



What Did Emeagwali Discover?—Part 8

In this, the eighth installment of our weekly series at emeagwali.com, we focus on one million young Africans who could follow the footsteps of scientific discovery.

Technology is Africa's Next Resource

Transcribed and edited from a lecture delivered by [Philip Emeagwali](http://emeagwali.com). The unedited [video](#) is posted at emeagwali.com.

Scientific discoveries lead to technological inventions that are the foundation of the new knowledge that must precede new products, services, industries, jobs, and wealth. Young Africans can contribute to the alleviation of poverty by making ground-breaking discoveries and inventions and thus creating new wealth.

To compete, the next generation of Africans must become more knowledgeable workers. They must be trained for the jobs of the Information Age and not the jobs of the Industrial Age. We are at an age where 5 billion of the world's 6.6 billion people have cellular phones. In the future, 6.6 billion people will have computers that are connected to the internet.

In the 21st century, ground breaking discoveries are being made at the frontier of scientific knowledge. That frontier is a territory that can no longer be seen with the unaided eye. We use a microscope to reveal things too tiny and a telescope to see things too distant. The particle accelerator needed to discover the smallest sub-

atomic particle and the telescope needed to discover the farthest galaxy both cost about 20 billion dollars. To make a ground-breaking discovery and thus push the frontier of scientific knowledge requires billions of dollars.

A supercomputer costs 1.32 billion dollars. It performs the fastest computation powered by thousands of sub-computers that are connected as an internet. In oil-producing nations, supercomputers are used to discover and recover more oil. Although supercomputing is abstract and invisible, it empowers the economy of many developing nations in the same manner the concrete and visible mobile phone empowered citizens.

An internet powered by 65,536 sub-computers empowered me in the 1980s. I harnessed those sub-computers to outperform any supercomputer and solve computation- and communication-intensive problems. I arrived at the frontier of computation and communication in 1989 when I performed a world record 3.1 billion calculations per second. I achieved that by simultaneously computing with 65,536 sub-computers and synchronously communicating on its internet. My computation was fast because I simultaneously sent and received 65,536 emails to 65,536 addresses on 65,536 sub-computers at each cycle or heartbeat. Each sub-computer was simulating a small portion of a petroleum reservoir or forecasting the weather and similar problems in science and engineering.

That discovery is as valuable as discovering an oilfield because one in ten supercomputers is used to recover more oil. So technology is a resource that empowers the world's poorest nations.

The path to scientific discoveries and technological inventions is through reading and writing. We cannot popularize science without, first and foremost, cultivating a reading culture. Africans must go beyond textbooks, newspapers, junk magazines, and home videos. Even a 24/7, high-bandwidth internet access will never substitute for critical thinking that can only be nurtured through life-long reading.

My journey to the frontiers of science did not begin in America but rather when I was a teenager in Nigeria, West Africa. In 1966, Ms. Mary Carl, the librarian at a Catholic boarding school gave me books with fairy tales such as *Rumpelstiltskin* and *Rip Van Winkle*. I fled to a Biafran refugee camp with some of her books and read them aloud to children.

One of my first steps to America was taken in 1972, when I travelled from Onitsha to Enugu, to borrow science books from the one-room British Council Library. I also had borrowing privileges at the public libraries in Onitsha and Enugu. Those books exposed me to new worlds. In Onitsha, people referred to me as “the young man who walks around with a book in his hand.”

My journey to the frontier of the internet and to the limits of the supercomputer was a search for a brighter light and new knowledge about how to harness an unconventional technology with an unorthodox technique. Along the way, I discovered how to recover more oil applying the most important law in physics, namely the 330-year-old Second Law of Motion.

I believe a million young Africans should follow this same scientific path. There is simply no faster path for development than technological knowledge. Technology is Africa's next resource.

If Africa fails to encourage its children to discover and invent and to create and innovate, it's not merely a misfortune for science and technology but a tragedy for humanity. If so, our descendants will live without prophets and prophecies, without futurists and forecasts, and without visionaries and visions.

Technological creativity and innovation will allow Africans to create more wealth with the continent's diminishing natural resources. The 21st century calls for a greater reliance on discovery and invention.

For Africa to take center stage in tomorrow's economic world, it must push the frontiers of science and acquire the technological knowledge needed to compete in the 21st century.

The new generation of Africans must throw away the begging bowl and realize that their fate lies in their hands, and that the solution to poverty must come from their own people, and not from Europeans. This generation—the largest in history—must spearhead the African Renaissance.



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