ghana's digital dilemma

BY G. PASCAL ZACHARY

PHOTOGRAPHS BY JASON LAURÉ

Bridging the digital divide in this African nation isn't just a matter of computer-equipment care packages and free Internet accounts.

In on the ground floor: Thomas Fabyan is one of the first Ghanaians to find work in a burgeoning local data-entry industry.

IN THE WEST AFRICAN COUNTRY OF GHANA, ONE OF THE WORLD'S POOREST PLACES, THE BUSY SIGNAL IS A REMINDER OF THE UNFULFILLED PROMISE OF THE INFORMATION AGE.

Making a telephone call here requires persistence. Roughly half don't go through because of system failures, but that's only the start of Ghana's telephone woes. The country has a mere 240,000 phone lines—for a population of 20 million spread across an area the size of Britain. Moreover, telephone bills are inaccurate, overcharges common, and the installation of a new line can cost a business more than $1,000, the rough equivalent of the annual office rent. Lines are frequently stolen, sometimes with the connivance of employees of Ghana Telecom, the national carrier. Phones go dead, and remain unrepaired, for months. Some businesses hire staff for the chief purpose of dialing numbers until calls go through.

The spread of mobile phones has only worsened telephone gridlock. There are more mobile phones in Ghana than wired ones—about 300,000, as of March—but the network is clogged because of a shortage of cell stations. Customers are bedeviled by what operators term "dropped calls." Besides, calls are costly. The price of a one-minute wireless conversation, under the most common plan, is ten times higher than it would be in the United States. "The situation has come to a point of crisis," says Kwesi Nduom, the country's minister for economic planning.

Ghana's telecom mess limits the utility of the Internet, raises the costs of information services—and suggests that the country is mired in the Stone Age, technologically. But the situation here, as in much of sub-Saharan Africa, defies such straightforward conclusions. There is another side to the country's technological profile, a burgeoning homegrown technology culture that explodes assumptions about the inherent backwardness of Africa and the nature of the so-called digital divide.

That there is a gap in the use of information technology between Africans and most people in the United States, Europe and other wealthy regions is unsurprising. After all, development experts have long presumed that lags in technology, much like lags in medicine, stem from poverty—and only reducing poverty can close the technology gap. In the late 1990s, the pioneers of the personal computer, the mobile phone and the Internet saw their technologies as a fresh chance for Africa, an opportunity to leapfrog over what would normally be decades of conventional development. Luminaries such as Microsoft's Bill Gates and Kofi Annan, secretary-general of the United Nations, began campaigning to close the digital divide. Influential international organizations, such as the G8 group of nations and the World Economic Forum, commissioned blueprints for raising the technological level of poor nations, in Africa especially.

So far, these plans have come to little or nothing. In the main, the rich have dropped boatloads of computers onto the poor with no awareness of the environment in which the machines will (or will not) be used. With results lacking, technophiles are starting to recognize what development experts have long known—that no magic wand solves poverty—and to accept that they need to know much more about how people in developing countries live, and what they need and want, in order to close the digital divide.

These are some of the questions that have brought me to Ghana several times in the last two years, first as a foreign correspondent for the *Wall Street Journal*, and later as a visiting professor at the University of California, Berkeley, Graduate School of Journalism. In my visits, I've seen information technologies changing the landscape in unexpected ways. The people I've met are more adept at using these technologies, and are hungrier for them, than most experts believe. But their efforts to put advanced technologies to work in Ghana are often thwarted by the failings of much older infrastructure technologies—the phone system, the electric grid, even the roads.

A visit to a third-floor office in the high-rise known as the Pyramid in Ghana's capital city, Accra, provides a look at one advanced-technology project that seems to be overcoming the barrier of faulty infrastructure. Behind glass walls, hundreds of men and women type at computer keyboards, reading American health insurance claims on their computer screens. Each claims form has been digitized in the United States by Aetna, the large insurer, and sent over a computer network to Accra. Here a typist culls the name, address and other personal information from the form, entering it into a new electronic form, which is then sent back to the U.S.

The key technology in this process is invisible: a satellite link that bypasses Accra's creaky phone system and enables data to be sent overseas instantaneously. To set up the system, the facility's manager, Bossman Dowuona-Hammond, convinced Ghana's government that the satellite would not steal business from the country's national phone company—or be used to interfere with Ghana's politics. "In the past, fear prevented us from getting the tools we needed," says Dowuona-Hammond. "With the right tools, we can compete." Indeed, in one swoop, the satellite link has made a facility in Accra a thoroughly modern business.

All the workers at the data entry facility, from the site manager to the computer networking technician to the typists, are natives of Ghana. American supervisors, located in Salt Lake City and Lexington, KY, visit only occasionally; from their U.S. bases they can view any form in Accra at any moment, peering electronically over the shoulder of any Ghanaian keypuncher, offering help and encouragement.

Local Ghanaian supervisors do much the same. Thomas Fabyan, smartly dressed in black suede shoes, khaki pants and a pressed white shirt buttoned to the neck, prods and cajoles his typists to push their limits. Fabyan sits in the corner of a large open room, with tall windows that overlook the city and give glimpses of the Atlantic Ocean. Along with a colleague, Fabyan is responsible for 275 employees who work over three shifts, round the clock. These typists are paid piece rate: the more records they complete, the greater their pay. The fastest workers can earn nearly three dollars a day, while the slowest take home little more than a dollar, still slightly higher than the pay of a local policeman.

Fabyan, who is 26 years old, represents the new wave of technologically savvy Ghanaians. He used his first PC at the age of 15 and later enrolled in Ghana's top engineering school—then dropped out because he found the courses antiquated. He went to work for a local Internet service provider, where he installed

the equipment required for Web access and later trained others to do the same. The job paid only $30 a month, though, and Fabyan knew he would need more technical expertise to earn a better salary. He decided to sign up for some online programming courses offered by British and U.S. training schools, convincing his father—a financial officer for a local company—to pony up the $800 in fees. Working from a computer in his parents' home, Fabyan devoted more than a year to the courses.

Not long after completing his online studies, Fabyan responded to an advertisement and landed the supervisory job at the data entry facility. There, he can work with an advanced computer network and learn more techniques that he hopes someday to apply in a business of his own. While his chief responsibility is managing keypunchers, in his spare time he recently helped construct an internal Web site where the data entry staff can get answers to common questions. "I want to be serious in IT, and this is a place to start," Fabyan says.

Critics see it differently, insisting that data entry mainly sops up low-skilled workers. "The technological content of this work is quite thin," says Nii Quaynor, a technology advisor to the World Bank and one of only a few residents of Ghana who have doctorates in computer science. "Is there really a future in this for people other than secretaries?" He shakes his head.

Quaynor believes that multinational technology corporations ought to do more for African countries, including creating high-tech product development jobs for local workers. But Ghana is in dire need of jobs—and so the processing of American health-care forms by Ghanaians is potentially ground zero for the birth of a labor-intensive industry in one of the places seemingly left behind by the computer revolution.

After all, processing forms is a worldwide activity that employs millions of people. Most large corporations, from credit card companies to health-care insurers, have contracted out the chore, and contractors run facilities in the Caribbean, Central America and Mexico and throughout Europe, Asia and the United States. Millions of people around the world work in offshore data entry facilities. Yet until Dallas-based Affiliated Computer Services—which processes Aetna's forms along with those of companies such as Liberty Mutual and Health Net—opened this facility in Accra in late 2000, not a soul was employed in this activity in sub-Saharan Africa, says Dowuona-Hammond.

Now, Ghanaians talk of someday hosting 100,000 computer jobs, or more, with keypunching as a base. In March 2002, a second data entry company, Data Management Internationale, opened shop in Accra. The privately held firm, based in Wilmington, DE, is handling government forms for one large U.S. city at its Accra operation. While that project has only 35 workers and is viewed as a pilot effort, the long-term prospects look strong. "We're optimistic about generating the advantages of low-cost labor here," says William Swezey, who launched Data Management's Accra business and is the company's vice president for technical services. "I clearly anticipate other companies coming here, and probably large ones."

The potential for job growth is so great that last fall Ghana's president, John Kufuor, made a surprise visit to the Affiliated Computer Services data entry office. He was impressed by the hundreds of computers he saw (the most in any business in the country) and the spotless working conditions. But what most amazed him, he told his aides, was that work proceeded round the clock, in a country where previously no white-collar work had ever been performed in evenings or the middle of the night.

The growth of data entry in Accra suggests that new information technologies can knit the world closer together by defeating distance and creating jobs. Yet despite working around Ghana's troublesome phone system, Affiliated Computer Services' Accra operation is hampered by other basic infrastructure problems that mock its high-tech sophistication. Frequent power outages—sometimes three or four a day—disrupt work and add to the wear and tear on computers. And the Pyramid building has such poor air conditioning that electric fans are needed to reduce heat in work spaces, in a bid to extend computer life. Such problems mean that, despite the lure of inexpensive labor in Ghana, "the barriers to entry here are very high," says Swezey. "Anyone coming in from the outside will have a hard time getting up and running."

This constant struggle with the local infrastructure is also being waged in Accra's Internet cafés, whose numbers have expanded rapidly thanks to the scrappy ingenuity of their owners and employees.

Two years ago, Accra lacked a single Internet café. Now the city boasts more than 600 of them, a consequence of plummeting prices for PCs and new ways of circumventing the phone system to reach Web servers. An hour online costs anywhere from 75 cents to $1.25, still pricey in a country where many people earn that much in a day. But a few years ago, Web access was far more expensive, when users had to phone places like London or Paris in order to get connected. The rise of Web cafés, combined with free e-mail services such as Hotmail and Yahoo!, means that many Accra residents can receive personal electronic messages for the first time in their lives. This makes "the IT deficit" smaller than people think, says Ravi Amar, a Ghanaian who runs two Web cafés and assembles his own PCs from imported parts. "There's much more computer use here than people realize" *(see "Closing the Gap," below).*

Keeping all those computers up, running and online presents some special challenges, though, as Richard Amaning well knows. A thin and wispy 29-year-old sporting a goatee and eyeglasses, Amaning is the manager of one of Accra's most technically advanced Web cafés, Cyberia. The operation has a dozen PCs powered by 1.4-gigahertz Intel processors and loaded with memory.

Closing the Gap

TECHNOLOGY INDICATORS FOR GHANA	1995	1998
Computers per 100 people	0.12	0.30
Telephone lines	63,067	179,594
Mobile-phone subscribers	6,200	42,343
Public telephone booths	30	1,814
Satellite dish subscribers	0	15,000
Internet host sites	6	253
Radios per 100 people	23.1	68.2
TVs per 100 people	4.04	35.2

SOURCE: GHANA HUMAN DEVELOPMENT REPORT (2000), UNITED NATIONS DEVELOPMENT PROGRAM

Rather than reach its Internet service provider through the city's balky phone lines, Cyberia transfers data through a sophisticated wireless modem, which also increases network speed.

But one afternoon, as Amaning helps a customer print a document, all of Cyberia's whiz-bang technology vanishes—when the electricity goes out. He tells the customers to be patient, and to stay at their computers. Then he runs down a long flight of stairs to the basement, kicks on a backup generator, dashes back upstairs and reboots all the PCs, one after another. That's not the end of it, though. Since the generator is too costly to run any longer than necessary, Amaning must constantly check on neighboring shops to see when their lights return. When power is restored, he tells his customers to halt their work again and shut down, while he goes back to the basement, turns off the generator and switches the café back to public electricity.

Amaning wants Cyberia to automate the process of switching to and from the generator, but the café can't afford the required equipment. Today, at least, he is fortunate: there are no repeat interruptions. Amaning returns to helping the customer with printing. But the episode is a stark reminder that one must know much more than the ins and outs of computers to manage a network in Accra.

Amaning's computing experiences also illustrate in microcosm the haphazard but promising ways in which Africans, relying largely on their own resources, are coming to terms with the digital revolution and attempting to make it their own. For all the expertise required by his job, Amaning has only completed high school. Eight years ago, an uncle offered him an apprenticeship at his computer repair shop. He liked fixing PCs and, while working, attended a computer training school. For 18 months, he learned the basics of PC hardware and networking, then joined a Web advertising agency—one of a handful in Accra—repairing PCs.

Wanting more skills, Amaning took a course on computer networking which helped him to understand the hardware requirements for computer networks, as well as the often idiosyncratic ways that Africans, saddled with poor national telephone and electricity systems, plug into the Web. After the course, he felt ready to manage a Web network. But finding a job took months.

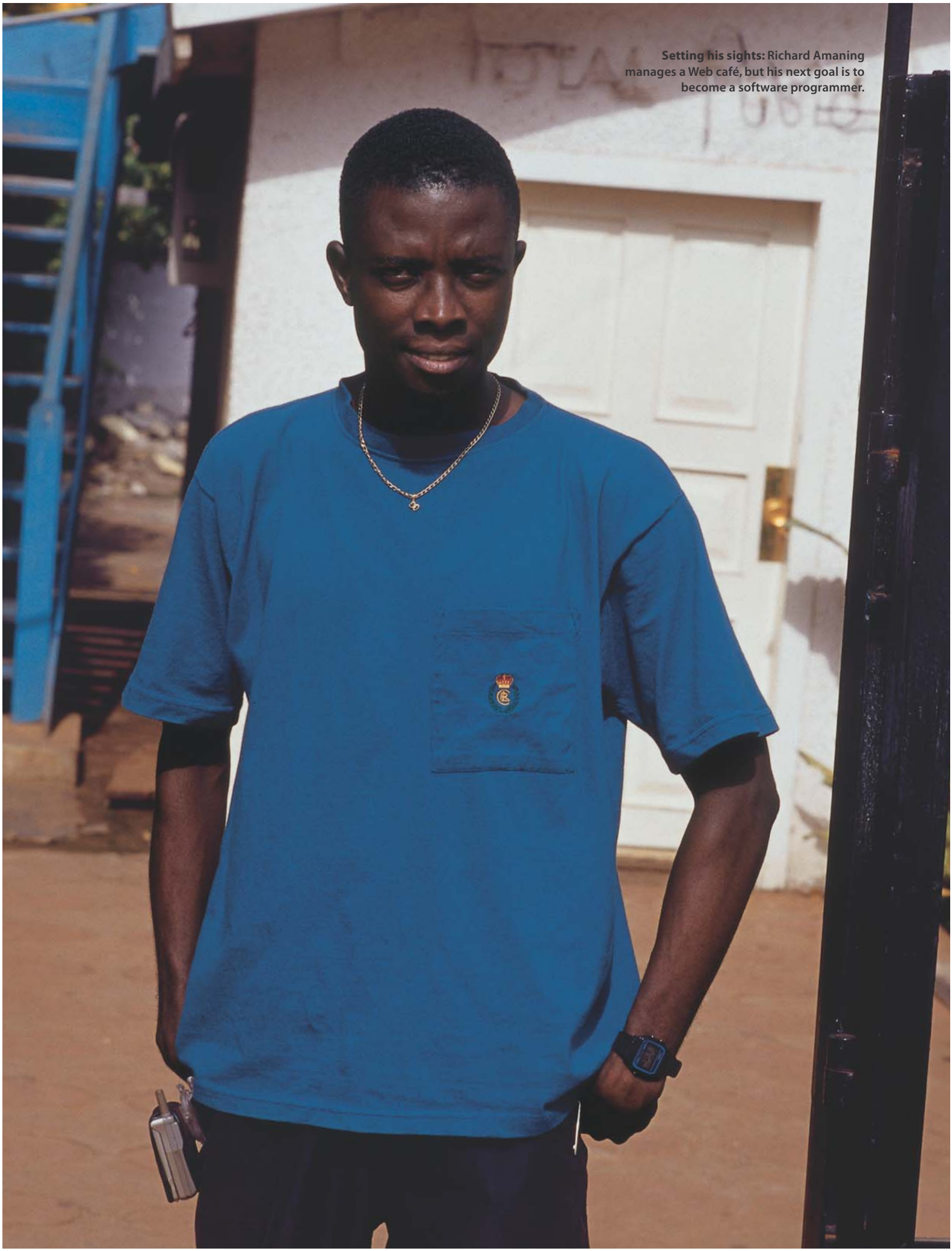
Amaning's break came when a friend, hired by Cyberia to fix a faulty modem, failed at the task and summoned Amaning for help. He got the modem working, and Cyberia's owner hired him. His job is grueling: he works six days a week, from nine in the morning to 11 at night. He earns the equivalent of $125 a month—or roughly four times the average wage in Ghana. To earn even more than that, Amaning will have to improve his skills still further. "My next step," he says, "is to get myself into programming."

While Ghanaians should dream of a better future, their reality is sobering. Accra is home to fewer than 50 code writers who can write a program without close supervision. "The pool of experienced people is very thin."

Many of Ghana's politicians are beginning to think that would-be programmers like Amaning have the right idea. Sam Somuah, an advisor to President Kufuor, clicks through his PowerPoint presentation on the government's proposed information technology policy before a crowded room in Accra. What is striking about this moment is not the specifics of Somuah's plan, but rather that he has a plan at all. Until late last year, Ghana's political leaders seemed blithely unaware of information technology. Now it is seen as potential national salvation. "There's no way we can raise our standard of living rapidly without IT," Somuah says.

Somuah is chiefly concerned with improving government efficiency through information technology, but he also talks of spawning a generation of technology entrepreneurs. As a first step, the government of Ghana recently reached an agreement with India, which is promising to open a programming training center in Accra. Somuah also wants the government to launch a venture capital fund for technology enterprises. "Who knows, one of you might be the next Bill Gates," he tells the group of young people who surround him after his talk.

Indeed, creating a programming industry would be a coup for Ghana's leaders. Software requires little capital to write and can be sold relatively cheaply all over the world; one hit product could make a huge economic difference in a small country like Ghana, Somuah says. "I believe Accra can become, in time, another India, a Silicon Valley in Africa," adds John Hooper, a Ghanaian graphics designer who opened a three-person company in Accra a year ago.



Setting his sights: Richard Amaning manages a Web café, but his next goal is to become a software programmer.

While Ghanaians should dream of a better future, their reality is sobering. Accra is home to fewer than 50 code writers who can program without close supervision, says Roger Oppong-Koranteng, a Ghanaian information technology manager who trained the president and his cabinet in the use of e-mail. "The pool of experienced people is very thin," Oppong-Koranteng says.

Oppong-Koranteng believes that Ghana will eventually produce information technology innovations but warns against expecting too much too soon. Rather than form a venture capital fund, he says, the Ghanaian government should support programs that "bring Ghana's inexperienced IT people together. Let them talk. When people talk, ideas come up—and someone will pick up the ideas and run with them."

While code writing is an inherently lonely task, in Ghana it is lonelier still, because of the small size of the fraternity and the potential for programmers to get left behind by new technology—a fate that Dan Odamtten is struggling to avoid. At 29, Odamtten has only a high-school diploma. His father wanted him to become a nurse, but he had another idea. "I thought computers were the future," he explains.

To get started, Odamtten took a nine-month course at a computer institute, his mother paying the fees without telling her husband. He learned how to program in BASIC and, as an exercise, wrote a payroll program—but on graduation still found he couldn't get a job. He begged Ananse Systems, a local software house that specializes in supplying programs to small banks, to train him without pay. The company agreed.

Odamtten began by installing shrink-wrapped software for the company's banking clients. After six months, the company decided to put him on the payroll, but only at $30 a month. After another six months, he was asked to write a program in MS-DOS. He has since moved to writing Windows programs too. The company now counts him as one of its best code writers and in January increased his salary to $350 a month, a princely sum by Accra standards.

Rather than celebrate, Odamtten worries about learning new skills. "I can't fall behind," he says, while tapping on his Dell laptop. Sitting on the verandah of the company's office, he is tailoring a database written in Microsoft Access to fit the needs of a rural customer. This is a far cry from writing original programs, but he doesn't have the opportunity for such work. In a small company, he must do many things, from servicing customers to adapting mass-market programs for their specific needs to answering his boss's phone calls. "Software means working long hours," he says.

Odamtten's workload is made heavier by bone-crunching automobile journeys. He typically travels three to five hours on Ghana's poorly maintained and congested roads to visit clients. "Someday we will service customers electronically, over networks," obviating the need for lengthy journeys, he says. But for now, he often rises before dawn to avoid the worst of the traffic.

Odamtten's frustrations are Ghana's writ large: the great potential of information technology—to liberate people from drudgery and saturate their lives with knowledge—is thwarted by tribulations that stem from an earlier, mechanical age.

On my first visit to Ghana, I went to the house of a Ghanaian friend. Like many homes in his part of Accra, his had no indoor plumbing, no kitchen, no telephone—not even a street address. My friend had never received paper mail. But two months before my visit he had gotten an e-mail address, an account on Yahoo!, and for a few pennies could send his own message to relatives halfway around the world. In the last two years, I have watched my friend become more adept at using a PC, faster at surfing the Web. But while he remains excited about computing, his discontent grows. He knows much more about the rest of the world than before, but this very knowledge makes him more aware of his own poverty, isolation, and, indeed, the long odds against his succeeding in Ghana.

Information technology isn't the great leveler that enthusiasts champion, but it also isn't as out of reach as skeptics say. The advanced-technology gap between rich and poor nations cannot be explained purely as a function of poverty.

My friend embodies the riddle, I think, of information technology in Africa and other parts of the developing world. The more I learn about how new technologies are altering ways of working and playing in Africa, the more I become convinced that they both hurt and help. I recently talked with Welsh-born entrepreneur Mark Davies, the founder of Ghana's largest Internet café, BusyInternet. When I asked him what his customers did online, he said, "Four out of five are trying to find ways to get out of Ghana."

The lessons of Ghana are thus complicated. Information technology is not the great leveler that enthusiasts champion, but it also is not as far out of reach as skeptics say. The advanced-technology gap between rich and poor nations cannot be explained purely as a function of poverty. And the most successful efforts at bridging the digital divide may be those that combine the efforts of locals with those of emissaries from the developed world.

On the second floor of BusyInternet, upstairs from the café, a Dutch couple runs a Web design business. An English woman has joined with an East African to launch an e-retailer offering African-made arts and crafts. Data Management, the latest data entry company, has its office on the floor as well—next door to a Ghanaian Web designer. Ultimately, this juxtaposition of foreign energy and local initiative could be just what Ghana needs, says Oppong-Koranteng, who is managing director of BusyInternet when he's not giving computer lessons to his country's president. "The foreigners rub off on us, triggering ideas," Oppong-Koranteng says. "We must make them our own."

Software success story: Dan Odamtten's job in software earns him a salary that is princely by Ghana's standards.