

Timeline

1921. James Nnaemeka Emeagwali (father of Philip) born in May in Onitsha, Nigeria.

1938. Agatha Emeagwali (nee Balonwu, mother of Philip) born on August 7 in Onitsha.

1954 Chukwurah Emeagwali born on August 23 in Akure, Nigeria.

1956 Baptized as “Philip” by William Obelagu at Saint Mary’s Catholic Church, Onitsha, in August.

1960 Nigeria gains independence from Great Britain on October 1.



1962 Philip (far right) in family photo taken on December 24 in Uromi, Nigeria.

1966 Nigerian military overthrows Azikiwe-Abubakar government. Fifty thousand Igbos killed in street uprising. Two million became refugees.

1967 Nigerian-Biafran war begins in May. One million died in 30-month war.

1968 Emeagwali family fled Onitsha for the fourth and final time. Lived in refugee camps for two additional years.

1969 Emeagwali conscripted into Biafra army in August, sent to Oguta war front, returns to become a cook for Army Officers at Ndoni, Biafra.

1970 Biafran army defeated in January. Emeagwali is discharged from the Biafran army.

1974 Emeagwali wins a mathematics scholarship and arrives in Oregon (U.S.) on March 24.

1981 Marries Dale Brown on August 15 in Baltimore, Maryland. Continues scientific research at U.S. National Weather Service.

1983 Obtains U.S. permanent residency visas for his 35 closest relatives.

1987 Programs 65,636 electronic brains, called processors, at Los Alamos National Lab. (the birthplace of the atomic bomb) to perform the world’s fastest calculation.

1989 Wins the Gordon Bell Prize alone which is the supercomputer industry equivalent of the Nobel Prize.

2000 Bill Clinton extols Emeagwali as “one of the great minds of the Information Age” during a televised speech as president.

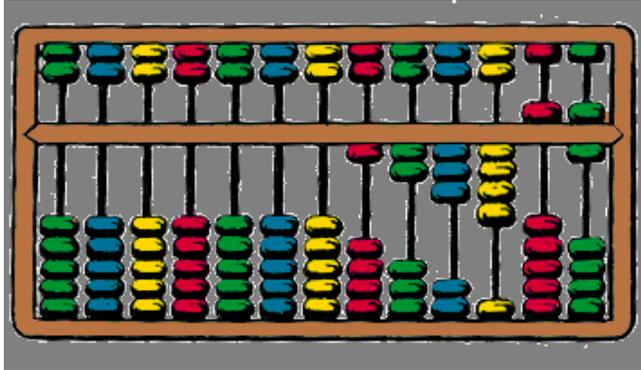
2004 *New African* magazine poll ranks Emeagwali as history’s greatest scientist of African descent.



2005 Philip, Dale and Ijeoma Emeagwali, June 8.

TIMELINE: New knowledge builds upon old knowledge and the names of most contributors were lost in the mist of antiquity. Here are some of the discoveries leading to the supercomputer and Internet.

469 B.C. The oldest computing equipment, the Abacus, invented in China.



An Abacus

200 B.C. The water clock invented in the Nile Valley of Africa. This technology inspired the development of early computers.

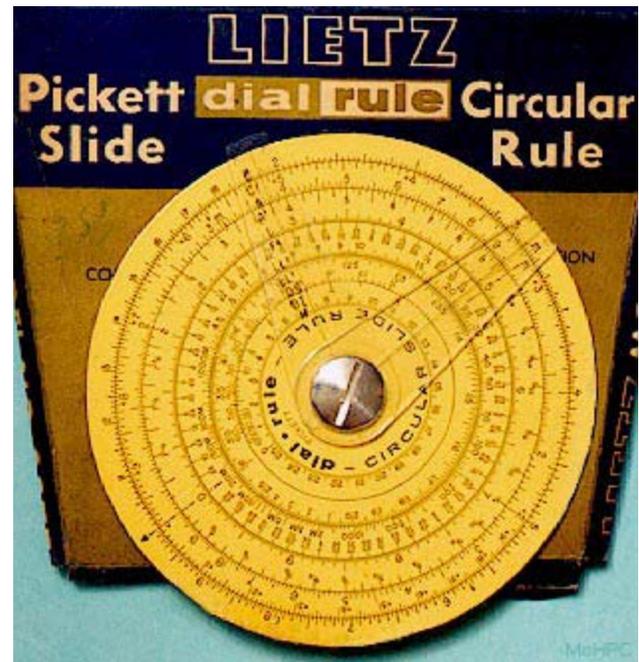
100 A.D. Mathematician Heron describes the first **sequence control**, a technique that made it possible to predict an output for a given input which, in turn, laid the foundation for computer programming or the prediction of an output for a given input.

476 A.D. The number zero introduced by Indian mathematician Aryabhatta. The Internet and a supercomputer only understand two numbers: 0 and 1.

800 A.D. Persian mathematician Muhammed idn Musa Al-Khwarizmi publishes his influential book *Al-jabr wa'l muqabalah*. The words "Al-Khwarizmi" and "Al-jabr wa'l" were corrupted to **algorithm** and **algebra**, respectively.

1398 The word "**compotystes**" is coined by the writer Trevisa to describe a person that calculates time. Two hundred and fifty years later, the word "compotystes" was corrupted to "computer," describing a person that calculates.

1621 The second oldest computing equipment, the slide rule, is invented.



1922 Lewis Richardson wrote that "64,000 computers would be needed to race the weather for the whole globe." In 1975, Emeagwali theorized the latter as an interconnected HyperBall **supercomputer**, which is roughly equivalent to the **Internet**, but implemented it as a hypercube in 1987.

1946 The **supercomputer** was invented as a single **electronic computer**.

1970s The **Internet** was invented as a **dozen** interconnected **supercomputers** around the United States.

1980s The **Internet** was reinvented as **millions** of interconnected computers around the world.

1990 The **supercomputer** was reinvented as **thousands** of interconnected computers.

CHRONOLOGY - of discoveries leading to Emeagwali's 18 equations and algorithms.

1680 BC The African mathematician Ahmes wrote the oldest mathematics textbook with solutions of equation.

325 BC Euclid, "a father of geometry" was born in the Nile Valley. He published *The Elements*, the second most reprinted book in history.

800 AD Persian mathematician Muhammed idn Musa Al-Khwarizmi publishes his influential book *Al-jabr wa'l muqabalah*. The words "Al-Khwarizmi" and "Al-jabr wa'l" were corrupted to **algorithm** and **algebra**, respectively.

1590 Galileo publishes "Du Motu," his experiments on falling objects. In 1616, the Catholic Church prohibited him from conducting scientific research.

1621 Johann Kepler's "The Epitome of Copernican Astronomer" banned by the Catholic Church.

1666 Sir Isaac Newton formulates the universal laws of motion and gravitation and co-invented calculus.

1759 Leonhard Euler synthesized the techniques of calculus and Newton's second law of motion to obtain the first partial differential equations governing frictionless fluid flow.

1845 George Stokes improved upon Euler's and Navier's (1822) work, by rederiving the Navier-Stokes equations.

1856 Henry Darcy formulates "Darcy's Law," the foundation of petroleum reservoir simulation.

1932 The first drilled oil well. Two decades later, the oil well created a need for petroleum reservoir simulators.

1934 Paul Fillunger (and his wife) committed suicide in protest against the rejection of his formulation of the mathematical equations for porous media.

1946 The modern electronic computer is invented, making it practical to develop petroleum reservoir simulators.

1973 OPEC oil embargo stimulates interest in enhanced oil recovery technologies and reservoir simulators implemented on one processor supercomputers.

1989 Emeagwali rejects Darcy's Law and develops nine equations that unifies Fillunger's equations and Newton's second law of motion and invents nine algorithms that enable 65,536 cooperating processors to increase the amount of oil recovered.

For 70 pages of additional biographical info log on to <http://emeagwali.info/biography/long.pdf>