattered across Africa (plus a few in Norway and the United States). HERANA is coordinated by the Centre for Higher Education Transformation (CHET) in Cape Town, South Africa, and has received funding from Carnegie Corporation, Ford Foundation, The Kresge Foundation, and Rockefeller Foundation.

## voices of change

**Higher Education and Development**
Pundy Pillay, independent education economist and senior researcher for HERANA

Governments don't seem to have bought into the notion that higher education is absolutely vital for the development of poor countries. They think it's a rich country thing: "We must do basic education, they must do higher education"—whereas the evidence points very much to the fact that…it's no [longer] an either/or situation.

They are still locked into this model that says you have to follow some kind of sequential pattern of development. Because you are poor and your economy is based on producing agricultural products and basic manufacturing, you don't actually need to do anything beyond primary education.

But the economic growth model of the 21st century is completely different to the Stages of Growth Model that industrialised countries went through. If you look at middle income countries like China and India, you will see that there are both developed and developing economies within those countries. When people talk of India, they say [it] is an IT economy, but 70 percent of the people are engaged in rural agriculture. That's the argument we have been making in the HERANA project.

We are not having the kind of social transformation needed in our societies. You have this obsession with, "Well, if we increase economic growth, then everything else will fall into place." All of these economies are growing. But what has happened to poverty and inequality, let alone the high-level things such as innovation and the knowledge economy?

Two primary take-home lessons from the project so far, says Nico Cloete, the director of CHET and a lead HERANA researcher, are: first, that there are many different and often contradictory notions, both within universities and amongst politicians, of what higher education means for development; and second, that there is little coordination of government policies on higher education. The project's aim is to provide hard data that allows all of these actors to engage in higher education issues with more clarity and a common basis for understanding.

The network's ongoing research over the past several years has helped to define and explain the higher education landscape, says Cloete. Working on a number of distinct projects, HERANA researchers have begun to collect and interpret data from different universities, moulding this dispersed information into solid indicators to track change, progress, and other trends over time.

One of HERANA's flagship projects has been to gather indicators for universities in eight different countries that offer a comparative picture of how different institutions and countries are faring in terms of research output, sustainable financing, and other measures. According to this study, Mauritius is one country that shows signs of fruitful and concerted development, and has enacted policies that other countries might learn from. "Some countries must lead. South Africa, Mauritius, and Kenya are examples of countries that have the resources to show the way forward," says Pillay.

## The Pact

Another important area that the project has investigated is how the "pact" that exists between universities and society everywhere plays out in Africa. In an ideal situation, universities form one strand of a triple helix that aligns their work with that of government and the private and non-governmental sectors, forming the cornerstone of a vibrant society and spurring economic and social development. The architecture of the helix positions each strand to complement and uphold the integrity of the others, providing the framework, for example, to ensure that universities produce graduates who have the kinds of skills that employers need, and that they produce the kinds of research that governments, industries, and NGOs can use.

Stanford University's role as a driving force behind the massive explosions of creativity and technological innovation that fuelled the rise of Silicon Valley is a prime example of this triple helix in action. There was no reason, apart from the presence of a world-class university, why a few sleepy towns located at the southern end of the San Francisco Bay should have morphed into what is now the epicentre for such global juggernauts as Apple, Cisco, eBay, Facebook, Google, Hewlett-Packard, Intel, and Oracle.

HERANA has helped to provide a global context for looking at the African higher education situation. Pillay, also a senior researcher for HERANA, produced a case study on three different countries and regions that have successfully linked higher education with economic development: Finland, South Korea, and North Carolina. All three systems are examples of well-functioning pacts between universities, governments, and the private sector, he says, and offer many insights for African universities to draw from.

In African higher education, however, the "pacts" that exist between universities, governments, and society are often deeply flawed or dysfunctional, says Cloete. A lack of coordination amongst the different groups sows confusion in the landscape, resulting in a lack of clear consensus about what universities should be, or what they should do. Many universities, caught in vicious cycles of under-funding, also do not perform as effectively as they might, and, furthermore, fail to communicate the relevance of the work that they do perform, thus masking their vital importance and seemingly justifying the under-investment in the first place. This conundrum, researchers say, has only been made worse by the lack of available data with which to make a case.

Many governments' historic neglect of higher education also stems in part from political leaders' ambivalence about the role of academics as critics of government itself, says Ouma. Now, as democracy solidifies in a number of countries, that old dynamic is slowly shifting. Increasingly, universities are forging new kinds of relationships with governments—relationships that are no longer guided by narrow, nationalist objectives, but are more symbiotic and synergistic. While a number of obstacles remain to forging such relationships, changes are happening. From programmes within universities that cater specially for government employees, to new approaches in technology incubation centres that link higher education with commerce, a number of examples will be visited in the chapters ahead.

## Part Two: Of Bandwidth and Backbones

While the Partnership's case studies helped ignite action and deepen the understanding of higher education issues by bringing together groups of scholars, the common struggles that universities faced to gain access to precious bandwidth emerged as a central organising theme for the Partnership and eventually served as perhaps its most significant contribution to African higher education. In this section, we will look at how the early efforts of universities to pool their resources and secure better access to the Internet helped a number of institutions to leapfrog into the digital age, and harness the power of technology to transform teaching, learning, university management, and research. We shall also see how these early processes helped to galvanise new waves of advocacy for ICT access on the continent.

Universities of the twenty-first century are fundamentally globalised and connected places. The rise of the Internet brought the barriers of time, space, and communication crashing down, enabling researchers on different continents to contact and collaborate with one another instantaneously, and putting a dazzling wealth of resources for teaching, learning, and research at their fingertips.

**Universities of the twenty-first century are fundamentally globalised and connected places.**

While national crises and the withdrawal of higher education funding strangled the growth of African universities into the 1990s, the rise of the Internet, with its promise of global connectivity, held out a distant lifeline. However, as universities in the developed world harnessed the power of the Internet, and were profoundly transformed by its vast potential to connect people and transfer data around the globe, African universities faced a host of obstacles to accessing this new frontier. To academics sitting in Accra and Lagos, it seemed as though the Internet was a vast and powerful tidal wave washing over the globe, whose flow was blocked by thick concrete walls surrounding Africa, allowing only the thinnest trickle of information to seep in or out.

The physical infrastructure was simply not there. For much of the continent, expensive satellite links offered the only means of connectivity. Fibre-optic cables, the arteries through which information flows, were in short supply. Bandwidth, the capacity to transmit information through the infrastructure, was limited and prohibitively expensive. While years of neglect and disintegration had left most African universities poorly equipped for the digital revolution, national infrastructure constraints and regulatory regimes threw up further roadblocks, while national telecommunications monopolies kept the costs of connectivity prohibitively high.

"ICT was evolving at all the universities around the world, and there was no way we could use our own resources to bridge this gap," recalls Mumuni Dakubu, a professor of chemistry who is playing a leading role in driving ICT at the University of Ghana and in Ghanaian higher education. Before the turn of the millennium, the University of Ghana had perhaps a dozen working telephone lines. When email first arrived on campus, the academic staff would line up in the library to send and receive their messages, Dakubu recalls.

## The Bandwidth Consortium

As mentioned, the greatest hurdle preventing African universities from harnessing the digital revolution was the restriction of bandwidth. While developed countries were busy laying newer, faster generations of fibre-optics, many African countries were still stuck at the stage of installing rudimentary landline telephone networks. At Makerere University, for instance, people joked about how performing a simple download provided an opportunity to enjoy a leisurely cup of tea.

"The starting point for ICT at Makerere was the faculties which had linkages with SIDA[5] in Sweden. Those got connected fast. All the university buildings were connected to the fibre backbone, but beyond that all the responsibility fell to the faculties. [The faculties] who had a research collaboration outside could get funding, and [the faculties] whose leadership was more aware and creative and knew how to access resources—those came on second," recalls Francis "Tusu" Tusubira, the founder and former head of the Directorate of Information and Communication Technology at Makerere. Everyone else was left out in the cold.

The extent of the problem across different campuses revealed itself in a Partnership-supported meeting in Addis Ababa in 2002, when "attendees said that they could not take action on nearly every single agenda item presented because they did not have the bandwidth to do so and could not afford to get it."[6] Increasingly, universities were being squeezed between the need to adopt new technologies, and their inability to afford them. After the meeting, they decided to pool their resources in order to negotiate better access to bandwidth for all.

In April 2005, the Partnership announced the creation of the Bandwidth Consortium, a group of 11 universities and two higher education organisations that had struck an agreement with a satellite-based Internet service provider, Intelsat, to buy bandwidth in bulk at a third of the price, which the Partnership subsidised further. At face value, the initial goals of the Bandwidth Consortium were straightforward and fairly modest: it would be a bridging mechanism that allowed universities to sink deeper tap roots into the flow of connectivity that was passing them by.

But if the objective appeared simple, the reality was anything but. The Bandwidth Consortium involved bringing together technology leaders from far-flung campuses who had never met one another, and engaging in aggressive negotiations with service providers. Nothing like it had ever been attempted before. Bringing the consortium into fruition was a painstaking three-year process, involving extensive negotiations with the prospective host institution, and lengthy and complex interactions between the universities, bandwidth providers, government officials, and foundation representatives—and new management challenges appeared once the consortium was in operation.

[5] The Swedish International Development Cooperation Agency.

[6] "A Case Study of the Partnership for Higher Education in Africa: Lessons from a 10-Year Funder Collaborative," by Susan Parker, www.foundation-partnership.org/pubs/pdf/phea_case_study.pdf

"The Bandwidth Consortium came at a crisis time, when it was impossible to find bandwidth at a lower cost," recalls Nora Mulira, the current head of the Directorate for ICT Support at Makerere. In the first three years, universities participating in the Bandwidth Consortium collectively saved $19.7 million in connectivity costs, and were able to take advantage of faster connections, helping to accelerate uptake amongst university staff and students, and laying the groundwork for further infrastructure development.

### Bandwidth Today

Initially, Partnership support helped many universities gain a critical mass of connectivity. That success fuelled new appetites for IT on campuses, challenging universities to develop creative new ways to expand their capacity and meet the costs. The issue of cost became the focal point for advocacy groups around the continent that are lobbying with increasingly loud voices for African academics to enjoy the same level of access to bandwidth as their Western counterparts, as explored in Chapter 9.

**The Bandwidth Consortium involved bringing together technology leaders from far-flung campuses who had never met one another, and engaging in aggressive negotiations with service providers.**

Today, as new submarine cables expand Africa's broadband capacity, offering for the first time ever the prospect of sufficient bandwidth at affordable prices, universities are finding themselves in a position to take advantage of new capabilities. Stakeholders on different campuses who met one another through their work with the Bandwidth Consortium developed relationships that became the basis for new organisations and networks now lobbying to further drive down the price of bandwidth. And as the universities have succeeded in equipping themselves with the necessary infrastructure, they can now concentrate on harnessing that connectivity for greater effect in the classrooms, dorm rooms, and libraries where it is needed.

More than a decade later, barely a trace of the constrained old reality remains at Makerere. "Now, there is the perception that ICT is working in the university," says Mulira. "As more demands come, they will be met. Even the library has grown in actual size, a 4,000 square-metre extension, and fitted with a local area network, compact terminals, and over 6,000 journals. It's not the perfect picture, but it's improving. The right support for research and education has been provided." The improved connectivity has enabled research collaborations, as well as "sandwich" programmes for PhD students who divide their time between Makerere and Sweden, for example, receiving online supervision. These arrangements help the university to further its aims of growing its own research and graduate training capabilities, officials say.

Likewise at the University of Ghana, the library is a well-connected hub of information, and many students now find computer labs in their dormitories and access course materials on the Internet. Lecturers are

Nora Mulira, head of the Directorate for ICT Services at Makerere University in Uganda.

increasingly integrating Internet-based e-learning into their courses, while web access helps them to stay current in their fields and reach out to colleagues on other continents. A number of universities in other countries have followed similar patterns.

### An E-Readiness Tool

As the Bandwidth Consortium got underway, another organisation, the Kenya Education Network (KENET), was deploying its own strategy of collectively purchasing bulk bandwidth to distribute to member universities. Physical connectivity was just the first step—the organisation also recognised the need to help its members harness the power of this new quantum leap they had taken, says Meoli Kashorda, KENET's executive director.

**Lecturers are increasingly integrating Internet-based e-learning into their courses, while web access helps them to stay current in their fields and reach out to colleagues on other continents.**

KENET approached the Partnership about funding possibilities in order to prepare an assessment of the ICT readiness of its member universities, eventually undertaking a pilot study of 17 Kenyan universities and eight tertiary institutions with funding from the Ford Foundation and the Rockefeller Foundation. To assess e-readiness, the organisation had to develop new ways to measure a university's ICT performance. What it came up with was an elegant solution for giving universities telling snapshots of their performance, which they could then use to plot strategies to maximise ICT's bang for buck.

KENET staff collected indicators for each institution, such as "Internet bandwidth per 1,000 students", and "integration of ICT into curricula", drawing on various pre-existing tools for ICT self-assessment to help synthesise a new measuring tool tailored to the local situation. They then plotted this data onto circular pie charts resembling spider's webs, giving visual shape to the institution's ICT profile. The organisation assessed all 25 of its members using the new set of indicators it had developed, published its findings in a report in 2007, then provided a roadmap for these institutions to optimise their use of ICT.[7]

"In this area there were no good indicators for a developing country environment, and not only that, but no good indicators that could help the institution to grow, as opposed to an assessment that tells you 'this is how bad you are' and then leaves you," Kashorda says.

At Kenyatta University, for example, the snapshot was dismal. Kashorda continues, "The [vice-chancellor] saw it and says, 'Is this where I am? What can I do to move up?' She used our tools to construct a whole student centre because we told her there is something we are calling the 'student-to-PC ratio'. We told [her] to aim to have 10 PCs per 100 students."

[7] Report can be accessed at www.kenet.ac.ke

Suddenly, he says, university leaders could see how they measured up in terms of reaching certain targets that the benchmarking tool deemed important. The tool helped them to pinpoint areas, such as the purchase of new computers for student use, where even small increases in spending could have a magnified impact. For something as important as ICT, KENET found two percent of the budget to be a manageable figure for most universities, and set out to find ways of maximising that spend as much as possible. Says Kashorda:

> *We gave them targets. We told them, "If you don't have two megabytes per second of bandwidth per 1,000 students, you are not doing well." All of the [vice-chancellors] ramped up their institutional budgets to reach these targets.*
>
> *The unique thing about the report is that we didn't tell them to get money from elsewhere.…We weren't telling them to go and borrow money, or to go and increase tuition. We were telling them that if you really believe in ICT as a strategic tool, look at your budget.*
>
> *In fact, we measured something we call the "percent of budget for ICT". We told them this can easily go up to two percent….The innovation of this project was to move them away from focusing on externals, and focus on internals. The ones who even increased their spending on ICT to one percent have made tremendous growth. So a $50,000 grant from Rockefeller helped us to make concrete recommendations and develop indicators.*

After the initial reports, the Ford Foundation stepped up with funding for dissemination of the work, and the Rockefeller Foundation made an additional grant that enabled KENET to expand the study to some 50 universities in Burundi, Rwanda, Tanzania, and Uganda. The success of that project helped secure a $21.5 million grant from the World Bank that KENET will implement to increase connectivity on Kenyan campuses. The magnitude of the project ensures not only that KENET's innovations will have a wide impact on universities in the region, but also that the organisation itself remains sustainable, Kashorda says.

### Human Networks for Connectivity and Advocacy

During the processes of establishing the Bandwidth Consortium and building ICT strength at universities, many were struck by the power of simply bringing people together to discuss a common problem. African academics often lack such platforms due to historically weak ties between many African nations, as well as a host of other practicalities, from the expense of travel to the poor transport links between countries.

On the sidelines of one meeting in Dar es Salaam that took place during the formative stages of the Bandwidth Consortium, the Nigeria ICT Forum was created—which, incidentally, has hosted the Bandwidth Consortium since 2008. Six of the initial eleven universities to participate in the Bandwidth Consortium

were from Nigeria. Before joining the process, however, these universities had not been speaking to each other, recalls Aminu Ibrahim.

Ibrahim, who at the time worked for the National Universities Commission of Nigeria and was responsible for supporting universities in setting up their ICT networks, says, "Mistrust has always been a big problem, and for good reason. We had been under military rule for a very long time, and 'divide and rule' was a widely deployed method. The universities were all after the same pot of money. Institutions did not have the resources to meet together, and individuals did not know each other."

## voices of change

### Laying the Foundations of ICT

Mumuni Dakubu, professor of chemistry, the University of Ghana

Most of the actions of the Partnership foundations have been catalytic. They have spurred the institution to do new things and make use of their facilities. Governments at that time were not willing to give money—there were so many other priorities.

There is no sphere in which you can't apply ICT. So the idea was, how do you apply ICT to enhance the work of universities? One of the things the university went on to do was build a resource centre.

Now almost everybody has email and it's taken for granted. I give tests online. You can do library searches on the Internet. We have a video-conferencing centre here, and we are moving onto a new platform now where universities in different countries can share lectures. New doors are being opened, and I find it very exciting.

I'm also the resource person and coordinator for the national research and education network. My chemistry research is fading into the background. In November 2009, the University of Ghana hosted an Open Access conference, looking at all of the fibre coming to Africa and how it is going to be utilised. We are hoping this will bring down the price of fibre, and bring some competitiveness.

Our bandwidth is still not sufficient. Since we started all of this, our population has just about doubled to 30,000 students. If you go to the computer centre there are 500 computers and every [computer] is engaged. The bandwidth is gone. In the US, a household may be using 4 megabits, and in the university now our total bandwidth is 25 megabits.

The Partnership has helped a great deal. I always say it has been a catalyst, and also it helped to build the foundation for future work.

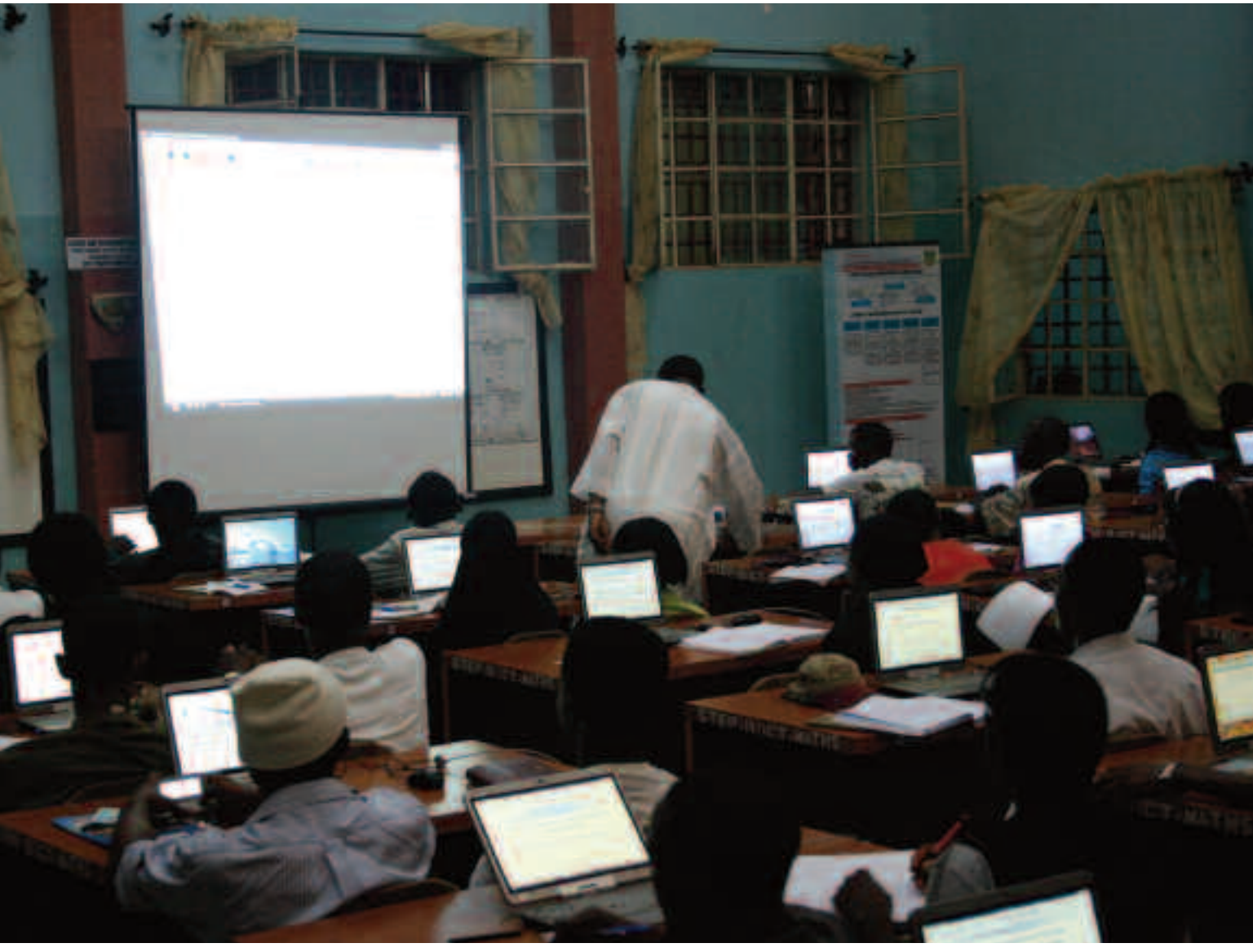
As universities began to realise the potential benefits of collaborating more, they began working to break down the old barriers of mistrust, Ibrahim recalls. The Nigerian vice-chancellors and IT coordinators who attended the Dar es Salaam meeting decided that they would set up a "Mini ICT Forum" to facilitate collaboration amongst themselves. "We had our first meeting at the MacArthur office in Abuja," recalls Ibrahim. "We just wanted to have an informal relationship and see if those six institutions could use our own resources to organise activities and finance those activities." They started up a chat room, and began to organise workshops on issues such as the management of limited bandwidth. Within a couple of years, the membership grew from six institutions to sixteen, and continued to multiply.

**As universities began to realise the potential benefits of collaborating more, they began working to break down the old barriers of mistrust.**

The Forum grew into a neutral platform where different voices within universities and the private sector could gather to brainstorm the implications of a new government policy or share ideas for getting the most out of new library software systems. As the Nigeria ICT Forum shows, the Bandwidth Consortium helped to plant seeds for further developments in ICT that are transforming African universities in diverse ways. New programmes have split off in different new directions, ranging from e-learning to ICT advocacy. The Educational Technology Initiative, for example, which will be covered in the following chapter, is one of a number of efforts currently underway to enable African universities to develop e-learning and get the most from a panoply of learning resources that the Internet puts on offer, while developing more of their own content, too.

The early processes of the Bandwidth Consortium also helped draw together individuals who are now vocal advocates for equal bandwidth access for African academics, lobbying for better access to enable academics on the continent to participate in sophisticated collaborative research with partners abroad as well as to build continent-wide networks for research and education. As will be seen in Chapter 9, this is now the next major frontier for African universities in their continuing quest to harness the transformative power of ICT.

Better connectivity has enabled e-learning to take hold at the Catholic University of Mozambique.



Len Liverpool's blended e-learning class at the University of Jos.

**On a continent where only around 10 percent of the population has Internet access, the idea that universities might harness its power to enrich learning for students is only now becoming a reality.**

Chapter Four

# Innovations in Learning

**EARLY PARTNERSHIP SUPPORT HELPED PROVIDE A FOUNDATION OF BASIC ICT INFRASTRUCTURE THAT** could be harnessed to improve both the quality of teaching and access to higher education. Pioneering lecturers and their students are transcending the limitations of old learning models—often dictated by constraints such as large class sizes, outdated pedagogies, and sparse reference materials—to create new models of dynamic, interactive learning that take advantage of both technological advances and new pedagogical approaches.

These new models have profound implications for universities grappling with the tough, and often conflicting, challenges of absorbing ever-greater numbers of students while simultaneously improving the quality of instruction. Research from the HERANA project, introduced in the previous chapter, indicates that African universities tend to be highly efficient in producing large numbers of undergraduates, but are far less successful in delivering quality instruction. This chapter highlights cases where universities have successfully employed models for addressing various aspects of this complex and critical challenge in African higher education.

As we shall see, e-learning, which encompasses web-based learning, computer-based learning, and other digital learning media, is lowering the barriers of knowledge, giving African lecturers and students access to open courseware from world class universities, and allowing them to contribute their own courseware to the ever-expanding pool of global knowledge. It is also raising the bar for teachers, helping them to inject new life into their courses, but also challenging them to address new global ideas and trends. At the same time, improved Internet access is increasingly empowering students to drive their own learning, giving them the freedom to follow their curiosity and gather new material from varied online sources of their own choosing, no longer constrained by the linearity of a textbook.

This chapter visits a wide array of campuses to illustrate how learning and teaching is being transformed through advances in technology, new pedagogies, and new curricula. Various academics are working to bring

e-learning into the mainstream of African higher education, as well as to demonstrate the dramatic potential of technologies such as radio and mobile phone platforms to reach greater numbers of students through open and distance learning, particularly in marginalised areas. Like anything new, these early case studies have challenged and stretched academics both technologically and intellectually. Yet the hard work is beginning to pay off, and these early experiments are increasingly yielding workable models, in disciplines ranging from English to engineering, for others to adopt.

## Levelling the Field

In Len Liverpool's first-year mathematics class at the University of Jos, in Nigeria, about 100 students sit at desks in pairs, going over the day's course notes and equations on shared laptops. Sitting at his projector in the middle of the crowded classroom, Liverpool guides the students through the rigours of introductory calculus, one of the fundamental building blocks of knowledge for careers in mathematics, statistics, engineering, or physics. This class is an introductory gateway through which thousands of students must pass on their way to more advanced specialisations.

As Liverpool scribbles notations, which appear on a large overhead screen, students follow along on their laptops, making their own notes on the concepts and equations.

If this classroom scene is still atypical at the university, it is the hallmark of a future that Liverpool and his counterparts at other universities are striving to create. On a continent where only around 10 percent[1] of the population has Internet access, the idea that universities might harness its power to enrich learning for students is only now becoming a reality.

For more than two decades, Liverpool, a professor of mathematics and the former head of academic planning at the University of Jos, pioneered the adoption of information and communication technology for teaching, research, and management at the university. Through the course, he now hopes to illustrate the potential of interactive learning for the entire campus.

Always fascinated by computers, he worked during his tenure in the planning office to help put information technology centre stage at the university. As Liverpool tells it, Jos, a relatively young university, was one of the few institutions to build its technology infrastructure without substantial foreign aid, opting instead for self-sufficiency and sustainability over speed. Every step of the way was a challenge: the machines were costly, and initially only a few individuals knew how to use them.

As technology gradually seeped into the mainstream, however, Liverpool saw an opportunity to bring the use of ICT on campus to the next level, by returning to the classroom. He asked himself: How could he use

[1] Source: http://www.internetworldstats.com/stats1.htm

the available technologies to deepen students' understanding of mathematics, and to compensate for a dearth of traditional resources such as textbooks?

Liverpool designed the course using Moodle, an open-source learning platform that is known variously as a course management system (CMS), a learning management system (LMS), and also a Virtual Learning Environment (VLE). Moodle offers a resource for lecturers to create both pure e-learning courses that have no classroom component (to be used in distance learning, for instance) and "blended" learning courses, such as the one Liverpool teaches, which use the platform to enhance, not replace, classroom learning.

Through the course website, students have access to a host of interactive materials, including courseware from MIT and Carnegie Mellon University, video lectures, quizzes for students to self-test their understanding of concepts, and an interactive chat facility. Using chat, they can ask questions during lectures without disrupting them. They can also pose questions through the site about problems they encounter as they study that the lecturer can then pick up on during the next classroom session. These resources enrich classroom discussions, and also enable students to take on more challenging and creative problems that involve some degree of web research in their homework assignments, says Liverpool.

**Sometimes you look at the different approaches that people use, and you actually discuss them. You encourage them to understand that they can learn from each other.**

"In the old times, the more experienced professors taught the young students, the 101s, but with the shortage of human resources, things have changed, and you may have young, inexperienced people teaching them," he says.

Not only does the technology enable better interaction between students and lecturers, it also facilitates learning amongst the students themselves. "Our classes are like problem-solving sessions," says Liverpool. "Sometimes you look at the different approaches that people use, and you actually discuss them. You encourage them to understand that they can learn from each other."

### Overcoming Constraints with Online Laboratories

The University of Jos is not the only place where students increasingly learn from each other. In a computer lab in the College of Engineering, Design, Art, and Technology at Makerere University in Uganda, Arthur Tumusiime Asiimwe sets an experiment in motion with the click of a mouse. Instantaneously, his screen displays a red-patterned graph, a fine mesh of curves and numbers that, he says, illustrates how the transmission of an analogue signal from one place to another works—a concept called modulation.

iLabs has introduced a new hands-on learning dimension to engineering programmes at the University of Dar es Salaam.

More often than not, technical experiments such as this require intricate and expensive equipment, which is one reason why many African students in poorly resourced universities often only ever read about such processes in textbooks.

Here at Makerere, however, Asiimwe is not just a passive observer of some abstract theory. Sitting at his computer, he is fully in control of an experiment that is being conducted on a remote machine, which his computer accesses via the Internet. At Makerere, students not only get to perform such experiments as often as they like, using online laboratories, but are also occasionally involved in designing the classroom experiments themselves. The iLabs Shared Architecture programme, developed by MIT's Center for Educational Computing Initiatives, offers a prime example of the ways in which African universities are finding ways to offer more engaged learning.

The constraints of equipment availability impact every university to some degree. In fact, iLabs was first conceived by MIT Professor Jesus del Alamo, who wanted his students to experience performing their own experiments in transistor physics, but could not ensure adequate access to the necessary equipment.

At African universities, the challenge is that much greater. "Because of diminishing funding, it's just not possible to equip laboratories for the numbers of students that we have," says Oladipo Osasona, a professor of engineering at Obafemi Awolowo University in Nigeria. "In the past you might have ten students around an experiment table, but only two of the students are really working, and the other eight are not having a hands-on experience."

**At Makerere, students not only get to perform such experiments as often as they like, using online laboratories, but are also occasionally involved in designing the classroom experiments themselves.**

Engineers at Obafemi Awolowo initially turned to iLabs as a solution for a course in micro-electronics. "We had a clean room, but we couldn't maintain it, so the course was almost dying," says Osasona. "We had no way of giving practical experience to the students."

Carnegie Corporation support has helped to bring iLabs to three universities: Makerere, Obafemi Awolowo, and the University of Dar es Salaam in Tanzania. The project was designed to give students remote access to MIT lab equipment and experiments, to support the formation of lab development teams, and to facilitate research as well as student and staff exchanges amongst the universities.

At Makerere, student teams have immersed themselves in designing their own new experiments that feed into the curriculum. The opportunity to do hands-on research and development has convinced students who might have otherwise been lured to the private sector to stay and pursue advanced degrees at the university. Tumusiime-Asiimwe and his colleague Cosmas Mwikirize both graduated at the top of their class last year and won research scholarships from Carnegie Corporation. Both are now working on their master's

degrees, and agree that the opportunity to remain involved with iLabs was a major incentive to stay in academia.

"iLabs helped me learn to apply ICT and participate in something with the potential to change how engineering is done at Makerere and in other developing countries, which was very exciting," says Andrew Kabumba, another former student who stayed on in the Department of Electrical Engineering after graduation as a teaching assistant, in order to remain involved in iLabs.

### ELVIS and iLabs

iLabs came to Makerere in 2004, but really took off three years later when the programme's Principal Investigator, engineering professor Sandy Tickodri-Togboa, travelled to MIT with three students. Kabumba was one of them, a fourth-year student at the time. "They felt our eagerness to work on this project," he recalls. "There was no equipment and many limitations." Internet connectivity was still sporadic, however, which meant that students could not always access the experiments in time to meet classroom deadlines.

The group returned with a device that freed them to take control of the process themselves. The Educational Laboratory Virtual Implementation Suite, a relatively low-cost, briefcase-sized gadget known by its acronym, ELVIS, made by National Instruments, functions as a one-stop experimentation lab, with the built-in software and electronics to mimic the functions of far costlier and finickier devices such as oscilloscopes.

The ELVIS has allowed students to branch out and develop all kinds of new experiments, supporting both the broadening of the curriculum, the greater integration of iLabs into the curriculum, and the development of research. For their final-year projects, students have been enlisted to design experiments in emerging new fields like optical fibre communication and digital signal processing.

"Students can do the experiments repeatedly, and they can change the parameters, meaning that they have more direct control over the experiments and can do them in their down time," says Mwikirize. "It also means that they need to have a more solid understanding of the experiments, in order to explain why the result happened the way it did."

While all students in the department work with iLabs as part of their coursework, a select few enter the programme as trainee developers, responsible for programming and designing new experiments. Following the university's policy of gender equity, female students are given priority in the selection—8 of the current 17 student developers are female.

Now, iLabs programmers at Makerere are working to introduce the project in other Ugandan universities, as well as in local high schools. With the introduction of universal primary education in Uganda,

the number of students enrolled in high schools has increased 20 times over, putting the squeeze on already limited science facilities, says Mwikirize. "We're killing young minds out there," he says. "We're not training them to be scientists, because they're not involved in any projects that expose them to cutting-edge technologies."

Partnering with National Instruments, the students plan to start working with high school students on designing and building robots, and to introduce a design competition in order to stimulate their interest. "In rural areas, some students don't have access to computer laboratories. We need to encourage them to take part in relevant problems, to stimulate them, and train them in using hardware and software, and encourage them to develop projects towards an engineering and design challenge, so that by the time they get to university they can do bigger things," says Asiimwe.

**Students can do the experiments repeatedly, and they can change the parameters, meaning that they have more direct control over the experiments and can do them in their down time.**

### The Educational Technology Initiative

As we have seen in this chapter, a number of individual academics and programmes within universities have successfully employed ICT and other strategies to address their pedagogical challenges and improve educational outcomes. The next challenge is to find ways of sharing lessons and insights both within and amongst different universities, so that greater numbers of academics and learners on the continent can also benefit.

The Educational Technology Initiative (ETI), a programme funded by the Partnership, aims to do this by supporting the development of new e-learning models at seven different universities—the Catholic University of Mozambique, Kenyatta University, Makerere University, the University of Dar es Salaam, University of Education Winneba, University of Jos, and the University of Ibadan—to find and develop new approaches to harnessing technology in the classroom, in the context of African universities' particular needs and challenges.

Just as the Bandwidth Consortium enabled universities to address their connectivity challenges by taking advantage of scale and information sharing, the ETI provides the means for a more comprehensive and collaborative approach to developing working models of e-learning. "We can think more broadly and strategically, which wouldn't have been possible if we were dealing with an individual grant," says Neil Butcher, the project manager for the South African Institute for Distance Education, which is overseeing the project from South Africa.

Cosmas Mwikirize is a research fellow, working with the iLabs programme at Makerere University in Uganda.

Jerome Dooga, a lecturer in English at the University of Jos, first seized on e-learning as a way of freeing up his students from taking notes during classes, so that they would engage more during class time. "Students expect you to come and dictate notes to them," he says. "But if you come into a two-hour class and the students expect you to speak at a pace where they can write down every word, it limits the scope of the class. It also limits their ability to raise engaging questions and push the frontiers of discussion. They can't take notes and at the same time concentrate or fully understand the concepts introduced. I wanted to ensure that students had a resource they can fall back on so that they no longer engage their valuable time trying to write things down."

One strategy of the ETI at Jos has been to introduce fellowships that support younger lecturers such as Dooga in integrating technology into their courses. While it's widely known that online materials can help to augment the quality of over-subscribed courses or beef up out-of-date pedagogy, many instructors lack the knowledge to take advantage of online resources, says Daniel Yakmut, the director of ICT at the university, who is also the ETI coordinator. While many older staff still resist learning the new technologies, Yakmut says, the university realised that it could target younger lecturers to set the stage for wider adoption and eventually prod their older colleagues to embrace technology, too.

The e-learning fellowship, in which Dooga participated last year, was designed to support selected staff members in learning about online course design and pedagogy and integrating these new modalities into their own courses. The university ensures that the participating academic staff have a laptop, Internet access, and online learning resources to explore. Dooga was one of seven initial members of the academic staff to participate in the programme. "We hope that it will have a domino effect, as others see what difference it makes," Yakmut says. "Already, the little effort that has been made is generating a lot of interest. Students, as the core users in the process, are already putting on the pressure, asking for other courses to be made available online."

### A Catapult for World-Class Learning Resources

The University of Jos has meanwhile also joined forces with the Catholic University of Mozambique, (hereafter referred to by its Portuguese acronym UCM), under the banner of the ETI, in a project that uses online simulations to give students otherwise constrained by poor lab access, overcrowding, and lack of resources a closer look at chemical experiments, lab dissections, and other processes that are integral to their learning.

Although it is a poor country, Mozambique has a relatively advanced fibre-optic backbone. Until recently, the UCM, faced with so many other challenges, had not managed to put in place the last-mile infrastructure to allow it to take advantage of this backbone. "We have fibre here, but it is still not distributed," says Wisdom Machacha, the university's director of Distance Education and Information Technology. "So we have a big

well of water, but the pipes to take it to the homes are not there. The most important thing is to have a well of clean water, though, because then you can distribute it."

For a university like UCM, e-learning has the potential to bring world-class learning resources to one of the most remote and impoverished areas of the world. The university, with its six different campuses strewn across the vast reaches of central and northern Mozambique, currently relies on sending reams upon reams of photocopied course material to all of the various satellite campuses. The communication links between campuses are spotty, and sometimes sever for weeks at a time, as these campuses still are not plugged into the national backbone. The work being undertaken through the ETI will lay the groundwork for an expansion of ICT that will reach all of the different campuses and revolutionise how learning takes place, says Machacha.

## voices of change

### An iLabs "Pioneer"

Lea Musasizi, iLabs alumna, was the top graduate in Makerere's telecommunications engineering programme, and currently works for MTN Uganda, a mobile phone network.

Telecommunications engineering is something new here, so I was very excited about it. iLabs was a lot of fun, and it definitely prepared me for my work now. I didn't have a background in IT or computer science, so initially it was challenging to learn what Java [a computer programming language] is, for instance.

iLabs helped me to explain concepts that are difficult, and to sell ideas. MTN is rolling out new programmes, and we need to be able to explain them in a way that people can understand and feel interested in. In iLabs we underwent training in preparing good presentations, proposal writing, and understanding how the system functions. A lot of this has influenced my current work, especially in being able to stand up before an audience to give a presentation.

In iLabs, we were given equal treatment as females, and you did not assume that less would be expected of you because are a girl. It was good to be thought of as a pioneer.

On the developer side, there is a lot of groundwork involved to produce or explain a theory you have learned in class.... iLabs gives you the desire to explore more and create more and be more innovative, especially since students would often leave campus previously without ever having touched a computer to experiment.

There are a lot of prospects for iLabs, and I would like to remain part of it.

At UCM, the advent of the ETI motivated the university to scare up the resources to wire its campus with fibre-optic cable for high-speed Internet access, which it had previously lacked. The new programme also provided an impetus for the university to develop an ICT strategy. Already, those basic measures have triggered new waves of ICT-related activity on campus, such as the use of e-learning platforms like Moodle and online exams which give students immediate results, says Machacha.

"It's what the students want," he says. "It is what they expect. It's long overdue, because if you go into class, you see the kinds of cell phones these kids use, and the functionality is there. You find that they are even more advanced than some of their teachers in terms of technology use. So a teacher who comes in front of the students and starts using a chalkboard and shouts at the top of his voice, they really don't like it."

**E-learning has the potential to bring world-class learning resources to one of the most remote and impoverished areas of the world.**

The ETI is still in its early phases, but its prospects are exciting, says Machacha.

Neil Butcher, ETI's coordinator, hopes that the impact of the project will eventually stretch far beyond the seven campuses his organisation has been working with, as other universities discover and adapt useful lessons from the initial case studies. "We're looking at extracting a toolkit from this process," he says. "We want to be able to supply a comprehensive packaging of resources that any institution in Africa can pick up and use to navigate the journey of harnessing teaching and learning resources."

### Broadening Access through Distance Learning

It was with trepidation that Francis Egbokhare first stepped into the role of director of the Distance Learning Centre at the University of Ibadan five years ago. Distance learning, then considered the poor cousin of traditional face-to-face classroom education, was marginalised within the university to the extent that people often referred to the centre as "Siberia", he recalls.

But when the MacArthur Foundation's initial grant to the university, in 2002, included funding for the expansion of open and distance learning, Egbokhare saw an opportunity to work towards a goal that he was passionate about: making higher education more accessible to the huge numbers of young Nigerians who find themselves shut out of the system. With 1.2 million high school graduates seeking entry into Nigeria's already-overburdened universities each year, educators were gradually—and grudgingly—beginning to acknowledge the necessity of finding creative solutions to constraints on the delivery of higher education. "Five years ago, nobody wanted to hear about open and distance learning," says Egbokhare, who completed

his term as director of the centre in December 2010. "But now the government is saying this is our best chance of dealing with the crisis of access in the country."

"Most people in Nigeria want to go to university," Egbokhare continues. "There is this mass hunger for education in the country. I felt that this was a unique opportunity to contribute and to ensure that as many people as possible have access to higher education."

Around 70 percent of the centre's students come from poor and working class backgrounds, he says. Over the past five years, the population of students served by the centre has grown from 1,100 to 16,000, enrolled in 38 different programmes, eclipsing the number of students in traditional classroom learning environments. The centre has pioneered technology-driven approaches to learning, using radio, the Internet, and mobile phone platforms to reach an expanding network of new distance learning centres sprouting up around Ibadan and, increasingly, other parts of Nigeria. The centre has also pioneered computerised testing within the university, and recently opened a new computerised testing centre that is seen as a model for conducting exams for large courses across the campus.

With support from the MacArthur Foundation, the centre has digitised and loaded hundreds of different course materials onto the web. It also develops course content that students can access over the radio and as MP3 downloads. Every day, people in Ibadan can tune into lectures that are broadcast over the campus radio station, Diamond FM. These lectures are popular with the public as well as with students, Egbokhare says.

At Diamond FM, six distance students who also work as presenters, delivering the course lecture materials in the radio broadcasts, gathered to talk about how distance learning has enabled them to access higher education. Although these students passed their university entrance exams, they, like the majority of applicants in Nigeria, failed to obtain a coveted spot in one of the country's overcrowded public universities.

"I used to have the mentality that if you want to go to school in Nigeria, you need to be rich," says Samuel Emmanuel, who is studying psychology. Indeed, Nigeria has seen a proliferation of private universities in response to its access crisis, yet the high fees charged by such institutions puts that option out of reach for most working class students.

Open distance learning has opened up a powerful new avenue for social mobility in Nigeria, the students say. They speak about their various courses and dreams: Adedotun Amosun, for example, is set to become the first open distance learning graduate in linguistics. Fajuyigbe Folakemi is studying to become a clinical psychologist. The course fees they pay are substantial, the students say, but the flexible part-time schedule also allows them to work while they study. "It's an open door, an opportunity to be someone in life," says Priscilla Chinekwe, who is studying communication and language arts. "You have a dream of being a degree-holder."

## voices of change

### Expanding Access through Distance Learning

Francis Egbokhare, former director of the Distance Learning Centre at the University of Ibadan in Nigeria

I would like to be very honest with you. Fear was my first motivator, coming into the [University of Ibadan's Distance Learning] Centre, because I saw the enormity of the challenges. First of all, [I] had 1,100 students, [I] had a staff complement of over 50, and [I was] told by the university that [I] had to make all of the money to pay the staff.

The laws establishing this place said there would be no funds from the federal government. They are now committing 260 million naira to distance learning—that is unheard of.

I worked very hard the first year to try to increase the student population, but the population actually dropped the following year to 800.

Before I became director, I had an opportunity organised by the Ford Foundation to attend a retreat in Addis Ababa on envisioning the African university in 2025. I got the opportunity to work intensely on this issue, not knowing that I was going to end up as director of the Distance Learning Centre.

I saw that there was a problem of access, and that there was actually a means of alleviating this problem. We believe that the centre should focus on these issues: content development, quality assurance, and student support.

We have had a lot of struggles, as we have tried to change internal attitudes. The university is a very conservative university that believes in traditions. Traditions change, but they have to change very methodically. You have to do it in a way that does not rupture the system. That's what we have tried to do.

To expand the reach of its programmes into other cities and rural areas, the centre has partnered with private universities to use their extra classroom space for periodic face-to-face "contact" course sessions, as well as with the owners of cyber cafes, who offer another venue for learning, and also help students to become ICT literate.

### Mobile Phones for Course Delivery

The development of new mobile phone platforms for learning excites Francis Egbokhare most. While Africa has struggled to establish other ICT infrastructures, the continent has seen extraordinary recent growth in mobile phone penetration, a platform that is enabling young Africans in particular to leap-frog to technological parity with their Western counterparts through mobile web access. Millions of people who cannot afford computers are instead gaining entrance to the Internet via their mobile phones.

**Open distance learning has opened up a powerful new avenue for social mobility in Nigeria.**

"There are over 60 million mobile phone users across Nigeria," says Egbokhare. "Because of the poverty levels, we feel that if we want to do any serious distance learning projects, we must continue to use mobile phones for delivery." With support from the Partnership, the centre is developing different platforms for students to use their mobile phones to access distance learning. In one format being explored, called a Virtual Private Network (VPN), the lecturer delivers a lecture over the phone that as many as 20 different groups of students gathered in remote locations can listen to. The lectures would be broadcast to the gatherings of students over a loudspeaker, while students can use SMS to send in their questions to the lecturer, Egbokhare says.

The centre already uses mobile phones as a platform for communication between students and staff, and to track students' progress. Now, it is negotiating with service providers to secure cheap messaging rates and data access for students, to allow even more extensive use of the platform in distance learning. The centre is also looking at becoming a service provider to other campuses, in order to gain another source of revenue.

In addition, the centre has been working with the National Universities Commission and a group called the National Open Distance Education Network, in order to replicate similar technology-driven distance learning programmes nation-wide.

Many of these innovations, such as computerised testing, have offered the traditional university models to improve their own systems and services to students. "Now the Distance Learning Centre is a place where everybody wants to be," says Egbokhare, with a laugh. "It is no longer Siberia. Now I think it's America."

### E-Learning "Breaks the Cycle" for Rural Girls

The Marsabit district in Kenya is one of the country's most remote areas. This vast, arid region of northwest Kenya, sandwiched between the borders of Ethiopia, Somalia, and Lake Turkana, has just one road and one town. In 2006, researchers from Kenyatta University were led to the region as they conducted a study on gender imbalances in education in the marginalised areas of Kenya. The factors inhibiting girls in this deeply impoverished and traditional area, populated mostly by nomads surviving from their livestock, were numerous, recalls John Mugo, a lecturer at the university who took part in the study. "We realised the more remote a place is, the less likely the school is to have a female teacher," he recalls.

Girls were vastly under-represented at schools, and it was on this issue that the researchers sought to develop a pilot intervention. Many schools lacked even a single female teacher, reinforcing an overall pattern

**Around half the girls in the e-learning programme came from far-off villages—often places where no other girl had previously qualified for further study.**

of women's exclusion from education. This absence of female teachers was critical, the researchers realised. The importance of role models is a well-known factor in the success of minority groups in education, both in Africa and around the globe. In schools with at least one female teacher, girls were better represented and tended to progress further with their education, the researchers found. One obvious solution was to attract more female teachers into the district's schools—but how?

"The solution that emerged was to have girls from those places qualify to be teachers," says Mugo. The researchers realised that it would be important to enable the women to do their studies in Marsabit: most were wary of travelling too far from home, and besides, if they travelled to Nairobi, some of them might not return, which would defeat the objective of the programme.

Designing an e-learning programme to work in such a remote area was a pertinent challenge for a university like Kenyatta. The university has deep roots in education and teacher training, and distance learning has become a staple of the university. The researchers designed an e-learning programme that has partnered education lecturers at the university with the technological expertise of the Kenya Education Network (KENET)[2] and the resources of the Higher Education Loans Board, Kenya's national student financial aid scheme. The Ford Foundation stepped in with financing for the programme in 2008. The aim of the programme was to provide all course materials in distance learning format—in this case, as electronic modules loaded onto netbooks that would be distributed to the students.

The goal was "100 percent detachment"—that girls would not have to travel to Kenyatta, and that lecturers and examiners would not have to travel to Marsabit. The students would access all their course materials electronically, while being connected to the university through Moodle, via an Internet connection provided to the open learning centre for women established by the university on the grounds of a girl's secondary school located in the town.

Finding the girls to participate in the programme was a big initial hurdle, Mugo recalls. The researchers looked to remote police stations and district government offices to help spread the word. The programme has had three intakes of students so far (18 in 2008; 9 in 2009; and another 18 in 2010), but has never been able to fill all of the 20 slots available. In the end, around half the girls came from far-off villages—often places where no other girl had previously qualified for further study. That was intentional, and made recruitment all the more difficult, says Mugo.

Given the small numbers of girls actually using the centre, the programme has come under some pressure to justify why the university should spend its limited resources there. At one point, the university considered admitting local men to the programme as well. However, while men in the region also need access to higher education, admitting them to the centre may inhibit the women's access. The local culture lends itself to male dominance unless women are purposefully given affirmative action, says Mugo.

[2] See previous chapter for additional coverage of KENET.

Despite these challenges, Mugo says the programme has been highly successful. The region now has 43 budding new teachers, which will more than double the number of female teachers currently serving in the district. In addition, the Higher Education Loans Board has set up a revolving fund that will allow students to access loans over the next decade, helping to ensure the sustainability of the programme, he says.

"Now, there is conviction in the community that a woman can get educated. The students are now models for their communities, and because of them there are girls who believe that it is possible to join the university," says Mugo. "I think we will be achieving a tremendous change in attitude in the community with regard to the girl child and education."

### Transforming Pedagogy in Teacher Training

In Ghana, meanwhile, new approaches to active learning pedagogies and distance learning are helping the University of Education in Winneba (UEW), the nation's leading institution for education and teacher training, to improve classroom training and expand its reach into rural areas.

UEW had its start in 1992, when the government decided to consolidate its teacher training efforts, and pulled seven different diploma-awarding teacher training colleges into one new university college. A decade later, this entity was in the throes of transforming once more, from a university with limited autonomy—the younger sibling to the much-larger University of Cape Coast, located nearby—into a far more strategic and influential national university, charged with leading the education of teachers and education policymakers for the nation.

Like other universities on the continent, UEW has struggled with rapid growth, expanding over the past 15 years from a student population of 2,000 to its current size of 35,000 students today, including distance learning students. In the past, outdated pedagogies prevailed, due to the crunch of numbers as well as old-fashioned mindsets, says Issifu Yidana, who heads the university's new educational technology programmes. Here as elsewhere, new technologies are opening the floodgates of new learning styles.

The university utilised support from Carnegie Corporation initially to develop a strategic plan, something that had been sorely lacking. This process ultimately uncovered the need for pedagogical shifts that would make the institution more responsive to national needs. "There are a huge number of untrained teachers in Ghana, so the question you ask yourself is, what is Winneba doing to ensure that these untrained teachers are given some level of professionalism," says Mawutor Avoke, the university's pro-vice-chancellor.

In evaluating its teacher trainees, the university had formerly relied on exams that students jokingly called "one-shots", underscoring its reliance on traditional rote teaching and examination methods. With Carnegie

Corporation's support, the university overhauled its curriculum, introducing distance learning as well as a year-long teaching internship programme for fourth-year students.

Initially, the hands-on component of teacher training had consisted of short internships known as "attachments" in schools. These attachments often threw students straight into the deep end, recalls Bernard Bingab, a former student who now coordinates the university's External Funds Office. Students received little supervision, and were evaluated solely on the basis of spot visits made by university staff.

The university realised that this was inadequate, and set about developing a new programme where students would work as classroom assistants in schools located throughout the country, while being supervised by an experienced teacher in the school who would serve as a mentor. "Now our teacher training is more intense," says Bingab. "Students are able to develop their own philosophy of teaching."

One of the ways in which that happens is the "action research" project that the student interns are now required to complete. As part of their hands-on teacher training, they must identify a problem in the classroom environment, and design an intervention to address it. The action research component in turn reflects the university's own teaching philosophy, which is that "students should be made to construct their own knowledge," says Avoke.

For Lucy Owusu Takyiwaa, a fourth-year student intern, the attachment has been challenging, but the support from her mentor has helped her to come out stronger, instead of being overwhelmed by the difficulties of her class:

> *I teach home economics. The children we teach, their parents come from the coast. Their occupation is fishing, and they find it very difficult to support their children. Many of them come to school without having eaten, and some come late because they have to go and sell fish before school.*

Lucy Owusu Takyiwaa, a fourth-year student intern at the University of Education in Winneba.

*It is difficult for the parents to contribute to buy things for the practicals. My mentor is helping me. She told me about all the problems of the school and she helps me with lesson plans and practicals. She has also been helping me financially, so that I can hold the practicals, because if there are no practicals, the students find it difficult to understand.*

## A Distance Learning Model for Rural Teachers

The distance education model, meanwhile, is geared towards addressing the country's enormous challenge of having large numbers of inadequately trained teachers in its classrooms. The programme was designed specifically to reach an estimated 60,000 teachers who are currently working in classrooms, but lack formal training beyond a basic teacher training certificate. Increasingly, UEW is being positioned as a place for continuing education, particularly through distance learning, which now serves some 4,000 of these working students per year. Says Anthony Mensah, the head of the distance learning programme:

*Times have changed. When I was a teacher, I had to motivate myself to move out of the village [for further study]. Now the avenues for upgrading are very many. If I had been a teacher now, I could have stayed in the village and done an additional upgrading, but there was no avenue so I had to leave the village....Now we have brought certification to their doorstep. In the past, things were very tight.*

Distance learning offers an elegant solution, in that teachers in rural areas don't have to leave their posts in order to upgrade their qualifications, says Mensah. In this way, the university has helped to stall the attrition of teachers from rural schools, and is also helping to fill a rising demand in the country, particularly for primary school teachers. The country's teacher training colleges collectively produce about 9,000 new teachers per year, which is not enough, says Mensah.

## Introducing Entrepreneurship

As universities transform their curricula to respond to new economic complexities, entrepreneurship is emerging as an increasingly prominent feature of many academic programmes. The University of Ibadan, for example, recently made a new course in entrepreneurship mandatory for all students, while the five-year-old Centre for Entrepreneurship and Innovation has been helping to forge new linkages between students, academics, and the private sector. A grant from the MacArthur Foundation provided an opportunity for the university to build up its collaborations with the private sector. "We want to ensure that what we are doing as a university influences what the private sector is doing, and influences policy," says Kassey Garba, a professor of economics who is now chief economic advisor to the Nigerian president, and was involved in the centre from its inception.

A persistent criticism of African universities has been that they are too theoretical, divorced from the realities of their societies, and therefore do not produce graduates with the right kinds of skills. The rise of entrepreneurship training on a number of campuses represents one effort to remedy this. In countries like Nigeria, where the rate of unemployment is high, often even amongst university graduates, universities are realising the need to equip students to create their own jobs. Nigeria may have a shortage of jobs, but it has an abundance of problems needing innovative solutions, which is exactly what entrepreneurs provide.

The course at Ibadan is only getting off the ground now, says new centre director, Gbemisola Oke, but the plan is to develop it into a hands-on platform where students with promising commercial ideas receive practical help with writing business plans, sourcing financing, and scaling up their businesses. Not only does the entrepreneurship course serve a need, she says, but the students also love it. "Even for those who don't have the innate disposition for entrepreneurship, we know we can impact positively on them to have a better attitude in everything that they do," Oke says. "It's about mobilising a generation of people to be better at whatever they do."

**After the first two years, we discovered that one encounter was not enough for the majority of {students}. They want to know how to carry the agenda forward. I have a number of students coming in to discuss their business plans, business ideas, and innovations.**

The course evolved from its practice of holding day-long workshops on entrepreneurship. "We bring people from the private sector who are successful entrepreneurs and have experience," she says. "The students get really inspired and they begin to ask questions. After the first two years, we discovered that one encounter was not enough for the majority of them. They want to know how to carry the agenda forward. I have a number of students coming in to discuss their business plans, business ideas, and innovations."

One such student was Osatimehin Olumuyiwa, a master's student in public health, who was inspired by a big question: with the world's population expected to grow to 9.8 billion by the year 2050, how might one essentially population-related problem—the proliferation of organic waste across so many millions of households—contribute solutions to address another population-related need, to address energy poverty with the offer of new sources of low-emissions energy?

In answer to the challenge, Olumuyiwa designed a prototype of a product he calls the Activated Biogas Digester, a device that produces methane gas for cooking from household organic waste. The device was featured in the December 2009 issue of *BioCycle International,* a magazine on the recycling of organic matter, based in the United States. He has been working with the Centre for Entrepreneurship and Innovation to

patent the invention, and to scale it up from a prototype to a commercial product. So far, he has secured a contract to fabricate units for use by the local government. The university's vice-chancellor, Isaac F. Adewole, also recently directed the centre to begin expanding the use of the biogas digesters across the campus.

In addition to working with students and staff members at the university, the centre is also increasingly reaching out to small businesses in the community, in an effort both to help stimulate local economic activity and gain new insights into the informal economy, and to carry the knowledge and ideas of the university further afield—an example of a feedback cycle creating positive change both within the university and beyond it, says Garba. "The programme is like a hydra—it's branching into so many different directions. The more we do, the more we know it is the right thing to do," she says.

Library staff at Bayero University in Kano are collecting and cataloguing old manuscripts from the area.

Chapter Five

# From Basic Needs to Broader Impacts

**WHILE CHAPTER 4 DEALT WITH TRANSFORMATIONS IN TEACHING AND LEARNING METHODOLOGIES,** including the impact of technology, this chapter looks at the ways in which universities are addressing a variety of issues outside of the classroom. Strengthening an institution requires vision and strategy—as well as sufficient resources. This chapter will look at how other universities identified and achieved progress in priority areas, often in ways that brought benefits beyond the original intention.

In the process of relaying these stories, the notion of a "hierarchy of needs" within institutions comes into focus. For universities hindered by such basic challenges as power failures, equipment shortages, and poorly trained staff, focusing on questions of improving research output and aligning with national development priorities becomes all the more difficult. Practical hurdles such as poor record-keeping and computer illiteracy can prevent universities from operating efficiently and making good management decisions, which in turn prevents them from getting all of the oars of their management, academic planning, and research policy systems, amongst others, pulling in a coherent direction. In fact, it is sometimes the mundane, unsexy stuff—the small yet effectively targeted grants for things like new computer equipment and training for library staff—that end up making the biggest difference.

In many instances, relatively small amounts of funding from Partnership foundations helped universities to make major strides in addressing stumbling blocks. The arc of this chapter begins with stories of universities successfully addressing basic issues, and follows the progression of needs to show how other institutions used funding opportunities to move beyond the basics and address important campus issues, such as the lack of facilities for people with disabilities and the high prevalence of HIV and AIDS. Finally, the chapter concludes with a look at the Innovations at Makerere Committee, a comprehensive programme at Makerere University in Uganda that realigned the university's approach to teaching and research with the government's decentralised poverty reduction policies. This example of a university demonstrating its usefulness to the national development agenda, and thus beginning to engage government from a position of strength, also sets the stage for later chapters on research and social engagement.

### Libraries as Hubs and Nerve Centres

"The library in any university is the pivot around which academic activities revolve—teaching, learning, and research. The totality of these activities makes the university what it is, and if the library that is to support all of these activities in not well-funded, we have a problem," says Benedict Oladele, head librarian at the University of Ibadan in Nigeria.

A decade ago, Ibadan had a problem. The crash of the Nigerian currency, the naira, during the dark days of the military regime meant that the library could not afford to replenish the imported books and journals it had once enjoyed in abundance. Local journals and university presses were also closing their doors. While each Partnership-supported university suffered its own version of political and economic meltdown, university libraries effectively became time capsules, filled with obsolete books and journals from the 1970s that gathered dust on their shelves. Oladele used to check the citations listed in papers written by students, and would find their references to be decades old. Now, as university libraries in the rich world race to keep pace with rapidly evolving new technologies like e-books and provide access to a vast array of academic journals and articles in digital formats, their counterparts in the developing world are stepping up to the racetrack.

**The library in any university is the pivot around which academic activities revolve—teaching, learning, and research.**

The arrival of increased bandwidth on campuses, coupled with support for the refurbishment of libraries from various foundations (Carnegie Corporation supported libraries at universities in Ghana, Nigeria, South Africa, Tanzania, and Uganda; while the Mellon Foundation funded South African university libraries, and the MacArthur Foundation did the same in Nigeria and, to a lesser extent, Madagascar) helped to kick start a new era. Book and journal collections have multiplied, in both paper and electronic forms, and universities have increasingly digitised their collections, and are pooling their resources in innovative ways to make these advances stretch further. For instance, universities across sub-Saharan Africa now enjoy open access to the JSTOR archive of scholarly journals as a result of a MacArthur grant. The MacArthur Foundation support also helped universities such as Bayero to gain access to the "e-granary", a device known as "the Internet in a box", which provides a trove of millions of electronic resources that institutions can access while offline.

Staff training is also a critical part of the process of improving university libraries. In the process of automating the University of Ghana's Balme Library, for example, library staff attended training at the Mortenson Center for International Library Programs at the University of Illinois at Urbana-Champaign, and returned to pass their insights on to other facilities in Ghana through their participation in a local network called the Consortium of Academic and Research Libraries in Ghana. At Mortenson, staff had learned that they could save considerable time and money by entering books into new online catalogues as they returned through

The library at the University of Education Winneba has been modernized.

the circulation desk, ensuring that the most popular titles were digitised first, while leaving dustier volumes for later, says Professor Anaba Alemna, the former head of the library who oversaw the digitisation process. They were able to share this and other ideas with their colleagues in Ghana who were standing at the edge of the water contemplating their own plunges into automation.

Gearing up for automation was a steep challenge for facilities whose staff members had often never before handled computers. "In Europe, America, South Africa, and Asia, ICT introduced a new dimension to library services, but that was not the case in the library here," Oladele recalls. "Ninety-nine percent of our staff were trained in Nigeria, when the idea of ICT did not even exist. We have a generation of staff who can't use a computer." Ibadan also sent staff to be trained at the Mortenson Centre, which has had a tremendous impact, says Oladele.

Now, the library at Ibadan is firmly embedded in the digital age. Through its relationship with the MacArthur Foundation, Ibadan's library gained access to the Journal Donation Project, a scheme at The New School, a university in New York City, that offers journal subscriptions at a significantly reduced rate—as much as 80 percent—to scholars in countries recovering from upheaval. The increased access to timely new paper and electronic sources is helping academics and postgraduate students to climb back on the research band-wagon, which has profound importance not only for research, discussed further in Chapter 9, but also for the development of the next generation of academics, addressed in Chapter 8.

The University of Ghana's library has also benefited from shiny new journals as well as digital resources. "You can see this, it's the latest one you can see, from 2010," says Alemna, holding up one.

> *Before this you couldn't get a five-year-old journal in the Balme library. The faculty virtually abandoned us because they thought we didn't have recent materials. In fact, even now you have to convince some of the faculty to come and see what has happened in the library.*
>
> *After the automation a team of us had to go [to the different faculties] to meet the staff to try and explain to them that things have changed. The other thing we did was train staff and faculty on how to access the materials. We realised that people were not coming because they didn't know how to use the system. So with all those professors who felt too big to come ask for assistance, we became rather proactive and [went] to their offices to show them how to use the systems.*
>
> *We also targeted the graduate students. Every year when they come for orientation, we send them to the library and show them how to use the electronic journals. The impact it's had on graduate students has been felt already. Our image and visibility has improved.*

One precondition for library automation at the University of Ghana was that the university provide a generator to ensure a constant power supply. Because of the generator the library can now work extended hours, making it a popular destination, particularly at night and when the power is out elsewhere. "The students all

rush in here, because the dorms have no lights, the classrooms have no lights, but the library has lights," says Alemna.

### System Overload

At the University of Dar es Salaam, meanwhile, one of the numerous consequences of rampant growth was the difficulty that administrators faced in keeping track of their growing student body. The manual systems they used for admitting new students, allocating them dorm rooms and tracking their academic progress, were all well and good for a university with a mere 3,000 students in 1990. But fast forward to the year 1998, and administrators were using the same basic tools to manage a student population of 16,000 spread across 72 different academic programmes.

Not surprisingly, the processes for admitting and managing students had become chaotic and the existing systems constantly led to mistakes by the overburdened staff. With support from Carnegie Corporation, staff from the university's computing centre custom built a computerised record management system, tailored for the university's increasingly complex needs. The Academic Registration Information System (ARIS), as it is called, has created a fairer, faster, and more transparent system for managing admissions, campus housing, and academic records, says Respickius Casmir, who heads the project. Whereas before, university staff would be holed up in a hotel for three weeks manually selecting admitted students into academic programmes, the computerised system now assigns students their courses automatically, based on test scores and stated preferences. A process that once took three weeks and absorbed huge amounts of staff time and university money is now completed in an hour and a half with a few keystrokes, says Casmir.

For students, these processes have helped to eliminate arduous registration queues, and have made it far easier to access exam scores, which are now available online, rather than posted on public notice boards. Each student has his or her own account, and can log in to see courses and exam results. Transcripts, which once took a month to issue, are now available within a week. "Before that, the transcript officer had a desk piled with papers, and was typing the transcripts on an old typewriter," says Casmir. "There were lots of complaints, lots of headaches." Lecturers also now enjoy greater flexibility, as they are able to mark exams from home or during holidays, and simply post them online. The new systems have also cut down the opportunities for fraud. For instance, all changes made to grades and test scores leave a trail within the system.

The system proved so successful at the University of Dar es Salaam that Tanzania's Commission of Universities decided to adopt the programme for managing admissions to universities nationwide. This means that students no longer have to fill out arduous forms or travel from remote villages in order to apply to one the country's 12 public universities. Because the national university commission's computer system is linked to the National Examinations Council, university entrance exam results are simply uploaded from one database to the other. Students can send in their applications to universities either online or by mobile phone.

While the system at first encountered hitches at the University of Dar es Salaam, says Casmir, continued investment from Carnegie Corporation helped the university to build an effective management system that could then be scaled up to serve national needs. "It helped us to make sure the system was sustained," he says.

For a comparison of experiences, Makerere University in Uganda bought a proprietary information management system, which has been so difficult to maintain and upgrade that the university is beginning to plan production of its own system along the lines of ARIS. Says Nora Mulira, the director of the directorate for ICT support at Makerere:

> *When the university wanted to put in place a system, there was no homegrown system. The system is proprietary. We bought it from South Africa. We have problems of maintenance that cost upwards of $300,000. Other challenges include university policies on tuition fees payment and academic transcript design that change sporadically and are not easily adopted by external developers. Thus, we are looking at developing an in-house MIS [information management system] created by our students….We have a new MIS strategy, looking at transferring from a proprietary to a homegrown component that would reduce costs and provide timely customisation.*

## A Culture of Leverage

A series of three large MacArthur Foundation block grants to Bayero University in Kano, a relatively young institution located in the arid far reaches of Muslim-dominated northern Nigeria, yielded not only funds but also, more importantly, new ways of thinking and new connections to the outside world. The grants contributed to the creation of a new agricultural faculty and computing centre, an overhaul of the library, a new advancement office, and a computer purchasing scheme that helped to put previously unaffordable laptops and computing equipment in the hands of hundreds of academic staff members. The common thread across all of these programmes, says Muhammad Y. Bello, the university's former MacArthur Projects Implementation Committee Chairman, is that they have helped the university to generate a "culture of leverage".

When the university needed to build a new centre for information technology, for example, the MacArthur Foundation put up half the funds for the building, and the university leveraged its relationships with private companies to generate the rest of the funds and furnish the centre with computers and hardware. The approach filtered down to the departmental level as well, says Professor Bello.

> *A case in point is the Department of Mathematical Sciences. They have a postgraduate programme in computer science, from which they get some money. So when they were given money for equipment from the grant, they brought a proposal to the university and said, "Can we put in our money and provide the structure for a new computer laboratory, and set it up ourselves, so that we can maximise the use of the grant money to purchase as many computers as possible?"*

The new Faculty of Agriculture at Bayero University in Nigeria fills a need in a region depedent on subsistence dryland agriculture.

## voices of change

### From the Village to the Laboratory: A PhD Student Targets the Weed That Destroyed His Family's Crops

MacArthur PhD Fellow Abdulrahman Lado is working to find potential herbicides to control striga gesnerioides, a parasitic weed that destroys cowpea crops; Bayero University, Kano, Nigeria

The cowpea is the most important green legume crop in Nigeria. It's an easy source of protein, and a very important crop for food security. Striga can cause up to 100 percent crop losses—it can take over the land, and land is so scarce. If the land is infected with striga, it will most often have to be abandoned.

We are trying to find out if there is any variety of cowpea that can generate a herbicide against striga….All the previous research has failed. We feel that the only hope is to get a herbicide that will circulate in the crop system so that the weed will absorb the chemical and be killed. So now we are trying to find the herbicide-resistant cowpea.

The constraint is the chemicals. One of the primary chemicals I've found is not available in Nigeria. But if we disseminate the research, it might be made available in the country.

My father is a farmer from Kaduna State. We grow cowpeas, and the crop is close to my heart. I developed an interest in finding a solution to the striga problem from childhood. It not only reduced our yields, but also led to us having to abandon whole fields. Land is scarce, and the population is growing. So I thought, why can't we find a solution to this problem?

My family is very happy—I'm one of the pioneer students in my place, and I thank God for that. I never thought of having more than a secondary school education. I didn't even know about it. I attended a college of education first, and a student there convinced me that we could go to university together. I was employed here as an assistant lecturer, and from there I discovered that MacArthur offers a PhD fellowship within the university.

This work will have a lot of importance for food security. [The crop is] used to bridge the gap between the hunger months, and it's also a cash crop. I hope this work will alleviate a major constraint of cowpea production, and uplift the living standard of the people.

*Even after the grant money, they have gone a step further. Recently the department proposed to the university that they had a room that could be converted into a computer laboratory. They said, "We have this much money we can use to make the room ready, if the university can provide us with the computers."*

*I believe that this was learned based on the [department's] experience of the MacArthur grant. Some departments would have asked the university to do everything. But this department said, "We can do so much, but can you chip in?" The university management was very happy with this initiative.*

That strategy has now worked time and again at the university. As a relatively young institution serving Nigeria's arid and impoverished north, Bayero was struggling to grow amidst government cutbacks in 1999, when its relationship with the MacArthur Foundation began. Over the next four years, for instance, the university received only one capital grant from the federal government, says Bello. With support from the MacArthur Foundation, however, it still managed to build new facilities. "For me, the grant served two purposes," says Bello. "It provided us with money to do a number of things, but it also taught us to source money from other places."

When it came to the funding of international PhD training, for example, the university under-budgeted in the amount of money they requested from the MacArthur Foundation, meaning that academics travelling abroad would have only about half the funds they needed to study and live. University leaders realised that they could correct the mistake by sourcing new funding to cover the shortfall. They approached the governments of Nigeria's different states, which agreed to provide additional funding so that the university could stretch its funds further and provide all of the planned fellowships.

## Local Expertise in Agriculture

According to Bello, Bayero University has been held back by its history. Created in 1977 as an appendage of another more established institution, the Ahmadu Bello University, located in the city of Zaria, in a neighbouring region, Bayero was initially a humanities university, which focused on Islamic studies, Arabic, and history. Lacking both human and financial resources, the university was ill-prepared for the adoption of a new government policy, which stated that universities should focus 60 percent of their programmes on the sciences and only 40 percent on the humanities. At the time, Bayero had not a single science faculty.

Yet it was also obvious that the region sorely needed more advanced training in agriculture, says Bello. Predominately Muslim and racked by poverty, Northern Nigeria is a world apart from the steamy, tropical south, where a vibrant, chaotic sort of hand-to-mouth entrepreneurialism punctuates street and market life. In the north, by contrast, more than 70 percent of the population relies heavily on dryland subsistence farming. Food security is increasingly tenuous in the face of population growth and climate change, and these tensions periodically erupt into violent clashes over access to land.

The government had promised to build a new college of agriculture at the university in order to combat some of these challenges head-on. However, when that support failed to materialise, the MacArthur Foundation agreed in 2002 to provide half the funds for the construction of new facilities, making an exception to its usual rule of not funding facilities because of the sheer urgency of the problem.

Within the few short years of the existence of the new Faculty of Agriculture, the college rapidly built up a critical mass of academic staff, won accreditation, and was recognised by the National Universities Commission for punching above its weight. In 2006, the faculty had advanced far enough to begin its own postgraduate training programmes. Now, academic staff work directly with farmers in the field, and appear frequently on local radio programmes about environmental issues and food security. They have developed expertise in dryland agriculture, soil science, crop science, disease management, and livestock, for instance, working to help local women poultry farmers gain better market access. "We know the farmers' problems, and we conduct research on dryland agriculture and crops that are drought tolerant," says B.M. Auwalu, the dean of the faculty.

**Most of the problems that farmers are facing are systemic problems. We believe our research activities have to help.**

There are a number of international agencies that used to collaborate only with research centres from other parts of Nigeria, but in the last few years the university has entered a number of these collaborations. For example, a new agreement with the Alliance for a Green Revolution in Africa, a non-governmental organisation of African scientists funded by the Rockefeller Foundation, the Bill and Melinda Gates Foundation, and others working to increase food security, will soon see the university working with 800 local farmers to deploy new farming technologies widely—while a new innovation platform brings together farmers, local officials, and researchers to share their ideas.

The university has also entered collaborations with the Africa Rice Centre, based in Cotonou, Benin, and the International Institute of Tropical Agriculture, an international research organisation with branches across Africa, including Ibadan, which works on crops such as yams and cowpeas that are important to local food security. "Most of the problems that farmers are facing are systemic problems," says Auwalu. "We believe our research activities have to help."

### Connecting the Campus, One Computer at a Time

Across the campus, meanwhile, Bayero University's Academic Staff Union had another idea: The union wanted to give their members the opportunity to buy their own computers. Ten years ago, most academics could not afford computers, and had to rely on public Internet cafes to get their work done. So the union

approached the vice-chancellor to request that the university act as a guarantor in order to establish a revolving loan scheme for the purchase of computer equipment.

The idea was to make money available for lecturers to borrow, repayable in low-interest monthly instalments through salary deductions. This would make it affordable for them to purchase computers, while also replenishing funds to keep the programme ticking over, keeping funding available for others. Although the vice-chancellor at the time was supportive of the concept, it soon became clear that the scheme would be untenable because of high interest rates charged by banks on commercial lending.

Instead, the university asked the MacArthur Foundation if it would provide start-up funding for a revolving computer loan scheme. A small grant of $150,000 from the foundation established the programme, and $50,000 of additional funding later on enabled a faster uptake of the loans. All told, the scheme has now revolved five times, and has enabled well over 1,000 academic staff members at Bayero University to collectively purchase a million dollars' worth of equipment, says Professor Bala Sidi Aliyu, the current chairperson of the committee in charge of granting the loans.

> *I think the most important impact of the loan has been the increase in productivity. People have come to understand the importance of computers. They can use [them] after office hours, and some go to the extent of preparing PowerPoint lectures, which is something that is not very common because people don't have the skills, and they lack the appropriate equipment. There may be just two laptops available in a department of 20 academic staff, and you have to book in advance in order to use a computer or a multimedia projector and a standby generator. With the scheme, all those that require the use of a computer have been given the opportunity to acquire one.*

## An IT Centre for the Campus and Community

As staff members at Bayero University gained access to their own computers, the university was working hard to boost the technology infrastructure on campus. In building a new Centre for Information Technology, the university came up with an innovative way to share IT with the larger community, while generating funds to keep the centre self-sustaining. When the MacArthur Foundation put up half of the funds for the construction of the new computer centre, the university leveraged its outside contacts to complete the construction and furnish the centre. For example, a company called the Nigerian Development Insurance Corporation equipped the largest computer laboratory in the building, donating more than 100 computers.

The centre opened in November 2008, bringing a flood of new e-resources onto the campus. Access to online learning resources such as World Lecture Hall and MIT open course materials has expanded, and Moodle is increasingly popular as an e-teaching and learning platform. Now, the centre is poised to gain access to fast bandwidth through Step-B, a programme to boost science and technology in Nigerian universities, financed by the Nigerian government and the World Bank.

The university has built up the computing centre as the gateway through which the university itself increasingly accesses the outside world. As the tenuous branches of connection have thickened to solid boughs, the centre has begun to access new programmes such as MIT's iLabs, with plans to incorporate the programme in the Departments of Physics and Electrical Engineering this year. The centre has also begun developing e-learning platforms, using Open Source where possible, and has been the test bed for new computerised records and financial management systems that the university has since adopted. Increasingly, they are using forums like AfNog, a platform for Internet services providers and network engineers from African education institutions to exchange technical information.

All of these developments are increasingly feeding back into the classrooms, reshaping the learning process as teachers and students alike gain access to new resources that offer new avenues for deepening their knowledge and satisfying their curiosities. "I know that I'm teaching in a more well-informed environment," says Auwal Alhassan Tata, a systems and network administrator in the centre, who also teaches ICT. "I'm getting more challenging questions, and I've learned to use the words 'I will go and find out'."

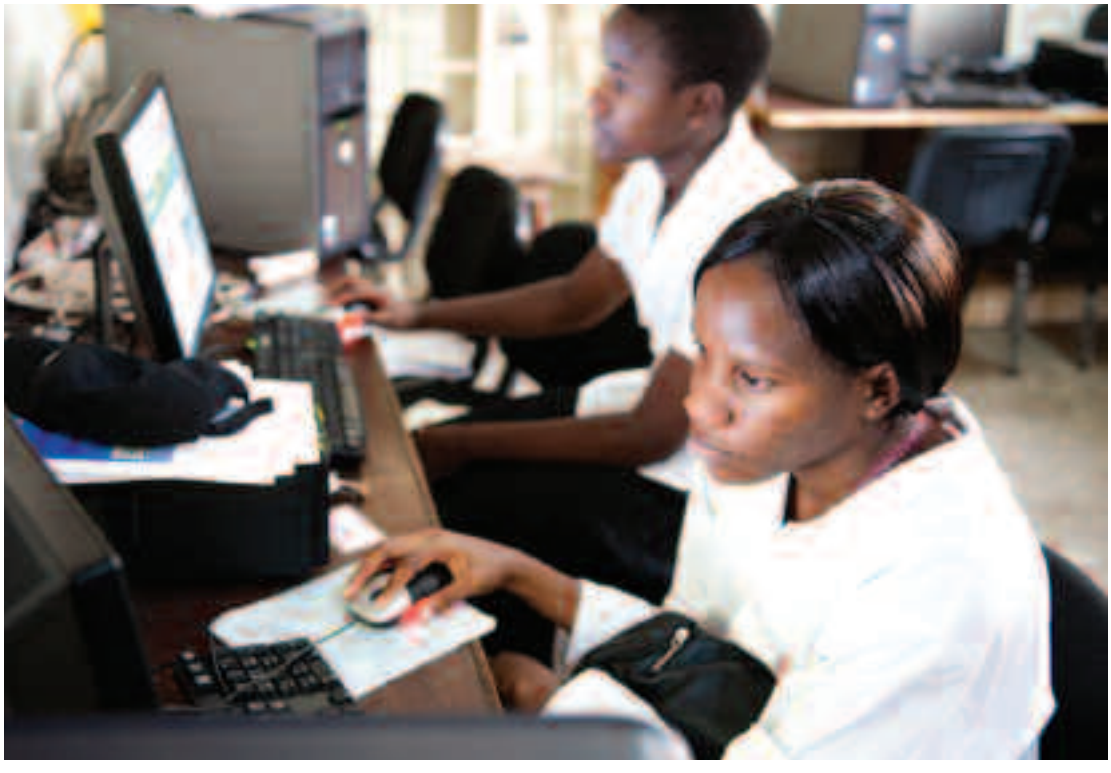
"I graduated from the university in the late 90s, and there was no centre like this. Most of our lecturers were using outdated materials. Most lecturers now are up-to-date, and most are conducting research. If you are not current, you will be left behind," says Abdullahi Bin Abbas, a finance and accounts manager at the centre.

Yet even under ideal circumstances, running a computing centre is a complex and costly enterprise—and conditions in Kano are anything but ideal. In power-scarce countries like Nigeria, the operations and upkeep of energy-intensive facilities such as libraries and computer centres present unique challenges. As campuses become more IT-intensive, they also must become more resourceful, and find new ways of generating the revenue to keep the centres running, says Bello. With only a sporadic trickle of a power supply, the facility must maintain multiple generators and the centre needs between 10 and 12 drums of diesel a week just to keep its doors open, says Bello. While the university supplies about four barrels, the centre must make up the shortfall through other means.

Controlling the use of meagre bandwidth by, in part, preventing students from downloading hefty sound and video files is another constant challenge. "It's one thing to get something started, but it's another to ensure that it continues," says Bello. As a start, the university introduced a small ICT fee, levied on students as part of their registration. Students and academic staff also pay modest fees for browsing the Internet.

"The centre also introduced a number of training programmes to people outside the community, because computer training is now absolutely necessary," he says. "Part of the money goes to the university, and part of the money is retained at the centre."

While the centre primarily serves students and academic staff on campus, it also doubles at nights and weekends as a training place for the community at large. The centre offers diploma courses in computing, which target office workers in need of computer literacy. Another certificate programme serves high school graduates. The centre also has a Cisco Academy, and has introduced training in Oracle and Java. In the past two years, these activities have generated 31 million naira (roughly $200,000 based on the exchange rate of December 2010) in income for the centre. By capitalising on the high demand for computer skills around Kano—and the limited capacity in the area to obtain the skills elsewhere—the university has helped to ensure the long-term viability of the centre.



**While the centre primarily serves students and academic staff on campus, it also doubles at nights and weekends as a training place for the community at large.**

### The ICT Gurus Are Student Interns

While gaining access to computer equipment was an initial hurdle for many universities, finding the people with the necessary skills to run that equipment and to train others to use it posed another challenge. Recognising the old adage that young people typically embrace new technologies with more enthusiasm than their elders, Cliff Missen, an ICT expert from the University of Iowa who came to Jos on a Fulbright fellowship in 1999, saw an opportunity to provide students with a valuable training opportunity—while also helping to keep the university's IT labs running. To address the skills gap, Missen helped to introduce a student internship programme that has since spread to every nook and cranny of the campus. Missen, meanwhile, went on to establish Widernet, a non-profit organisation specialising in improving digital communications for learning, which received support from Hewlett and other Partnership foundations.

The campus now has computer labs in its hostels (student housing), academic faculties, and departments, and in libraries. Student interns staff all of these facilities, which not only saves the university money, but also provides students with hands-on experience and highly marketable skills. That is no small achievement: as universities have struggled to access ICT, they have also struggled to equip adequate numbers of students with the technology skills that are so essential to developing the economy overall.

At Jos, the Faculty of Law has led the way. "Law was the first faculty to invest in purchasing computers for its faculty lab; the first to develop a student-managed lab; the first to introduce commercial services to support sustainability and growth; the first to provide Internet access points in all academic and administrative offices; and the first to host a faculty internship training programme," according to *The History of ICT at the University of Jos*, a book that chronicles the story in detail.

Building off its investment in setting up a basic computer lab, the faculty proceeded to develop a web-based legal research lab. According to the book, students led the efforts to develop this facility and to commercialise it by charging fees for services and attracting legal researchers from the region to come and use the facility, enabling them to sustain and improve services.

The faculty invested money in buying computer equipment and in networking the faculty. "The Faculty of Law was well on its way to developing a sustainable model for ICT development at the faculty level," the book says. But it was not easy. The budget became tighter as the federal government reduced its spending on universities. The faculties were forced to make tough budget choices and seek other sources of funding to sustain their activities. Opportunity appeared with the award of a grant by Carnegie Corporation in 2003, and the formation of the Jos-Carnegie Partnership (JCP). The grant committee was looking for ways to partner with students to strengthen the university, and the early success of the student-run computer lab offered a model from which other faculties on the campus could learn.

Interns at the Faculty of Law computer lab passed on their skills and experience by training and mentoring other students in running the ICT labs. "Their successful efforts demonstrated how other students could play a key role in the development of the university's infrastructure and services," the book says.

> *The self-sustaining lab raises capital by selling Internet access. The profits are used to purchase fuel, maintain equipment, and finance training....With support from JCP, the faculty subscribes to two legal databases, Westlaw, and HeinOnline....Each graduate student must take a compulsory course on ICT-based legal research. The presence of this lab serves as a training facility enhancing the image of the faculty nationwide and the law curriculum locally....Justice Damulak of the Plateau State Judiciary described the legal research lab as the best thing to have happened to legal education in Nigeria. Post-graduate students see the lab project as capable of turning the faculty into a centre of excellence. Lecturers in the faculty regard the project as a new beginning in legal research in Nigeria.*

The training and services generate revenue to keep the facility running, and attract legal scholars and students from university and the government, which, in turn, raises the profile of the law faculty and enables the university to serve as a direct resource to government. Last year, for example, master apprentices, who are experienced interns who commit to a deeper level of involvement in the programme, conducted training for the attorneys general of the federal and state governments. The faculty also produces its own online law journal.

**So many legal works are now online, and there are so many databases. We gain exposure to it here, and it really reflects in your grades.**

"People come from other universities in the country to be able to carry out their research here," says Frances, a master apprentice and second-year law student, who is also the manager of the Thin Client Lab[1], in the Abuja Hostel. He also gets satisfaction from helping fellow students learn. The programme has also allowed academic staff members to tap the interns' expertise, as it is often student interns who show them how to utilise e-learning tools in their classes. And all of this, of course, translates into marketable skills and deeper learning for the interns.

"If you go back to the classroom, we're doing far better than our peers," says Frances. "The ICT knowledge is an added advantage in law. So many legal works are now online, and there are so many databases. We gain exposure to it here, and it really reflects in your grades."

[1] A Thin Client Lab is a networked computer laboratory where all of the machines are linked to one or two powerful computers that do most of the work. Thin Client Labs are often deployed in developing countries as a way of cutting down operating costs and making use of old machines.

The Partnership With Students has helped to improve facilities and beautify the campus at the University of Jos in Nigeria.


JOS CARNEGIE PROJ.
PARTNERSHIP WITH STUDENTS
BORE HOLE AND WATER
PUMP
PROVIDED BY STUDENTS OF THE
UNIVERSITY OF JOS
APRIL 2006

### Shifting Campus Culture by Meeting Basic Needs

At the University of Jos, in central Nigeria, students are the pivot around which the university's strategy for developing itself has revolved. Since the university received its first grant from Carnegie Corporation in 2002, it involved students heavily in its efforts to improve campus facilities and strengthen ICT: in addition to staffing the computer labs in hostels, libraries, and academic departments; they work closely with the university's alumni office to undertake campus improvement projects.

With a programme called Partnership With Students, the university also involves students in finding practical solutions to many of the problems that affect quality of life in dorms and on campus, such as shortages of water and electricity. In the past, for example, the administration frequently had to pay for water delivery trucks to service hostels, a practice that angered students, who had to queue for their water, and which frustrated everyone. Further shortages of water sometimes forced students to scavenge supplies from nearby communal wells, which were frequently contaminated. Such problems fuelled constant tensions amongst the students and the administration. Violent student protests over poor service delivery often resulted in the campus being closed for months at a time.

**The Partnership With Students programme has lifted students into the role of decision-makers and coordinators, instead of passive recipients.**

At Jos, administrators realised that they could instead engage students in investing in their own welfare. "The Partnership has let student leaders see that dialogue is a much stronger force than violence," says Francis Ayomoh, the former president of the Jos University Medical Students Association. "Since the inception of this programme, student leaders have been made to realise that if you have a problem, come through the right channels and we can discuss it and get a solution to the problem."

To ensure the sustainability of the programme, students committed to pay a nominal fee of 150 naira each (about one US dollar) at the beginning of each term (or "session", to use the Nigerian term) to fund campus improvements. Each year, the administration works with student leaders to identify top-priority projects. On a tour around the campus, Ayomoh and other student leaders point out the fruits of the project: in the massive Abuja hostel compound, foot paths that were once dishevelled and garbage-strewn are now adorned with landscaping and benches. Students have left their brightly coloured plastic buckets at new communal water taps that work only at certain hours of the day, when there is electricity available to pump the water. The secluded road that connects the hostel to the campus—once a crime hotspot where muggings and rapes took place—is now lined with solar-powered street lights. Students can even be found studying underneath them at night, when the power goes out elsewhere, says Ayomoh.

The programme has lifted students into the role of decision-makers and coordinators, instead of passive recipients, says Jennifer Agaldo, a recent student representative on the programme. "It has given the students a sense of belonging and ownership," she says. "For me personally, one of the most important things was learning to be accountable for the finances, and for every responsibility that we were given."

The programme has helped to turn the formerly adversarial relationship between the students and the administration into a relationship of trust and respect, says Elizabeth Abama, the dean of students. "Students are not just the leaders of tomorrow. They can lead even today," she says.

### International Exposure Gives Voice to an Advocate for the Disabled

New university strategies have also empowered individuals to spark change in their environments. The University of Ibadan in Nigeria, for example, prioritised internationalisation as a key strategy for revitalising research and staff development on campus that culminated in the opening of a new office of international programmes in 2009, with funding from the MacArthur Foundation. Convinced of the importance of providing young academics with opportunities to broaden their horizons internationally, the university used this funding from the MacArthur Foundation to offer academics fellowships for stints of advanced research and study abroad.

For Akinbola Ruth Bukola, a young law lecturer, internationalisation furnished the opportunity to spend three months at the University of Birmingham in Alabama, following her interests in human rights and education access, and learning about how universities in other countries dealt with disability issues on their campuses. "If somebody can't physically see you, and you make no provision for that, you are denying them the right to education," she says. "These issues kept bubbling up in my mind. Very little has been done in Nigeria in terms of legislation and awareness."

In Birmingham and Tuscaloosa, which she also visited, she saw that both universities had dedicated centres to cater to the needs of the disabled. For the first time, she was fascinated to see adaptive technologies, such as speech-to-text and text-to-speech computer programmes. "I went to watch how students were assisted with note-taking, and how evaluations and assessments were done with special facilities."

Initially, she intended to do research for a PhD topic. Returning to Ibadan, however, she realised that she also wanted to make a more tangible contribution based on what she had observed, and work towards establishing similar facilities and policies back in Nigeria. She made her proposal to university authorities, who agreed to form a committee to investigate introducing a new disability policy on the campus. The committee probed the different legal, medical, and access issues, and agreed that far more could be done to make the university more hospitable to people with disabilities. "There were some skeletal services and special accommodations given, but there was no systematic delivery," she says.

The process led to the university adopting a new policy to increase access for disabled students and staff, the first in Nigeria. "The university has started to do a lot physically," such as installing access ramps. It has also hired sign language interpreters, Bukola says. "But the socio-cultural setting is such that whatever is done for the person with the disability is looked on as a favour, rather than as according them their rights. Until now, the disabled were looked at as beggars, when in actual fact they deserve to be educated and empowered."

"I count myself as fortunate to be involved in disability advocacy and research. It's an area that gives me joy. It gives me a lot of delight to see that I'm impacting lives not only through teaching and research, but also through advocacy. At the end of the day, it's how you impact people's lives that counts," she says.

**The idea of the "HIV mainstreaming" programme is both to provide practical services such as testing and professional counselling, and also to provide forums for students to speak openly about the issue.**

### Taking on HIV/AIDS

At the Catholic University of Mozambique, meanwhile, the Ford Foundation helped to support students and others on campus in contending with the devastation of the AIDS pandemic. The university, which is located in a region where estimates show that around 35 percent of the adult population is infected, received funding from the Ford Foundation in 2008 to set up a university-wide "HIV mainstreaming" programme. "Honestly, every student of ours has had the experience of somebody who is sick or somebody dying from [HIV/AIDS], within their families," says Dr Hemma Tengler, who directs the programme. "Nobody can actually say 'I have never come across it'."

The university realised that students, as young people often having their first sexual experiences, needed to be able to access information about the virus—as well as testing for it—on campus. In populations such as Mozambique's, where HIV spreads primarily through heterosexual sex, young adults face huge risks, particularly as many of them get caught up in the very patterns of multiple partners, inter-generational sex, and transactional sex that spread the virus.

Said one student, who requested anonymity:

> *HIV in Africa is not news; it's our reality. It's a social disease, and that disease exists in my own family—both my parents are HIV-positive, and my younger brother is HIV-positive. There are many of us in the same situation, but because of the stigma all of them are in silence. We do not yet share it with the group. But we have to talk about our culture. Because of the group, I have changed my own ways of thinking about gender. I think when I am a doctor, I will do many things about HIV.*

In recognition of these complexities, the programme was expanded to deal with HIV/AIDS in the context of sexuality, reproductive health, and gender issues. "We realised that we have to go far deeper into our analysis of why HIV has become such a big problem, and what HIV and AIDS means for the younger generation," says Tengler. The idea of the programme is both to provide practical services such as testing and professional counselling, and also to provide forums for students to speak openly about the issue. Each of the university's seven faculties has a "nucleo"—a student-led group—that leads activities on HIV and AIDS. Students hold workshops to talk about the issues, but also venture out into markets, prisons, and social programmes for the HIV-affected in order to spread awareness and offer their support.

At one such workshop, held by the nucleo of the medical school, called *Pabodzi*, or "Together" in the Senna language, first-year medical students form groups of about 10 and circle their chairs for a discussion on gender and culture. A third-year student named Peniela facilitates the discussion, throwing out statements such as, "Men must have several sexual experiences before marriage", and, "A woman should accept everything that her husband says", in order to get students talking and discussing their opinions.

"I want to see what they know, what they believe," she says. "Most of us come to the university with our own culture." Attitudes and beliefs vary wildly. Some of the students, for instance, share views that it is acceptable for men to have multiple wives, and to hit their wives. As the university's student population comes from all over the country, but particularly the country's less developed northern and central provinces, the full range of viewpoints, from tribal to modern, are represented here. In some areas of the country, for example, the culture dictates that if a man dies, his widow must sleep with the man's brother—in a cleansing ritual that has ironically contributed to the spread of HIV.

The *Pabodzi* students also work with a local home-based care group, which offers support to people with AIDS. Piniela works with the children in the group, some of whom are infected, while others are AIDS orphans. They also visit markets to distribute information on HIV and demonstrate how condoms are used. Peniela considers both this and the work with the university students as good training for her future as a doctor: "When a person comes to you, that person has feelings. That person has a culture," she says. "What we want to do is help them find their own solutions."

The prison work, for instance, was initiated by medical students completing their internships in rural hospitals, who were trying to gain a better understanding of the local dynamics of the pandemic. Says Tengler:

> *They did some research and [made observations about access to ARVs[2]] and how ARVs are managed at this rural hospital. But then they also went out into the rural communities, and they discovered the prison and they realised that nobody is going to these people. So they started also catering to [the prisoners] and giving [them] information.*

[2] The common abbreviation for antiretroviral drugs.

*I think the university has gained a lot of knowledge of the dynamics and the social phenomena of our society. Without engaging in this awareness-raising work, we would not have come across this knowledge. To a great extent, these awareness-raising activities are also action-based research.*

*We have trained our people in a series of methodologies. By using participation and involvement of the audience in our awareness-raising, we get to know a lot about what people think, [their] attitudes, their perceptions of what is socially acceptable, what is not acceptable: where there is social pressure, and where there is freedom to decide.*

*Each and every debate…provides us with a better understanding of where the difficulties are in combatting HIV and AIDS. They also show us why all these programmes that we had on HIV and AIDS have not really resulted in reducing prevalence.*

## Making a More Responsive University

Higher education is particularly important for developing countries because of its potential to foster local research and innovation. Outsiders have long sought to transfer "appropriate technologies" to the developing world, with mixed results. Yet locals are naturally often best positioned to identify their own problems, set their own priorities, and find their own solutions—which provides yet another argument for investing in good management practices at universities.

At Makerere University in Uganda, transformation hinged around the university's quest to align its own teaching and research with the government's antipoverty efforts. When civilian rule returned to Uganda in the 1980s, the new cash-strapped government followed the prevailing advice of the time, and invested in primary education at the expense of higher education, leading to further neglect of Makerere. However, as the government embraced a policy of "decentralisation" aimed at fighting poverty at the local level, Makerere seized an opportunity to overhaul itself in a way that would make its importance to the country more apparent.

The Innovations at Makerere Committee (I@Mak), which existed between 2001 and 2009, was created to forge links between the university and government, and help the university to realise its transition from an "ivory tower" to an institution with real social relevance.

"Literally every faculty needed to revise its curricula," recalls Samwiri Katunguka, the I@Mak programme manager. "With Uganda's turbulence over the years, the transition led to Makerere's realisation of the need to become more relevant in the new environment, which brought services closer to the people through the policy of decentralisation. Government wanted a partner institution that could study, understand, and come up with possible models that would help improve service delivery."

I@Mak recognised that Makerere could both play a role in the training of government workers, and in re-shaping its curricula and gearing its research to support the government's decentralisation policy. The intervention was far-reaching, extending into issues of university management as well as academics and research. The programme started with support for streamlining financial management, in order to help strengthen the university's ability to manage large gifts.

To steer the course of I@Mak, a committee met regularly, comprised of representatives from the local government; government ministries of finance, education, and economic planning; deans from the faculties of agriculture and social science; and the College of Health at the university. While the Rockefeller Foundation provided the bulk of the funding over the project's lifetime (and its successful "Public Health Without Walls" model), its support also helped to bring the World Bank on board, in an effort to extend the programme to other Ugandan universities.

Over nearly the next decade, I@Mak offered competitive grants for research and curriculum development in all disciplines, ranging from sociology to medicine, with an antipoverty focus. The catalogue of achievements is long. Over its lifetime, I@Mak supported some 200 researchers, resulted in six new academic programmes, and gave rise to 33 new short courses for government officials working in rural areas. The programme supported the training of some 100 master's students and 50 PhDs.

Across the university, the processes of developing these new interventions increased academics' capacities for planning, strategising, writing proposals, and publishing, Katunguka says. Building on the I@Mak model, the university opened private sector forum to enhance collaboration between the university and private industry, and it established new centres for entrepreneurship and commercialisation, which, he says, will help the university to realise the benefits of further innovations. In addition, the programme led to a new policy requiring all undergraduate students in the university to complete rural internships.

I@Mak also helped to spur and inspire individuals to greater things. For instance, one Makerere professor of agriculture, inspired by the indigenous knowledge of local farmers, designed a soil testing kit with an I@Mak grant, and has now gone on to design a communications and innovations platform that links rural farmers to banks, NGOs, and the university community.

In total, the changes that the university realised through I@Mak led to stronger university management; a stronger curriculum; and a stronger culture of research, innovation, publication, and connectedness with government and with communities, Katunguka says. All of these elements combined have provided Makerere with a strengthened institutional base to build on, as shall be seen in Chapters 9 (Developing Research) and 10 (Dirty Hands, Fine Minds). While the programme itself came to an end when funding dried up in 2009, Samwiri Katunguka, the I@Mak programme manager, says that the transformations it helped to spark will endure.

Omaima Abou Bakr and her colleagues from Cairo University created the Women and Memory Forum, which serves as a centre for scholarship and dialogue on the changing roles of women in society.

Chapter Six

# Journey to Academic Freedom

**The greatest threat to freedom is the absence of criticism.**

– Wole Soyinka, Nigerian writer and poet

**THIS SHORT CHAPTER VISITS BOTH EGYPT AND SOUTH AFRICA TO LOOK AT HOW ACTORS WITHIN** higher education in those two countries, located at the extreme opposite ends of the continent, have emerged as beacons of discourse in countries affected by profound social and political change. While Chapter 5 argued that universities' efforts to strengthen their internal cultures and structures have given them increasingly solid platforms for engaging with government and society, this chapter looks at how societal tensions challenge academics to assume roles as critics and take active part in debates on important societal issues, which can be challenging as well as, often, politically uncomfortable.

Universities strive to be partners to government in the name of development, but their relationship to the state is in fact complicated. If universities are indeed bound up in a pact with government and society, they also must also shine a light of critical inquiry on the relationship between the two—a role which sometimes puts academics at odds with authorities, in Africa and elsewhere around the world. This chapter looks at Egypt and South Africa in particular, because it is there that the debates about the role of higher education in a democracy have been the most pronounced, and have received the most direct support from Partnership foundations. But aspects of the stories in this chapter are also deeply relevant to situations in other African countries.

In Egypt, tensions are reflected in a long-standing struggle for greater academic freedom, expression, and autonomy in higher education, which stems in part from the high degree of direct government control over

University students in Cairo attending a rally.

higher education. Egyptian universities have also long been flashpoints for the economic, religious, and political tensions that underlie the broader Egyptian society.

In South Africa, meanwhile, the end of apartheid brought about a new era of soul-searching in higher education. Suddenly, universities and individual academics found themselves redefining their relationships to the structures of government in a number of different ways. This sort of ideological realignment formed the backdrop against which universities also undertook processes of "transformation" on their campuses. While historically white campuses opened their gates to large numbers of black students, and began to grapple with questions of how to remake themselves for a new political era, historically black universities fought to overcome their deep legacies of deprivation and marginalisation. Four of the foundations within the Partnership—Carnegie Corporation, the Ford Foundation, the Kresge Foundation, and the Mellon Foundation—supported these processes in significant ways.

## The Quest for Academic Freedom

Long before the historic uprising in early 2011, Egyptian universities were places of simmering political tension. Over decades, the universities incubated many of the nation's movements for political reform, including pro-democracy activists, and members of the Muslim Brotherhood, a previously banned Islamist organisation. This role often made universities a thorn in the side of the government and subjected them to tight controls. It was against this backdrop of tension that Emad Mubarak enrolled as a law student at Ain Shams University in Cairo during the 1990s.

Active in leftist politics, Mubarak quickly found himself targeted by the security forces stationed on the campus. He says that he was barred from participating in student government, and detained on numerous occasions for the roles he played in organising demonstrations. On one occasion, he says, security agents beat him so badly that he still feels the pain in his knee. For his various political activities, he says, he was expelled from the university for a year, and also barred from taking his exams on various occasions.

When he finally graduated with a law degree in the year 2000, Mubarak resolved to use his legal expertise to fight for greater academic freedoms on university campuses. With support from the Ford Foundation, he established the Association for the Freedom of Thought and Expression (AFTE), an organisation that aims to uphold within Egypt the internationally recognised Lima Declaration on Academic Freedom and Autonomy of Institutions of Higher Education within Egypt, and has employed a number of different strategies to raise awareness of issues on campuses, and support students and academics who face different forms of suppression.

Here, as elsewhere in Africa, demand for higher education greatly exceeds supply, and universities are forced to accept far more students than they can reasonably serve, leading to inevitable compromises in quality. Yet in Egypt, activists say, a long history of government interference has further distorted the shape of the quality-access-financing triangle described in Chapter 1.

For 30 years, Egypt's Ministry of Interior Affairs had maintained the presence of security forces on all public university campuses, says Mubarak. The government had progressively clamped down on the spaces of dissent on campuses, to the point where security forces would control student elections, staff appointments, and even the presence of visitors on campuses, he explained during an interview in November 2010.[1] "Basically, all the [university] power structures are controlled by the government," he said. "The university presidents and deans are now standing with the government and the security forces against the students and academics."

The AFTE monitors and documents abuses of power by the Egyptian government; pursues strategic litigation on academic freedom issues; supports academics and students who run afoul of the authorities; and offers training on academic freedom issues in Egypt.

Wrongful detention and torture of student activists is rife, says Mubarak. Increasingly, the organisation has focused on helping these students to document violations, especially using video and new media such as Facebook and Twitter. With support from the Ford Foundation, the organisation has also worked to raise the profile of academic freedom issues in the news media.

The tightening fist of government did not just squeeze freedom of expression, however. The state also directly controlled university budgets, and dictated the numbers of students accepted into different

[1] The author was unable to contact Emad Mubarak after the early 2011 uprising.

academic departments, politicising issues of academic quality. "It's broken the idea of the independence of the universities," Mubarak explained. While Mubarak was unavailable for further comment after the uprising of early 2011, which forced the resignation of former president Hosni Mubarak, other higher education activists have widely expressed their intentions to fight for a major overhaul of higher education, and particularly for more freedom within the higher education sector. As this book went to press, however, it was still unclear to what extent the revolution would spur changes in the sector.

## voices of change

### A Timeline of Repression

Emad Mubarak, executive director of the Association for the Freedom of Thought and Expression in Cairo, Egypt

In 1977, there was an historical demonstration against rising prices for basic needs in Egypt, and the government started to think about the risk students posed in social and political life. The Islamic movement in the universities started to grow, as did its influence on student life.

In 1981, in response to this, the president released a decision to send security forces to campuses. They realised that the student movement is a risk factor for the government. They wanted to make sure that there weren't staff members, teaching assistants, or professors in the Islamic movement, and they started to clamp down on political activism.

In 1994, the law controlling universities was replaced, so that the president of a university was to be nominated by the president of Egypt. Since 1995, there have been no real elections on campuses. The nominations are made by the administration and the security forces. In the hiring of academics and TAs, most are members of the national party.

Then there is scientific research: the government has interfered in different ways, in what kinds of research can be done. For example, there are no topics related to sex, religion, or politics. There have been a lot of cases of scientific research being stopped, of researchers being punished by the government or the university. They are not allowed to collect data. If I want to do empirical research outside the university, I have to get permission to publish data and statistics.

One of the strategies we have used is direct legal support to professors and students. There are a huge number of cases of legal support for students who have been beaten or physically violated on campus. Most students involved in political activism in the universities have been facing legal investigations. Many students have been beaten and tortured, some with cigarette burns on their bodies.

We began working on the security forces litigation four years ago. We held workshops with academics and lawyers, and prepared legal papers on international standards in academic freedom and the independence of universities. The lawyers used these legal papers to support their case.

We believe the case will start a new era for Egyptian universities. It has raised awareness, and also has encouraged students to document rights violations themselves.

By the time the Egyptian revolt of early 2011 occurred, however, activists such as Mubarak had already succeeded in setting certain processes of change in motion. In late October 2010, Egypt's robust freedom of expression movement won an important victory. The Egyptian High Court handed down a decision barring governmental security forces from university campuses, reversing on paper what had amounted to decades of direct interference by the national security apparatus in academic life. Emad Mubarak, along with many different colleagues in universities and organisations, had already begun working on the case four years ago.

The organisation held workshops with academics and lawyers, and prepared legal papers on international standards in academic freedom to submit to the court. Now, as Egypt prepares to enter a new political era, advocates such as Mubarak are attempting to introduce broad, sweeping changes to the landscape that will both strengthen and entrench academic freedoms on campuses.

### The Women and Memory Forum

Omaima Abou-Bakr is a very different sort of Egyptian activist, engaged in a different sort of quest. A scholar in literary criticism at Cairo University, Abou-Bakr helped to found the Women and Memory Forum, a tightly-knit group of female academics from the university, who have worked to bring a feminist perspective to contemporary Egyptian scholarship, as well as to unearth forgotten female voices of the past, by collecting oral histories and archives of writings by female pioneers in fields such as education and medicine.

At first glance, this story might seem better placed in one of the following chapters of this book, such as gender or research. Abou-Bakr's story appears in this chapter, however, because more than anything, the group has focused on expanding the discourse around modern Arab feminism, a topic which clearly fits within this chapter's exploration of universities as beacons of discourse around important societal transitions. In Egypt, perceptions of women's roles have changed rapidly and are fiercely contested, socially as well as politically. Much of the organisation's work centres around giving voice to new intellectual perspectives, which are important for understanding Egyptian society, yet are often overlooked within the universities, says Abou-Bakr.

Initially, the group formed in 1995 as an independent group of six women who all wanted to study Arab history from a gender perspective. Over the past five years, this informal group has morphed into an independent organisation, housed off-campus, with strong linkages to other local civic and cultural organisations, and an extensive library collection that is available particularly to young researchers and graduate students who want to study or incorporate gender perspectives into their research. The group also conducts gender training courses at universities, and has translated a series of course readers, in order to make issues of gender's intersections with sociology, psychology, political science, and other issues accessible to Arabic readers.

While Egyptian society has made great strides in introducing women's issues into public debates at the grassroots level, she says, there is a huge need for deeper intellectual examination of some of the religious and gender dynamics by academics—which is largely not happening within the universities. At first, the group faced critics, who felt that this circle of elite academics had little to contribute. She says:

> *"What does this have to do with real women on the ground?" We used to get that a lot: "You're up there in the ethereal sphere of intellectual considerations and theories—how are you going to contribute to real social problems on the ground?" But now, they are realising the importance of cultural issues and cultural perspectives.*
>
> *They realise that information from religion and culture and history can have its role in supporting developmental projects.*

Through her work, Abou-Bakr says, she has encountered many surprising and delightful historical figures—women whose stories have re-shaped her understanding of the past, and caused her to question modern conceptions of women's roles in the present. For example, she has been studying one group of female scholars—the *muhaddithat*—from the 14th and 15th centuries, who taught the Islamic sciences both within mosques and within their own homes, often instructing men. "Our modernists have the idea of strict segregation between the sexes in Muslim society, but perhaps it wasn't quite as strict as we thought," she says.

Another more recent pioneer from 1915, named Malak Hifni Nassef, was the first Egyptian woman to give public lectures at Cairo University, and took the opportunity to speak about women's education and participation within the public sphere long before the term "gender" even really existed, she continues.

While Abou-Bakr and her colleagues have brought the stories of these women to life, they have also assembled a vast archive of writings, as well as other literature on gender-related topics, which is open to students and researchers who often lack such resources at Egyptian universities. While Egyptian universities are in some ways exceptionally hospitable to women, and most of them are in fact roughly 50 percent female, gender topics are still largely ignored in higher education, she says. In its haven of off-campus independence, the organisation has filled both a vacuum and a niche that has long been missing. The researchers focus on contemporary issues as well as history, and their debates are increasingly framing the current Egyptian climate of economic difficulty in gender terms. Says Abou-Bakr:

> *The number of female students is on the rise [at universities], which is good, but after graduation unemployment is very high....It's always the women who pay the price of unemployment more. You find the tendency of female graduates is to say, "It's not worth it—I'll stay home. If I receive a low salary, I'll just spend it on gas; I'll spend it on transportation; I'll spend it in day care centres..."*

*People sometimes misinterpret this and say it's because of religious conservatism, and that women are going back to the veil, and the traditional ideologies. But it's not necessarily because of the religious conservatism, it's because of the financial practicalities of life. People can always justify it: if you don't find a job, you tend to say, "Maybe religiously it's also better to stay at home". But that only comes later.*

These and other studies have left Abou-Bakr fascinated by concepts of comparative feminisms, and particularly Islamic feminism. "I wanted to achieve compatibility," she says. "As a practicing, committed, Muslim woman, I also have a vested interest in rescuing Islam from patriarchy. What Islamic feminists would like to argue is that Islam has been hijacked by patriarchy, and we'd like to fix that."

### South Africa's Journey

At the other end of the continent, in South Africa, the transition from apartheid to democracy was placing very different kinds of intellectual demands on universities, and opening up new opportunities at historically white "liberal" universities such as the University of the Witwatersrand and the University of Cape Town. The end of apartheid saw these institutions' roles shift from being generally critical and oppositional to the regime, to being important supporters of a new political process and a new government that was desperately unpractised in the business of governing.

**You expect universities to be places where open, independent, robust encounters with what is happening can take place, in ways that are not necessarily possible within the society at large.**

As a nation that had miraculously stepped back from the brink of racial conflagration, South Africa flowered as a symbol of hope in the international spotlight. Suddenly, South African academics found themselves awash in consulting opportunities, as the inexperienced young government, along with a bevy of new NGOs, clamoured for their expertise. New policy institutes mushroomed, all waiting in the wings to do their part to support the birthing process of the new nation.

Deborah Posel, a sociologist at the University of the Witwatersrand (known to most as "Wits")[2], in Johannesburg, was troubled by some of the patterns she saw taking shape in the new landscape. "The university as a place of critical independent thinking was, for many people, receding," she recalls. Instead, academics threw themselves into the effort of nation-building, abandoning their roles as critics and commentators, and, instead, played the parts of policy architects and implementers.

[2] She has since moved to the University of Cape Town, and directs the Institute for Humanities in Africa, which opened in 2010.

"You expect universities to be places where open, independent, robust encounters with what is happening can take place, in ways that are not necessarily possible within the society at large." In short, Posel felt that there was a need for rigorous intellectual engagement with the questions and tensions emerging from the birth of a new South Africa, but she did not see it happening.

Posel says she wanted to create a space within the university where academics could "hold a lens to this very complex society that was in transformation." She wanted to offer a counterpoint to what she saw as the overly utilitarian direction that universities were taking, and to link the South African experience to larger global processes.

What emerged from this vision was the Wits Institute for Social and Economic Research, known by its somewhat tongue-in-cheek acronym, WISER. The institute launched on September 14, 2001, and quickly became a rich nucleus of intellectual inquiry at Wits, drawing heavyweight scholars such as Achille Mbembe, a Cameroonian political philosopher best known for his seminal critique of discourses on Africa, *On the Postcolony*.

Posel's ambition was to create an intellectual space that would draw people from around the university into a cross-disciplinary community whose work would converge around specific themes central to South Africa's emergent new social order, including: Law, Criminality and the Moral Logistics of Everyday Life; Meanings of Money and Cultures of Consumption; Cultures of Cosmopolitanism; Urban Forms and City Lives; Life, Death and the Politics of the Self; and Sovereignty and the Limits of the State. It would be a centre for research and scholarship, but also a forum for public events to engage the general public in debates around these key themes.

Posel's idea was unconventional at the time, and drew vociferous opposition from some colleagues, but as it took shape, she found two unexpected allies and supporters in Stuart Saunders of the Mellon Foundation and Harvey Dale of Atlantic Philanthropies, a foundation that was not associated with the Partnership, but has given extensive support to South African universities. WISER could not have happened without these two supporters, who were willing to put substantial funds not only into the relatively poorly-resourced humanities, but also into a concept that was experimental and unproven, yet, Posel maintains, still had a vital role to play in keeping a space open for critical inquiry during a key period of social change.

### A New Set of Railway Lines

The process of transformation in South Africa also posed steep new challenges for university leaders. After 1994, the University of Cape Town (UCT) had to cross "from one set of railway lines to another," says Njabulo Ndebele who joined UCT in 2000 as vice-chancellor. For him, it was a radical departure from his previous post at the University of the North, one of the country's struggling historically black universities. Arriving at the nation's leading university, which was roaring down its new set of tracks, Ndebele felt lost.

"I felt like I was on top of a moving train, and I was somewhere in the middle of it, trying to reach the engine room to get some control over it, but the train was moving very fast," he recalls.

This was the challenge of being a leader during a period of radical change. "Changes had occurred of a very dramatic nature, which I think was necessary to shake an institution out of historical complacency," Ndebele recalls. And these changes had raised challenging new questions: How does the university's inherited value system respond to a new socio-political environment? What degree of self-awareness does the institution have as it engages with a new society?

Those were the questions that preoccupied Ndebele. One of the biggest tensions was in trying to balance the need to iron out inequalities within the system with the need to preserve the strengths and pockets of excellence that the university possessed.

This was around the time the South Africa's Council on Higher Education published a report exploring similar themes. This document, known as the "size and shape report",[3] highlighted numerous problems and weaknesses in the higher education system, most of them stemming from the inequalities of a system that was "incoherent, wasteful, and unco-ordinated" (sic) and ill-suited to serve the needs of a democratic society.

In this paradigm, the future of universities such as UCT and Wits is still highly contested. There is much debate over what ultimate shape these institutions should take, how they can situate themselves as research institutions, and also become more reflective of South Africa's multiracial population. South Africa emerged from apartheid with a highly stratified higher education sector, and tried to fix it by ironing out the inequalities through merging and consolidating a number of different institutions (as discussed in Chapter 2). But while institutions such as UCT and Wits have performed well, many of the historically black universities remain dysfunctional, with no easy fixes in sight, and with limited money available to address the many problems.

"I think there's a dawning realisation…that you can't remake this sector," says Posel. "It's just not going to be possible without doing significant damage to the institutions that are functioning. I think that is a politically very, very uncomfortable realisation."

As these difficult questions were first being raised, Cheryl de la Rey, who was the deputy vice-chancellor for academics at UCT at the time,[4] found the early meetings of the Partnership, which periodically gathered together institutional leaders from around the continent, useful forums for hearing about how other African

[3] Full title: "Towards a New Higher Education Landscape: Meeting the Equity, Quality and Social Development Imperatives of South Africa in the Twenty-first Century".

[4] She subsequently became the director of the Council on Higher Education, South Africa's quasi-governmental higher education body responsible for quality assurance and standards, and is currently the Rector of the University of Pretoria.

universities had navigated their own periods of dramatic change in the past. "It was not only an opportunity to network, but also to learn from the experiences of other institutions," she recalls. "In the post-independence phase, they had debated certain policy questions that we were now confronting for the first time."

These were questions of how to deal with issues of equity and redress, how to work with the government yet maintain autonomy, and how to embed practices of efficiency and quality assurance in university structures. A decade of such challenges, she says, has stretched thinking and forced more creativity into problem-solving:

> *Ten years ago, we spoke about historical divisions. Well, the demographics of student participation have changed. It's quite dramatic. Over the decade, it is quite a different picture [of higher education in South Africa]: much more conscious of its role in Africa, much more aware of its own role as a system. We are much more aware of the potential contribution we now make in the international environment. The breadth of collaborative arrangements and partnerships has grown markedly.*

**University leaders believed that the best way of addressing widespread racial and cultural issues was through a series of unfettered dialogues.**

### Taking Responsibility

Yet deep tensions remain at UCT, as they do at other South African universities. The transformation is incomplete, and the processes of achieving it have often been painful, for the institution and the people within it.

That much was illustrated clearly by a campus-wide programme called Khuluma, established by the university with support from Carnegie Corporation, to open meaningful dialogues between diverse groups of people on the campus about the legacy of apartheid. The university began the process after an institutional survey in 2003 revealed widespread racial and cultural rifts amongst members of staff. University leaders believed that the best way of addressing these issues was through a series of unfettered dialogues—a process that has been illuminating but also bruising, says Crain Soudien, the current deputy vice-chancellor at UCT responsible for transformation.

The Khuluma dialogues were meant to bring people together in a space where they could "look each other in the eye and talk about their own experiences," says Soudien.

> *[We] went through quite a bruising process around all of this. It raised the temperature on the campus. We have gotten to a point with the Khuluma process where we have not stopped it, but we can't get any more people to come voluntarily. We are now having to cajole people to come, because we think that there is unfinished business.*

*We are working very hard at trying to put in place ongoing forums for reflection, for dialogue. It's hard because what the Khuluma forum [does] is ask people to take responsibility, which I think many people have immense difficultly with...to think about my own kind of complicity, in some ways, with the past, and my own ongoing reproduction of hurtful and discriminatory practices which continue to characterise our society.*

*So, it's hard stuff. We have won major victories, I think, but we haven't gotten to the point where [staff members] think about what it is that they are teaching, what they are researching, in relation to these kinds of questions.*

For Soudien, who has written extensively on issues of race, class, and education, this process ties in with the larger question, still unresolved, of the role of South African universities within a democratic space. As democracies develop, the role of universities grows more complex, in order to fill the spaces that open up in society for new kinds of challenging, uncomfortable questions to be posed. While the current discourse is polarised between adherents to a state-aligned, "developmentalist" paradigm for universities, and those who believe in complete autonomy and academic freedom at universities, Soudien says there needs to be a middle ground.

"I argue that those two streams miss the complexity of the context in which we find ourselves," he says. Support from the Partnership foundations for research has allowed academics to begin nibbling at the edges of these big questions, he says. For example, one team of accountancy lecturers recently completed research interrogating the concept of accountability for a developing country with diverse cultural traditions, like South Africa.

"These programmes have, in my view, been immensely successful, because they have stimulated a whole range of people in the university, and the most unlikely kinds of issues have emerged, which has helped us come to these questions of change in the university in a much more organic kind of way," he says.

"The university has to be thinking about public good in a much more deliberate way," says Soudien. "These rights and privileges of academic freedom and universities' autonomy are not unconditional, and [they] aren't absolute freedoms, particularly in a context such as we now find ourselves in, where we have been declared to be the most unequal society in the world. The university has to think about that."


Catherine Kanabahita has mentored hundreds of Female Scholarship Initiative recipients, including Harriet Muhindo at Makerere University in Uganda.

Chapter Seven

# Crossing Boundaries, Building Bridges, Opening Doors

**TO RE-INTRODUCE THE KENTE CLOTH METAPHOR, ACROSS THE WARPS AND WEFTS OF GENDER,** skin colour, religion, culture, and tribe that shape Africa's rich social fabric, there is, in higher education, an overarching dilemma: Who gets access to university and the better career prospects, social mobility, and income that a degree promises? As we have seen[1], the stakes are particularly high for many African countries, with their large and ambitious youth populations. Yet very few African countries currently manage to enroll more than five percent of their student-age populations in higher education.[2] University systems have stretched themselves to keep pace with exploding demand, brought about by growing populations, rising middle classes, and the expansion of primary and secondary schooling in countries such as Uganda and Tanzania. However, as the gap between supply and demand for university education widens, students from poor and marginalised groups are all too often pushed aside, in large part due to the poor quality of their schooling.

**As the higher education sector has grown in complexity as well as in numbers, universities have been reaching for new ways to better represent the societies they serve.**

As the higher education sector has grown in complexity as well as in numbers, universities have been reaching for new ways to better represent the societies they serve. At Makerere University in Uganda, for instance, affirmative action programmes have helped women rise from a small minority to half the total student population. In South Africa, meanwhile, elite universities once reserved mainly for whites are steadily gaining higher proportions of black students. These processes have led to marked shifts at individual institutions and across university systems, raising new tensions and important questions around access to, and success in, higher education.

[1] "The youth bulge" issue is also addressed in Chapter 5: Transformations on Campuses.

[2] See Chapter 2 (University Snapshots) for country data.

This chapter will explore these dynamics, placing in the foreground the issue of gender. "Most people within university spaces have to negotiate their gender and their sexuality as a very core relationship to their success or failure in that space," says Jane Bennett, director of the African Gender Institute at the University of Cape Town, in South Africa, which is supported by Ford Foundation. After decades of being virtually shut out of, and silenced within, universities, women across the continent are now accessing higher education in unprecedented numbers, surmounting huge cultural and financial barriers in order to study. Increasingly, they are also joining the ranks of the academic staff and administration, transforming these institutions from within by their very presence.

Pushed to change by committed advocates, both male and female, universities are at the same time slowly transforming their cultures to reflect greater inclusiveness. This process is not just about faces in classrooms. It's about creating a sense of belonging in the universities, so that a diverse strata of students and employees—women, the rural poor, ethnic and religious minorities—feel that they belong, and that the institution reflects, or at least makes space for, their interests, values, priorities, and identities.

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**Gender equality is more than a goal in itself, it is a precondition for meeting the challenge of reducing poverty, promoting sustainable development and building good governance.**

— Kofi Annan, former United Nations Secretary-General

**When you educate a man, you educate an individual....When you educate a woman, you educate a family, a nation.**

— Ghanaian proverb, often attributed to the educator James Emman Kwegyir Aggrey

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The quotes above refer to the fact that women in Africa, as elsewhere in the world, have traditionally been the nurturers of children and the caretakers of families. In situations of poverty, however, these roles often come at the expense of education for all but the luckiest and most determined of girls and young women. Visiting any rural village in Uganda, say, or Ghana, one sees girls, often wearing their school uniforms, taking on serious and time-consuming domestic responsibilities while carrying infant siblings on their backs.

As a child growing up in rural Uganda, Harriet Muhindo took on this regimen of tedious and time-consuming work. She fetched wood and water, and worked in her family's fields; but what she really wanted to do

was study. She loved school, and dreamed of leaving her village one day to continue learning. Then insurgents attacked her village, killing her father and laying waste to her family's crops. As subsistence farmers, the family's options were bleak. Her mother conferred with the extended family, and decided that Harriet, then age 12, should marry an older man in the village. Her bride price would help to stave off the family's hunger and financial ruin, at least for a while—although perhaps it never occurred to the family to wonder what price it would have to pay in curtailing a young girl's education.

## Hungry for Education

One can only imagine all of the hundreds and thousands of Harriet Muhindos who must hunger for an education that remains beyond their grasp. The truth is that not many girls in Muhindo's shoes ever get a chance to break the poverty cycle. If sub-standard schools do not thwart them, interrupted educations, early pregnancies, or family urgencies, sometimes triggered by situations of conflict and war, almost surely will. The barriers of access to university for rural women are huge, and begin piling up long before birth.

Nevertheless, Muhindo was one of the lucky few to realise her dream. In 2006, she arrived at Makerere, having won a highly coveted scholarship to study law (see box on p. 105 to read her story). There, she joined hundreds of other marginalised young women in accessing university education through the Female Scholarship Initiative (FSI), a programme underwritten by Carnegie Corporation. Similar programmes helped to increase female participation and change individual women's lives, not only at Makerere, but also at the University of Dar es Salaam in Tanzania, and in other universities in Nigeria and South Africa.

**It's not just about fewer women getting access to universities; it's not just about sexual harassment; it's not just about the clustering of women students in one discipline over another—it's everything, absolutely everything.**

Since the early 1990s, and in some cases before that, gender stalwarts at these universities have struggled to open the door to higher education for women such as Muhindo. Their efforts stem from a much broader struggle to assert their voices in the academic and policy debates that shape a university's culture, and claim equal space for women within university structures. "It's not just about fewer women getting access to universities; it's not just about sexual harassment; it's not just about the clustering of women students in one discipline over another—it's everything, absolutely everything," says Bennett.

Naturally, however, the story begins with access. And from the early years, Makerere led the charge. In 1989, a mere 25 percent of Makerere's student population was female. Now, after 20-plus years of concerted

effort, men and women are represented about equally on the campus[3], with women even comprising the majority of graduates in certain fields such as medicine and law. This shift was not achieved without controversy. In order to pull more women in, the university automatically boosted the grade point averages of female applicants, letting in far more women than would have succeeded based on secondary school grades and entrance exam scores.

At Makerere, the FSI began as the university was grappling with sweeping policy reforms, which had started to widen access to higher education for middle class Ugandans, yet still largely excluded poor women like Muhindo. Driven by economic imperatives experienced by so many African universities, Makerere embraced major market reforms during the 1990s. One of the most controversial of these reforms was privatisation, which resulted in a rapid and drastic expansion of the student population, as the university admitted thousands of new fee-paying students. Suddenly, the university's initial population of 3,000 students, all receiving government scholarships, mushroomed to its current size of 35,000 students, the vast majority of whom pay their own fees.

**The girls we supported have excelled, becoming doctors, engineers, and economists.**

Although this expansion opened the university to far greater numbers of female students than ever before, it did little to bring higher education within reach of students like Muhindo, who could neither afford to pay private fees, nor compete for merit-based government scholarships against the top students coming from elite secondary schools.

"Higher education was becoming the preserve of the rich. Those who could afford it would take up the university positions, and those who could not afford it were left out," says Catherine Kanabahita, who heads the university's Gender Mainstreaming Directorate, responsible for overseeing all gender policy-related activities on the campus.

The FSI was in part an effort to keep space open within the university for students like Muhindo, who would qualify to enter the university as fee-paying students, but could not afford to pay the fees themselves, says Kanabahita. Initially, the goal of the programme was to bring more rural girls into the sciences. It soon became clear, however, that many poor and rural schools were failing to adequately prepare their students—and particularly their female students—to embark on science programmes at the university, leaving a limited pool of disadvantaged females to draw from. In the end, only about 30 percent of scholarship recipients ended up studying in the science disciplines, says Kanabahita.

While similar programmes on other campuses have shared the broadly similar goals of expanding access to the poor and increasing female participation in the sciences, the programmes were structured and implemented in different ways on different campuses. At Makerere, for example, annual selection committees

[3] Females represent 56 percent of all students in the humanities, and 34 percent of all students in the sciences.

## voices of change

### A Budding Lawyer Escapes Early Marriage

Harriet Muhindo, graduate of Makerere University in Uganda

[At the time of my father's death], I was 12. I was the eldest girl, and the elders said, "You must get married." I told my mother that I wouldn't marry, but my mother said I had to. They wanted to marry me off for the bride price. They said, "Why should a girl continue to study?"

I ran away from home to my uncle's place, and I talked to one of his sons. He went to the elders to try and convince them. He told them, "If you do not want to pay for this girl, she can live here."

So instead, my younger sister was married off at the age of 11. I stayed with my uncle and joined a better primary school. He paid for my secondary school. I made sure that I worked hard so as not to disappoint him. I tried my best.

One time, I went to watch a movie in the village. It was an old movie, and there was a legal action in it. I said, "I think I want to be a lawyer." My cousin said, "How will you ever get there?" I told her, "I know I will."

When I applied to Makerere, I made sure my first choice was law. I was sitting at home, and heard the announcement for the Female Scholarship Initiative on the radio. I filled in forms, and then went to apply. I didn't have the death certificate for my father, so I had to travel six hours back home to get it. Over 2,000 people applied for the scholarship, and I was amongst the shortlisted. They sent a group to my house. You had to draw a map of where you stay. They interviewed my aunty, and my grandmother. Finally, I was admitted.

In the residence halls, they mix you with people from different backgrounds, from the more posh schools. I came only with my mattress, nothing else. FSI helped us a lot. We had trainings where they would tell us about the social life, how to conduct ourselves and be determined, how to manage stress, as well as help with interviews and CVs.

I graduated in January, and am now studying for my legal practice diploma. Currently I am the only one in my village, the only one in my whole family, with a BA. I am so glad, because they didn't want to spend money on a girl. Most often, girls get pregnant before they finish school. Domestic violence is the order of their days. My younger sisters seem older than I am. One of them, her husband reminds her, "I paid for you, and you are my property."

FSI has changed my life. When I get back home, everyone points at me as the girl who has a bachelor's degree. As soon as I am working, I won't hesitate to donate back to the programme that gave me my start. I know there is some other girl out there who wants help like I did.

sent word about the scholarship programme far and wide across the country, using radio and scouring rural schools to find potential candidates. At the University of Jos in Nigeria, by contrast, because the federal universities do not charge tuition fees, scholarship administrators instead focused on identifying and reaching out to indigent female students already enrolled at the university, but struggling to keep themselves afloat there.

One thing is certain, as will quickly become apparent further into the chapter: the programmes offering scholarships for disadvantaged women focused on a narrow piece of the overall access problem. Some criticised this approach, questioning why the scholarships should go to girls only, when boys from deep rural backgrounds and marginalised areas face similar obstacles, such as in Northern Uganda, where 20 years of civil conflict has completely arrested development, says Kanabahita. The intensity of focus did achieve results. At the University of Dar es Salaam, for example, the provision of an intensive pre-enrollment academic support programme to young women entering the engineering programme helped to boost the rate of female participation from less than five percent to an impressive 27 percent.

At Makerere, the FSI reached some 691 girls over its 10-year lifespan. "We found that it really has met a genuine need," says Kanabahita. "The girls we supported have excelled," becoming doctors, engineers, and economists. One of the strongest signs of the programme's success is that, while external funding ended in June 2010, graduates of the programme spurred the launch of the FSI Foundation, an association that will continue raising money to fund future scholarships. At least 50 FSI graduates pledged their own money to support the foundation, which had raised money to fund 10 full scholarships as of late 2010, when the Makerere University Council also announced the approval of funds for 10 additional scholarships.

## Bridging South Africa's Great Divide

In South Africa, a similar scholarship programme for black female students, called the Carnegie-South Africa Undergraduate Women's Scholarship Programme,[4] helped low-income girls navigate a somewhat different set of obstacles in order to survive, and ultimately thrive, in universities where the culture is alien to everything that they knew previously.

Once again, South Africa's peculiarities set it apart. When it comes to gender representation in the sciences, South African universities are more on a par with their European and American counterparts than with the rest of the continent—which is to say that females still lag behind males in many disciplines, but typically less so than in other African countries. And when it comes to the economic landscape, South Africa bears closer resemblance to emerging economies like Brazil and India, with vast disparities between the rich and poor. While rich South Africans enjoy living standards comparable with those of any first world

[4] The South African Department of Education administered the initial programme until 2010. Separate scholarship programmes were also subsequently established at three different universities: the University of Cape Town, the University of KwaZulu-Natal, and the University of the Witwatersrand.

nation, the urban poor live on a par with the inhabitants of Congo-Brazzaville, and the rural poor are in many ways even worse off.

On the one hand, South Africa's historically white elite universities have achieved remarkable demographic makeovers. The numbers vary across campuses, but the trend is led by the University of the Witwatersrand in Johannesburg, which now takes in a clear majority of students who are not white. For a steadily growing number of young black South Africans, these institutions have come to represent a bridge, the bridge, across the country's firmly entrenched social divide, from the world of the impoverished and excluded, to the world of the wealthy and the privileged.

These dynamics both complicate the story of the female scholarship programmes in that country, and, in a way, mask the need for having them in the first place. For if the universities are indeed bridges of social mobility, the trouble is not that too few black students are stepping out over the water, but that not enough of them are making it to the other side. Several different studies conducted in the last five years have shown that more than half of all black students who enter university in South Africa fail to graduate, often due to financial stress and poor academic preparation.

**I think the Carnegie-South Africa Undergraduate Women's Scholarship Programme helped us to understand that although finance is one of the main reasons why students don't succeed, it is not the only reason.**

The problem is particularly acute in the sciences. While the numbers of both black and female students entering the sciences have increased, women from poor rural backgrounds are still woefully underrepresented. The Carnegie-South Africa Undergraduate Women's Scholarship Programme was designed as an attempt to redress some of those historic imbalances. The programme was special in that it allowed people in the South African Department of Education, which administered the programme, to work closely with a small number of carefully selected girls and see up close the different challenges and stresses that could cause them to stumble on their journeys across South Africa's disjointed cultural landscape.

"We now know broadly the reasons why people succeed or fail," says Thandi Lewin, who managed the programme from its inception in 2002 until 2006. "I think the programme helped us to understand that although finance is one of the main reasons why students don't succeed, it is not the only reason."

One reason is the tragic legacy of South Africa's Bantu Education system. Initially designed as a deliberately inferior tier of education, aimed to ensure that few black South Africans rose above the lowly stations for which apartheid's social engineers deemed them fit, Bantu Education left deep scars in the schooling system. Laying down a new direction has proved difficult, as schools in black townships and poor rural areas continue to face problems of overcrowding, scarce resources, and poorly-trained teachers. In consequence, students come into universities to study subjects like engineering and medicine having never before looked

through a microscope or operated a computer. The challenge for the programme's administrators is to spot raw talent and potential, and to look for other ways, apart from notoriously unreliable school exam results, of predicting which girls have the best chance of succeeding.

### The Challenges Went On and On

While Fhulufhedzani "Fulu" Mulaudzi was growing up in a remote village of South Africa's northern Limpopo province, she loved to watch aeroplanes arcing distant trajectories across the sky, and dreamed of one day flying one of those magical contraptions herself. Always clever at school, and especially gifted in mathematics, she graduated at the top of her class but never thought seriously about going to university. She knew that her mother could not afford the tuition.

But when her principal told her about the scholarship, she figured she might as well apply. "I decided that I wanted to be a pilot," she recalls. "But seeing my marks in science and maths, my principal said, 'No, being a pilot is just like getting your driver's licence. You can do something even better.'" So she enrolled in a bachelor's degree programme in aeronautical engineering at the University of the Witwatersrand (Wits) in Johannesburg:

> *When I came here to Wits, I knew nothing about it. All the big buildings, and the lights—everything was just a different world to where I was coming from.*
>
> *Academically, the hardest part was technical drawing. I couldn't draw at all. And then we had to do design, and I was like, "What is that?" And we had to go to the lab. In the high school that I went to, we didn't have any labs. The teacher would just pour water into a jug, and the reaction would happen, and that was it.*
>
> *I managed to pass my first year, but the challenges went on and on. I didn't know how to send emails. I think I had used the Internet once or twice before, but you come here and the lecturers send everything through email.*

Nowadays, Fulu appears confident, bubbly, and quick to laugh. But when she first arrived at university, she was painfully shy. She struggled doubly hard to keep up with the coursework, as all of her previous schooling had been in the Venda language. In her second year, she failed four subjects and feared that she would lose her prized scholarship. In the end, she had to repeat the year.

The other students in her programme who come from the rural areas have all faced similar difficulties, she says. But where many of them have failed or dropped out, Fulu has managed to hang on, and is now finishing her third year feeling confident about her future. She says that the combination of financial support, social counselling, academic tutoring, and a second chance that was offered by the scholarship helped her

to succeed where others coming from similar backgrounds to hers have not. "It was my first time failing in my life. I never thought I could fail. For someone like me, when you fail and you don't have money, you just go and drop out," says Fulu.

The universities often display a sink or swim attitude towards students, without acknowledging that many of them simply lack adequate preparation to succeed, says Zena Richards, the programme manager of the Carnegie Bale Undergraduate Scholarship programme at the University of the Witwatersrand. One thing the scholarship programme has shown is that supporting students and helping them to succeed is an expensive and complex process, requiring, for example, specialised individual tutoring that is far beyond the means of most needy students. Unfortunately, universities are increasingly cutting back on the very academic support programmes that are often the only lifeline available to poor students, she says. "A lot of these kids come to university bearing the hopes and aspirations of their communities," she says. "So to go back not having succeeded, the psychological impact that has, not just on the individual but on the community, must be devastating."

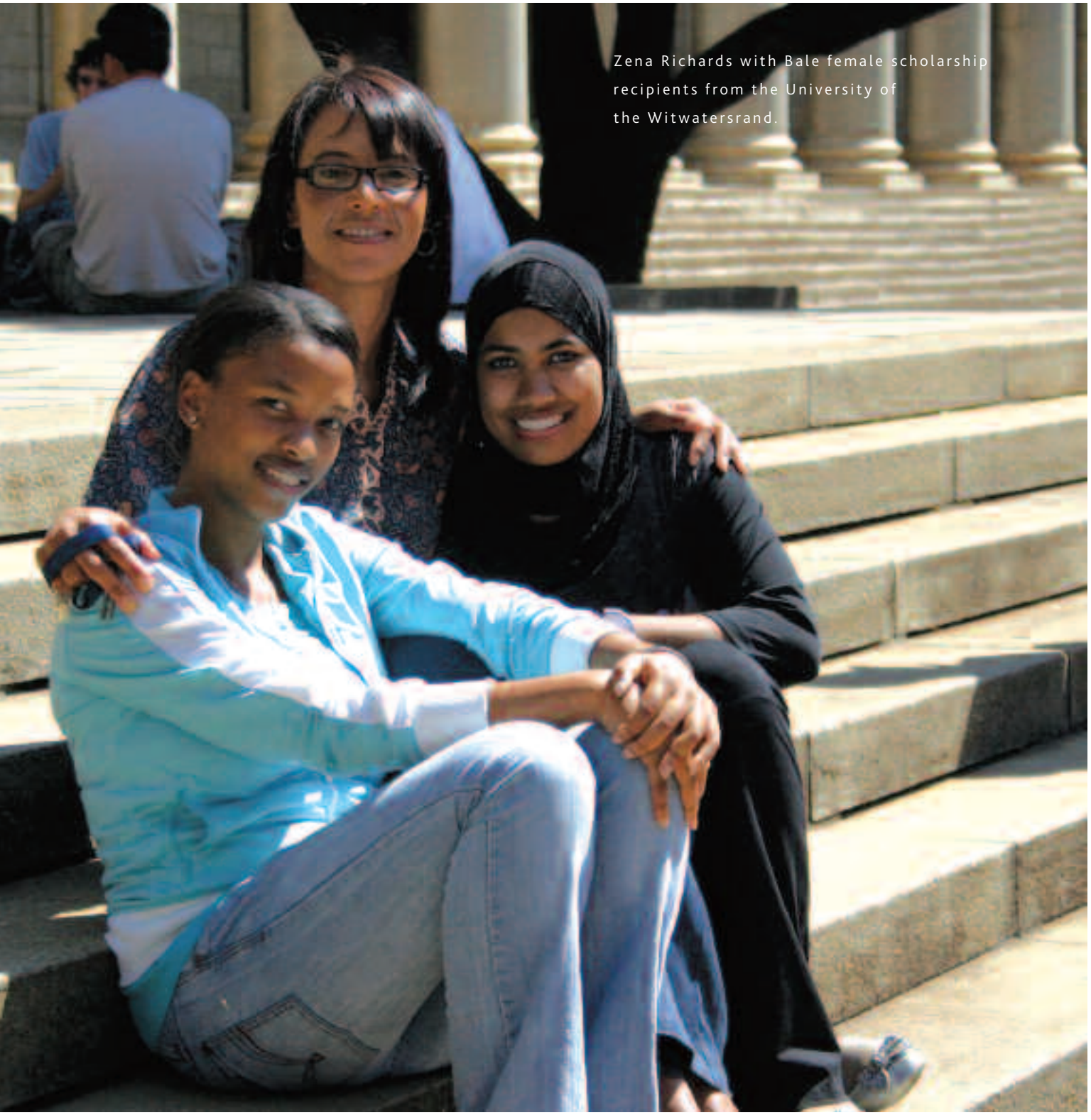
"I think we've got a problem in many institutions, where we're not helping individuals to realise their potential," says Richards. "For me, that's problematic, because the fact that many of these students are able to access higher education at all says a lot about them and their potential."

**The combination of financial support, social counselling, academic tutoring, and a second chance that was offered by the scholarship helped Fulu Mulaudzi to succeed.**

### What Kept Them Going

With so many female university students like Harriet Muhindo and Fulu Mulaudzi clinging to the margins of survival, simple inadequacies, such as insufficient dormitories for female students on many campuses, can have profound consequences. These daily struggles of finding food, shelter, books, and money for transportation have notoriously fuelled phenomena such as female students sleeping with lecturers or other older men—"sugar daddies"—who supply them with essentials. But financial struggles manifest in plenty of less dramatic but equally significant ways—for example, in students being called home from university by families short of hands to help with the harvest, and never returning.

For the girls in each country, the generosity of the scholarships, which covered tuition, housing, and meals, and also provided an allowance for books and pocket money, freed them from the daily stresses of making ends meet, and also enabled them to help their struggling families. For Harriet Muhindo, the scholarship suddenly gave her the means to maintain her younger brother in school—which the family otherwise could not have afforded. Next, Muhindo helped her mother to set up a small business of buying cassava flour in



Zena Richards with Bale female scholarship recipients from the University of the Witwatersrand.

bulk and selling it in smaller quantities for a profit at the market, which provided the family with its first modicum of financial stability in years. Now, as Muhindo has graduated from university but is not yet working as she prepares for exams to earn her licence to practice law, her mother is able to support her. "She gets money now, and can support my brother (too)," says Muhindo. "That all came from FSI money."

In South Africa, students also used portions of their scholarships to help their families. Lewin initially found it difficult to condone this practice, but ultimately concluded that empowering students to help their families could be an added source of strength, helping their success at university: "It's what kept them going," she says. "That's what they needed to do, in order to be there." Administrators of the scholarship programmes on other campuses have all observed similar multiplier effects, as young women become providers for extended families even as they study—not only helping to improve the futures of their families, but also literally disproving a commonly held notion that it doesn't pay to educate girls.

## Deeply Understanding Gender Justice

While the gender fault lines in South Africa are often inextricably linked with race and class, elsewhere in Africa, women's poor representation within higher education often stems from a deep-seated cultural notion of women as submissive care-takers of the family, which runs counter to the idea of women earning advanced degrees, pursuing professions, or asserting authority in an institution.

Think back to the image of a young girl fetching wood and water at the beginning of this chapter. These perceptions of traditional roles, thrust upon women from childhood, often overshadow them throughout their academic careers. Numerous young female academics interviewed for this project, for instance, at campuses ranging from South Africa to Nigeria, cited the difficulties of balancing work and family obligations as a major barrier to advancement in their careers, because however busy they are teaching and completing dissertations, they are, like so many of their counterparts elsewhere around the globe, often still expected to bear the brunt of child-rearing and chores at home.

**I think we have reached a stage where everybody has accepted that women must be seen and must be represented.**

Indeed, while universities have made great strides in improving female representation on the lower rungs of the academic ladder, the higher women climb, the lonelier it gets for them. Only a handful of women succeed in reaching the highest rungs of the administration; and on many campuses female full professors are equally rare. The problem is closely linked to the challenge of training and retaining the next generation of academics, which is the subject of the following chapter. Partly, it is a matter of time. Academics take years to train and advance, while efforts to achieve gender balance are fairly new. However, gender advocates maintain that shifting the balance will ultimately require changes to institutional structures, which in turn requires substantive changes in thinking about gender.

"I think we have reached a stage where everybody has accepted that women must be seen and must be represented," says Professor Lillian Tibatemwa-Ekirikubinza, the first woman to reach the level of deputy vice-chancellor at Makerere. "But whether they deeply understand what it means to ensure that there is gender justice, I am not sure. I want us to go further, so that people can understand the value of having women, for example, on a particular committee." When campus committees meet, she says, people always look around the room to see if a woman is present. If not, they raise a hand and simply say, "Gender". But Tibatemwa-Ekirikubinza wonders if this is mere political correctness:

> *I know if it is investigating issues of fraud or discipline, people will want to have a lawyer there. So they are recognising that legal expertise will add value to the committee. That's what I want to see. When we are discussing issues of a woman representing others on a committee, I want people to go beyond mere numbers and say, "What kind of women do we need on the committee?"*

## Putting Gender on the Table

Before gender could even emerge on the agendas of universities, courageous women and men first had to stick their necks out to convince colleagues and universities to recognise it as a serious issue, often in the face of strong resistance.

For Dolapo Amole, a senior lecturer in architecture at Obafemi Awolowo University in Nigeria, the journey to gender consciousness began as an academic pursuit, when she became involved in a collaborative project looking at gender issues in housing in African cities:

> *That was my first time of ever having anything to do with gender issues at all. At that time—it was 1997—it was all quite new, and people were reserved. It's not only that they weren't interested, they also didn't want to get involved. It seemed like something that would get women out of the box, go crazy, like some women's liberation movement.*
>
> *We were just adding to the body of knowledge in gender areas, and at first we thought it was sufficient. Starting to transform a community like this with respect to gender was something we approached with trepidation. We were more comfortable not having to deal with it at all.*

The arrival of Carnegie Corporation to Nigeria in 2002 forced the issue of gender out into the open in the academic setting. Carnegie Corporation had approached universities for funding proposals, and the application criteria made it clear that they wanted their support to touch all aspects of university life, including gender.

Every project presented for funding had to have a gender component, reflecting Carnegie Corporation's goal of supporting broad changes towards gender equality within the university, rather than addressing gender

in isolation through gender-specific programmes, apart from the scholarships for women. To Amole, the process of writing the grant proposal for Carnegie Corporation was eye-opening. Male colleagues sneered, while the women mostly kept silent, perhaps secretly hoping for change, yet fearing a backlash.

But when the women were divided from the men in workshops convened to discuss gender, they began to speak out. "They were wonderful sessions," Amole recalls. "The women were extremely excited at the idea firstly that they were not second-class human beings, that they were important in society, their roles were important, they were equals, and they could aspire to be whatever they wanted to be."

As for the men: "Oh boy, we met obstacles," she continues. "They just felt that no, no, no, we wanted to disturb the traditional systems and values, and that there shouldn't be any space for trying to suggest equality amongst many lines like employment, promotions, appointments, admissions. Some didn't take kindly to it at all."

The discussions were an important starting point, in that they began to expose previously unquestioned prejudices and assumptions about the university's power structures: the idea that gender was not a serious research subject, for instance, or that it wasn't necessary to have women serving on academic committees.

## voices of change

### "Madam, You Can't Say That in Your Husband's House"

Dolapo Amole, senior lecturer in architecture, Obafemi Awolowo University, Nigeria

The most difficult part—it may not be just one difficult part, but all interrelated—was juggling family and work. And then the traditional values, just finding that you have to struggle through a system which you know looks down on females. You had to fight, do double the work to be recognised.

It's easy to be intimidated, because you can feel it in the atmosphere that this is your position. When you eventually get into leadership positions, you find your male subordinates don't respond the way they would respond if you were a male. They are reluctant to take instructions or orders from you—or they don't take them seriously. You really have to assert authority.

I remember one colleague, who was a department head, saying that some of her male subordinates would not take instructions. They would say, "Madam, you can't say that in your husband's house" or, "Madam, a man is on top of a woman any time." She would tell them, "No, you can be on top of your wife, but not on top of me." She really had to assert her authority. It didn't come naturally, by which I mean she wasn't given power in that position. She deserved it, but she had to take it by force and struggle to collect it.

What I see is more women taking bold steps. I see more women taking more challenges. I see more women now asserting themselves. Now, women are more confident, not shying away from challenges and responsibilities. I think that women are also encouraging each other to make progress, to aspire to leadership positions. I see that women support each other fairly well here, because they have bought into the idea of gender equity.

"Our traditional values are deeply entrenched in us," says Amole. "Even if women were highly educated and highly placed, they were not given responsibilities. It was so deep-seated that if a man appointed a woman to a committee, it would be a matter of wonder: 'Why on Earth should you appoint her? She won't be able to perform. She will be asking you for permission to take her children to hospital.'"

## Leveraging Carnegie Corporation Support

Over the next few years, due in large part to the impact of Carnegie Corporation programmes, changes began to take hold in the university culture at Obafemi Awolowo. Increasingly, women who had previously been working in environments that stripped them of power began asserting their voices, Amole recalls. At the same time, the university unveiled scholarships exclusively for women, and introduced gender workshops across the campus.

To Amole, it was particularly helpful to have Carnegie Corporation as a carrot—and as a stick. For instance, when people grumbled about gender sensitisation workshops, we "[gave] ourselves some legitimacy through Carnegie Corporation."

Together, those three things—the gender aspects in programmes, the scholarships for women, and the gender workshops—cemented the changes, Amole says.

"In fact, now, to have a female vice-chancellor wouldn't be anything strange," she says. "Back then, it would have been unthinkable. Even the women themselves would not have risen up to the task. They wouldn't have dared. Now, they command equal respect." To demonstrate the changing ethos, former vice-chancellor Michael O. Faborode, who completed his term in the spring of 2011, appointed a woman, Funmi Togonu-Bickersteth, as one of the university's deputy vice-chancellors.

In this more open environment, the university has also recently formulated policies on gender and sexual harassment. "For me, it's really been life-changing. I have had the chance to read a lot about gender, because I have to defend the positions I take," says Amole.

## A Gender-Sensitive Budget

Sent to Dar es Salaam by the University of Education, Winneba, a few years ago to attend a training workshop on gender and budgeting, deputy finance officer Thophilus Senyo Ackorlie was having none of it. Deeply sceptical, he arrived ready to argue against the very idea of linking what he saw as two entirely unrelated concepts. Yet he was attracted by the simple logic that, since the beneficiaries of a university's budget are both male and female, the needs of both groups must be taken into account:

*Let me be honest. When this whole thing about gender-sensitive budgeting came up, I said finance is a technical subject; it had nothing to do with gender. I would challenge or argue how impossible it would be for anybody to bend the core principles of budgeting and finance to include gender. That was my view and I didn't hide it.*

*I wasn't the only person who was sceptical—the facilitators picked it up as a challenge....At the end of the second day I realised how easy it was to stick to the core principles of finance and budgeting and still incorporate the needs of the two parts of society—male and female.*

*The first presentation was a case study, which actually [posed the question]: Who are the final consumers of what you are doing? It follows that…there are two main categories of people—male and female—so you need to incorporate the needs of these two categories.*

Inspired by the workshop, Ackorlie returned and decided to apply the new consciousness to the area of the sports budget allocated to a yearly residential camp for sports teams—the objective is to ensure that, while in the camp, all the needs of the athletes are provided for by the university.

"To me, fairness means being able to address needs," says Ackorlie. "When I took a critical look at the list, it was clear that we had only men in mind...For instance, there were no sanitary pads in the budget...not because we think they don't need them, but because we think they are not necessary, or that they must be provided by the users—or the users themselves do not make a strong case for it; if they do make a case, it would not be appreciated."

He continues, "The university has embraced gender, but we still have a long way to go." As an example of change, he says, the university now funds gender mainstreaming from its operating budget, whereas in the past the unit relied on Carnegie Corporation funding. The next big challenge, says Ackorlie, is to support women in speaking up for their own needs within the institution, and, in the process, embed a gender perspective into all university decision-making processes.

### A Model for Embedding Gender in the Curriculum

For Monica Karuhanga Beraho, a lecturer in agriculture at Makerere University, the fact that gender hardly featured in the coursework reflected precisely how the under-representation of women, and their perspectives, in universities has led to a skewed and incomplete understanding of critical issues that bear upon the discipline. Like most sub-Saharan African countries, Uganda's economy depends heavily on small-scale farmers—about 70 percent of whom are women. Yet key issues such as the fact that many of these women do not own, and have little control over, the land that they work—which in turn, without collateral, limits their access to finance—were often overlooked both in the research literature and in the courses taught at Makerere.

With small grants from the Rockefeller-supported I@Mak[5] and also later from Carnegie Corporation, Karuhanga Beraho and her colleague Margaret Mangheni set about forming teams of lecturers and consultants from the Department of Women and Gender Studies to go through course materials and weave gender concepts through them. But they soon realised that pushing the changes through would not be an easy task.

Gender was becoming something of a buzzword at the university, so the women encountered little outright resistance to the changes. But Karuhanga Beraho soon began to notice subtle forms of opposition. Some colleagues simply ignored the new material and continued to teach their courses as before. "People may not say no, but they may not say yes to it, either," she says. "We realised that, especially for scientists, there are still stereotypes that gender is for the social sciences. People do not appreciate its relevance to agriculture or why they should teach it."

**We realised that, especially for scientists, there are still stereotypes that gender is for the social sciences.**

Agriculture was the first faculty at the university to incorporate gender in its curriculum, and Karuhanga Beraho was surprised by how much work the process demanded. As she and Mangheni had initiated the process, colleagues expected them to take charge of organising meetings, building committees, and setting up monitoring teams. And when the department unveiled a new course dedicated to gender issues in agriculture, there was little question as to who would teach it. "People kept looking at Margaret and Monica," she says. "It was just seen as our thing, because we had initiated the process."

Despite the challenges, Karuhanga Beraho maintains that the process was worthwhile, and remains proud of what she and her colleagues accomplished. The main lesson she learned, she says, was that reforms such as the one she worked on must be folded into the institutional culture to have a lasting impact. The changes took hold because she and Mangheni were there to drive them through, sometimes at the expense of their regular work. "Who is going to be committed to keep driving the process?" she asks.

### Gender Dimensions in Research

Just as Karuhanga Beraho's perspective as a woman gave her the eyes to see the crucial gaps in the curriculum resulting from an absence of gender awareness, women completing their postgraduate[6] theses and dissertations are introducing fresh questions in their research that are informed by their own experiences as women.

[5] Innovations at Makerere Programme funded by the Rockefeller Foundation. The early phases of the programme were also supported by the Winrock International Institute for Agricultural Development. See Chapter 5.

[6] Postgraduate being the British term for a graduate student.

### A Case (Study) for Gender

Monica Karuhanga Beraho, lecturer in agriculture, Makerere University, Uganda

When you're looking at gender, you're looking at changing people's attitudes, allowing different people's stereotypes and perceptions to come out; maybe allowing students to interact with communities and draw out these experiences—maybe taking them to the field so they can get some feel of how would one go about gender analysis.

You can't do that if you have a class of 90 or 100 students, so the method of instruction needed to change. And if the method of instruction needed change, then the system had to put structures in place to support this new kind of instruction.

We needed to develop teaching materials—those who wanted to teach needed to get relevant literature. There are a lot of existing materials on gender, but they're about Asia, about Europe. Local studies did not exist. We actually did attempt to collect a little data, to come up with information to document local case studies, so that when we're teaching gender, students are given some local examples that are relevant.

We're still in the process of finalising some of those case studies. If you have something bringing out these gender issues amongst communities from different farming systems in Africa, in Uganda, and so on, it makes the situation real. It demystifies the thinking that gender is actually something that is brought from Europe and is being imposed on Africans.

If the curriculum and this whole process were institutionalised, we would have structures to ensure that lecturers are held responsible to teach the gender content and cover the content in exams. At the moment, because this is not really institutionalised, people teach what they want. You are not sure that gender will definitely be taught and examined.

A common problem that frequently prevents women from entering academe in the first place is the scarcity of funding available for postgraduate work. At Obafemi Awolowo University in Nigeria, scholarships provided support for female postgraduates whose studies focused on research topics that raised new questions about gender. For Folosade Hunsu, who recently defended her PhD in English Literature, a two-month stint at the School of Oriental and African Studies in London allowed her to gather new sources for an investigation of a topic rarely if ever seriously explored before: women's autobiography in Africa.

While scholars in the past have held that Africans tell their personal stories as part of the communal whole, Hunsu found that African women, in contrast to African men, speak for themselves and not the community. "What they do is stand apart from the community, and raise their individual voices as women to be reckoned with in the society, as people who have built their own life stories according to some aesthetics which contradict what the society expects of them," she says. "They are writing differently, telling their life stories differently from their male counterparts."

Hunsu says the support she received from Carnegie Corporation to pursue her PhD gave her priceless autonomy as an academic. "It's not easy for me to say I want to order books worth $1,000 and then go into the family purse," she says. "As a woman, you don't have such power. The husband determines how the money is spent, even though you both contribute to this money. If you don't accede to what the man says you are seen as a rebellious woman," she says. "But since I have a fellowship that is devoted to my work, it has given me the freedom to pursue my academic interests."

## Confronting Sexual Harassment: "The Blinders Must Be Removed"

As a concept, gender is much more than a women's issue: it examines the socially constructed roles of men and women, and how these roles relate to one another. "Gender mainstreaming" describes the process of addressing gender holistically rather than in isolation—so that many of these questions, such as how to feed more women through the academic pipeline, can be seen as part of a larger picture, and as part of a coordinated effort to bring a gender dimension to all the university's endeavours, from teaching and research to budgeting and admissions policies.

As gender awareness on campuses grew, tenuous new spaces opened for dealing with highly sensitive matters, such as the problem of rampant sexual harassment on many campuses. In order to grasp the amount of courage it took for early trail-blazers to shine a light on sexual harassment, one must first understand the personal financial stakes for women in academic careers, says Jane Bennett, from the University of Cape Town. Just as poor students with so many family expectations riding on their academic and financial success feel enormous pressure to graduate, female academics who have secured a place in a university—and the promise of a solid middle-class life that it offers—often feel enormous pressure to stay there at all costs. Bennett says:

*No matter whether you're the president of a university, a first-year, or a cleaner, rocking the boat at an African university is associated with economic disaster, and that makes these politics of gender all the more volatile.*

*If you get sexually harassed at an Australian university, it's not nice, and your personal life is probably quite deeply traumatised, but if you leave the job there will probably be a blanket that can hold you. But if you drop out of the Faculty of Agriculture at Makerere, you lose your relationship to survival. So that will make it all the more unlikely that you'll move into a volatile area, that is seen to have little to do with your job, in order to ask: How is this institution replicating dangerous gender dynamics? The stakes are too high.*

While at Obafemi Awolowo it was initially a battle even to get gender recognised as an issue, at the University of Dar es Salaam the suicide of a first-year education student, the victim of sexual harassment, forced the issue out into the open.

In 1990, first-year education student Levina Mukasa committed suicide with chloroquine tablets, after being hounded by a group of male engineering students known as "Mzee Punch". The group was notorious at the time for targeting women on campus with obscene wall drawings, intended either to coerce them into sex, or to derail those who performed well academically. To many women on campus, the incident was a ghastly expression of their general experience of the university as a hostile environment, says Fenella Mukangara, founding director of the university's Gender Centre and now a member of the Tanzanian parliament.

"Gender was not well-articulated," she recalls. "There was rampant sexual harassment, gender imbalances, and an organisational culture that was not gender-friendly. There weren't processes in place to ensure that situations were dealt with. There was no political will—or, maybe, the lack of political will was due to the university being blind to the issues, because we were used to the circumstances, and thought of them as being normal."

As a young lecturer recently returned from getting her PhD, Mukangara agreed to oversee gender programmes on the campus, and presided over a process of "deep analysis", which allowed the university to gather statistics and begin to form an approach to improving female participation. The programme eventually expanded into a full-fledged Gender Centre that now has a sweeping mandate to institute gender mainstreaming.

At the University of Ibadan in Nigeria, meanwhile, economics professor Kassey Garba helped to drive similar processes of drafting gender mainstreaming and sexual harassment policies. The documents have been completed, but have not yet been put into practice, she says. Even before these processes, the university "frowned on certain kinds sexual harassment," says Garba.

*But when it comes to other salient aspects of sexual harassment, like preventing someone from making sexually explicit verbal comments at official meetings—it's more difficult.*

*The challenge now is to get people to buy into what is in the [gender mainstreaming and sexual harassment policy] documents and change their lifestyle....To me, it has to do with treating someone with dignity. Nobody wants to see his daughter slapped on the waistline for no reason, just because somebody felt like doing it. There are some strategies we are trying to employ to appeal to their sense of fairness about how people are treated.*

*We have to find a way to remove those blinders, not just for the sake of women but for the sake of the system. It's a system problem. If people are competent to work, but because of gender problems they are not allowed to, then it's not good for the system. So those blinders must be removed.*

*Having a gender mainstreaming document is not enough. We need to find ways to work [on improving gender equity within the system] without destroying the culture. We want to remove things about the culture that are not progressive, things that do not allow the system to treat everybody fairly, because gender relations actually deal with human rights, the ability of everybody to participate in decision-making. Writing documents is easy, but getting people to change their fixed ways of thinking—that's more challenging*.

### Putting the Structures in Place for Women to Succeed

Issues of gender gained focus at the University of Education, Winneba, in Ghana after a study conducted with support from Carnegie Corporation revealed serious issues such as under-representation of female students and staff, widespread sexual harassment, and low research productivity amongst female staff members. "There wasn't discrimination in a very blatant manner, but looking at the way the system was structured, there was a need to make a conscious effort to get women on board," recalls Wilhelmina Tete-Mensah, who heads the university's gender mainstreaming division.

That much had become clear to her after she returned from completing a master's thesis that focused on women's issues in higher education management, in the United Kingdom. She had often felt isolated in her position of authority as an assistant registrar. She says:

*I was the first woman to join [the university administration] at a high level, and not having my kind in the system was a challenge. There were two sides: the positive side was that it gave me visibility and I enjoyed a lot of support from my colleagues. But the other side was they brought a lot of pressure to bear on me. People were always doubting if I could perform, and I needed to go the extra mile to ensure that a bad precedent was never set for other women following on after me.*

*The experience [of earning an MA in London] was an eye-opener. It led me on to do what I am doing now. It lent some interpretation to the experiences I had previously, which I couldn't really understand or name back then. I came home with a determination that we needed to do something as an institution that would make the system supportive for everybody.*

In short, the trouble was that she was effectively an anomaly in the system, rather than a trail-blazer whose position articulated a conscious aim on the university's part to transform; there were no support structures in place for her to draw on. With support from Carnegie Corporation, the university set about putting new structures in place: workshops to introduce gender concepts to students and staff members, scholarships for needy female students, programmes to help promising young women get their PhDs, and a mentorship programme geared to helping female academics develop their careers, and especially to conduct and publish their research.

So far, more than 40 women have completed the scheme. The programme has helped these young researchers to network and present their work at international conferences. These results were achieved with simple measures, such as informal networking sessions amongst colleagues—even a weekend writing workshop that allowed the women, particularly those with families, a crucial break from their household responsibilities in order to focus on writing.

As the programme has grown, new structures have solidified, says Tete-Mensah. Most recently, the university has developed explicit policies on sexual harassment. As seen above, Theophilus Senyo Ackorlie, the university officer in charge of budgeting, attended a workshop on gender-sensitive budgeting, and—after overcoming his initial scepticism—returned to champion the issue and pass on the knowledge he had gained to 50-odd additional university employees.

The university also recruited new female lecturers from the ranks of its graduates, in many cases offering them the opportunity to complete their PhDs. Financial support for undergraduate students has enabled women who couldn't have otherwise afforded to further advance their education the opportunity to stay and complete degrees. Tete-Mensah recalls one female scholarship recipient in particular, who was a teacher for eight years, and had barely managed to save enough money to get to the university and pay her fees. Lacking accommodation, she slept in a university common room until other students brought her plight to the university's attention, and she was eventually awarded a scholarship.

## Getting to the Root of the Problem

In their efforts to address the gender imbalance in particular fields, universities across the continent face the same fundamental barrier: schools are simply not producing a large enough pool of girls with strong backgrounds in science and math. At Kenyatta University, in Kenya, scholars led by the vice-chancellor, Olive Mugenda, designed a programme to address that core issue, with support from the Rockefeller Foundation.

The scarcity of female scientists mirrors the scarcity of female academics: the further up the ranks you go in higher education, the fewer women are present. To Caroline Thoruwa, it was a familiar problem. As a professor of chemistry, she counted herself as a scarce breed in the university, and was aware of the fact that most women are weeded out of science long before they reach university.

Working with 14 pilot schools in areas across the country, she and other scholars at Kenyatta designed an experimental programme to see if they could help girls in primary school improve their performance and preparation in science. Over a five-year period, the scholars worked with teachers and parents in each of the schools, seeking not only to improve their access to better-quality materials and teaching techniques, but also to make them aware of the importance of the messages their actions and attitudes send to young girls.

**The scarcity of female scientists mirrors the scarcity of female academics: the further up the ranks you go in higher education, the fewer women are present.**

"If you ask young ladies in science who influenced them the most, the two most important people who come up are 'a parent who believed in me' or 'a teacher who believed in me'," says Thoruwa.

In the end, the researchers compared the pilot schools with a control group of schools that did not participate in the programme, and found strong improvements in the girls' attitudes towards and performance in the sciences and other areas of their schooling. The programme not only showed that such interventions could make a difference, but also provided valuable lessons for the university to incorporate into its teacher training, Thoruwa says. "I think it has a bearing, especially on training teachers in the importance of gender issues, and knowing how they can make a difference in their roles as teachers," she says. "It will influence training. It helps us to be aware as to why so few girls are proceeding into science and engineering—and why the problem is persisting, why it's not so easy to eliminate."

With Ford Foundation support, the university then introduced a similar programme, also led by Mugenda, for women studying in the sciences at Kenyatta, which was aimed at raising graduation rates. One problem the university had found was that female students who entered the university as science majors were later transferring to the humanities. The challenge was to try and find ways of enabling students to complete their science degrees—one of the end goals of the programme was to try and expand the pool of women scientists in academe. "We don't even have a female lecturer in physics," Thoruwa says.

As a young chemist, Thoruwa had the opportunity to travel to Iowa through the International Women in Science and Engineering programme at Iowa State University, which gives female scientists in the developing world the opportunity to work in the labs of senior female counterparts, for training and mentorship.

A number of African universities have made strong efforts to enroll more women in the sciences.

She worked in the lab of renowned food scientist Patricia Murphy, synthesising compounds active against cancer and osteoporosis, and ended her stint there with a joint publication in the *Journal of Natural Products*.

She had agreed to find a way to "pay it back" on her return to Kenyatta, which eventually led her to become involved with the Kenyatta University Female Students in Science and Technology (KUFESST). As her experience at the University of Iowa had inspired her, she thought that students taking part in the programme would in turn be inspired by visits to important research facilities and meetings with senior scientists. Ford Foundation support for the KUFESST programme has since ended, but Mugenda and her colleagues have ensured that the KUFESST activities continue on the campus.

"These girls were able to see applied science at work: what are the impacts in society, what does it do," she says. "When we went to visit Kenya Medical Research Institute, for example, there had been the outbreak of the Ebola virus. It was exciting for them to realise that this was the centre, the place the government relied on for the monitoring of the disease. That had an impact on them, and they began to realise that, as a student doing biochemistry, this is the role they could play."

### HERS-SA: A Network for Women

While it is no secret that, as with other professions, networks play a critical role in the career development of academics, women have often lacked access to these informal mechanisms that can spring careers forward. The absence of high-level women in academe is often most noticeable at high-level meetings. It was one such meeting that sparked a discussion between Lesley Shackleton, the director of the International Academic Programmes Office at the University of Cape Town at the time, and Pat McPherson of the Mellon Foundation. Noticing the absence of women at senior levels, McPherson suggested bringing a leadership seminar programme for female academics—modelled on those of the American organisation Higher Education Research Services (HERS)—to South Africa.

**The goal of the HERS-SA programme is to chip away at the inverted women's representation structure by providing women with a safe space in which to network and explore leadership roles.**

Typically, women make up more than half the ranks of those entering university as undergraduates, but their numbers thin out with each step up the academic totem pole, until only a handful remain at the highest levels. The goal of the HERS-SA programme is to chip away at this inverted women's representation structure by providing women with a safe space in which to network and explore leadership roles.

"It's academia which is a very patriarchal system, coming from the old monks. It's structured almost like an army. You've got to have a position or a title for anybody to take you seriously," Shackleton notes. "A conclusion that I came to at one point is that the academic environment is such a difficult one to operate in that most women are sensible enough to take a look around and say, 'I'm happy at the level where I am'." As a consequence, the overall growth of female representation in the academy is often not reflected in leadership.

In South Africa, for example, only three of the country's 23 vice-chancellors are women, while only five of its 23 registrars are women. "It's a battle you have to fight," says Shackleton. "The leaders of tomorrow are going to our universities, and they're going to look up and see who's lecturing them and who's in charge there. If they don't see women up there, then, in their minds, women aren't leaders. When they look up and see women as leaders, they understand that women can be leaders, and they will, as women, become leaders."

Each year, HERS-SA brings together women from universities across South Africa, and also from several other African countries, for a week-long programme supported by the Mellon Foundation. The HERS-SA academy has succeeded in equipping a number of women to advance despite the obstacles. "The institutional cultures are the same as they always were, but HERS-SA has changed a lot of individual lives," says Shackleton. "Just about every woman who has participated has described her experience at the academy as being incredibly beneficial. It has given them the confidence to apply for deanships or deputy vice-chancellorships. But I don't think HERS-SA has made any change in the broader environment."

**We're not looking at all the right areas to build a nation—yes, we need doctors and nurses, but we also need scientists working in fields to allow us to develop new industries, new ideas, new ways of doing things.**

### A Young Leader Emerges

And yet, it is only when university systems are able to allow all kinds of people to flourish that universities can truly realise their potential. As more women are gradually being shown the way into the higher echelons of academe, through programmes like HERS-SA and the various scholarship programmes for women we have seen, the hope is that they will, by their very presence, help to sow further transformation.

When Caitlynne Phillips was growing up, there were few role models around to let her see how far in life a capable and determined woman can go. She notes that in the gang-ridden community on the bleak Cape Flats outside of Cape Town where she grew up, "ninety percent of girls who are even younger than me have already had children."

But Phillips had other plans. After graduating from high school with top marks, she won a scholarship from Carnegie Corporation to the University of Cape Town—less than 10 kilometres away from her home, yet a world apart.

Journeying from a world mired in the ganglands of post-apartheid South Africa to the halls of the country's most prestigious university required Phillips to see herself through new eyes. She had to battle with feelings of inferiority and alienation in an environment where few could really comprehend her life history.

As she studied further, she discovered a passion for phytoplankton, the lowliest form of marine life, and its potential as a natural medicine. And as she delved into her new passion, all of the previous feelings of the limitations of her gender, class, and background slipped away, replaced by a powerful new image of herself as a scientist on the cusp of great things. Now, Phillips sees herself as an emerging leader in the development of new marine-based products.

Elizabeth Abama, former dean of students, University of Jos in Nigeria.

## voices of change

### A Woman's Place Is in the Garden

Elizabeth Abama, former dean of students, University of Jos in Nigeria, and HERS-SA delegate

There was a series of presentation papers at HERS-SA. We were lectured on how to behave as a woman leader: for example, there's a way of sitting where you denote and express a sense of confidence.

The paper that fascinated me the most was on gardening. I came back and wrote a paper to our vice-chancellor. It said that shrubs should be planted at the entrance to the university because that is the first visual impression people form. I have implemented that here now: this garden and this green grass around my office were not here before.

In African society, a woman is looked upon as a second-class citizen, and until we assert ourselves, we will not move. This is not to say that we flout our culture. We will observe our culture, but we will also look at ourselves as people whose voices have to be listened to, and now have something to contribute.

If there's one thing the workshop has helped me with, it's working with people. We have 30,000 students, and to preside over a number of students like that is a challenge. We want to start a local [HERS programme] within the University of Jos, where we can train young women to get to know how they can climb up against all of these forces, and how they can impact their society.

"We're not looking at all the right areas to build a nation—yes, we need doctors and nurses, but we also need scientists working in fields to allow us to develop new industries, new ideas, new ways of doing things," she says. "South Africa harbours about three times the number of plant and animal species as North America does in its entirety. Now we just need the scientists who can go in and develop that."

Now, Phillips is part of a new generation of academics that represents the future of African higher education. That she has come so far already is more than just a personal victory. The next chapter looks at the challenges of attracting, training, developing, and retaining this next generation as universities themselves transform, grow, and become more complex. Their future health increasingly depends on people such as Phillips seeing promising futures for themselves within the academy. As Phillips herself says, she has already beaten many odds to get where she is today. And that is good not just for her, but for the system as a whole.

"My dream is to do a PhD," says Mozambican MBA student Amalia Dickie. "I see myself as the director of my own company, teaching part-time."

Chapter Eight

# New Life Blood

**In the history of nations, each generation is summoned to define its nation's purpose and character. Now, it is our time to state clearly and unequivocally who we are.**

– Ellen Johnson Sirleaf, President of Liberia

**WHEN SENIOR ACADEMICS PONDER THE FUTURE OF THEIR INSTITUTIONS,** one of the most pressing questions to nag them is: "Who will fill my shoes after I am gone?" Over the past few years, a startling realisation has dawned on many African campuses: there are simply not enough young academics stepping forward to serve the ever-expanding needs of tomorrow's universities. Equally troubling, many of the universities charged with training future academics struggle to find the financial and intellectual resources to do so on the scale that is needed. Just as an older generation stands on the verge of retirement, the need for new academics is greater than ever, not only to replace those departing, but also to staff new universities and to cope with rising numbers of students on established campuses.

The issue came to the fore during a Partnership meeting in 2007, when Ford Foundation grantee Johann Mouton, from Stellenbosch University, presented alarming data showing poor replacement rates of retirees from South African universities, which, spearheaded by the Ford Foundation, subsequently became a key area of Partnership investment. The imperatives of attracting, training, developing, and

## voices of change

**"I Want to Stay in Academia."**
Naa Dodua Dodoo, PhD student in the Regional Institute for Population Studies programme, supported by the Hewlett Foundation, University of Ghana

I want to stay in academia. I grew up in an academic family. My father lectures in French here at the university, and my mother was a librarian here. It is interesting because you are your own boss, you get to ask your own questions, and pursue research that interests you, rather than an international organisation's agenda.

I am working on a dissertation on "Women's Roles in Decision-making in the Home". The roots of it came from my background in nutrition. I came here from the department of nutrition and food science, and for my MA I looked at nutritional status in children. I used the demographic and health survey data to look at women's autonomy and decision-making.

For many people, especially here in Africa, academia does not make money. My father says he was more brilliant than many of his peers who went into business and became rich. He was brighter, but never had much money. Secondly, it's difficult to fund academia as a student here in Ghana. I did not want to go out of the country, because of a lot of people do not come back. My two brothers left, and have not come back. The earnings and the convenience lure them to stay. In nutrition, I saw people who had been doing a two-year MA stay on for three or five years, because there was no money available, and they had to work elsewhere off-campus to find money.

Going to Penn State (as part of the Hewlett-sponsored programme) was great. I found that I am as good as everybody else out there. I presented a poster at the Population Association of America meeting, which helped to build my self-esteem and show me that I can compete with anybody out there. On the other hand, because you are being funded, you are compelled to come back, which is really good. I made friends and formed partnerships, which will be good for future work and collaborations.

retaining this next generation of academics—the future life blood of academe—is truly one of the "mission critical" challenges facing African universities right now.

The statistics are grim. At the University of Dar es Salaam in Tanzania, for example, 50 of the university's 58 full professors are within a few years of the national retirement age of 60, while some 500 junior teaching staff members have yet to obtain their PhDs. Many other universities across the continent face similar staffing bottlenecks, and experts worry that unless universities come up with creative new ways of attracting talent into the profession—and of alleviating the numerous obstacles and frustrations that drive many to abandon it or go abroad—the problem will only grow.

The challenges are as complex as they are urgent. One would be hard-pressed to identify an issue within the realm of African higher education that is not tied in some way to issues surrounding the next generation of academics. As we shall see, many of the same higher education challenges that featured in previous chapters of this book—from coping with large class sizes and improving the quality of libraries and ICT facilities, to building the core strengths of universities through sound policy-making—also relate deeply and directly to the development of the next generation.

This chapter looks at some of the structural challenges keeping students from pursuing careers in academia, as well as the ways in which some universities have employed successful strategies both to train more young academics and to remove the blocks that stymie young academics as they build their careers. The chapter also highlights the importance of networks and mentoring, particularly for young scholars who are now climbing the first few rungs of the academic ladder and navigating the dilemmas. It also explores the international dimensions to this problem, including a long-standing reliance on training academics abroad.

## Structural Challenges and Solutions

"I want to stay in academia," says Naa Dodua Dodoo, a PhD student at the University of Ghana. "You are your own boss, you get to ask your own questions and pursue research that interests you, rather than an international organisation's agenda." She admits that she has been lucky so far in her academic career, and acknowledges the many pitfalls that lie in wait for young academics, starting with the difficulties of financing a postgraduate education. While Dodoo received a fellowship from the Hewlett Foundation to complete first her MPhil and now her PhD at the Regional Institute for Population Studies, an institute within the university dedicated to postgraduate training in population studies and demography, a number of her colleagues without sources of funding struggled to balance course work and dissertations with off-campus jobs to keep them afloat, and eventually settled for careers outside of academe.

On top of the difficulties of funding postgraduate education, one of the biggest hurdles to enticing young people to enter academe remains the low salary levels.[1] As we heard from former University of Ghana vice-chancellor Ivan Addae Mensah in Chapter 2, Ghanaian academics have seen their salaries drop from being on a par with senior government officials, to being less than that of a mid-level bank employee:

> *A lot of people are complaining; even some of the younger people are complaining that some of their colleagues are more interested—too interested—in doing other things that will bring them money; in doing one part-time teaching after another, jumping from one private university to another, and not spending enough time on their own academic careers. That has to change. And it can only change if the remuneration system in the universities is considerably enhanced. Sometimes you can't blame academics for wanting to chase after financial rewards more than the academic career because "A hungry man is an angry man"—that's the African saying. Unfortunately, the financial situation of the academic in this country has fallen drastically over the years. That is driving a lot of good potential academics into other areas, and really needs to be looked at. And it's only government that can do that.*

**For the country to develop, we need advanced training, and we are well placed to train lots of people for the upcoming universities.**

The problem stems from historical trends introduced in Chapter 1: just as universities faced periods of crisis and under-investment in the 1980s and 90s, they also began expanding rapidly. As this growth occurred, universities, mired in hard times, lagged in their efforts to build new generations of academics. Now, they are struggling to play catch-up.

At the University of Ghana, the student population increased by 167 percent between 2000 and 2008, while the size of the academic staff increased by only 41 percent during the same period. The ratio of academic staff holding PhDs is also falling, as older staff members retire and are replaced by younger, more inexperienced colleagues. Nigeria's universities currently have about 30,000 academic staff, but another 18,000 are already needed, according to Olufemi A. Bamiro, the former vice-chancellor of Ibadan.

Meanwhile, the University of Dar es Salaam has some 500 junior academic staff members without PhDs. The picture is not all gloom, however: average PhD candidates at the University of Ghana are now in their thirties, whereas 15 years ago they would have been in their forties, according the Kwesi Yankah, the pro-vice-chancellor.[2]

[1] Salaries do, however, vary from country to country, and are less of an issue in countries such as South Africa, where academic salaries are the second highest in the British Commonwealth. Source: Falk, Emma (Dec. 2010). The Association of Commonwealth Universities: 2009-2010 Academic Staff Salary Survey.

[2] In Ghana's university system, the pro-vice-chancellor is the deputy to the vice-chancellor.

## Fixing the Academic Pipeline

In light of this challenge, the University of Dar es Salaam is attempting to persuade the government to identify higher education as a key national priority over the next five years, says Rwekaza Mukandala, the university's vice-chancellor. "Our strategy has got to be a national response. [Even] if we train all these 500 lecturers, and recruit more at the same time, we cannot retain them. And in the meantime if we don't increase the numbers, quality will go down," he says. "For the country to develop, we need advanced training, and we are well placed to train lots of people for the upcoming universities," he says. "We think there is an opportunity to leave a notable legacy."

While universities such as Ibadan, supported by the MacArthur Foundation, have turned programmes of advanced training abroad into wellsprings of revitalisation for their entire institutions[3], most now recognise that the current problem requires not just one single intervention, but a combination of many. Universities not only must make the most of the international exposure that doctoral training abroad brings them in this age of globalisation; they must also boost their own capabilities to produce advanced degree-holders who understand the local context, and combine rigorous scholarship with a local understanding of the complex challenges that both accompany and hinder development. Partnership foundations have supported these efforts in a number of ways. The Hewlett Foundation, for example, which supports Dodoo, the PhD student at the University of Ghana, invested in training the next generation of population scientists in Ghana, Kenya, and South Africa. In South Africa, meanwhile, the Mellon Foundation invested in research programmes, academic programme development, academic staff development, and postgraduate training—all aimed at supporting the development of the next generation of academics.

Such efforts have gone hand-in-hand with the strategies that a number of universities are pursuing to increase their research output, described in the next chapter. Makerere University in Uganda, the University of Dar es Salaam in Tanzania, and the University of Ibadan in Nigeria are three examples of universities that are trying to transition from primarily undergraduate teaching institutions to fully-fledged research universities. Ibadan, for example, aims to have 60 percent of its students at postgraduate level within the next few years.

Another promising strategy is the development of advanced training and research networks, whereby universities in different locations pool their thin resources in specific areas, such as materials science or health policy, and train young academics as a collective project, drawing on all of their dispersed strengths. These networks are profiled in Chapter 11.

[3] See also Chapter 5.

### The Business of Building Academics in Mozambique

As much as countries with well-established university systems such as Ghana's struggle to produce the next generation of academics, the task becomes even more difficult when there isn't much of an older generation either. That was the situation for the Catholic University of Mozambique (referred to by its Portuguese acronym, "UCM"), a small, private, non-profit university.[4] In a region that still lacks much basic economic development, it made sense to begin efforts to build a new generation of academics in a field whose value and relevance virtually anyone within the broader society could appreciate.

In Beira, the port city where the university's main campus is located, one of the most pressing needs is for more business-savvy graduates to jump-start the moribund local economy, a need that was underscored by the university's own difficulties in finding qualified teaching staff. Initially, the university had to recruit many of its lecturers from neighbouring Zimbabwe, who would cross the border to teach short modules at UCM. The situation was hardly ideal, especially since these visiting lecturers often lacked an understanding of the local context, recalls Alfandega Manjoro, the dean of the Faculty of Economics and Management.

**The faculty's dual emphasis on developing people with skills both to build the local economy and staff its own programmes has been key to its success.**

With support from the Ford and Rockefeller Foundations, the university introduced a master's degree programme in economics and a master's in business administration, designed not only to meet the desperate needs of the local economy, but also to ensure the sustainability of the faculty itself by building up a cadre of trained academic staff. Recognising the low level of both intellectual and economic resources available locally, the university chose to begin its efforts in postgraduate-level training with the practical field of business, but eventually hopes to expand advanced-level training into other areas, says the university's vice-rector, Father Francisco Ponsi.

Previously, students from Beira wanting to obtain business degrees would have had to travel to the capital city, Maputo. "You can imagine what would happen to the girl-child," says Manjoro, to give an example of the level of difficulties that previously barred local students from accessing higher education. Traditionally, "it would be difficult to convince parents [to] allow a woman to go to Maputo to study. So it actually meant that many women were sentenced to disaster. They didn't have the opportunity to go further. They would only go through primary and secondary and that was the end of it. There was absolutely no hope."

The faculty's dual emphasis on developing people with skills both to build the local economy and staff its own programmes has been key to its success, says Manjoro, who himself initially joined the teaching staff

[4] While a number of countries do not allow for-profit universities, they are proliferating in some countries, including Egypt.

New master's and MBA programmes in the Faculty of Economics and Management at the Catholic University of Mozambique have helped to produce new academics to staff the faculty, including Alfandega Manjoro, who is dean.

with the equivalent of an honours degree[5], and subsequently enrolled in the MBA programme when it was introduced. Students in the faculty, he says, "are people who, under normal circumstances, wouldn't have obtained the master's degree." Yet the MA and MBA programmes have helped to make lecturers as well as business people out of a number of them: now, graduates of the programmes teach not only in Beira but also at the university's other satellite campuses.

"Basically if you go into town today, many of those who are leading in all these companies, they have passed through our hands, the Catholic University of Mozambique," says Manjoro. "That is the impact on the whole of society. Also in terms of development, I think Mozambique as a country has been doing quite well. We believe we are also contributing to that kind of development, particularly in terms of human resources in the education sector."

Harish Kumar Naunitlal is one of a number of MBA graduates who simultaneously runs his own business in Beira and teaches in the faculty. Naunital sells management and accounting software to small and medium-sized businesses in the region. His business makes good money, he says, and also provides him with real and relevant material to draw upon in the classroom.

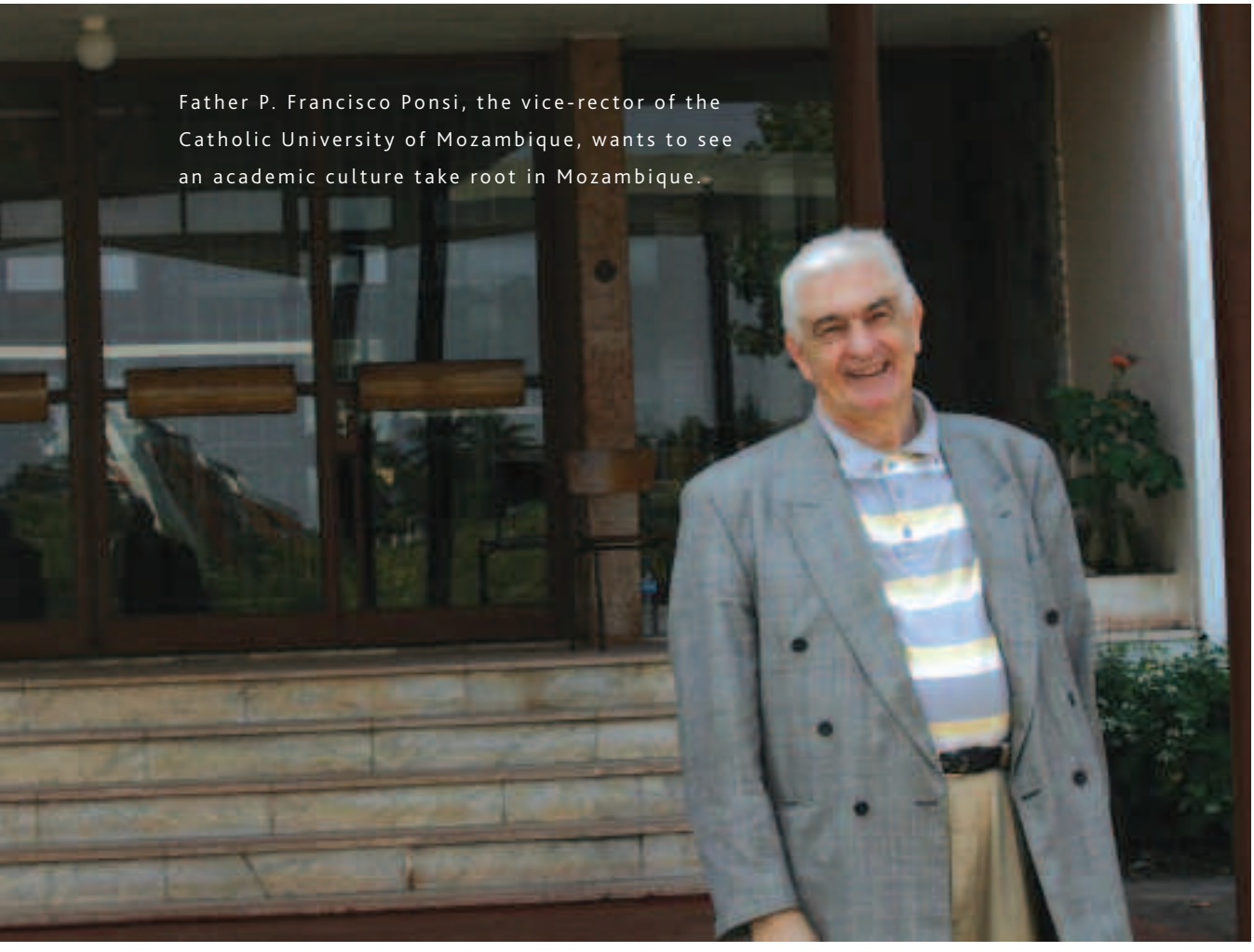
The university now faces pressure to comply with new government directives that will require 75 percent of teaching staff to hold master's degrees, and 25 percent to hold PhDs by 2015, says Ponsi. While regulation provides one impetus for the university to step up advanced-level training, Ponsi says that the goal is important in and of itself. "Local people have to be trained to the level of PhD, and they need to be committed to producing research," he says. "Unless you have PhDs who are working in the production of knowledge and the analysis of society, this is not a university. We may be present in every province, and we may be known as a quality type of institution. But we are not a university yet."

Plans are already underway to expand training to the doctoral level, and the university is in negotiations with the University of Johannesburg to unveil a joint PhD programme that will further strengthen the academic foundation for business development in the region, as well as train future academic staff.

### South Africa's Struggle

The relative strengths of South African universities historically enabled them to train future academics at home, while academics in other African countries typically travelled abroad for advanced training. Despite its strengths, South Africa continues to face two unique "next generation" challenges as a result of the apartheid legacy. Firstly, universities suffered decades of isolation as a result of a global academic boycott, and are still struggling to overcome this insularity—an issue that impacts younger academics in particular, in the current age of globalisation. Secondly, and most importantly, the vast majority of blacks were histor-

[5] In the British Commonwealth system, a normal bachelor of arts degree is three years; an honours degree is the equivalent of a four-year degree.



Father P. Francisco Ponsi, the vice-rector of the Catholic University of Mozambique, wants to see an academic culture take root in Mozambique.

ically excluded from the professoriate, and universities continue to find it difficult to reverse the pattern, despite dramatic shifts in undergraduate demographics on campuses over the past twenty years.

At the University of the Witswatersrand ("Wits"), in Johannesburg, South Africa, the numbers tell an important story. Sixty-six percent of the 185 academic staff members who resigned during the 2006-07 academic year were under the age of 40, according to data collected by Wisdom Tettey, a professor in the Faculty of Communication and Culture at the University of Calgary, originally from Ghana, who was commissioned to gather data on "next generation" issues in Partnership-supported countries. Most of those who left are black.

We saw in the previous chapter how the diminishing numbers of women at the postgraduate level and above narrows the pool of potential academic staff. Between 1999 and 2007, the percentage of female postgraduate students at the University of Ghana, for example, hovered between 26 and 33 percent (though happily the trend is a slow but steady increase). In South Africa, the lack of blacks entering the professoriate plays a similarly narrowing role. In South Africa, most of the overall numbers do not appear nearly as alarming as

Despite the challenges that South Africa continues to face with attracting previously marginalised and adequately prepared groups to academe, numerous students there, such as Itumeleng Molefi (who photographed the young woman entering the University of the Witwatersrand on the left, and then graduating from that same university on the right), have successfully undertaken the life-altering process of obtaining a degree.

in other places—yet the country faces its own unique challenges in its struggle to attract blacks and other previously marginalised groups to academe. The statistic above reflects the fact that young black professors in particular are not finding traction in the profession, or are being drawn away by more lucrative offers in the private sector.

Like the challenges of transformation at the undergraduate level described in the previous chapter, this particular South African dimension to the next generation crisis is complicated, but has its roots in the inequities of the schooling system and the cultural challenges of the university environment. It is estimated that only 10 percent of children who begin school in South Africa will eventually qualify for university. Many people are weeded out of the system early on because of poor schooling and cultural and financial complications,[6] dramatically limiting the pool of would-be academics. The situation is hardly unique to South Africa, but it packs a particular punch there, because so few blacks were part of the academy under apartheid, and so few are entering the professoriate now. Although more than half the student body at Wits is black, re-shaping the composition of the professoriate is a much slower process and black academic staff members represent less than a quarter of the full-time academic staff.

**I feel like there is a commitment from the leadership to develop black academics, and it makes me feel safe in this environment. I know that if I want to advance, I will be able to advance.**

To Mzi Nduna, a young lecturer in psychology at Wits, who is finishing her PhD with support from Carnegie Corporation, it appears that there are even fewer black academic staff members now than there were when she joined the faculty in 2006. One problem is that black students don't have enough role models amongst their professors, she says. "I was telling a colleague: I need to have a bumper sticker that says 'I fully support BEE', as in Black Education Empowerment," she says, playing on the country's programme to increase black participation in the economy, Black Economic Empowerment, which is known by the same acronym. The reasons for this attrition have been difficult to pinpoint. Nduna says:

> *It's a sad situation. I didn't want [those black lecturers who departed] to leave, because they carry the institutional memory for us black young lecturers who are coming in. I wish people wouldn't leave, but people should be able to move, whether for greener pastures or whether they feel they've been pushed from the ship.*
>
> *I have had a good experience, and have no intentions of leaving, not now....I'm not saying Wits is perfect, but I feel like there is a commitment from the leadership to develop black academics, and it makes me feel safe in this environment. I know that if I want to advance, I will be able to advance.*

[6] For a more thorough investigation of this issue, see Chapter 7: Opening Doors, Building Bridges, Crossing Boundaries.

One stumbling block for many prospective black academics, Nduna believes, is the length of time it takes to earn their PhDs, and the lack of financial, academic, and professional support during the process. While most lecturers take six years to finish their PhDs, she says, Nduna will complete hers in three. The fellowship she received from Carnegie Corporation allowed her to travel and seek out expert guidance at the University of Alberta in Canada, particularly with data analysis and writing. It has also allowed her to take precious time away from teaching in order to focus on her writing. "I know colleagues here who have given up on their PhDs, and when people give up they leave academe because you can't survive here if you don't have a PhD," she says.

After Nduna completed her honours year[7] in psychology, her mother felt that she had studied enough, and should find work and earn money, as her degree had given her the means to do. After working as a teacher as well as for rural development NGOs, Nduna eventually found her way back to academe. Many others, however, do not—leading some like Nduna to believe that the problem of poor representation may be self-perpetuating, as black students perceive the university as being inhospitable to people like them. "I feel it's my contribution. I've got to teach," she says. "I think it's very important for black students to have experiences with black lecturers."

### The Next Generation Club

After a Partnership meeting in Accra, Ghana, in 2008,[8] Olive Mugenda, the vice-chancellor of Kenyatta University in Kenya, returned home with new determination to find ways of helping young academics get their PhDs, the first step towards meeting the next generation challenge. She had spent months gathering data on the percentages of PhD holders in academic staff positions at various universities in the United States, Kenya, Nigeria, and South Africa. In the mathematics department at MIT, for instance, all 176 academic staff members held PhDs. "You go to Nigeria, you go to South Africa, you come to Kenya, and you find the numbers of PhD holders are just the opposite," she says. "I said, 'In five years, can we try to turn this around?' I don't expect us to have zero non-PhD holders, but can we talk of 60 percent?"

At universities across the continent, scholars often start off on the academic career path as tutorial assistants with bachelor's degrees, and can wait years before the opportunity of further training comes along. This reality presents a frustrating dilemma, both for aspiring young academics who want to build careers, and for universities that desperately need them to advance and help build capacity further, yet have few resources to invest in their training.

[7] South Africa follows the British system where a basic degree takes three years, and a fourth "honours" year is required in order for a student to move on towards a master's degree. The honours year is often referred to as a postgraduate, rather than undergraduate, qualification.

[8] The next generation issue emerged as a paramount concern for African university leaders during the latter years of the Partnership, and was therefore made the key focus of Partnership support, as well as the subject of a major meeting of Partnership stakeholders, the University Leaders Forum, held in Accra, Ghana, in November 2008, which helped to advance the debate and galvanise action on a number of different campuses.

## voices of change

### "Many Are Excluded Unfairly"

Mzi Nduna, psychology lecturer at the University of the Witswatersrand in South Africa

When we don't have enough applicants from black students to do master's degrees in research, I get really, really worried. The thing that worries me most: I am aware of a lot of organisations out there who do research and want to recruit black researchers. We're doing a dis-service to those organisations, because they won't have a pool to recruit from.

Some students are claiming there's a ceiling for black students at this university....It's like they already know that they're not going to make it anyway. I always speak to the second year group that I teach, and tell them that actually there are opportunities, and that they should not feel there is a ceiling for them.

I think when they have that attitude they are less likely to go into postgraduate study because they think even if they are qualified, we are not going to take them....There are lots of undergraduate black students, and lots of white postgrads, so it does give that impression. Undergrad students say, "What's the point of going to postgrad because it's not going to be possible."

We look exclusively at results [meaning black students who have potential but perform poorly compared with white counterparts who don't face the same kind of adversity shouldn't be excluded for master's and PhD]....That's how we select students, and I think we're being narrow-minded.

Why do we go on admitting 80 percent white students, when we know that they come from a particular environment that allowed them to excel? The white students in my classroom have laptops and open them as I teach. I haven't seen a black student who opens a laptop when I teach. [The white students] are well-resourced, they don't struggle to get textbooks, they don't struggle to get access to WebCity [the Internet-based site for class notes].

I think it's important that we develop black academics so we can motivate students and so that they can see that it is possible, that it has happened. I use myself as an example to them, so they know it is possible.

The solution that she hit on was to form a "Next Generation Club", a network comprised of different groups of young lecturers from the various university departments who did not have their PhDs. The university did not have much money to devote to the cause, but at least it could develop a network as a focal point for tackling the issues of training and mentorship more systematically, she says.

*I called all the people without PhDs together and I told them, "Okay, we want to develop the next generation of academics, and you are part of that group. The first thing is for you to get your PhD. What can we do to help?"*

*They were telling me, "Professor, we need time off, we need a bit of research money, we need supervisors, and even help with the university fees." I had to go back, and look around for a few resources, and I told them, "Okay, I don't have much money, but we can find ways to help: So, if your biggest problem is collecting data, don't tell me to pay you to collect data—but if you have a research assistant in the field that you can't pay, maybe we can help. Or if your problem is that you have no time to collect and analyse data and you need six months, come to me and I will give you six months and look for a part-timer to do your teaching."*

*The university is struggling to even look for finances to do that. We know what we need to do, but we don't have the resources. I kept saying, "I wish I just had a little bit of funding."*

**In the next five years, we will have a critical mass of staff members here coming from the next generation of academics initiative, who will be good leaders, good researchers, and good academicians.**

Mugenda set the goal of raising the university's rate of academic staff with PhDs from 45 percent to 70 percent. "Really we have no choice," she says. "We cannot operate a world class university if you have 45 percent PhD holders." With more funds, Mugenda says, the university could solve the problem much faster. But wise use of the few resources they do have is already making a difference. Since the university waived tuition fees for lecturers earning their PhDs, greater numbers have graduated, she says. Others have benefited from taking paid time off to write. "It has a direct impact on quality," Mugenda says. "In the next five years, we will have a critical mass of staff members here coming from the next generation of academics initiative, who will be good leaders, good researchers, and good academicians."

In spite of the issue's complexities, simple interventions have also made a difference. At Cairo University in Egypt, for example, teaching assistants employed in the Faculty of Economics and Political Science sat down with representatives of the Ford Foundation to brainstorm ways of making changes to their working environment in order to boost their productivity and job satisfaction. Teaching assistants form the backbone of

the university's future professoriate, but, like their counterparts across the continent, often bear the brunt of overcrowded classrooms and chaotic work environments.

The frustrations and pressures of the job are both large and small, says Aya Nassar, a TA in the department. They manifest such large obstacles as professors too busy to provide mentorship, but also in the "lesser" frustrations of a chaotic communal work space without enough computers or chairs.

The Ford Foundation coordinated focus groups for the TAs so that they could discuss their needs and look for solutions to have a meaningful impact on their working environment. "We were concerned about the need for training in methodology, new pedagogies, also issues of supervision, quality supervisors for our theses, the length of time required to complete theses, and the chaotic communal work space, the only place available for meeting students, preparing lectures, and grading papers," she says.

As a result of the focus groups, the Ford Foundation provided a small grant for the refurbishment of the communal work space, and also offered TAs support for taking courses in areas such as social research methods that were unavailable from their own institution. "It seems mundane," says Nassar. "But the lesson here is that the process of getting together in the focus group, and talking about what the issues and priorities are, is valuable in and of itself."

## A Community of Scholars

Of course, tackling this issue of equipping young academic staff members with advanced-level training is really just the first step in tackling the next generation challenge. Upon receiving their PhD credentials, many young academics are still thwarted by the difficulties of their working environments. Ironically, many of their greatest difficulties arise as symptoms of underlying problems that are consequences of staff shortages: jam-packed classes suck up precious research time, for example. Poor library facilities and the difficulties of Internet access diminish the quality of research, as well as the speed at which it is completed. Lack of international exposure breeds parochial thinking and obsolescence of ideas, leaving academics cut off from new trends and developments.

For Lillian Tibatemwa-Ekirikubinza, the deputy vice-chancellor for academics at Makerere, looking at the need for better mentoring of young female academics made her realise that men need mentoring just as badly. So she initiated a programme on the campus that aims at helping all young academics who have completed their PhDs within the past five years to adjust to academic life. Her idea was to give young scholars the opportunity to present their dissertation research findings to the larger campus community, and also to involve policymakers outside the university and in government debates stemming from academic research, in order to help young researchers connect their ideas to the broader world:

*What has been happening over the years is that you go for your PhD, whether you do it at Makerere or elsewhere, you hand over the certificate to Makerere, but beyond that there is hardly anybody who is interested in knowing what you have been doing.*

*I [know] that is very demotivating, because that is exactly how I felt when I came back with my doctoral award. The question is, who is really interested in what you have been doing? You are coming from a highly vibrant research atmosphere where you have been having intellectual debates with fellow doctoral students and your supervisors. So you come back to Makerere, and suddenly…all you are doing is teaching, teaching, teaching.*

When she first put out the call on the university intranet, seeking others interested in sharing their work, she expected a modest response. But as word of the new programme spread, 37 young scholars signed up to share their findings. As the plan is to hold monthly meetings, this means that the slots have already been booked for the next three years. Tibatemwa-Ekirikubinza wants to use the forum to help academics polish their public speaking and presentation skills. It is about making sure scholars have research skills and links to international networks that will enable them to conduct meaningful research, publish, and advance.

She also speaks passionately about the need for academics to learn to speak about their work to audiences outside their discipline, not least so that they learn to communicate the implications of their work to policymakers, the media, and the general public:

*Later on, I decided that when a presentation is going to take place, I [would invite] the public as well. We are really talking about training ourselves, and turning ourselves into public intellectuals. We must communicate our research to the wider community.*

## Building Community

Phillip Bonner and Noor Nieftagodien in the history department at Wits realised that the department was failing to attract new lifeblood. The two academics were part of the History Workshop, an interdisciplinary research unit within the department that focuses on public history. The problem, they began to realise, was that students often felt no incentive to stay in academe, as postgraduate opportunities were scarce and poorly funded, while the long-term prospects of becoming an academic in the social sciences seemed equally bleak.

They approached the Ford Foundation with a request for funding for postgraduates to obtain master's degrees and PhDs under the banner of the History Workshop. "We wanted to construct a tight team of postgraduate researchers, and allow them to engage in a community that is simultaneously exciting, productive, and interdisciplinary," recalls Nieftagodien.

*This is not something original. It's been confronting people across South Africa and the continent. Even though we had made various efforts to provide support and mentoring, creating opportunities for students to engage in research and publications, there was an element missing. Students, particularly black students in the South African context, often found it very difficult financially to focus on postgraduate research. Once they had finished their undergraduate degrees, the demands immediately multiplied on them to go out and provide for the family.*

*We wanted to develop a system or a model that would make it easier for them to stay in a postgraduate programme to the point of completing PhDs, and open opportunities beyond that. For me, that is almost as important in the process of regenerating the academy as assisting the individual student in going through the various postgraduate degrees. Those two need to go together.*

The Ford Foundation supported three master's students and three doctoral students, providing them with adequate living allowances so that they could focus on their research without having to work on the side, a need that all too often delays postgraduates in finishing their degrees, says Nieftagodien. Combined with separate support from the National Research Foundation, which awarded Bonner a prestigious national research chair, the academics have been able to assemble a community of 16 honours, master's, and PhD students, all of whom are working on projects related to the History Workshop's intellectual banner of "local histories, present realities". The group provides an alternative to the traditional "old boys' networks" on campus that many say continue to impede the progress of young black academics.

**This community of young scholars has brought a renewed vigour into academic life, often taking up challenging new research subjects that look at issues of rural South Africa in fresh new ways.**

This community of young scholars has brought a renewed vigour into academic life, often taking up challenging new research subjects that look at issues of rural South Africa in fresh new ways, eschewing, for example, the lens of politics through which academics of Nieftagodien's generation, who came of age in South Africa's anti-apartheid struggle, have typically viewed their subjects. One young woman, for example, is looking at how the transfer of power between successive chieftaincies works in South Africa's Limpopo Province, while another is doing ethnographic work on the politics, practices, culture, and meanings of "white weddings" in an area of small towns south of Johannesburg known as the Vaal Triangle. Says Nieftagodien:

*By bringing together young scholars and being deliberately interdisciplinary, we've generated a new set of questions which older people like myself would not ordinarily have been attracted to. Bringing these new scholars in from diverse backgrounds put onto the table a series of interesting questions that have forced us to look at our own research agendas in different ways.*

*This year, we have easily the best cohort of postgraduate students. In a very short time, they have coalesced into a self-defined and interesting group of scholars. Part of the rejuvenation of the academy of scholars is the creation of new academic networks. The most successful academic cohorts have been groups of scholars who have been located in the same place and, over time, have maintained those connections.*

## Global Ambitions, Local Realities

This idea of developing and retaining younger academics through building strong, enduring communities of scholars also underpins efforts on other campuses to internationalise and strengthen linkages with foreign universities, both on and off the continent. In the old paradigm, African academics often travelled abroad for advanced training and severed the link with home, leading to a deeply entrenched brain drain crisis. Yet the concept of brain drain is gradually morphing into the more hopeful concept of "brain circulation", as African academics do in fact return from stints abroad, having forged enduring relationships with foreign academics and institutions, which can then be leveraged to strengthen both individual careers and institutions themselves, for example through research collaborations and the formation of new institutional partnerships.

Over the past several years, the MacArthur Foundation has supported young lecturers from Bayero University in obtaining their PhDs abroad, in order to help develop a critical mass of academics with the global connections and expertise necessary to build a culture of advanced training and research at the university. Half a dozen of these young lecturers—all of them male—gathered around the lunch table at Bayero, in order to share the experiences of their first few years in academia. All were eager to discuss and debate what their newly earned credentials would mean, both for their own careers and for the university, located in the arid far northern reaches of Nigeria.

These young academics are daunted by the challenges they will face here, as they balance heavy teaching loads against their ambitions to continue publishing and networking internationally, building on the connections they made while abroad. Without the programme, "none of us would have had the opportunity to go and travel and study in those world-class universities," says Bashir Tijjani, who recently completed his PhD in finance at the University of Dundee in Scotland. "We are now importing the culture of research back home, which will improve the quality of our jobs and our university."

This aspect of a university's "research culture" left a deep impression on Tijjani and several of his colleagues, who relished being able to attend international conferences and contribute to journal publications. When Tijjani returned to Bayero, for example, he took over as the head of the department, and decided to introduce a thesis monitoring committee, because he saw how it had worked as a mechanism for smoothing communications and heading off problems for graduate students working on their theses at Dundee.

In addition, he says that he is now working to set up an exchange programme and collaboration agreement between the accounting and finance departments at Bayero and Dundee.

In the past, few of the young lecturers sent abroad for training by the university returned, says Muhammad Bello, a professor of mathematics who previously oversaw all MacArthur-funded programmes. The lure of higher pay, better resources, and greater opportunities was simply too strong. Before leaving on their MacArthur fellowships, the lecturers all signed pledges that they would return to Bayero after completing their PhDs. "We feel that it's morally binding on us," says one of them. "If we stay there, the whole aim of the programme is being defeated."

Few of the returnees around the table today, however, would deny that they were sometimes tempted to stay. Studying liquid crystals as an industrial chemist at Putra University in Malaysia, Abdulsalam Salisu travelled to South Korea, where he rubbed shoulders with the world's leading experts. One of his Nigerian counterparts was able to register two patents—one in the United States and one in Australia—in the time it took to complete his PhD there. By contrast, young academics here and elsewhere around the continent are often so bogged down by heavy teaching loads, poor access to materials, and unavailable supervisors (to say nothing of arcane national patenting procedures and regulations) that it takes them as many as nine years to merely finish.

"All of us have attended international conferences, and we presented papers with leading scholars in our various fields. Since we are back to Nigeria, we are going to implement some of the skills we have learned. Now all of us can go present papers in international conferences," says Haruna Musa, who did his PhD in polymer chemistry at the University of Bristol.

**We are now importing the culture of research back home, which will improve the quality of our jobs and our university.**

Now back in the land of power failures and slow Internet connections, however, the lecturers express fears that they will not be able to maintain the levels of productivity and connectedness that they have come to value so much. For all the recent gains that universities have achieved in improving Internet speeds and reducing costs, connectivity still lags far behind much of the rest of the world. "We used to be on the Internet for more than 10 hours, in our own rooms," says Ibrahim Idris, who recently completed his PhD in mathematical biology at the University of Liverpool. "Here, you have to go to an Internet cafe, and it takes ages before you can open a page. I've been back here one and a half years, and I've had such a heavy teaching load that I've done no research work."

If properly supported, these new academics, with their valuable skills and new international connections, firmly believe that they can help turn an obscure university in the northern extreme of Nigeria into a place where ideas from around the world are exchanged, adapted, and re-shaped to suit a local context. Such is

the promise of advanced degree training abroad. Says Tijjani: "The future depends largely on how prepared we are to contribute....We've seen a lot in developed countries, and if we [can] implement some of the things we saw, there's every possibility that our universities will also become centres of excellence."

## The Weight of History

Another Nigerian university, the University of Ibadan, has also embraced internationalisation as a cornerstone of its strategy to develop the next generation of academics. During the 1960s and 70s, Ibadan was not only internationally competitive, but it also enjoyed widespread international linkages that withered away during Nigeria's long winter of strife, says Akinbo Adesomoju, a chemistry professor and former MacArthur liaison officer. As Nigeria became an increasingly embattled pariah state, the university's international partners fled, and the university was also forced to admit more students than it could handle. "Naturally, standards went down, and the staff got discouraged," Adesomoju recalls. "That was the period we refer to here as the 'locust years'."

For decades, Ibadan, one of Nigeria's oldest flagship universities, relied on the strengths of an ageing cadre of foreign-trained professors to see it through. But now these individuals who carried the system for so many years stand on the verge of retirement. And the generation of professors now in their forties—those, in other words, who should now be in the prime of their careers, serving as mentors to younger academics—is known as "the lost generation". They assumed that unfortunate title because they began their careers within the stagnant university system, at a time when a university career offered but a pale shadow of the vibrant, globally engaged experience enjoyed by their older colleagues. Once-prolific library journal collections grew obsolete and ossified on their shelves. Budgets evaporated with austerity measures and inflation, robbing scholars of opportunities to do research and rub shoulders with their global peers at conferences.

In the late 1990s, the University Council resolved to turn the institution around. The university management wanted to focus on restoring opportunities for staff members—particularly females and younger staff—to travel abroad. With support from the MacArthur Foundation, the university decided to prioritise the development of its next generation of academics, particularly through new opportunities opened up by a strategy of internationalisation. One of the bitterest prices exacted by the locust years was the university's loss of international linkages, which had kept academics globally current and competitive.

"[We] had a situation where people had obtained their first degree here, their second degree here, their PhD here, and had started teaching without having ever left the country," says Adesomoju. "Research had also [declined], so their exposure was limited. Many didn't know how to write research proposals properly, because it was very difficult to get grants from outside the country."

While today conditions have improved dramatically at the University of Ibadan and elsewhere, the legacy of past isolation continues to cast a long shadow, as Adesomoju explains, looking at the example of the chemistry department where he is a professor:

> *At one time, the department of chemistry had 15 professors. There was a time when I think the number dwindled to four or five, though new ones are coming now. Within the last five years a lot of people retired; after reaching the mandatory retirement age of 65, they had to go.*

Because many of the lecturers rising up through the ranks during the locust years lacked opportunities to produce research, they also failed to obtain promotions, which hampered their careers and left gaps in the university's human resources. As the university grew more insular, its isolated culture inevitably became more tolerant of non-productivity, says Adigun Agbaje, the former deputy vice-chancellor for academics, who completed his term in December 2010.

With the help of new global linkages, the university has gradually succeeded in re-introducing a culture of competitiveness, says Agbaje:

> *Now the university has conference funding available, so people can no longer claim a lack of money to go to conferences as an excuse for not producing conference-quality papers. We are now able to separate out those who are willing, and facilitate training where it's needed....We can encourage them and drive them into the process with a carrot and a stick. We give you facilities and funding, and you give us an abstract that is acceptable.*

**With the help of new global linkages, the university has gradually succeeded in re-introducing a culture of competitiveness.**

The travel grants have had a ripple effect throughout the university, Adesomoju agrees. "Even most of the younger lecturers now travel [outside the country] at least once a year, which was not happening before," he says. "They now access grants from so many different places."

As internationalisation increasingly becomes embedded in the culture, both Adesomoju and Agbaje argue that instead of fuelling brain drain, it even serves to help the university retain staff, because academics can see for themselves that careers at the university offer rich opportunities. Equally important, the lessons Ibadan has learned are now spreading beyond the campus, says Agbaje. Nigeria's Educational Trust Fund, for instance, a national funding body for education, is increasingly moving towards a new strategy of supporting human capital development at universities. The next stage of MacArthur Foundation support, meanwhile, will focus on building centres of excellence within the university as a new strategy for retaining academics by offering them the chance to engage in prestigious and fulfilling research and training collaborations.

Support for research at the University of Antananarivo has helped academics gain new insights in fields like entomology.

Chapter Nine

# Developing Research

**THE NEED FOR A STRONG CADRE OF AFRICAN RESEARCHERS, AND FOR STRONG RESEARCH-DRIVEN** institutions to support and enable their productivity, is obvious—and ties in closely with the previous chapter's look at the development of the next generation of academics. The academic rite of completing a doctoral dissertation is, after all, in itself an act of research; and it is through continuous research contributions that academics build and sustain their careers, and bring prestige to their institutions. But more than that, without strength in research, African countries cannot really determine their own priorities, or set their own developmental agendas.

This chapter will explore the wealth of challenges and opportunities African universities now face in their efforts to build infrastructures and cultures that support research. In the few areas where African universities have produced significant bodies of research, such as health, education, and agriculture, the impacts have been significant. Yet research is generally a costly and complicated exercise, and poses deep challenges for universities often starting from a low base. For example, the flow of communication between researchers, universities, and other key parties, such as government funding bodies, is often flawed—leading to complaints that publications gather dust on shelves, when they should be used to inform policy work.

These complexities raise many questions: Who decides what the research agenda should be? How can researchers communicate their findings effectively to policymakers and the public? And does all research need to be somehow relevant to national needs, or should space be preserved for research that may never lead to actual applications? This chapter sketches some of the philosophical and developmental arguments for building strong cultures of research within African universities—picking up on some themes of technology and bandwidth introduced in Chapter 3—and looks at how some institutions are addressing the practical, financial, and ideological barriers that challenge them.

### Missing Links in Madagascar

In a university that has seen very little capital investment in the past 30 years—and has literally no research budget—conservation biologists at University of Antananarivo, one of Madagascar's national universities, faced all manner of obstacles to doing research. They lacked vehicles for getting out into the field, reference collections where students and researchers could look at plant and animal specimens, solid ICT and library facilities, and even running water in the laboratories. And in the past two years of political crisis in the country, researchers have faced increasing threats in the field from bandits, and often even have to hire security guards to accompany them.

**Support from the MacArthur Foundation has helped to bridge some of the missing links that previously hindered scientists from doing their jobs, for example by providing for such essentials as boats, GPS systems, and microscopes.**

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Yet the widespread dependence of academics on international donors for research funding is often problematic, says Gerald Ouma, the higher education researcher introduced in Chapter 3, because it can allow external funders to effectively set the research agenda. And on this island nation of extraordinary biodiversity, which harbours a wealth of unique endemic plant and animal species—nearly all of them threatened by habitat loss—the task of discovering and cataloguing them, and piecing together the dynamics of the ecosystems supporting them, was, until recently, left largely to foreign researchers.

Despite such difficulties, Madagascar has seen "massive growth in biological research on the island....Until a few years ago, Malagasy biologists often remained in the shadows of their foreign counterparts and largely detached from a clear engagement in scientific research," says one report submitted by the university to the MacArthur Foundation.

The need for conservation vies constantly with the needs of impoverished rural communities that live adjacent to important pockets of rainforest, and this conflict is increasingly driving the research agenda, explains Daniel Rakotondravony, the head of the Department of Animal Biology, as he browses through a collection room that contains an extraordinary array of nature preserved behind glass. Over years, this collection has grown from a few modest specimens that Rakotondravony gathered himself to its current size of about 70,000 different animals.

Until recently, Malagasy researchers often had to travel to foreign museums to examine such troves of still life, because they did not exist here at the university. With funding from the MacArthur Foundation,

Rakotondravony has built this collection up to its current size. The collection has an importance beyond research for the sake of research: it is here that students return from their fieldwork to compare specimens, pinpoint the types of animals they find in the field, and piece together the implications. Increasingly, they are using this knowledge in their work with communities to try and find ways of aiding a peaceful coexistence with nature.

Jeanne Rasamy, a lecturer in animal biology, and Christian Ranaivoson, an MSc student working with her, for example, are studying the biology, ecology, and pathology of native species of crayfish—a topic that at first glance might not seem urgent, but in fact has important implications for the ecology, the economy, and food security. "There are a lot of pressures on these animals," says Ranaivoson. "It's much easier to convince people to save the lemurs. But they are important: when they are in the larvae stages, they eat the algae and keep the growth of algae in check."

Many of the biggest challenges in conservation biology in Madagascar today stem from the fact that there has been little consistent monitoring of animal and plant populations, and changes in local ecologies, which makes it difficult for researchers to see changing dynamics in a larger context. "Every year we lose a huge amount of forest, but nobody can do assessments of what is happening in the field," says Herisolo Razafindraleva, who recently completed his PhD in entomology. "In the US, research is done all the time, for example, on what we get from pollination. If we lose the bees, we lose so many billions of dollars. Here in Madagascar, nobody is doing that, so we don't know."

### A Central Science Laboratory to Raise the Research Bar

Throughout the developing world, the scarcity of laboratory equipment has circumscribed, or at least re-directed, many scientific careers. At Obafemi Awolowo University (OAU), it was the lack of equipment such as a nuclear magnetic resonance (NMR) spectroscope that initially thwarted Abiodun Ogundaini, a medicinal chemist, and his colleagues. Ogundaini has spent his career applying the methods of modern chemistry to plants used in traditional medicine in Nigeria, conducting research on the bioactive compounds that give the plants their efficacy.

Unlike other countries such as India and China, which have applied modern science to their strong traditions of herbal medicine, most of Nigeria's medicinal plants have never been subjected to the scientific lens, despite the fact that 80 percent of the population relies on them as a primary means of treatment.

With scientists across the full spectrum of other disciplines facing similar frustrations, the university hit on a novel idea that is increasingly becoming the norm in Nigeria. By building a single laboratory facility to house all of the university's expensive scientific equipment, the university realised that it could make better equipment available to researchers, while avoiding unnecessary duplication and ensuring proper

maintenance. Nigeria has vast human resources, says Ogundaini, but is constrained by the lack of funds for the labs and equipment needed to harness this potential.

Now the Central Science Lab, which Ogundaini currently directs, has helped to revive the culture of research on campus, a trend that has worked hand-in-hand with other efforts to strengthen the university's research infrastructure and culture. OAU takes pride in its reputation as Nigeria's premier research university, and also used a portion of its block grant from Carnegie Corporation to build up its capacity for research management, says Abiodun Adediron, who directs the university's linkages and research office.

The research office introduced new monitoring and evaluation processes to ensure that grants are managed well. "We carefully chose projects that would have a lasting impact, that would lead to structural adjustment of the university," he says. OAU also streamlined its processes for managing grants and distributing grant funding, and boosted its ICT and library facilities, all in a concerted effort to help researchers (and, by extension, the university) get the most from their grants. The research office has also succeeded in channelling more funds for academic staff to attend international conferences. All of these interventions together have helped raise the university's research profile, says Adediron, particularly in areas of energy, aeronautics, and ICT. With the right research policy framework in place, the university is that much better positioned to reap the benefits of facilities like the Central Science Lab.

**Most of Nigeria's medicinal plants have never been subjected to the scientific lens, despite the fact that 80 percent of the population relies on them as a primary means of treatment.**

By concentrating all sorts of equipment here, such as digital microscopes, centrifuges, and chromatographs, which can be used across different disciplines, the university has surmounted many of the problems that researchers previously confronted. Many labs and offices often get only a few hours of electricity a day and blackouts can stretch for weeks, putting sensitive equipment and perishable research materials at risk—yet, with two back-up generators, the power is always on at the Central Science Lab. The university's NMR remains the only one in the country, and the centralised and efficient maintenance of the facility has now kept the machine running for nearly 10 years.

The Nigerian Universities Commission put up the initial funding for the facility. A grant from Carnegie Corporation then helped to ensure the lab's sustainability by providing funds for more equipment, such as a liquid nitrogen plant, essential to the running of the NMR, and for reagents and service contracts for maintaining existing equipment—which has helped to build up a skills base of local maintenance technicians certified to work on highly specialised, foreign-built equipment.

In all, some 36 different departments and units within the university, ranging from biotechnology to soil science to physics, currently use the facility. It has helped to strengthen training for undergraduates, who use

MSc student Christian Ranaivoson conducts water quality tests as part of his research on crayfish at the University of Antananarivo.

it to complete their final year projects, as well as for postgraduates and academic staff. Comments from external examiners show that students are now better prepared for their final year projects because of their access to the lab. It has also brought academics from different disciplines together in new collaborations. So far, it has contributed to at least 20 new research publications by the university's academic staff, according to a report on the lab's impact as of 2009.

While the facility requires constant new injections of money to keep it running, the more effectively it runs, the more success the academic staff should have in obtaining research grants, which will then help to

## voices of change

### Nature's Beauty Is in Her Molecules

Bimbo Elusiyan, lecturer, Obafemi Awolowo University, Ile Ife, Nigeria

I had to come to Ife to do my PhD work here. At that point, I had almost let go of my PhD, because the facilities just were not available [at the university I was working at]. I spent seven years in the other university, and was teaching at the same time. I was shuttling back and forth between Ife and the other university—doing my research work then going back and doing the teaching, supervision, and practicals for the students.

It was very difficult, especially because I have three children and got married the year I started my PhD. Basically my love of science kept me going. The interest I have in making something out of my life, and contributing to my country, kept me going.

What interests me most is that nature is so endowed with molecules that can bring relief to people's suffering. That really fascinates me. If I take a plant and work on the plant, test the plant, maybe it can heal cancer or infectious diseases. That really interests me.

The plants are still here in the bush, waiting for someone to tap these resources. You talk of HIV and the diseases that are plaguing humanity now—the solutions are still in the wild, still in the plants. I believe I will be one of the people who will contribute to bringing them out of nature to help humanity.

At present, I am working on a project on sickle cell disease. The first phase is to explore what traditional remedies people are using. We are going to the villages, to the traditional people to learn from them about the indigenous knowledge. We then bring the indigenous knowledge to the lab and scientifically test whether or not its claims are right.

It is really challenging and exciting. I'm looking forward to a day when we come out with a drug product that sickle cell patients will use, and their sickle cells will return to normal blood.

This research is possible now because we have the facilities on the ground. If the facilities were not there, such projects would be basically impossible. In the past, it was not feasible.

sustain the lab further. "We should be able to produce research papers that are of an international standard, that are acceptable not only in Nigeria or in Africa, but in the United States," says one former director of the lab. "This has given us an edge. With the introduction of these pieces of specialised equipment, our research output was not only better in terms of quantity, but also more acceptable in terms of quality."

The facility has also attracted researchers from 30 other universities and institutes in the region, which provide usage fees to keep the machines running. The plan now is to get the facility accredited by regulatory bodies like the International Standards Organisation, in order to earn further revenue by offering services to industry.

Perhaps even more importantly, the lab has emerged as a model for other universities in the region to follow. When the Nigerian government's Educational Trust Fund made money available for five different national universities to develop their research expertise, for example, it stipulated that half the funds be spent on building new central science laboratories on those campuses.

At OAU, meanwhile, the lab is also helping a new generation of researchers to stay motivated in advancing their careers. "I wouldn't have even stayed on in natural products if I were to go by the stories I heard in the past," says one former student of Ogundaini's, who is now a lecturer. "But with what is happening now, I am excited to build a career in academics."

### The Rise of Research and Education Networks

While advances in equipment at facilities such as the Central Science Lab are making it possible for academics to engage in sophisticated research, ICT advances now increasingly hold out the potential for African academics to join advanced international research collaborations. Universities around the world have banded together to take advantage of new generations of fast and sophisticated fibre optic cable, forming high-speed networks called National Research and Education Networks or "NRENs" that are dedicated to carrying the heavy traffic generated by global research and education collaborations. These new cables and networks increasingly make such things as remote surgery, super telescopes, and high energy particle accelerators possible to the global research community by allowing researchers on different continents to collaborate in real time and analyse vast troves of data coming out of highly specialised facilities in distant locations.

While the United States has Internet2, the pan-European network GEANT connects all of Europe, and Latin America has the Latin American Advanced Networks Cooperation ("CLARA", using the Spanish acronym). In recent years, these national and regional Internet super-structures have meshed together, giving infrastructural support to the increasingly global and multi-dimensional nature of research in the twenty-first century.

Africa remains the only continent in the world that has not yet tapped significantly into this vast global super-highway. As new high-speed cables reach African shores, new opportunities are arising for African

universities to connect. But connecting to the super-highway is as much about creating awareness and cohesion amongst people, and getting political leaders and national policy-makers on board, as it is about laying the physical infrastructure. Initially, through the Bandwidth Consortium, the Partnership helped to create a forum that brought together isolated ICT experts from different campuses at a crucial time. As these experts met one another and discussed their common challenges, they began to organise their own advocacy networks.

The ultimate goal of these regional initiatives is that they will all one day coalesce into a pan-African research and education network that is, in turn, connected to the global super-structure like GEANT or Internet2. Discussions concerning the need to establish this network arose from the Association of African Universities (AAU) general conference, held in Cape Town in 2005. As a coordinating body and forum for African universities, the AAU was the natural choice to spearhead the drive, and received funding from the Partnership and the International Development Research Centre[1] to establish a research and education networking unit.

**Being able to interconnect with institutions at the national and global level will enable us to share resources.**

"Sometimes you need an external player to bring people around the table to discuss issues of common interest," says Boubakar Barry, who directs the Research and Education Networking Unit at the AAU. "Research and education networks are fairly new to most institution leaders and governments. And if you don't get the support of the institution leaders and governments, it can't work."

The unit has focused on helping countries to establish research and education networks, a process that involves bringing government ministers and university vice-chancellors to the table. Many countries have long had telecommunications monopolies, or at least severely restricted competition, which have kept prices artificially high, he says. But the situation is beginning to change, with the arrival not only of the new cables but also of new competitors within the telecommunications sector. Some countries, including Tanzania, Kenya, Ghana, and Uganda, meanwhile, have been laying national fibre optic backbones, planting further seeds for future networks.

Altogether, Africa now has some 18 different NRENs, although many of them exist in name only. Advocates say that governments have so far been slow to respond to requests for free access to national fibre backbones, and other concessions that would help universities to realise the potential of NRENS. Nora Mulira, the director of the Directorate for ICT Support at Makerere University in Uganda, says the university is using the Research and Education Network of Uganda, the country's NREN, as a platform to push for cheaper bandwidth. The university is spending about five times more on bandwidth than it would in the developed world, and as a consequence still has access to only about a third of the bandwidth it needs.

[1] A public corporation created by the Canadian government.

"Most advanced research today is really about teamwork between specialists in many countries, and between many laboratories," says Barry. "Especially because of scarce resources in Africa, we have to share. Being able to interconnect with institutions at the national and global level will enable us to share resources. It's not just about courses, it's also about equipment, and using equipment remotely, if you have the necessary bandwidth and infrastructure. You can also share human resources. When I teach in Senegal, sometimes I have to travel 300 kilometres to teach, because they don't have someone else available to teach these courses. If we had an NREN in place and enough bandwidth, I could stay in Dakar and give my lecture."

## voices of change

### From Access to Advocacy

Francis "Tusu" Tusubira, founding director of the Directorate for ICT Support at Makerere University in Uganda, and acting CEO of the UbuntuNet Alliance, a regional association of National Research and Education Networks in Africa

We've come a long way from the days of simply trying to get a few more kilobits of bandwidth. The only focus of the Partnership initially was more bandwidth at a lower cost. The Bandwidth Consortium also contributed to the cohesion of the continent. Now we have linkages with Nigeria, and I don't think we would have made them otherwise.

Now, as UbuntuNet Alliance, we are saying that we should not be satisfied until each researcher, each academic, has got access to the same bandwidth, at the same cost or cheaper, as the rest of the world.

We claim that better access is going to lead to a higher level of participation in terms of intellectual output, in terms of publications around the world, and so on. In other words, we hope that better output is going to change behaviours. Our real aim is this: How do you impact education and research? Can we give real data, so that someone can argue that increased access is worth it in developing countries?

Our thesis is that if you give African-based researchers equal access to the rest of the world, then you're going to see an impact on global intellectual property output. We know that when [African] researchers go and work elsewhere, they excel. We know it is a question of their environment, so we are trying to manipulate that environment.

Policy and regulation remain the barriers. That's what we are fighting. The biggest problem is monopolies, limited competition, artificial barriers. All of this makes bandwidth expensive.

We are working at the national level with the national research and education networks, and where they don't exist we can help get them started. Where they do exist, we can help strengthen them. The Uganda RENU is working to connect all of the universities in Uganda.

We are also trying to encourage the development of regional content networks. Inter-African research is very important to us. One side is the infrastructure networks, and the other side is the networks of people working together.

Daniel Rakotondravony and Jeanne Rasamy in the collection room at the department of animal biology at the University of Antananarivo, which houses some 70,000 species.

## Building Research Excellence in an Overcrowded Faculty

Particularly in the over-subscribed humanities, there still remains an overwhelming need to build up basic research capabilities. "Our students come into a crowded place, where the opportunities for communicating with professors and getting feedback on their performance is very poor," says Feisal Yunis, the former vice-dean of the Faculty of Arts at the University of Cairo. "Teaching is carried out with lectures, so there is no chance for developing skills in research. That needs small groups with good interaction and communication, learning by argument. This is not available."

As vice-dean, Yunis grew accustomed to reviewing sub-par research plans, presented by postgraduate students who clearly lacked skills in proposal writing and research methodologies, as well as access to current and relevant literature. To improve the situation, Yunis and his colleagues came up with a three-pronged plan, funded by the Ford Foundation: they introduced seminars in social science research methods for postgraduates; they made funding available for specific research projects such as those of Fikri M. El-Etr, assistant professor of psychology, Cairo University (see textbox p. 162); and they began a project to translate seminal works in the various social science disciplines from English into Arabic, the first and only language spoken by the vast majority of students.

"Most of the good methodology books are in English," explains Yunis. "Now, they can read them first in Arabic and be familiar with the concepts. Some of these books we see as key readings. You can't understand many of the articles published in the literature without knowing them." The research methods course, meanwhile, is a 10-day training programme introducing key skills, such as using software packages for statistical analysis. Some 230 postgraduates have so far participated, out of a total of around 2,000 students. As the programme becomes more established, additional specialised seminars will be tailored according to students' needs, Yunis says.

The three-pronged approach is an effort to inculcate better research practices into young researchers. "It's an effort to effect a social change, to change the habits of work, based on the idea that experiences in the life of a young person can actually shape the course they set for themselves," he says. "In my second year of university, a professor told me in passing that you will never be a good scholar unless you can read and write in English. I took it very seriously, and taught myself English. It's the butterfly effect. What we are expecting is that some of the students will be influenced enough by the programme to go on and become good scholars. We provide them with the models."

The hope is that the combination of these three measures will offer a model for growing research capabilities in harried and constrained environments. "Many lecturers have good ideas, but when they do research, they have to pay for it from their own pocket, so they tend to do small-scale, low-cost research that is not of a very high quality," says Yunis. "They often just make up questionnaires for students, as they don't have money to do interviews in the slum areas of Cairo."

## voices of change

### "I Talk about My Project as I Talk about My Son"

Fikri M. El-Etr, Assistant Professor of psychology, Cairo University

There are three main mechanisms of resilience: individual character, family support, and community support. In recent years, it's been recognised that there is a heterogeneous community, and that the slum areas contain cultural differences.

Egypt has very nice people, suffering from more and more problems. They have goals, they have dreams, and they have positive coping mechanisms. This area needs more research. We need to study the positive examples. I'm concerned with my community, with my home. I'm looking for ways to improve the lives of human beings in Egypt. The children and the adolescents are the future of my home.

If you have adversities, the dominant narrative is that you will become deviant, a criminal, and end up in prison. But instead of this narrative [there is also a positive outcome]... you can adjust to negative conditions and adversities.

I think this is the first study of its kind looking at these questions. I want a study like this to influence people's thinking, to influence policies. I hope it will promote justice and equality amongst the population. I hope that scientific study contributes to social justice.

Sometimes science and research contribute to injustice. But we are trying to contribute to social justice and equality. If we cannot change the reality, then maybe we can change the person.

There are difficulties cooperating with the population, working with them, because they think that we are like the government. So the researcher suffers from two things: governmental constraints and an untrusting population. And the work is for the government, for the population.

Without the money from the Ford Foundation, there would be no in-depth research. This kind of research is very difficult. You need good researchers and reasonable funding. You need researchers who are aware of social sciences, and scientists who are aware of the social and psychological problems that need more in-depth research.

Now, I can employ our students. I can take enough time to do this research. I can develop new ways to get accurate data. We have drawn conclusions from [preliminary] studies and designed culturally distinct questionnaires related to our own culture, not to other cultures.

Reasonable funding enables all of this. And in my conscience, I feel a sense of well-being and satisfaction with my work. Now, I talk about my project as I talk about my son. If there were no reasonable funds, then I would have to depend on my own equipment. I would do incomplete research, inaccurate research, and feel dissatisfied.

Another potentially more serious obstacle to doing serious research in Egypt is the government's tight control of information, academics say. Under the former regime, restricted access to data narrowed the research agenda, and made it difficult for researchers to follow lines of questioning that might be politically embarrassing or stir controversy. This was seen not so much in overt clampdowns on freedom of expression, they say, but rather in the difficulty of accessing hard data, which was carefully guarded by the state.

**Research for Education's Sake**

It has become widely accepted that one of the best all-around ways of reducing poverty in a society is to invest in universal primary education. So it is perhaps ironic that universities have been so under-funded historically, given the important contributions they make to primary education by training teachers (and teacher trainers) and conducting education research. To help universities establish their reputations as centres of primary education research, the Rockefeller Foundation provided funding for two programmes in Kenya and Uganda.

After Grade 3 in Kenya, schools regularly switch over from native language instruction to English, but often pupils are given little formal preparation for this shift. At Kenyatta University in Kenya, education professor Agnes Gathumbi wanted to design a tool that would measure how well children adapt to being taught in English, which for most of them is not the mother tongue.

With support from the Rockefeller Foundation, she developed a series of books designed to help teachers ensure that their students have attained proficiency in English. The books taught teachers how to produce reading materials for their students, and were provided to schools as "book boxes".

Gathumbi's experiment measured the success of schools that were given access to the book boxes against a control group of schools that had no materials. "We picked poor-performing schools as the test group, because that's where we thought this type of intervention was needed most," she says. "At the end of the project, we examined the students again, and found that there was a lot of improvement [in the schools that were given the book boxes]."

"If the learners don't understand the language of instruction, they won't understand any other subject either. They won't understand the core concepts in math and in science if you don't develop the language first," says Gathumbi. After she completed the study successfully, she had found one effective solution to a pervasive problem that not only affects learning in Kenya but also in dozens of other countries where instruction takes place in children's second or third languages. However, Gathumbi ran into one of the key problems that so often trips up research that is meant to be applied: How, as a researcher, do you ensure that these results are taken up more widely, that they gain the attention of policymakers and are made widely available to schools that could benefit from them?

"This is the first time in East Africa that standards have been developed for any discipline. The children are learning the language and the content at the same time," says Gathumbi. "Year after year, national exams are done, and the cry is that performance in English is always low. Even the graduates from this university, you can see they must have gone through high school with some weaknesses in English. But the government has its own priorities, such as agriculture and health. It's an issue of funding."

### Building Expertise in Primary Education Research

The project at Kenyatta was linked to a companion study at Makerere University in Uganda, which, like its counterpart in Kenya, focused on the low English competency amongst teachers and pupils, but also looked at the low quality of many school facilities, such as the lack of clean water and toilet provision, as a variable in the study. A comparative study was conducted across three schools: one control, one that adopted the English programme only, and one that adopted the English programme and made improvements to the school environment.

When that study was complete, the Ford Foundation provided funding to the researchers to conduct training and distribute resource materials at teacher training colleges across the country. "I don't think I've had a richer experience in my education life," says Deborah Kasente, the lead researcher on the project. "It was very challenging, but very telling." The foundation also provided funds to publish the research findings in a book, and for a year of disseminating the findings to different schools and interested groups. The project has enabled the researchers to speak directly with teachers and parents. "It's enabled us to do what we've never done with any other research," she says.

The key finding of the study, says Kasente, was this: "We came to the conclusion that the money is being invested in the wrong place. All the money is going into infrastructure, but even those sitting under trees can perform. You have to go into the classroom and change the teaching and learning process."

The project has helped Makerere to establish its reputation as a centre for primary education research, says Kasente, who is a researcher in the Makerere Institute of Social Research, a dedicated institute within the university. Of course, the strengthening of primary education is not only an area of national importance, but also one in which universities themselves have a vested interest. After all, we have seen that many of the problems blighting higher education stem from primary schooling.

Research such as this helps to tie the university system to the lower tiers of education, says Kasente. "There's a very big wastage from primary to secondary. Often, these students have not mastered a lot of English, and lots of people can very easily slip back into illiteracy."

"It's the small things," she continues. "What had the biggest value was what we invested in getting children to read more, to ask more questions. That really helped the confidence of the students."

## Deepening Knowledge of Poverty

The identity of the researcher herself is, of course, also an important factor. Her identity shapes her outlook on life, and, therefore, the questions to which she will seek to gain insight. For Khosi Kubeka, a post-doctoral fellow in the department of social development at the University of Cape Town, one of the key questions that must now be asked in South Africa is this: How does the landscape of deprivation that has come to define the post-apartheid experience for many dismantle people's sense of identity and worth?

Growing up in Soweto, the country's largest urban black township, located on the outskirts of Johannesburg, Kubeka beat the odds, first by entering the University of Cape Town as an undergraduate in 1996, and afterwards by winning a Fulbright Scholarship to do her PhD on comparative youth racial identities at Ohio University. Initially she wanted to be a social worker, but then she took a course in social research methods as an undergraduate and fell in love with research. Now she is back in Cape Town, with a post-doctoral fellowship from the Mellon Foundation, and feels a strong sense of purpose in her work investigating how social identities are formed amongst those deprived in the country's fractured socio-economic landscape.

As the University of Cape Town strives to distinguish itself as a major African research university, Kubeka says she feels excited by the opportunity to ask new questions about how the poor are faring under South Africa's current trajectory. "We are engaging very closely with Amartya Sen's theory of capability," she says. "People need choices to function as who they are. If they don't have enough access to choices, they don't function."

Kubeka says she feels proud to be part of a new generation of black South African researchers who are asking new questions in the post-apartheid landscape, informed by their own particular viewpoints. As we saw in the previous chapter on the next generation of academics, young black academics serve as important role models for their students in the classroom. Equally, this new generation of academics is important for the diversity of perspectives they bring to the field of intellectual inquiry, and their passion for putting their own interpretations of post-apartheid inequalities under the microscope.

"We are asking questions about aspirations: What do they want out of life; what dreams do they have?" she continues. "Things that are important to them, and how they are thwarted by living in poverty."

Communities living near the Tampolo forest have received assistance with farming and income generation, in exchange for their help protecting the forest from illegal logging and farm encroachment.

Chapter Ten

# Dirty Hands, Fine Minds

**AFRICA'S COMPLEX SOCIAL PROBLEMS, COMBINED WITH ISSUES OF GLOBAL CONCERN SUCH AS** mass migration, water scarcity, and urbanisation, are placing new demands on universities. These types of problems demand new kinds of solutions from a new breed of researchers, academics, experts, and professionals—people who are firmly connected to local realities of poverty, disease, under-performing economies, and environmental degradation, and who can address these problems through rigorous intellectual engagement. This chapter shows how universities are increasingly positioning themselves to reach beyond the campus gates in order to bring their analytical and problem-solving skills out into communities.

In the best of situations, this work enhances both the university and the community, for example, by bringing students into the field to learn hands-on skills and test theories learned in the classroom, as well as by allowing the best academic minds to apply themselves to tough challenges in areas such as food security and health. Several universities have successfully cultivated cultures of innovation, and have sought new ways of ensuring that society reaps the benefits of what they produce.

On the one hand, universities' increased social engagement signals a real and positive change in African higher education. For years, outsiders have been offering their ideas for "appropriate technologies" to lift living standards and alleviate poverty in Africa, while African universities themselves largely sat silent on the sidelines. Yet most African academics would likely argue that it is indigenous organisations, and the people within them, that are best placed to identify problems, set priorities, and develop solutions that have the most likely chance of meeting local needs sustainably.

As anyone who has worked in development knows, however, getting it "right" is difficult and complicated at the best of times. And in all of their efforts, universities face the added challenge of ensuring that they engage in ways which strengthen their own core functions of teaching and research.

This chapter looks at some of the programmes supported by Partnership foundations that have helped universities to strengthen their links with society. In addition to enhancing research and enriching the education of students, these programmes have also helped universities to improve their academic offerings and develop new income sources. At the same time, this chapter also recognises the importance of individuals who are the lifeblood of any institution, and often, inspired by their own passion, drive the institutional changes that matter most. As demonstrated in previous chapters, these actors can help introduce meaningful change within institutions and within society at large.

### A Degree of Relevance

Papyrus grows plentifully in the in the swamp near the family compound on outskirts of Kampala, Uganda, its fan-like heads stretching over vast acres nearly as far as the eye can see. The reeds are integral to the swamp ecosystem, which supports so much of life around here. Until recently, people never realised that papyrus could also provide a source of prosperity to the community. Three women sit on mats in the shade, working diligently to strip, pound, and chop the reeds, leaving the fibrous pulp to dry in the sun before packing it into large canvas bags that a driver comes to fetch every Friday. Thus begins the local production chain for a product called the "MakaPad", developed by Moses Musaazi, an inventor and senior lecturer in engineering at Makerere University.

Musaazi's story is testimony to the power of the individual researcher. His manifold inventions, which focus on using "appropriate technologies"—technology that takes into account complex social, cultural, and environmental factors to improve the lives of the poor and marginalised—have touched the lives of school girls, refugees, farmers, and prisoners, and have won him a $350,000 award from the Ugandan President's Support to Scientists fund. The MakaPad, for example, is an inexpensive, locally-sourced, and environmentally sustainable sanitary pad, created to keep poor adolescent girls from missing school during their periods.

The product arose from Makerere's social research project, conducted by the Makerere University Institute of Social Research, featured in Chapter 9, which focused on strengthening primary education through better facilities and improved pedagogies. Social researchers from Makerere had identified absenteeism during menstruation as a hidden tipping point, often causing rural girls to lose traction with their education. Girls who could not afford sanitary items would miss four or five days of school every month. Some of them found it difficult to bounce back after these absences, and their education suffered progressively until they eventually dropped out.

The reasons for high dropout rates amongst adolescent girls are complex, but giving schools sanitary pads to distribute turned out to be one concrete and relatively simple way of putting a dent in the problem. But, as so often happens, the solution to one problem created another. Schools that had inadequate toilet facil-

ities to begin with had no way of disposing of the sanitary pads. However, six months earlier, Musaazi, working with a small team of engineering students, had won a competition to improve the latrine facilities at one of the Rockefeller Foundation–supported schools near the university, with his design of a passive water-heating system that provided girls with warm water for washing. So he was enlisted to try and help come up with a solution for the sanitary pad disposal.

### God Must Have Given Me the Head to Innovate

Musaazi's answer to the sanitary pad disposal problem sparked a chain reaction of creative output that has led to him developing all manner of simple, environmentally-sustainable technologies, aimed at solving problems and improving the lives of the rural poor. "God must have given me the head to innovate," he says. "People bring me problems, and I try and find solutions." Many of Musaazi's long list of inventions are on display, in one form or another, on the grounds of his own family compound. Often, he has also designed the machines used to manufacture these products—simple, hand-powered devices that are easy to use and need no external power source.

The solution he designed for the schools was an incinerator that was remarkable in that it required no additional fuel—as it was designed to use the pads themselves—and was both safe and inexpensive to operate. Versions of that incinerator are now also being used by schools, clinics, hospitals, and prisons for disposing of all manner of waste.

Years of work on such challenges in poor and resource-constrained places have made Musaazi an ardent advocate of appropriate technology. His work exemplifies the tenet that it is not enough for academics—particularly in applied fields like engineering—to merely concentrate on solving technical challenges without thinking of their broader impacts on society.

**It is not enough for academics—particularly in applied fields like engineering—to merely concentrate on solving technical challenges without thinking of their broader impacts on society.**

After Musaazi had successfully completed the incinerator project, Rockefeller Foundation programme staff came to him with yet another challenge: providing all of those sanitary pads to schools had become very costly, and they wondered if an inexpensive product could be manufactured locally. "I had to think about what to do, because this was a new thing to me," recalls Musaazi. "As a man, I had never seen a sanitary pad before, let alone used one!"

What followed was a lengthy process of testing different natural fibres, and developing new machines and processing techniques—all while keeping production costs at less than 50 cents per packet of 10 sanitary

Moses Musaazi's compound yard is where he builds new prototypes of his inventions.

**We never anticipated that the project could turn out to have an economic value as well as the social impact that it's having.**

– Moses Musaazi

The MakaPads production chain provides employment for local women, who process the papyrus fibers at home.

## voices of change

### Ready for Challenges

Juliet Nakibuule

When I joined MakaPads, they were testing different fibres, and doing product development. We made changes to the sanitary pads; before moving into the field, we would test the MakaPads on ourselves. I would talk to the different users of the pads. They kept changing the shapes and designs.

"Maka" means "home". As you see from our production site, it's a cottage industry, and the production is more in people's homes. We didn't expect that the innovation would come this far. Our story inspires me a lot. Many organisations really get excited about our success story, and the fact that we are so committed, with one product leading to another product.

The moment you go into research, you have to be ready for challenges. You do something and it fails, but you can't lose morale. You try again, and then achieve your objective. I'm now the manager for the MakaPads project. I believe that if we can do it here, we can do it in any other African country. I believe the challenges we face here are the same in other African countries.

pads. He hired Juliet Nakibuule (see textbox on page 172), who had just graduated from Makerere with a degree in education, to help coordinate testing and product development, often cutting up new samples for trials while sitting at the desk in his cramped office. "I'm a teacher by profession, but I have slowly moved towards becoming a social scientist working with a genius innovator," she says.

After trying various materials, including banana leaves and water hyacinths, the team finally stumbled on papyrus, and found its combination of tough but absorbent fibres to be ideal, particularly when mixed with office wastepaper. Today, the MakaPads enterprise has evolved into a thriving cottage industry employing dozens of women scattered around Kampala to complete the initial processing. As Musaazi and Nakibuule purposely set up manufacturing in Kampala as a distributed, labour-intensive process, in order to maximise job creation and minimise energy use, the MakaPad has touched many lives stretching across the entire production and consumption chain. The products themselves are bought and used widely by local schools and NGOs.

Meanwhile, for Florence Namuwonge, earning money from processing the papyrus has given her greater autonomy within the household, and enabled her to support an extended family. "I earn my living out of papyrus. If any of my relatives have a problem, they can come to me for help with the bills. I can pay my children's school fees. Before, you would have to wait for your husband to give you everything." Now, she earns between 180,000 and 200,000 Ugandan shillings a week ($80-90), about the same as an office worker. Steady demand has allowed her to grow her business, hiring other women living in the compound whose husbands might previously have objected to them working.

As word of the MakaPads spread, Musaazi was approached by the United Nations High Commission for Refugees, which was also feeling a heavy financial burden from supplying sanitary pads to Rwandan and Congolese refugees living in Uganda. Now, a partnership between UNHCR and MakaPads has led to the opening in 2007 of a factory in western Uganda, employing refugee women to make MakaPads, which are then purchased by UNHCR for distribution in the refugee camps it operates.

"The beauty is that the refugees are employed by us," says Musaazi. "UNHCR agreed to buy all of the pads that they produce, so UNHCR are spending their money locally instead of importing sanitary pads, and we, as a company, also have a test case of opening this factory. We never anticipated that the project could turn out to have an economic value as well as the social impact that it's having."

### Technology Transfer Challenges

Impressive as Musaazi's accomplishments are, some academics feel that there should be limits to how directly they get involved in the enterprises that spin off from their innovations. Higher education researcher Ouma tells the story of a professor from Nairobi who had invented a water pump. Without support struc-

tures from the university or the government to tap into, the onus was on the inventor himself to travel to rural areas and train poor farmers in using a new technology that could improve their yields.

While universities in the United States and Europe commonly have technology transfer offices that liaise with government, the private sector, and patent offices in order to help commercialise and scale up inventions, African academics are largely still left on their own. This is slowly changing: while in Chapter 5 we learned, for example, about efforts at Nigeria's University of Ibadan to facilitate commercialisation through a new Centre for Entrepreneurship and Innovation, other universities including Makerere are beginning to open new offices with similar aims. Yet these facilities for the most part remain new and untested. Ouma says:

> *There is nobody ready to run with it, so then the professor can only reach 20-odd peasants and that's the end of it. Then he goes back to the lecture hall or to the laboratory.*
>
> *It's a challenge that institutions all over experience. They get accused of being ivory towers. But we must understand this thing just the same way that we do relays, where we know that you can run from this point to the next point, and then hand over the baton to the other chap. The fact that you have handed over the baton does not mean that you have stopped being involved.*
>
> *I think we need to understand the role of higher education in development in the same manner. Universities are doing these very, very important things. But at the macro level, at the government level, there is no coordination.*

## Helping Small Businesses to Prosper

Although the University of Dar es Salaam's College of Engineering and Technology had focused for many years on producing new technologies to aid small businesses, such as solar dryers, juice processing equipment, and other food-processing machinery, these technologies were not reaching their intended end users. There were simply too many barriers in the way. Engineers in the college began to think that in order to make a real difference, they should change their approach, selecting small groups of businesses to work with directly to address some of the barriers.

While Makerere strived to cement its new culture of service by engaging directly with the government,[1] the engineers at the University of Dar es Salaam devised a different strategy of working directly with rural entrepreneurs, creating a technology incubation project with the goal of helping owners create and run prosperous businesses. Since Tanzania's economy is based on agriculture, the engineers decided to focus on value-added food processing.

[1] As we have seen not so much in the particular example of Moses Musaazi's work, but in the university's strategy of transformation through I@Mak, profiled in Chapter 5.

"Most SMEs are informal, under-performing, and face a lot of barriers hindering their development," says Emrod Elisante, the acting manager of the technology transfer centre in the College of Engineering and Technology. Yet they also offer the best private sector growth and employment potential for the country. A team of volunteer lecturers and students in the college reckoned that if they could help some of these small businesses access new training, equipment, processes, and business management skills, some of these enterprises would flourish and serve as working models for other small businesses—while the students and academic staff members would benefit from engagement with real businesses facing daunting challenges.

In the village of Lushoto, about 40 kilometres outside of Dar es Salaam, Juliana Machwe and Divina Kaombe, two young engineering lecturers, pay visits to several clients of the technology incubation project. The women, both volunteers, serve as coordinators for the project, and make frequent visits to the sites. "I've developed an interest in solving problems in rural areas and helping the community with food processing," says Kaombe.

While farming to produce raw materials yields low profit margins, every new phase of the more profitable value-addition process throws up new hurdles and presents new risks for these small businesses, requiring access to capital, increasingly sophisticated knowledge, and market research. Academics involved in the project faced complex challenges and learned much in the process of supporting rural entrepreneurs in climbing each new and precarious rung of the growth ladder. "We had to sort out about eight different issues at a time," recalls Mushtaq Osman, the training coordinator for the initiative, ranging from packaging solutions to microfinance.

### Bumpy Road to Success

"Business is going well, but my capital is small," says Hamida Makaranga, the proprietor of Mazupe Products, the label under which she produces jams and dried mangoes, bananas, pineapples, and other fruits and vegetables out of her home. Through the project with the University of Dar es Salaam, she has received training in food processing and business management, and help in writing a business plan. She has also acquired a cell phone and an email account for conducting her business, as well as procuring a solar-powered dehydrator, which has helped to improve quality control. But challenges with packaging her goods, transporting large quantities of the raw materials, and taking her produce to far-away markets and trade shows remain. "We are growing now, and moving forward one step at a time," she says.

After receiving training in food processing from the project, Makaranga's friend Magesa Munna started a business making wine from hibiscus flowers, bananas, grapes, and other fruits. The programme helped her to access loans, training, and equipment. Initially, Munna saw an opportunity to capitalise on the abundance of fruit being grown in the area, much of which was rotting before it reached the marketplace. Further research showed that the demand existed for her product. Since then, her business has grown large enough

to hire four employees. "My vision is to be a big company producing wine, and to be exporting wine from Tanzania," she says. She has already been making a few inroads into Kenya and Uganda, she says. Without the technology incubation programme, says Munna, "my growth would be low at this time." Her success so far has helped her get back on her feet, after her husband died three years ago.

Along the way, the project has picked up allies and collaborators like Mhegele Mduda, a former entrepreneur from Lushoto who now works for the Tanzanian Chamber of Agriculture advising small business people. One of the big challenges facing university academics in this project has been finding ways to balance project work with their other teaching and research work. While the programme has at times tapped academic staff members at the business school and the Faculty of Social Sciences at the University of Dar es Salaam, the professors involved have come to realise that things get done more quickly when they involve outside experts. Mduda says he has been happy to step in and give practical help and advice on the ground, since the academics can't get so closely and directly involved. "The university guys are very busy teaching and researching," he says. "But I have more time to get involved here."

After a bumpy journey on muddy dirt roads, Machwe and Kaombe visit another business, this time a group of 27 cashew farmers (20 men and 7 women) who are mostly former employees of a government-run cashew processing factory that closed down after it failed to perform in the free market economy. This group decided to carry on processing cashews independently, but faced the same challenges as other small rural businesspeople: accessing loans, competing with deeper-pocketed rivals, acquiring machinery, and developing standards of hygiene without easy access to commercial equipment and packaging materials.

With help from the technology incubation project, they acquired a building with processing machinery from India, but the new factory closed due to management problems. In the meantime, the collective members have built their own premises, so that the processing can be done in a clean and controlled environment. The enclosure has a dirt floor, walls of woven grass, and a thatched roof. Now, they often harvest cashews from their trees, or buy them from local people. If they had a proper factory, they would steam the cashews open, but for now must still rely on open fires to burn them open—a process that scorches the nuts, lowering their quality and price. The men from the project say they still hope to resolve their difficulties and scale up production.

For all its successes and failures, the technology incubation project has convinced engineers at the college that the future of their country's economy depends on ensuring that entrepreneurs have the means to succeed. The project has also inspired plans for a new, and as-yet unfunded, incubation centre on campus that will support students and staff members who have invented products and want to commercialise them. "Our work is very unique within the university," says Elisante. "We did work that a lot of people thought would be impossible."

The University of Dar es Salaam's technology incubator programme has helped rural entrepreneurs such as these cashew farmers to gain skills, improve their products, and increase their incomes.

The oral health programme at Obafemi Awolowo University has provided relevant training for students and local health workers.

**The university has also discovered an excellent way to provide students with hands-on experience in rural communities, and to bring lessons gathered from the process into the curriculum.**

## Community Oral Health Care in Nigeria

Sometimes, academics within institutions that train students to work as doctors, nurses, and other health-care providers find that they are in a good position to spot gaps in health care provision. One major gap in Nigeria that struck Eyitope Ogunbodede, the former provost of the medical college at Obafemi Awolowo University, was the absence of any sort of dental health facility in the country's local governmental clinic structure. "Virtually all over the world, dental care is provided in a lopsided manner," says Ogunbodede. "But here in Nigeria it is an even greater challenge, because oral health facilities are essentially non-existent in rural communities." More than 70 percent of rural Nigerians suffer from oral health problems, such as gum disease and periodontal disease, which are "100 percent preventable," says Ogunbodede.

As pervasive as the problem is, though, Ogunbodede realised that a solution was well within reach. Since the country already had a fairly extensive network of local rural clinics, Ogunbodede concluded that the university could set up a model of oral health care delivery to ride on the back of the infrastructure already in place. In the process of designing the programme, the university has not only provided oral health care to the community; it has also discovered an excellent way to provide students with hands-on experience in rural communities, and to bring lessons gathered from the process into the curriculum.

With $83,000 in funding from Carnegie Corporation's block grant to the university, Ogunbodede and his colleagues went to work to set up a pilot dental clinic at a nearby district health facility. The idea was to come up with a model that could be replicated across the country. Working closely with the Ife-North Local Government, and in consultation with a number of local government staff and traditional leaders, the university designed a programme to run at the Ipetumodu Clinic, a district health facility not far from the campus, hand-in-hand with outreach programmes in the surrounding community.

The idea for the programme arose from the university's strategic goal of increasing its engagement with the surrounding community, says Ogunbodede. Taking a visitor on a tour of the small dental facility, Ogunbodede, accompanied by Oluseguno Nyeni, a recent graduate of the university, and Florence Ogunniran, a health worker who is employed in the oral health programme at the clinic, points out the consulting room where people from the surrounding area come for check-ups and to have teeth pulled. "This is just a minor aspect of what the whole process is about," says Ogunbodede. "More important is the education."

Ogunniran, the wife of a local chief, was one of several health workers trained to staff the facility, educating patients and attending to minor procedures. Every week, she says, she ventures out to schools and markets to educate people. "We advise them to eat fruit and brush their teeth twice a day using toothpaste," she says.

For students, this outreach introduced an inspiring new dimension to their learning. "We had many students who want to specialise in community dentistry by virtue of their exposure," says Ogunbodede. Previously, they had gained hands-on experience working at the teaching hospital in town, but suddenly they found

themselves visiting local marketplaces and schools, helping to raise awareness about the importance of oral health.

Increasingly, other universities have latched onto this model, planning similar facilities of their own, while other local governments have also expressed interest. The university itself, meanwhile, has built on its initial training of healthcare workers to staff the facility by introducing, in 2009, a diploma programme that trains public healthcare workers in oral health and addresses a major gap in healthcare staffing nationally.

The pilot has also demonstrated that successful programmes can be set up with very little money, says Ogunbodede. Patients pay small fees for their treatment, which go into a revolving fund to keep the programme going. The programme has been tremendously successful with the local community, says Ogunbodede, and local government officials, as well as the head of a local market women's association, have all joined its governing committee. Carnegie Corporation's funding has drawn to a close, and the university is in the process of transferring responsibility for running the facility back to the local government, although it will continue to serve as a training site for students, says Ogunbodede.

### Shedding New Light on Tanzania's Cultural Treasures

While universities have made strides in producing new research, they often still face challenges disseminating it. A decade ago, this problem had become frustratingly obvious to Bertram Mapunda, a professor of archaeology and history at the University of Dar es Salaam. Visiting Tanzania's museums and cultural heritage monuments, he often felt embarrassed to hear local tour guides narrating stories that were wildly inaccurate, drawn from the colonial era, and racially biased interpretations of British archaeologists of the 1950s and 60s. "They would say things like the Swahili civilisation that we find along the coast was purely Arabic," he exclaims indignantly. "But these Arabs did not come here and find this as an empty land. Swahili civilisation was a collaborative effort between foreigners and locals."

Mapunda and his colleagues have produced troves of new findings and insights about the coastal Swahili civilisation that arose here between the 13th and 15th centuries, founded on a brisk trade in slaves and other commodities, as well as other civilisations that evolved within what is now Tanzania. This knowledge has helped to construct a picture of East Africa's coastline as a cultural melting pot, linked by the Indian ocean to distant Arab civilisations and global trade routes, and shaped by the complex mingling of new arrivals with indigenous locals who had established their own complex networks stretching to the interior of Africa. Yet somehow, these newer, more textured interpretations struggled to find their way outside of the university.

Then, with a portion of Carnegie Corporation's block grant to the university, in 2004, Mapunda designed a course in cultural heritage management, which has opened the university up to dozens of tour guides,

museum workers, and other interested people, offering year-long certificate and diploma programmes. Most museum and heritage site employees never receive formal training, Mapunda says.

While the archaeology degree programme at the university focuses on scholarly work, broad theoretical knowledge, and fieldwork, the cultural heritage management programme brought in new dimensions such as antiquities law and tour guidance. Students also make site visits, access books and journals on local history and trends in the field, and undertake their own research projects.

Course participants pay modest fees ($300 for the certificate programme, $500 for the diploma programme) that have been used to sustain the programme, which was recently expanded to include a bachelor's degree track. Keeping the cost affordable has also opened new opportunities to women, who have typically comprised just 3 out of 10 employees within the sector, Mapunda says.

The course has not only helped to professionalise the sector; it has also encouraged entrepreneurship within the cultural heritage arena. "The impact of the programme is everywhere, not only in museums but also with those who are self-employed and have tourist businesses," says Mapunda. "We want to see the day when we have a person who started with a certificate getting a PhD."

**The impact of the cultural heritage management programme is everywhere, not only in museums but also with those who are self-employed and have tourist businesses.**

The university has also leveraged the programme's success to secure a $1.2 million grant from the World Bank to construct a new museum on their campus that will serve not only as a repository for Tanzania's archaeology, but also as a showcase of the university's history and the unique inventions and research it has produced. "Doing [research on the university's history] was terrible. We went to the administration looking for important documents from the 1960s and 70s, and they were not there. Very important documents had been destroyed, because the space was needed for offices," says Mapunda.

### Sharing Cultural Heritage

About 40 kilometres north of Dar es Salaam, on the way to the old slave settlement of Bagamoyo, the ruins of an old port called Kaole peek out of dense palm tree and mangrove forests. In its heyday, the place was a lively and prominent port. But as dense mangrove forests choked off the harbour, the settlement faded into obscurity until all that remains today are the battered coral-brick ruins: the tower of a mosque and an old graveyard being the most prominent.

It is here that Erick Jordan, a student who is finishing his diploma in the cultural heritage management programme, spends his days working as a tour guide. Walking around the old settlement, he points out the tomb of the sharif, where people still come to leave coins and burn incense, not far from another gravesite for a husband and wife who lie buried together. Coins discovered in the foundations of some of the buildings suggest these settlers originally came from Persia, and developed a bartering economy with the indigenous Aramo people, which eventually tapped into the regional slave trade.

Before the course, Jordan explains, he was unemployed. Now, in addition to working here, he hosts a weekly radio programme dedicated to issues of cultural heritage in Tanzania. "People are living with these resources, but they don't know about them," he says. Each week presents a fun challenge, as he goes to various sources and consults Mapunda and others in order to find topics for discussion.

Chatting in the shade outside the settlement, Mapunda tells Jordan that he is proud of what his student has achieved: "Now you are employed, but you have also been able to do something beyond the regular antiquities employment," he says. "Our project is promoting culture and heritage. Now we have you as a product of that, spreading the information to many people."

### A Living Laboratory for Protecting the Forest, Helping the Community

Madagascar, the world's fourth largest island, harbours untold examples of quirky and wondrous evolution—but this biodiversity is increasingly threatened by the political instability that followed a coup in 2009. Legends from the time of the first human settlers, who arrived here about 2,000 years ago, speak of giant species of lemurs and flightless birds, long since wiped out by human expansion. Today, only eight percent of Madagascar's original forest cover remains, and most of the country's astonishing biodiversity is hemmed into these few remaining, and increasingly isolated, pockets of land.

The Tampolo Forest in Madagascar is a rare jewel, a 675-hectare island of littoral coastal rainforest engulfed in a sea of villages and farmland. On this postage stamp-sized island of biodiversity, a protected area, there is a research station belonging to the University of Antananarivo's Department of Forestry, where university researchers and students have created a living experiment in understanding and protecting a complex ecosystem that is threatened by the human settlements around it.

Walking on one of the pathways that cut through the dense forest, Jeannin Ranaivonasy, the assistant coordinator of the university's Tampolo programme, explains the dynamics of poverty, population growth, and political crisis in Madagascar, and how these factors intersect here in this lonely fragment of rainforest.

The forest at Tampolo harbours a panoply of species, ranging from the tiny, nocturnal mouse lemurs, whose eyes glow from forest branches in the night, to some 11 different species of orchid. Yet for all its splendid

Erick Jordan, a graduate of the cultural heritage management diploma programme at the University of Dar es Salaam, presents his own radio show about Tanzania's cultural treasures.

arrays of life, this place is fragile. The forest was a logging site until the 1980s, Ranaivonasy says, and was damaged by the loss of valuable tree species. Today, the logging continues, though illegally—villagers and unemployed people from the nearby town of Fenerive come into the forest to cut the trees and sell them for timber and firewood.

Here, students and researchers are studying the complexities of the forest, in order to try and better understand how to marry conservation with development. "It is a question of really integrating the population into conservation," says Ranaivonasy, who contributes to the university's research and field school programmes here, and is also conducting doctoral research that focuses on the dynamics of change in the composition of flora in deforested areas.

Students from the Department of Forestry at the University of Antananarivo attend field school at the Tampolo forest research station.

The university's research station is a collection of white bungalows. The construction was partly financed by the MacArthur Foundation. Now, the university's department of forestry, which operates the facility, needs to make the station self-sustaining, and is developing it as a resource for visiting researchers and ecotourism. The facility has attracted a French association of researchers called AVERTEM, who are working on a major study of medicinal plants, and recently spent three months at Tampolo, generating more than 75 percent of the facility's revenue for the year. Another building was recently constructed as a new centre for environmental education, where teachers can bring their students to learn about the forest and conservation.

Meanwhile, working with local communities and officials, university researchers have organised forest patrols to clamp down on illegal logging, and offered skills training for community members, in exchange for their assistance with conservation. Researchers in a country like Madagascar don't have the luxury of

pursuing research in isolation, Ranaivonasy says. It is inevitably and inextricably linked to the broader challenges of ecology, conservation, and community. Researchers have to work to defend the very sites where they are engaged, as the land and its resources are swallowed up by so many competing survival interests.

There is only one strategy for protecting the forest that has much potential for success, Rainvonasy says—and that is to convince villagers that the conservation of the forest is in their interest, too. But when villagers rely on exploiting the forest resources, and there is little cash available to train them in other skills, then it becomes difficult. Researchers at Tampolo have long been caught up in this juggling act.

It is difficult to gauge the health of the Tampolo forest, says Rainvonasy. To restore the forest, staff at the facility collect seeds and raise them in a nursery until they are hardy enough to be planted in the forest. "There are some indicator species that are still being maintained, like the lemurs," he says. "Now we can say that the forest is stable, but we will only be able to say if it is healthy decades into the future."

**Researchers have to work to defend the very sites where they are engaged, as the land and its resources are swallowed up by so many competing survival interests.**

In the village of Rantolava, located on the northern edge of the protected area, some people are beginning to realise other reasons to support conservation. In 2008, a devastating cyclone ripped through the region, and destroyed many people's woven grass houses in the village, which made some people begin to understand the value of the forest as a protective buffer, says Ernest Mahafena, the president of the village conservation association, called Fihati.

Climate change is also introducing new hardships. Rice production has fallen, while diseases amongst animals are on the rise, putting strains on people's livelihoods and making it all the more difficult to convince them not to cut down trees, he says. For his part, Mahafena says he believes that the disappearance of the forest is worsening the effects of climate change.

Bruno Algence, the association's secretary, agrees. He received training in growing vanilla and bee-keeping that was arranged by the university, and says that he sees a strong relationship between the forest and the future—the bees need flowers from the forest in order to produce their honey, he says. He has also been interested in the medicinal plant research conducted by the French, and is eager to learn more about what results from it. "The forest is like a school, because we can learn many things from it," he says. "If we destroy the forest, it's as if we destroy our school."

Students of the RUFORUM network at Makerere University in Uganda.

Chapter Eleven

# Networking a Continent

**Wisdom is like fire. People take it from others.**

– Proverb of the Hemma people from the Democratic Republic of Congo

**MOST AFRICAN UNIVERSITIES LACK THE CAPABILITY TO TRAIN LARGE NUMBERS OF NEW ACADEMICS** on their own, or to produce large volumes of their own research. Through networks for advanced training and research, however, universities are finding ways of pooling their strengths and resources, in order to achieve collectively what no single institution can do on its own. Typically, these networks are agreements amongst various universities to collaborate with one another, often in a particular discipline such as agriculture or economics, in order to mutually benefit from collaborations in advanced training and research. In some cases, networks are administered from a particular university campus, but many of them are autonomous organisations with links to universities.

While the concept of networks for advanced training and research is hardly new, university leaders are increasingly embracing them as crucial cornerstones of strategies to revitalise African higher education, particularly to gain traction on the challenge of training the next generation of academics. While the Partnership itself did not focus on networks, many of the Partnership foundations gave significant support to networks geared towards building capacity in their respective areas of interest.

On their own, most universities lack the full complement of resources to produce academics who can compete on an equal footing with their global peers. But when these universities combine their strengths—for example by opening up access to an electron microscope in Johannesburg for a doctoral candidate from Malawi to analyse plant compounds, or by connecting an aspiring coral reefs expert in Mozambique with

an experienced supervisor in Tanzania—the picture changes. Pockets of strength that can be found across different universities in different countries combine to equal a stimulating intellectual community where academic careers are launched and nurtured.

This chapter looks at how the spread of various networks can contribute to advanced research and training on the continent. African academics have long complained of being isolated from one another—but the networks taking shape not only expose students to other areas of the continent, but link the senior colleagues and supervisors as well. Some networks have been in existence for a decade or more, and have already made impressive contributions to shaping the future of academe in Africa. Others are rising only now, but already are inspiring new generations of scholars to widen their horizons and see new possibilities.

## RUFORUM: It Takes a Continent to Raise a PhD

Adipala Ekwamu was lucky to start his career in plant breeding at a time when funding for advanced training abroad was plentiful. While USAID gave him funding to do his training at The Ohio State University, the Rockefeller Foundation supported him when he returned to Uganda to do field research on plant breeding and disease management in maize.

With Rockefeller Foundation support, he was able to work on issues critical to national food security in the early 1990s. "When I finished my training in the US, I already understood what was needed in Uganda," he says. More than anything, he understood that Uganda, and the African continent, needed a network of scientists who could support each other and share ideas, to build up a strong science capacity on the continent. "Agriculture faculties were in a sorry state because of the neglect," he recalls. "Those faculty members who had not gone elsewhere were not conducting research, or were desktop researchers not working on the real issues. Research centred around where the universities were, and was not linked to communities. Postgraduate training had collapsed."

It was in the midst of this bleak picture that Ekwamu and his colleagues formed the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM),[1] with support from the Rockefeller Foundation in 1994. The aim of the programme was to train students at the master's level, and also, more specifically, to take African academic staff members and their students out into the field, producing research more responsive to the needs of small-scale farmers.

While the support from USAID that helped educate so many of Ekwamu's generation of agronomists has largely since withered, a new paradigm of training African scientists, researchers, and academics on their home soil is emerging. RUFORUM has been at the forefront of this trend.

[1] The organisation was originally called FORUM.

A student of the RUFORUM network at Makerere University in Uganda does field work.

Today, nearly 20 years later, RUFORUM has evolved into a large and thriving network for advanced training and research, encompassing 25 different universities throughout Southern and East Africa. Its strategy has been to tap pockets of expertise that exist within universities by creating specialised master's and PhD programmes concentrated on a single campus but serving the entire network. For instance, Maphosa Mcebisi, the Zimbabwean graduate student in Chapter 1 of this book, is earning his PhD in RUFORUM's plant breeding programme at Makerere. Other new PhD programmes include dryland resource management at the University of Nairobi; as well as fisheries and aquaculture; soil and water management; and food science and technology at universities in Kenya, Malawi, and Tanzania.

Since 1992, the organisation has produced 600 master's graduates, and it aims to graduate 800 master's students and 150 PhD students by 2013. "People didn't believe that Africa could offer quality PhD programmes," says Ekwamu. "RUFORUM has demonstrated that, yes, it is possible—but you also need to be able to mobilise expertise from more than one university." But if wonders are being achieved today, they are the fruits of slow and steady processes that began 20 years ago and have taken this time to mature.

"Today you have a place like Makerere University, which has a state-of-the-art biotech programme—but that process started in 1992. It started with basic things like tissue culture," says Ekwamu. "There is something very unique about the approach that Rockefeller has taken, and I hope that other donors will try and learn from it. They recognised two things—one is the impact of long-term investments, and the other is the importance of doing things in phases.

"When we started research to develop varieties of cowpea and soya, we were all in a hurry to release these varieties within two years. We had not even consulted with the farmers and identified the issues. Only later we would bring in the market issues, test the different varieties, and check whether what we produced was even relevant to their needs. It took eight years to get those varietals released in Uganda," Ewkamu elaborates.

As RUFORUM has evolved, Makerere, where the programme's secretariat is housed, is now undergoing its own transitions, building up its emphasis on postgraduate training, in part to produce the academics to staff the other public and private universities that have mushroomed around the country. In addition, Makerere's dedication to pursuing gender equity (elaborated in Chapter 7) has rubbed off on RUFORUM, prodding the network to do more to attract and support young female agronomists, Ekwamu says. While RUFORUM has gained from the strengths of its member universities, like Makerere, it has also fed new ideas and benefits back into those universities. "There is a symbiosis and a synergy with the universities," says Ekwamu.

## USHEPiA: A Sleeping Giant Awakens to the Continent

Elsewhere on the continent, similar ideas were taking hold for different reasons. As South Africa emerged from the cocoon of apartheid, its universities began to look beyond the protective shell that their government had created to keep the rest of the continent at bay. South Africa had been a country apart, a pariah nation that was isolated by an international academic boycott and its own psychological blockade against the rising tide of independent, black-ruled Africa for the past 40 years. But as South African academics gradually began to step beyond old ideological boundaries, meeting their northern counterparts at forums such as the Association of African Universities (AAU), in Accra, Ghana, they began exchanging ideas. One such idea was to collaborate on exchange programmes to strengthen advanced training for young lecturers who did not have their PhDs, particularly in science and engineering.

In 1993, the University of Cape Town (UCT) received a planning grant from the Rockefeller Foundation to explore the possibility of creating new linkages with universities in other Anglophone African countries. The following year, the university received a grant to bring vice-chancellors from 21 different African universities to the campus for discussions about forming a partnership for the development of academic staff in science and engineering. For African universities, the programme represented an opportunity to harness

Cape Town's experts and facilities, while for UCT, it was a chance to make overtures and forge ties with long-estranged neighbours. University leaders at the meeting agreed to seek funding for a network that would allow young scholars to travel and divide their time between their home university and another member institution while earning their PhDs. They believed that if African scholars stayed on the continent while they earned their degrees, their research would be more relevant, and they would be less likely to take long-term academic staff or research positions abroad.

Over the past 16 years, the programme, called the University Science, Humanities and Engineering Partnership in Africa (USHEPiA), has awarded a total of 71 fellowships, so far producing 40 PhD and 7 master's graduates, as well as some important lessons on how to make initiatives like this succeed. The programme received funding from the Rockefeller Foundation, the Mellon Foundation, and Carnegie Corporation. It was designed to strengthen teaching and research in eight different universities by allowing young academics to take time off to complete their PhDs. While the agreement allowed for academics to go to any of the member universities, participants in the programme have, with few exceptions, chosen UCT because of its generally superior resources. Each doctoral candidate works with two supervisors—one in his or her home university and another at UCT—in completing field and lab work, analysing data, and writing the dissertation.

**If African scholars stayed on the continent while they earned their degrees, their research would be more relevant, and they would be less likely to take long-term academic staff or research positions abroad.**

This arrangement was eye-opening for UCT professors, often older white males who had never set foot north of the Limpopo River, recalls Nan Warner, the programme's former director. Suddenly, as joint supervisors, they were trotting off to visit the fieldwork site of a Ugandan doctoral candidate looking at water systems in some remote corner of that country, or the lab of a Kenyan plant-breeder. "All of my generation were pretty much brainwashed to believe that nothing much happens north of the Limpopo," she says. "There has been a lot of fear, and a lot of discounting of Africa. That is going to have to change."

Warner believes that one of the important spin-offs of USHEPiA has been its role in helping to change perceptions of the rest of Africa amongst the academic staff at UCT. As professors returned to Cape Town from their forays into Tanzania and Zimbabwe, they brought back stories to share with their students about exotic field trips and courageous efforts up north to conduct research in the midst of daunting constraints, Warner says. She was fascinated by the changes she noticed in the attitudes of her white male colleagues as they grew more immersed in the programme, and eventually completed a master's degree looking at the learning experiences of these colleagues, and reflecting on how the transformations they experienced might help to shape UCT's culture. "For me, it was a life-altering experience," she says. "We have a lot to learn from the

rest of Africa. We talk about ubuntu[2] here, but it's not a great society at the moment. For Kenyans, an individual is someone to be respected and valued. That is the kind of society I would love to have here."

## INDEPTH Network: Gathering the Data

In strengthening African universities, it is not enough to concentrate solely on the universities in isolation without looking at the larger structures of government, NGOs, and the private sector that universities plug into. Sometimes, one effective way to benefit universities is actually to support the organisations with which they enjoy symbiotic relationships. The INDEPTH Network[3], a coalition of some 42 research institutions that conduct health and demographic surveillance across the developing world, which receives funding from the Hewlett and Rockefeller Foundations, amongst other supporters, is one of those organisations.

This network exists outside of the university structures, yet has had a powerful impact on the universities that orbit within its sphere. The idea of forming the network emerged in the late 1990s, as researchers at health and demographic surveillance sites scattered in different parts of the developing world sought ways of reaching across vast distances, in order to share the data and findings emerging from their siloed work with a broader community.

The mission of INDEPTH is: "To harness the collective potential of the world's community-based longitudinal demographic surveillance initiatives in resource constrained countries. Collective work will provide a better, empirical understanding of health and social issues, and enable scientists to apply this understanding to alleviate the most severe health and social challenges."[4] The network has been able to develop a bird's-eye view of what is being done where, which has helped it to identify critical gaps and devise strategies for filling them. When experts in different regions carry out similar or complementary work on topics such as malaria, the network has helped to produce synergies.

Even South Africa, which falls into the middle income country bracket, suffers from a poverty of health data on which to base policy decisions. While apartheid-era bureaucrats deliberately turned a blind eye to the health needs of millions of the poorest people in their gathering of statistics, the emergence of rural health and demographic surveillance systems in the early 1990s began providing the first glimpses into the health and population dynamics of the rural poor. One such site, called Agincourt, located in the far reaches of the Mpumalanga province, near the Mozambican border, and run by researchers from the school of public health at the University of the Witwatersrand (Wits), was a founding member of INDEPTH.

[2] A widely-used South African term, loosely meaning "people are people through other people".

[3] The International Network for the Demographic Evaluation of Populations and Their Health in Developing Countries is the full name.

[4] Source: The University of the Witwatersrand, Johannesburg, South Africa. Website for HDSS site in Agincourt, South Africa: http://web.wits.ac.za/Academic/Health/PublicHealth/Agincourt/agincourt_hdss.htm

Field workers in training at MRC/Wits Rural Public Health Programme.

The health and population division of the school of public health works hand-in-hand with South Africa's Medical Research Council (MRC). This partnership between the university and the research arm of the government's health and science departments has helped the flow of data, findings, and strategies between the university and the government. "That then serves as an incubator contributing to INDEPTH itself, which immediately makes all of us part of quite a high-functioning network," says Steve Tollman, the director of the MRC/Wits Rural Public Health and Health Transitions Research Unit at the School of Public Health.

"It allows one to have a density of relationships that are not geographically bounded, so we are all exposed to a lot of ideas, and we are contributing to people's ideas. It enables us to grow together," he says.

This works as a form of alchemy. Wits has become the cauldron into which all of these different bits of data, hypotheses, and findings pour. New ingredients, sourced from the wider network, are added to the local insights gained from Agincourt. Inside the cauldron, the various ingredients combine with and enrich one another.

At Agincourt, surveillance began just as the lethal ingredients of poverty, migratory labour, split families, high-risk sex, and poor health services were brewing an explosive HIV pandemic. With the rise of a system for gathering detailed information about births, deaths, and migrations at a critical time, researchers at Agincourt were able to precisely document dramatic changes in the population between the early 1990s and the present—finding, for example, that the average life expectancy has fallen by about 19 years within that brief time frame.

**The INDEPTH Network allows one to have a density of relationships that are not geographically bounded, so we are all exposed to a lot of ideas.**

In a sense, South Africa's delayed and lacklustre response to AIDS could be seen partly as a tragic example of communication failure, as policy-makers closed their ears to the alarm calls blaring from places like Agincourt. "I think it's fair to say that the consequence of the Mbeki regime in South Africa, and the Mbeki cabinet's rejectionist, denialist approach to HIV affected much, much more than just HIV," says Tollman. "It undermined the notion of evidence and it drove a wedge between scientists and [policy-makers]. We are in a process now of trying to bridge that and heal that gap."

### Networks Intersecting with Networks

INDEPTH has provided a means of shining a light on priority areas that, in turn, has fed into the processes of other institutions and networks whose work overlaps with INDEPTH. The School of Public Health at Wits, for example, has emerged as a small but intensively productive force driving research on the continent, and it is now helping to develop Agincourt further as a rural observatory for collecting other kinds of data that intersect with health, such as education, training, and economic development. Says Tollman:

> *I think that the nature of problems that we face in sub-Saharan Africa will never be solved by a single research group, a single institution. These are new problems. They are different problems. In some ways they are global problems.*
>
> *The disappointment is that I think we could have a far greater impact on policy development, research translation, and programme evaluation. I think that if you take INDEPTH as a whole, whether it's been vaccines, bed nets, or some of the newer efforts around tuberculosis, the record is actually quite significant.*
>
> *I think we are all feeling that there is a new public health here….The question is how to achieve far more effective connections between government, the public sector, and link those to centres of scientific strength.*

Another network in which Wits has played an instrumental role, and which overlaps somewhat with the work of INDEPTH, is the Consortium for Advanced Research Training in Africa (CARTA). It is a brand new

network with big ambitions, born from a separate process that took place in Nairobi, Kenya, as a population and health research institute began to grapple with the question of why it had so few locally-trained researchers on its staff. The African Population and Health Research Centre (APHRC), supported by Hewlett and several other Partnership foundations, is the institute in which CARTA is housed, and has a story of its own (see textbox on page 197). But to look first at CARTA: the network aims to develop the field of public health in Africa, with a specific focus on training junior academics who do not yet have their PhDs.

## A Critical Mass

CARTA aims to strengthen both doctoral training and the research infrastructure and capabilities of universities in the areas of population and public health. The network draws together some nine different African universities, four African research institutions, and an additional seven northern universities and research institutions,[5] with the idea that, collectively, they form a reservoir of high-level skill and knowledge from which all the different partners can draw. The programme is just getting off the ground: the first intake of 25 doctoral fellows was announced late in 2010.

But Alex Ezeh, executive director of the APHRC, where CARTA is housed, has ambitious plans for it. The goal of the programme, he says, is to train at a world-class level; to help African scholars forge lasting connections with one another that will keep them on the continent; and ultimately, to link African scholars through the network to opportunities to publish in big-name journals, in order to get relevant science produced by Africans onto the policy-making agenda. He says:

> *The key challenge is, how do you get Africans to play a role in defining and implementing priority research programmes for the region? If you are really going to improve evidence-based policy decisions in the region, you need people who are able to generate credible research and use that research to inform policy decisions.*
>
> *If you look at many of the top demographers in Africa, many of them would have gotten some funding from Rockefeller in the 1960s, 70s, and 80s. They spent millions training Africans in some of the best institutions in the world, but if you [look at] any of the fields in which they have worked, whether it's agriculture or population issues, you see that maybe 95 percent of what has been written on Africa, even in the journals that are focused on African issues, has been written by non-Africans.*
>
> *We want to build a critical mass of people who have the necessary skill set to succeed as researchers. We think that if we can sustain this engagement over a 10-year period, and build within each university 10 to 20 people with similar sets of skills, that we can actually begin to rebuild the foundation of intel-*

[5] The African universities are Moi University and the University of Nairobi in Kenya; the University of Malawi; the University of Ibadan and Obafemi Awolowo University in Nigeria; the National University of Rwanda; the University of the Witwatersrand in South Africa; the University of Dar es Salaam in Tanzania; and Makerere University in Uganda.

*lectual work, and the culture of excellence within those universities—at least within the areas that we are focusing on.*

Ezeh estimates that training a doctoral candidate through CARTA will cost about a quarter of the $250,000 or so that it costs to train an African PhD overseas. But the benefits are not only in cost savings. Like USHEPiA, the programme involves joint supervision: the PhD candidates choose a supervisor from their home university, and are provided an additional supervisor located somewhere else within the network, who can offer their own expertise and perspective. This arrangement is intended also to benefit inexperienced supervisors, by pairing them with old hands.

Networks such as CARTA also add value by adding a breadth of exposure to different areas of the field that students confined to a single university would otherwise not get. "If you are at the University of Nairobi and you study population studies or demographics, you have access to three or four professors who are in fertility and family planning programmes, or are in mortality. There is nobody in migration, but you want to do your PhD in migration. What are your choices? You either work with somebody who doesn't understand anything about migration, or you change to another area," says Ezeh.

**Maybe 95 percent of what has been written on Africa, even in the journals that are focused on African issues, has been written by non-Africans.**

The CARTA model encourages PhD candidates to find supervisors who are active researchers with interests close to their own, and to do their PhDs at the campus where the supervisor is based. "You might be in Malawi, but the person working in your area of interest is at Makerere," says Ezeh. "You can go to Makerere and do your PhD, and by the time you come back, you have actually begun to expand the range of expertise that is available within your university. You bring in different experiences of research and engagement, so that we are not continuing with this process of what someone has called 'incestuous inbreeding', where we only produce our own PhDs and our own faculty."

CARTA also involves regular gatherings of the participants: in this case, for month-long seminars where the doctoral fellows are exposed to key readings in public health and other areas that bear on their disciplines, and receive training in specialised research skills, such as proposal-writing. On top of providing this training, however, the network also aims to support the development of research cultures in universities, for example by hosting workshops for university librarians, financial officers, and administrators, to give them a better understanding of how things like effective processes for disbursing grant funding can smooth the way for researchers.

The network will also focus on finding ways to strengthen other systems that feed into research at its member universities, such as their libraries. Following consultations with CARTA staff, the National University of

## voices of change

### Genesis of a Doctoral Training Network

Alex Ezeh, Executive Director of the African Population and Health Research Centre, Nairobi, Kenya

I can say in the last three years, maybe 120 publications in good journals [have come out of APHRC], and that continues to grow each year. But we realised that even if we have 10 centres like APHRC that publish hundreds of articles each year, it is not enough to meet the needs for trained capacity within the region.

We did so many different things, but I was talking to somebody who said, "APHRC is only interested in people who got their PhDs from outside the region." We went back and looked at our recruitment, and we realised that we had interviewed more than 20 people with PhDs from African universities, and we didn't appoint any of them to a research position.

So we asked ourselves, what is it about the experience of these people that made it impossible for us to appoint them? We found that it was really around their understanding of the literature, their understanding of methods, their presentation skills, their ability to communicate their research, and things like that.

We started thinking, what is it about their training that leaves them poorly prepared? In 2006, we convened a roundtable discussion around doctoral training in Africa: the modalities, the constraints, the opportunities. We brought together vice-chancellors, deputy vice-chancellors, and deans to look at this. We brought people from South Africa, East Africa, and West Africa—everybody reflected on the fact that PhD training has remained a challenge for them as a university. They don't know how to get it right. They don't have a system in place.

Everybody realises it's going to be difficult to actually develop such programmes, for many reasons. If you decide that you are going to introduce coursework, who is going to introduce these courses? Where are you going to find the people that will actually serve as supervisors and mentors for these people? Also, people come into these programmes and don't graduate. They spend 10 years doing a PhD and they give up.

So after that meeting, we started thinking about how can we work in this area and make a difference. We felt it had to be African-led. It has to be something that we as a region can buy into and build together—a network that can support the training of the new generation of African academics and researchers.

Rwanda, for example, is looking at expanding its library to give master's and PhD students their own workspaces, says Caroline Kabiru, an APHRC researcher who helps to coordinate CARTA. Eventually, she says, such networks should be able to become self-sustaining, through the strength of their member researchers' abilities to raise their own grant money.

That is one area where CARTA's close association with APHRC might perhaps show the way. "We're relying on our own experience," says Kabiru. "We've built researchers who can raise their own money, and our primary source of money is researchers who can raise their own funds. If you build researchers who can write competitive grants, they'll support themselves and they'll support others who come after them."

## The RISE of Science

Another new organisation, the Regional Initiative in Science and Education (RISE), is an incubator for five different networks which collectively aim to strengthen science. Through the network incubator, universities located in nine different countries pool their strengths to train master's and PhD students in five different areas: materials science; African natural products; biochemistry and informatics for natural products; water resources; and oceanography and marine science.[6]

One of the five sub-networks, called the Western Indian Ocean Regional Initiative (WIO-RISE), brings together students and academics from the University of Dar es Salaam, in Tanzania; Eduardo Mondlane University, in Mozambique; and the University of Cape Town, in South Africa. These are three dramatically different institutions, but each has a contingent of oceanographers who are grappling, in different ways, with issues of ecology and development in a fragile marine and coastal environment. "Fish don't know anything about national boundaries, so we really need to work as a network along the coast," is how Margareth Kyewalyanga, the academic director of WIO-RISE, puts it.

**Fish don't know anything about national boundaries, so we really need to work as a network along the coast.**

The University of Dar es Salaam's Institute of Marine Studies (IMS), located on the spice-laden island of Zanzibar, has built up strength in working with local communities to find ways of using coastal resources sustainably. And it is through the WIO-RISE network that Kyewalyanga hopes to pass on knowledge gained in Zanzibar to researchers from other parts of the Western Indian Ocean region who are grappling with similar challenges.

When Kyewalyanga returned as a young academic from a two-year master's degree programme in Canada and took up a post at the IMS, she sat down to write a research proposal to do a complex study of phytoplankton, the foundation of life in the ocean. The director at the time was shocked, she recalls: "He said, 'You amaze me! This money you have put into your budget is the entire budget of this institute for this year!'"

As an oceanographer in Canada, Kyewalyanga had voyaged on month-long research cruises, exhaustively studying a single species of phytoplankton. In Zanzibar, she quickly realised, she was going to have to turn her sights to more local concerns. "The big issue is the exploitation of coastal resources," she says. "Poverty causes everything." Subsistence fishermen were dynamiting coral reefs in order to increase their paltry catches. Villagers were depleting the coastal mangroves—important nurseries for fish and buffers against natural disaster—and using the wood to build fishing boats and houses, and burn charcoal.

[6] The full names of the five networks are: the African Materials Science and Engineering Network (AMSEN); the African Natural Products Network (RISE-AFNNET); the Southern African Biochemistry and Informatics for Natural Products Network (SABINA); the Sub-Saharan African Water Resources Network (SSAWRN); and the Western Indian Ocean Regional Initiative (WIO-RISE).

IMS has for many years dedicated itself to working with communities to create solutions to some of these issues, such as sustainable income generating projects in aquaculture, shell polishing for jewellery, and manufacturing soap and beauty products from seaweed. As WIO-Rise gets off the ground, Kyewalyanga envisions eventually replicating this track record of community responsiveness through the network. "When you're talking about the protection of coastal resources, you have to involve communities," she says. "They have to see for themselves that resources are not being used sustainably, and that it's advantageous to them to protect those resources. And they have to have alternative sources of income."

So far, the network has proved effective for sharing ideas, expertise, and resources across the member universities. In Mozambique, for example, marine scientists lack expertise in geographical information systems, which are important tools for exploiting fishing grounds both effectively and sustainably, says Arelino Langa, a Mozambican PhD student from the School of Marine and Coastal Sciences at UEM who is currently in Zanzibar to learn some of the techniques for his dissertation research. Through the WIO-RISE network, he is learning to use remote sensing techniques to study eddies and currents along the Mozambican coastline, where upwellings of nutrients create rich fishing grounds. Langa says he hopes his work will help lead to better information so that fisheries can be exploited more effectively and sustainably.

In turn, says Langa's Mozambican supervisor, Antonio Hoguane, UEM's School of Marine and Coastal Sciences also possesses its own strengths to share with the network, such as its interdisciplinary structure, which has fostered a high degree of interdisciplinary thinking and collaboration amongst academics in the different branches of marine science. Unlike most universities, which break up the different disciplines of marine science into their respective larger departments such as biology, chemistry, and engineering, the school houses all of these disciplines under one roof, Hoguane says.

The school, like IMS, also focuses intensively on working with coastal communities along Mozambique's relatively undeveloped 2,700-kilometre coastline. For instance, researchers from the school have introduced refrigerators powered by solar as well as wind and tidal turbines, to help local fishermen who previously lacked refrigeration access to keep their catch fresh longer, get better prices, and avoid having to dry their fish, which lowers prices and reduces nutritional value.

Mozambique's civil war brought many people to the relative safety of the coastline, which led to extensive subsistence fishing that now strains local resources and coastal habitats such as the mangroves. These issues are only becoming more complex, as the larger issues of climate change and ocean acidification loom, while high-tech foreign fishing fleets increasingly sweep the relatively unexploited deeper waters off the coastline. "These things really constitute a challenge for us," says Hoguane. "They require knowledge and skills which we don't have. RISE is making us realise that our problems in the region need solutions within the region….We need to undertake education and research which can resolve the socio-economic issues of the country. We also need to consider the resources we have to solve these problems. This is a really big challenge that requires innovation. RISE is really pushing us towards this point."

## Sharing Innovations

Academics involved in the RISE networks in other disciplines are reaching similar conclusions. The networks are still in their early days, but the more academics and students begin to share, the more they realise how beneficial the networks can be for forging relationships and sharing ideas and resources. The AMSEN network, which involves materials science, is beginning to provide a means of access to rare and expensive equipment that students and researchers need to advance in their work, yet often are unable to access, says George Rading, a professor who directs the AMSEN node at the University of Nairobi.

Just as the Central Science Laboratory at Obafemi Awolowo University in Nigeria enhanced research by providing academics with the means to access crucial equipment, the AMSEN network is beginning to facilitate access to electron microscopes and other pieces of equipment—albeit across much larger geographical distances. "If this works, we could have a situation where one university specialises in one field, where we have a centre of excellence in one field in one place, and another in another place, and where the expensive equipment is distributed geographically according to each university's particular specialities," says Rading.

"Previously, we couldn't train someone here at the University of Nairobi for a PhD in manufacturing engineering," he continues. "We sent people overseas, but just one or two per year. But once you go to the US or Europe and work in their laboratories, coming back to Kenya becomes a problem—people don't come back, or those who come back get frustrated because they can't continue the line of research that they were doing….Now, we have the increased possibility of retaining staff and developing relationships," he says.

For students like Charles Ayieko, the access to experts and equipment such as a scanning electron microscope at the University of the Witwatersrand in South Africa, and at the University of Botswana, will make all the difference to his work on dye-sensitised solar cells. These cells, known as "Gratzel cells", differ from photovoltaic cells in that they are coated in layers of light-absorbing dye as well as titanium dioxide, making them a potentially attractive option for energy-poor markets such as Kenya's, because they are low-cost, durable, and relatively easy to manufacture.

Ayieko is investigating the potential of "doping" the titanium dioxide with nitrogen, as a way of increasing efficiency cheaply. "I wanted to investigate whether doping yields a higher harvest of the solar spectrum," he says. To do that, he has already begun making use of equipment such as the scanning electron microscope located at the University of Botswana, where he travelled earlier in order to receive training. Through the collective resources of the network, he hopes to produce an innovation that will help bring cheap, clean, "off the grid" power to large numbers of people who need it. "People are embracing alternative sources of energy," he says. "In Kenya, we are located on the equator, and have a source of energy that is clean and can be used in rural areas."

### The African Economic Research Consortium: A One-Stop Shop for Economics

Around the same time as RUFORUM and USHEPiA were being formed, a different kind of network was emerging in Nairobi—this one spurred not only by the goal of building capacity in universities, but also by the closely related aim of strengthening the hand of African researchers in economics to better inform policymaking in Africa. "Our aim is really to build a cadre of African researchers who are able to speak and dialogue at par with their counterparts from around the world," says William Lyakurwa, Executive Director of African Economics Research Consortium (AERC, for short), which received funding from the Ford Foundation, the Hewlett Foundation, the MacArthur Foundation, and the Rockefeller Foundation.

In short, since its creation over 20 years ago, AERC has reached into all of the different processes of research and training, policy advocacy, and communication that shape the discipline. It's an efficient system for equipping universities to support individual researchers, produce research that meets national and regional needs, and ensure that the research is applied to real-world problems. Together, these complementary processes have strengthened economics departments at universities across the continent.

Says Lyakurwa: "It's one thing to have good researchers who can conduct good policy research to inform the policymaking community, but the policy-making community ought to be able to appreciate the output of research and utilise it for policy-making."

Through AERC, postgraduate students learn by conducting research in strategic areas, university economics departments gain support for their master's and PhD programmes, and mid-career economists

## voices of change

**"Expanding the Reach of Economics Research"**

Jane Mariara, head of the Department of Economics, University of Nairobi

Most of the people who are driving economics in this country are people who have gone through our department, so I would say that AERC has indirectly affected economic policy-making in Kenya. With AERC there is assurance of the scholarships. There are research opportunities.

AERC has provided the opportunity to train very competitive graduates in this country and elsewhere in Africa. Our external examiner for AERC is from Europe, and the report we get from him is that he doesn't see the difference between a master's thesis written by a student in Kenya and one written by a student in the UK.

We are stronger now [as a department]. Our school recently won the WTO Chair. Of course, the people who are spearheading that may not really have done it directly through AERC, but you cannot separate the capacity that has been built through AERC and [otherwise].

Whatever has gone into building my own capacity so far, my main exposure has been through AERC. I have been able to be competitive, even amongst my colleagues who, unlike me, went to study abroad. Even in my ability to publish, I would rate myself higher than most colleagues.

We are talking about Kenya, but know that what is happening here is being repeated in 20 or so countries.

Charles Ayieko, a PhD student from the University of Nairobi, relies on harnessing the resources of the AMSEN RISE Network in order to complete his work on dye-sensitized solar cells.

undertake collaborative research projects. Bi-annual meetings give students the opportunity to hear from, and present papers to, the sharpest minds from Africa and beyond. Current and former Central Bank governors from Kenya, Tanzania, Nigeria all began their careers as AERC-affiliated researchers, and the organisation has cultivated strong links with the World Bank, International Monetary Fund, and other global multilateral organisations.

While 24 different universities belong to AERC, the organisation itself is an independent consortium that is managed by a secretariat with a small staff located in Nairobi—a status which confers it the advantage of staying focused on the big picture. From that lofty vantage point, the organisation has devised strategies to lift the boats at all of its member universities.

AERC's bi-annual meetings, one of the organisation's most important activities, bring member universities together with influential policy-makers. At these meetings, African researchers present proposals to carry out research on one of five different themes deemed by a board of experts drawn from African reserve banks and other influential bodies such as the World Bank to be most relevant for policy-making in Africa. Young researchers take advantage of the opportunity these meetings present to exchange ideas with the sharpest international brains and to ensure that their topics relate to the latest literature, methodologies, and global discourse. "It is getting young researchers through the mill," says Lyakurwa, "To learn the art of conducting policy-relevant research through a process of peer review."

Meanwhile, 10 of the network's 24 affiliated universities offer master's degrees—and AERC provides a means of channelling students who come from institutions that lack advanced training in their field into programmes at other universities—a strategy which is helping economics departments in the war-crippled nations of Burundi, Liberia, and Sierra Leone to gain strength, as newly trained graduates return equipped with master's degrees from institutions such as the University of Dar es Salaam. All told, AERC has, over its lifetime, supported well over a thousand researchers throughout sub-Saharan Africa (including the Francophone countries), as well as a number of master's students and 250 PhD candidates, says Lyakurwa.

### Impacting Local and Global Power Structures

Jane Mariara, who heads the Department of Economics at the University of Nairobi, has been nurtured over the past 12 years by AERC. Through the network, she had stints working at the IMF in Washington, and visited Cornell University twice on academic exchanges, the first time in 1998:

> *Initially there wasn't so much emphasis on policy. I think it was more academic; as long as you do your research and publish, it's fine. But now they have brought in this requirement that you must have a policy-maker working with you. You team up academics and somebody from the related ministry, so that you are can be sure that this person can try to use the results to influence policy.*

> *I am an academic, and…it is not very acceptable for me to knock on the door of a policy-maker and tell him that I want to sell [in the sense of convincing the person] these results to you. If I work hand in hand with this person [from government], then it's this person who can go and disseminate the results themselves.*

No less of an issue for many AERC participants is the need to raise Africa's profile and representation in larger global policy debates. While rich countries have plenty of experts at their disposal, African countries often lack a strong voice in forums such as the World Trade Organization because they lack the resources and home-grown experts to sit in Geneva and represent their interests.

"Sometimes issues are derailed in the WTO rounds of negotiations, simply because people don't have the capacity to understand what we stand to lose, what we stand to gain, what should be our position," says Lucas Njoroge, a researcher with the Central Bank of Kenya and a 1997 alumnus of AERC, who is currently teaching in the master's programme. AERC "fills a gap that no government in Africa is able to fill, and no international organisation has been able to fill," he says.

In a field as dynamic as economics, AERC helps distant universities stay plugged in to the rapidly mutating ideas and theories that drive the understanding of the interconnected webs of the global economy. "Today, you are talking about the Asian financial crisis, and before you know it, you are talking about a global financial crisis," he says. "You have to keep the fire burning. You have to continue sharpening your economics skills every day."

### Rebuilding the Economies of War-Shattered Nations

The idea of the AERC's Collaborative Master's Programme is that it offers world-class training grounded in the needs and realities of Africa. Each year, students enrolled in AERC-affiliated advanced degree programmes gather in one location for three months of elective coursework. The master's students cram an entire year's worth of academic work into this intensive time period, Lyakurwa says.

To students gathered in Nairobi, the programme has not only opened doors, it is also equipping them to return with new skills, ideas, and connections to understaffed universities and government departments in desperate need of them. "The moment I accepted the scholarship from AERC to do my master's at the University of Dar es Salaam, my life was transformed," says J. Wellington Barchue I., a Liberian master's student (see sidebar on page 205). His country is so lacking in trained academics, that even before entering the programme, he doubled as a tutorial assistant at the University of Liberia, and as an economist at the Ministry of Planning and Economic Affairs.

Liberia's 14-year civil war ended in 2003, leaving the country with a shattered infrastructure, 75 percent unemployment, and some of the world's lowest development indicators. Under the leadership of President

Ellen Johnson Sirleaf, Liberia is now rising from the ashes, but faces a critical dearth of people with the right skills to help build the foundations for the economy and civil society. The economics department at the University of Liberia, for example, does not have a single academic staff member who holds a PhD. In recent years, AERC has been awarding PhD and master's scholarships for academics within the department to go elsewhere for advanced study, and the country is beginning to build up a critical mass of economists.[7]

## voices of change

### From Refugee to Taxation Expert

J. Wellington Barchue I., student in AERC's Collaborative Master's Programme, from the University of Liberia in Monrovia, Liberia

Some of the lecturers in this programme are my age. I completed secondary school in 1989, so these should be my colleagues. I enrolled in technical college to do mechanical engineering, but unfortunately the crisis[8] erupted in 1989. My parents did not have the money for a plane ticket for me to return to Monrovia, and I had to flee to Cote D'Ivoire in 1990. I spent eight years of my life doing absolutely nothing.

I returned to start at the University of Liberia in 1999, but because of the crisis, instead of spending four years to obtain a degree, I spent seven. You would go to the university for five or six months, and then there would be no money for the university to re-open. It was a case of economic constraint, and a lack of political will to provide education for citizens.

AERC has done well, especially for poverty-stricken nations such as Burundi, Rwanda, Sierra Leone, and Liberia. If we did not have AERC, I don't know what our situation would be now. As I speak to you, the department of economics at the University of Liberia now has 10 graduates from the AERC's master's degree scholarship, three students, including me, expecting to complete in 2011, and we have two students completing their PhDs.

We don't have any full-time PhD holders in the economics department now, so you should know how grave the situation is. As a result of the crisis, we lost educated Liberians. The fabric of Liberian society completely broke down.

The minimum wage in 1988 was around $150 a month. When Madame Sirleaf took over in January 2006, it was $15 a month. The economy was a shadow of its past: in the 1970s, the economy of Liberia was compared to that of Japan, or of Singapore. But then our rubber trade stopped, our diamond trade stopped, our iron-ore trade stopped.

Now the minimum wage has increased to about $100. Thirty to forty percent of the country has electricity. The water supply in the city was completely out, but now 60 percent of the city has a water supply.

Taxation is a critical area for developing countries. Tax policies often distort, rather than encourage, investment. I want to see how best to weigh up the implications for the growth of my economy.

[7] The United Nations Development Programme and the African Capacity Building Foundation, an independent organisation based in Harare, Zimbabwe, have also supported the training of Liberian economists.

[8] Meaning civil war. Liberia was at war intermittently from 1989 until 2003; Barchue was studying in another area of Liberia at the time he refers to, but could not return to the capital, Monrovia, by road or by air, and had to flee to neighbouring Cote D'Ivoire.

The new Life Sciences building at the University of the Western Cape.

Chapter Twelve

# Shaking the Money Tree

**When water boils, it is foolish to turn off the heat.**

– Nelson Mandela

**AS WE HAVE SEEN, THE LACK OF ADEQUATE FUNDING LIES AT THE ROOT OF MANY UNIVERSITIES'** deepest challenges. The Partnership's $440 million, 10-year commitment brought new financial resources to African higher education, but no matter how much cutting-edge research or how many brilliant graduates universities churn out, they will always need to actively seek out new sources of funding to ensure that these activities can be sustained.

The greater the perceived value of a university, the likelier it is that governments, the private sector, and other donors will see higher education as a project worthy of their investment. But since long-term under-investment in higher education in Africa has often eroded universities' capacity to produce cutting-edge research and brilliant graduates, we have often seen them struggle to make strong cases for themselves. Yet, we have also seen a number of creative responses to this perennial under-funding.

Financial sustainability is one of the most important challenges now facing many African universities. Even as governments are gradually beginning to invest more in higher education, their real capacity to do so is limited, says economist Pundy Pillay. There are so many competing priorities.

This chapter looks at the growing field of what is termed "advancement", defined by the US-based Council for Advancement and the Support of Education (CASE) as, "a strategic, integrated method of managing

relationships to increase understanding and support amongst an educational institution's key constituents, including alumni and friends, government policy-makers, the media, members of the community and philanthropic entities of all types." In the long term, the project of advancement aims to supplement funding from government with financial and all manner of other support from diverse sources.

Successful advancement enables universities to develop new facilities and programmes that allow them to shine. It also provides them with greater measures of autonomy, so they can shape their own visions. Bringing fundraising, a key component of advancement, into a new environment is culture-changing work and, therefore, slow work, and the seeds that are planted now will only bear fruit in several years' time.

Universities in Nigeria, Ghana, Uganda, Tanzania, and South Africa are increasingly cultivating ties with their alumni in order to help sustain themselves. These new developments have required dramatic shifts from deeply ingrained and widely held attitudes that government should be the sole financier of higher education.

In South Africa, meanwhile, several universities with a more established tradition of raising funds from private foundations and their own government are now increasingly directing their efforts towards building endowments and tapping their growing bases of black alumni, especially in order to fund new scholarships that widen university access further for new generations of poor and rural black students.

## Early Lessons

Despite the improvements of the last 10 years, the reality is that many of the challenges universities are dealing with, as they struggle to churn large numbers of students through higher education systems beleaguered by poor management and dilapidated infrastructures, leave students feeling short-changed, and even bitter, about their experiences. A chance encounter on a London train drove this lesson home for Debo Adeosun, the director of a new advancement office at the University of Ibadan, in Nigeria.

He sat down on the train, he says, next to a young man who spotted the University of Ibadan (UI) pin in his lapel. In conversation, the two discovered that they were both alumni. When Adeosun explained that he was the head of a new advancement office, charged with cultivating alumni relations and fundraising, the other man's face clouded over. "He told me that he never wanted to visit UI again in his life," Adeosun recalls.

First, the young man explained, when he was a student, he had an argument with a lecturer in class one day. As punishment for the public confrontation, he said, the lecturer failed him, postponing his graduation date by a year. Later on, the young man continued, he was living in London, and was awarded a scholarship for

postgraduate study there. He contacted the registrar's office back in Ibadan to arrange for his transcript to be sent, but despite several attempts, the transcript never materialised. Finally, in desperation, the young man flew back to Nigeria to get the transcript himself. At the registrar's office, he was told that the person who was supposed to issue the transcript had gone to the health centre. The young man waited for the rest of the day, but the person did not return. He came back and waited the following day, but the person still did not arrive. As a result, the young man lost his scholarship.

The story left a deep impression on Adeosun. He was new to the job, and the very concept of advancement was new to the university. To him, the young man's experience revealed a mind-set of complacency and a troubling lack of accountability to students that was widespread on the campus. Adeosun tells the story to show just how deep a challenge he faces in his new position.

Despite this cautionary tale, however, UI has displayed an impressive track record in advancement, which is evidenced simply by the sheer numbers of buildings on campus that corporate and influential supporters have contributed. Yet while alumni in particular have long been a mainstay of support to many universities in America, the concept is still very new to most African countries. Too many lecturers and administrators fail to value and respect the students who pass through the university, Adeosun says; people who might one day be in a position to help the university.

**We have to let them know that it is their responsibility to plough back into the system that made them who they are.**

Particularly the older, established universities such as Ibadan and Makerere, in Uganda, have many influential graduates in government and business whose support they might tap. One big stumbling block in Nigeria, says Adeosun, is the deeply ingrained belief that the state should bear the cost of higher education. As we have seen, this belief is widespread in other countries as well, and perhaps extends from the initial notion of universities as practical extensions of the state. In Nigeria, it also stems from anger in the sense that Nigeria *should* be a wealthy country capable of spending generously on higher education, because of its plentiful oil, he says. Some feel that the money that should be available to universities disappears under a cloud of corruption.

Yet Nigerians are generous people who give freely to their churches and mosques, says Adeosun. "UI has the capacity to raise money from within Nigeria, but the orientation has to change," he says. "We have to let them know that it is their responsibility to plough back into the system that made them who they are. I appeal to their consciences, especially those who had a walk in the park. They had free education, and when they left UI, there was a job waiting for them, unlike the current generation."

### Leaving a Legacy

Victor Dugga, the director of advancement at the University of Jos, also in Nigeria, meanwhile, had his own "aha" moment. For him, it was a fruitless mission to Lagos that sparked an inspiration. The purpose of his trip was to knock on the doors of successful alumni and convince them to donate to the university. When he arrived, all those doors of wealth and influence remained resolutely shut.

On his way back to Jos, it hit him: "When people graduate, no one makes an effort to reach them until they pop up somewhere in an influential position," he says. "At that point it's really too late, because you have no relationship. When I got back to Jos, I felt that it was necessary to start working with prospective [alumni] while they are still in school, so that they can get to understand that the university needs them."

With that, Dugga created a programme called Leave a Legacy. Each year, the advancement office works with the graduating cohort to contribute something as a class that the university needs and will remember them by. By getting students involved in giving early on, the hope is that they will stay involved and interested in the university as alumni, Dugga says. In the process, the university also benefits from small but tangible improvements: the graduating class of 2009, for example, replaced scruffy old classroom chalkboards with shiny new dry-erase whiteboards. The previous class had installed new desks and benches in classrooms where seats had previously been falling apart.

This is but one example of how African universities are trying to build cultures of giving from the ground up. One day in Jos, the student representatives of a new class will be preparing their own parting contribution: they will be refurbishing the common rooms of several student hostels, painting walls, and installing new chairs so that future students can study in greater comfort.

For Geoffrey Bizet, who graduated in 2009, the simple act of carrying new whiteboards into classrooms helped to cement a feeling of belonging to the university. Taking a simple action to help the university made him feel proud, he says. "Even now that I'm working, I'm still thinking of the school that made me," he says. "I have a stake in the ground already, and I can come back and continue the work. Even if I catch the biggest fish of my life, I will have to come back and do something wonderful at the university."

### Raising an Endowment to Sustain a Programme

The South African Labour and Development Research Unit (SALDRU), located at the University of Cape Town, was one of many institutions that had to find a new sense of purpose as apartheid waned and a new era rose. As the apartheid government of the time spread propaganda about the welfare of South Africa's population, disguising the plight of its impoverished black majority, the centre committed itself to the "hard

### Leaving a Legacy

Victor Dugga, playwright and director of the advancement office at the University of Jos, in Nigeria

I was a student at Jos and graduated in 1990. I did my master's here and another one in the UK, and then a PhD in Germany.

As a lecturer, there is so much that you would want to do, but that is not dependent on you. The resources that enable you to do your job are not necessarily available. I felt that coming to do this job would facilitate the availability of resources for many more academics and help make many more students enjoy learning.

The first challenge you have is trying to get internal people within the university to see the paradigm shift. There are very few people who are willing to see how this new method of bringing resources to the university works. And amongst those who see it as working, there are fewer still who are willing to go through the entire process, because it demands a lot from the faculty.

From the university's first strategic plan of 1998 to 2008, the writers of the document captured the need to have a fundraising office—they just didn't know what it would look like or how it would work. So when the Carnegie Corporation grant came, we had the resources to explore that idea.

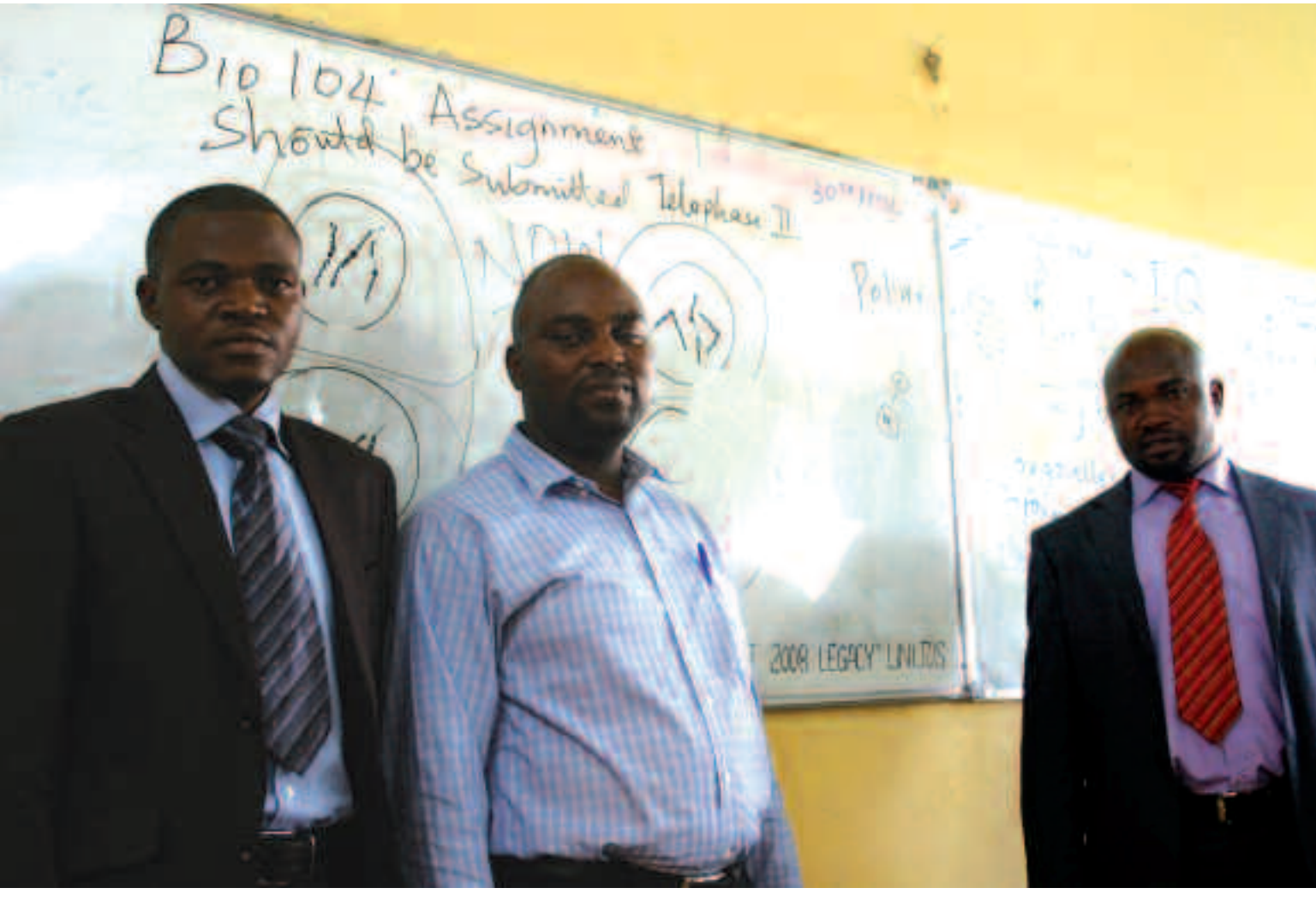
We began trying to find what we were looking for, but we couldn't find it anywhere in sub-Saharan Africa. In the whole of Africa, it was only South Africa that had anything related to advancement—so we were looking to the western world to try and get people to mentor us. But people wouldn't come to Jos.

Carnegie Corporation helped us to get in touch with Inyathelo. They served as consultants while we were establishing this office. I would say that the contribution of Carnegie Corporation was what ensured that we took every right and necessary step in establishing a professional advancement office.

Before we started, well, if you needed funds, you needed funds. So, when you went to meet anyone, you asked for funds, because that is what you needed. But advancement has changed all that. We know that first, we must have a good idea—and we must have a good relationship with people who will support that idea. So it's about building connections, and building friends.

**Even if I catch the biggest fish of my life, I will have to come back and do something wonderful at the university.**

– Geoffrey Bizet




Geoffrey Bizet's graduating class from the University of Jos raised money for new whiteboards in classrooms as a parting gift.

slog of producing evidence-based analysis."[1] Researchers combed through piles of hard social and economic indicators in order to paint a more accurate portrait of the country's true demographic profile.

In the transition of power to a new multiracial democracy, SALDRU continued to produce hard data about the state of South Africa, and the centre has grown to be the powerhouse of South African demographics. In the late 1990s, SALDRU, in close collaboration with demographers from the University of Michigan, received funding from the Mellon Foundation to stimulate training and research development in demography in South Africa. A key part of the proposal was to set up a two-week training programme in rudimentary data analysis, using South African data sets, says Murray Leibbrandt, the centre's executive director.

The "January training workshop", as the programme became known, has become renowned for providing a quantitative methods shot-in-the-arm to graduate students in the softer disciplines, many of whom are from South Africa's historically black universities, and would otherwise not gain exposure to the rigours of hard data analysis. For nine years, the programme continued with support from Mellon.

"It's highly successful, but it had not moved one inch towards sustainability," says Leibbrandt. The programme's purpose was to train young black graduate students from under-resourced institutions who could not afford to pay for the instruction, and it was serving an obvious need. Yet it had no way of sustaining itself apart from with foundation support, which in most cases is by definition temporary.

"The whole purpose of this thing is to find graduate students and bring them to Cape Town for two weeks, and give them software, and later send them emails and encourage them—how can you charge for that?" says Leibbrandt. "That will completely undermine the whole point of the exercise."

A challenge grant from the Kresge Foundation provided the answer to the dilemma. In 2008, Francis Wilson, the founder of SALDRU, and Leibbrandt sought funding for the workshop from Kresge, which had joined the Partnership after having adopted a strategy to strengthen South African higher education, including the training of the next generation of African academics. The Kresge Foundation agreed to cover the cost of the January training workshop for three years but, to ensure the programme's long-term sustainability, SALDRU and Kresge sought to create an endowment, which the Kresge Foundation agreed to double through a challenge grant if SALDRU succeeded in reaching the total with matching funds.

By then, SALDRU had amassed a long list of graduates to draw on as potential donors. But it was only when Wilson and Leibbrandt approached institutions such as the Development Bank of Southern Africa and Statistics South Africa, a governmental body that gathers national data and that had routinely sent junior staff members to the January training workshop, where they had success. A number of those organisations agreed to give money towards SALDRU's endowment in exchange for the right to send an employee to the January training workshop each year, in perpetuity.

[1] Taken from the centre's website: http://www.saldru.uct.ac.za/home/index.php?/About-Saldru/about-us

Those contributions raised only about a fifth of the money that SALDRU needed, however. "It hasn't generated nearly enough money to meet the challenge, but it has been the most wonderful thing in terms of firming up the constituency around which this course is built," says Leibbrandt. "Tiny little grants, like $10,000 buys you one seat at the table in perpetuity—it sounds like a futures market or something crazy, but it nonetheless resonated with everybody."

To make up the funding shortfall, Leibbrandt went back to the Mellon Foundation, and also approached the Ford Foundation. In the end, both the Ford and Mellon Foundations agreed, along with some additional corporate and individual donors, enabling SALDRU to claim its challenge grant money from the Kresge Foundation, ultimately ensuring both the long-term viability for the programme and a more experienced fundraising team.

## Beginnings of Advancement in South Africa

For South African universities, the end of apartheid yanked away the comfortable yet stultifying security blanket of government funding, as the national budget for higher education atrophied. As Brian O'Connell, the rector of the University of the Western Cape, recalls, post-apartheid euphoria quickly gave way to despair in South Africa's less-privileged universities, as they realised the extent of their financial predicament.

Just as Nigerian universities are gradually establishing their own cultures of advancement, in South Africa a home-grown organisation is helping African universities to professionalise their advancement efforts. When Shelagh Gastrow joined the fundraising office at the University of Cape Town, in 1998, she was thrown in at the deep end. With no fundraising experience, she was expected to raise about $10 million, and was given 15 months in which to do it.

The only thing to do, she says, was to teach herself the skills as she went along. The experience was sobering: if it was so difficult for UCT, arguably the country's leading university, to raise money, how were other universities that lacked UCT's resources and connections going to fare? But the experience also left her with what she realised were some pretty unique insights about how to develop "advancement" in a country that lacked the tradition.

Three years later, she and a partner broke off to form their own organisation, Inyathelo, the South African Institute for Advancement, which, with support from the Kresge Foundation, has been helping South African universities to make great fundraising strides. Inyathelo is a unique institution in the African landscape, although universities on the continent have also received major support from, in particular, CASE, which has provided training, counselled new advancement directors, advocated the cause with senior university administrators, and drawn participants from some 80 African universities around the continent to its annual conferences in Africa.

Inyathelo approached the Kresge Foundation with a proposal to conduct a five-year initiative, from 2006 to 2010, of working extensively with a handful of carefully selected universities. Carnegie Corporation created similar programmes for its East and West African partner universities—using both CASE and Inyathelo as warranted—while the MacArthur Foundation did the same with its partner universities, using a mix of assistance providers.

"[The Kresge-funded programme] is labour-intensive and expensive," says Gastrow, "But we have seen some amazing results." Inyathelo helped the original four programme grantees (University of the Western Cape, Cape Peninsula University of Technology, the University of Pretoria, and UCT's Children's Hospital Trust) double their annual fundraising to nearly 200 million rand, despite the ravages of the international financial crisis, which occurred midway through the initiative. UWC, in particular, improved its capacity, having increased its annual fundraising from less than 2 million rand per annum to consistently raising approximately 47 million rand per annum. When the fifth grantee, the University of the Witwatersrand, is included, the group is raising 367 million rand per annum.

The initiative requires deep involvement from vice-chancellors and financial officers, as well as from the development, planning, and fundraising staff, Gastrow says, bringing various groups together for regular meetings and evaluation visits to campuses. The universities set themselves milestones each year, and Inyathelo supports, prods, and ultimately verifies that they have been achieved, whereupon the university in question receives a bonus grant from the Kresge Foundation. "For me, some of the unforeseen impacts are the impacts it's had on other South African universities," says Gastrow:

> *The whole philosophy of advancement has really been taken on as a community of practice. When we started this organisation, the reaction was: "Why are you using that stupid word, why don't you call yourself the institute for philanthropy or the institute for fundraising or something?"*
>
> *Now, advancement has been mainstreamed, it has currency. It means something in South Africa, and it means something in* our *way, not in the narrow way it's seen very often internationally. A lot of our workshops were open, and most universities attended, so we've really had an impact on the whole university community in South Africa. And we have adapted that to the non-profit sector, and now our non-profit work is huge. So we've built whole other programmes there, based on what we learned from here. It's impacted on the private sector and on civil society.*

Inyathelo, which effectively operates as a non-profit consulting firm, financing its operations through the fees it charges for services, also began working with the University of Jos, in Nigeria, which used part of its grant from Carnegie Corporation to hire Inyathelo to help set up its advancement office. The cost of engaging Inyathelo's full range of services can sometimes make it difficult for other African universities to do the same, but West and East African university representatives regularly attend Inyathelo events and conferences.

### Reaching out to Black Alumni

For Loyiso Nongxa, the vice chancellor of the University of the Witwatersrand, in Johannesburg, new advancement work provided the opportunity to reach out to black alumni of the historically white university. "Universities like Wits were open universities, but there were still restrictions on black students at these universities" during apartheid, he says. "Some felt that they were being treated differently by universities that portrayed themselves as being liberal and non-racial. One picks up a high degree of resentment, and we felt that if we did not address that as a university, it could work against us," Nongxa continues.

In 2005, the university held a symbolic graduation ceremony, aimed mainly at black graduates who had boycotted such ceremonies during the politically charged days of apartheid, as a symbolic protest not only against white power, but also against the petty extensions of it on campuses, which had resulted, for example, in laws barring black students from living in "white" residences.

**Government support and student fees only go so far, and most of the innovations are a result of the additional funding we receive.**

Initially, Wits was excluded from participating in Inyathelo's Kresge-funded work, as the university had previously received funding for advancement from another foundation. Yet the results had been lacklustre. As the Inyathelo programme began in 2006, Nongxa was relatively new as vice chancellor at Wits, and was sorely disappointed not to be participating. So he began attending the conferences and workshops, paying his own way, and eventually won the opportunity to take part more fully in Inyathelo's Kresge-funded work, and to receive bonus grants funded by the Kresge Foundation for meeting advancement benchmarks.

When Wits began working with Inyathelo in 2007, and launched an alumni fundraising drive, the results were surprising: 20 percent of contributions came from black alumni, and 20 percent of the contributions were from graduates younger than 30. These statistics indicated that more young and black students were willing to give than the university had realised. "When I started this job, the profile of our average individual donor was a white male engineer in his 80s," says Heather Regenass, the director of development and fundraising at Wits. "We've reduced the average age by 30 years."

From this bracket of supporters, Nongxa saw the opportunity to cultivate new programmes close to his own heart. Nongxa wanted to raise funds to help the university to reach out and prepare talented but under-privileged young people from rural areas to attend university, and also to pair them with student volunteers from similar backgrounds, to help them succeed as students.

One idea that Nongxa picked up from an Inyathelo workshop was to group alumni according to their interests, for example by appealing to black alumni to support programmes that would help improve university opportunities for the new generation of under-privileged students. "Most of them come from similar

backgrounds, from modest backgrounds," he says. "For every potential donor, you must find something that will appeal to them. The message that we send out is that, without the non-government support, we wouldn't achieve the things that we have achieved. Government support and student fees only go so far, and most of the innovations are a result of the additional funding we receive."

"The actual giving process is very new," says Regenass. "It's not about the size of the gift. The message I have been sending out is that your 50 rand (about $7) will make a difference. Once people become habitual givers, they do it naturally and with pleasure." Most of this money goes towards scholarships for disadvantaged students, who struggle against many disincentives to stay in academe.

While scholarships have been a focus, the crowning achievement of the advancement programme at Wits has been the raising of money to construct a new $14 million building for the School of Public Health, under the Kresge challenge grant programme. As illustrated in Chapter 11, the school is a cornerstone of continent-wide networks such as INDEPTH and the APHRC, and produces important work that has helped to strengthen healthcare delivery in South Africa, particularly in poorly-resourced rural areas. The new building, which broke ground in November 2010 and is scheduled for completion in April 2012, will function as a home for the new CARTA PhD training programme profiled in the previous chapter. It will also serve to better integrate all of the growing and increasingly interdisciplinary arms of the school under one roof.

As of January 2011, Wits had exceeded its original goal and raised all of the needed funds for the new School of Public Health. Much of the funding came from foundations and government, but it received more than 620 donations, including almost $1.1 million from more than 500 alumni, staff, and other individuals. One condition of the challenge grant was that all of the Wits Foundation board members had to make personal donations, which they did, marking the first time a South African university board has met this international best practice.

### Advancement Breaks New Ground at UWC

Inyathelo's advancement training also helped the University of the Western Cape (UWC) to win similar prestige. UWC, one of Kresge's original grantees under the Inyathelo advancement programme, sought, and secured, additional Kresge support for the construction of a new life sciences building, the first dedicated science facility ever to be built at this historically disadvantaged university. Combined with funding from other private and public donors, the building, which opened in 2010, is sleek and beautiful, six floors of glass, steel, sunlit atriums, and state-of-the-art laboratories to accommodate everyone from medical undergraduates to world-class biochemists and geneticists.

The building is an outward manifestation of the changes that have taken hold at UWC over the past decade, as the university has shed its old insular, deeply racialised identity, and moved on to develop itself as a hub

of cutting-edge science. Under apartheid, the university was a poor stepchild of South African higher education, a university created to serve mixed-race "coloured" South Africans, who make up the majority of people living on the bleak flatlands surrounding the campus, on the outskirts of Cape Town.

As recently as the early 1990s, the students and academic at the university were overwhelmingly coloured, and had no science facilities. It very much reflected the notorious words of apartheid-era Education Minister Hendrik Verwoerd, who had remarked: "Education must train people in accordance with their opportunities in life, according to the sphere in which they live."

UWC began an attempt to turn itself around in the 1990s, hiring a number of intellectual powerhouses, recalls Renfrew Christie, Dean of Research. Soon after, the university began to see its research ratings improve dramatically, as it gained recognition for impressive work in bioinformatics and genetics. "By the 2000s, they were established as great scientists, and the [university] now had 12 really well-published 'mad scientists' who didn't have a building."

At last, after half a century, and an exciting and exhaustive process of conceptualising, lobbying, and fundraising, the scientists now have their building—and the university has a powerful physical symbol of the new direction it has embraced.

# Conclusion

**IT IS HERE, IN UWC'S NEW LIFE SCIENCES BUILDING, THAT THIS STORY OF A DECADE OF CHANGE IN** African higher education comes full circle. The processes of change at universities have been both sweeping and incremental, both prosaic and profound. They have touched many bases, and many lives.

As we have seen, the problems facing African universities are both complicated and enduring. A decade of hard work has led to considerable successes: universities overcame their barriers to accessing the Internet, and harnessed its connectivity to transform libraries, learning methodologies, and research capabilities; they grappled with tough processes of societal change in post-apartheid South Africa, and elsewhere; they embraced concepts of gender equity and strove to make their campuses more inclusive and reflective of different cultures and social groups; and they endeavoured to improve their capacities to sustainably train people to produce research aimed at furthering understanding of, and providing innovative solutions to, the complex social, environmental, and economic challenges of society.

Now, as universities look to the future, they can reflect with pride on their many achievements, yet they must at the same time roll up their sleeves to continue tackling the many challenges that remain. Universities, like any institution or organisation, will always be works in progress, and many of the imperatives for the future are clear.

Most of the African university leaders interviewed in this project were unequivocal in their agreement that the issue of training, developing, and retaining the next generation of academics is now their most critical and pressing priority. As we have seen, universities have employed varied and creative strategies for addressing this challenge, and have produced promising new models for supporting the next generation of academics. They have adapted innovative solutions, for example harnessing technology to help compensate for the burden of crushing and ever-expanding numbers of students in the classroom, one of many issues to drive young academics away from the profession.

Yet, notwithstanding the daunting challenges that universities face, this story ends with hope. It ends, as it began, with the story of a young African researcher, empowered and lifted to equal footing with her

counterparts from around the world by the access she has gained to the best equipment and minds; to international contacts and to all the cutting-edge ideas of her field.

Meet Sitembiso Sewana. A Zambian, she is completing her honours year on a Mellon Foundation fellowship, working in the Life Sciences Building at UWC, doing research in hydrology, looking at the ways in which microbes spread in groundwater; work that has important implications in developing countries where water contamination is rife.

She was born at a time when many African universities were dormant and dysfunctional, and when it appeared to the world that apartheid might last forever. Now, her very presence at UWC reflects the extraordinary changes and new possibilities that have opened up in African higher education over the past decade. Graduating from high school in Lusaka, the Zambian capital, she knew she wanted to study environmental and water science, a subject not offered by the University of Zambia. So she checked the web, found out about UWC's programme, and was accepted.

Through her Mellon fellowship, she has spent time working in a lab at Wesleyan University in Connecticut in the United States. The fellowship not only has provided the financial means for her to continue her education, but has also given her access to conferences, special research sessions, and valuable mentorship, which she says has helped her to find direction as a researcher. The idea of the programme is to provide a bridge to young scholars who will eventually, it is hoped, obtain their PhDs and make their marks in academe.

That is certainly Sewana's goal. After completing her honours year, she intends to move on to a master's and PhD, and then hopes to build an academic career.

"I just love how the university creates a safe space for me to play with ideas and put things together and come up with tangible solutions. The learning spirit in this place just drives me," she says. "Everyone is so willing to share."

Sewana's experience at UWC would hardly have been possible a generation ago. Back then, too many barriers stood in the way. Women faced strong gender discrimination that often hindered their success in academe, especially in the sciences. South Africa was isolated by an academic boycott, while the dictates of apartheid kept UWC, a "coloured" institution, from pursuing scientific excellence. South African universities were cut off from the rest of the continent, and poor communication links all too often kept other African universities isolated from each other and the rest of the world.

Today, by contrast, Sewana, a female Zambian scientist, is doing postgraduate research at a world class facility in a formerly "coloured" university. She is committed to staying in Africa, and sees a bright future on the continent. **Now, imagine that she is the future of African higher education.**

Sitembiso Sewana is completing her honours year on a Mellon Foundation fellowship at the University of the Western Cape.

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This is a story about how society wins when universities and the people within them are allowed to flourish.