Philip Emeagwali
info@emeagwali.com 202-203-8724

World's Fastest Computing Creates New Computer Sciences****

Transcript of Philip Emeagwali lecture 210928 1of4.

Watch the video at: https://youtu.be/uRgch0DQyQ8

Philip Emeagwali

The Reader's Digest **described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.**

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. ***CNN*** **called him "A Father of the Internet."** ***House Beautiful*** **magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000,**

then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."

1 Philip Emeagwali Computer [Part 3 of 3]

How the Fastest Computer Was Invented?

My Quest for the Fastest Computer in the World

Thank you.

On June 20, 1974, in Corvallis, Oregon, USA,
I began my search
for the new knowledge
of how off-the-shelf processors
could be harnessed
and used, in tandem, to create
the world's fastest computer.
I discovered that such a supercomputer

will not be a computer, in and of itself.
It will be a new Internet, in reality.

I imagined that new Internet
as my new global network of processors
that were identical
and uniformly distributed across
the surface of a globe.
But distributed just as
computers are distributed
around the Earth.
My search
for the fastest supercomputer
demanded that I begin
from the beginning, which is
the laws of physics that existed
since the Big Bang explosion,
or the small singularity,
that inflated
over the past 13.8 billion years.
And inflated to become the present
cosmos.

In my two-decade long quest,
I scourged the history of physics,
then of calculus and algebra
and mastered the frontiers of knowledge
of those three important subjects.
That mastery enabled me to harness
the total and maximum
supercomputing power
of my coupled ensemble
of the two-raised-to-power sixteen
slowest processors in the world.
Those off-the-shelf processors
were designed for a mainstream market,
rather than for supercomputing.
And they were manufactured
in large numbers and for a lower price.

My most significant contribution
to computer science is this:

I discovered that a million processors can
power supercomputers

In an email, a twelve-year-old
writing the biographies
of great inventors and their inventions
asked me:

"What is Philip Emeagwali known for?"

I'm known for discovering that
up to a billion off-the-shelf processors
can power the world's fastest computers.

In the 1980s,
I was ridiculed for pursuing
the then useless technology
of the first world's fastest computing
across
the slowest processors in the world.
But by 1989, I was in the news
for discovering
fastest computing with slowest processing.
After my discovery,

vector supercomputer scientists
who had ignored me
wanted to become my new best friends.

That invention of computing with
millions of processors
put a Black African face
in science classrooms.
And alongside the faces of Galileo,
Isaac Newton, and Albert Einstein.

The Debate on Race and Intelligence

My contribution to computer science
was how I chipped away
at one of the fundamental assumptions
of the myth of
white intellectual superiority.
Such myths were sincere fictions
of the white self.

Fictions that only white males,
the likes of Albert Einstein,
were endowed with the intellect
that was needed
to make substantial contributions
to human knowledge.
And to solve the most challenging
problems
at the frontiers of knowledge
of the fields of mathematics, physics,
and computer science.
Those sincere fictions legitimized
IQ science and white power.
Furthermore, those sincere fictions
legitimized white privileges,
including favoring the immigration
and hiring of Western and Northern
European scientists
over Black sub-Saharan
African scientists.
Not only that, those sincere fictions
legitimized

attacking affirmative action policies
that would have produced
more African-American
supercomputer scientists
who could have contributed
to making parallel
and quantum supercomputers
faster.
Over the decades, those sincere fictions
became the *status quo*.
I discovered
the world's fastest computing
across the slowest processors in the world
and did so on the Fourth of July 1989.
Before my discovery, it was assumed that
Albert Einstein is more intelligent
and more knowledgeable
than Philip Emeagwali.
The reverse now holds across
genius rankings posted on the Internet.

Historically, the Black invention

rarely was understood
in the racial context it was made.
Looking back to June 20, 1974,
the day I began programming
one of the world's fastest computers
that was at 1800 SW Campus Way,
Corvallis, Oregon, USA,
the toughest part
about being a marginalized
Black computer scientist
was that I was expected
to repress my oppressed identity.
As a mathematical physicist,
I always knew that
the laws of logic and physics
are experienced the same way
by Black and white persons.

2 Why is Philip Emeagwali Famous for the World's Fastest Computing?

How I Solved an Open Mathematical Question

In 1974, I conceived
the first world's fastest computing across
a new ensemble of
sixty-four thousand processors.
I visualized my new technology
as encircling a globe.
And doing so just as
what we later called the Internet
now encircles the Earth.
In May 1981, in College Park, Maryland,
I embarked on my mathematical quest
for how to solve
the most compute-intensive problems
that needed to be solved
on the world's fastest computers.
In 1981,

the open mathematical question
was this:

"Can mathematicians solve
an initial-boundary value problem,
such as simulating
the flows of crude oil,
injected water, and natural gas
that are buried up to 7.7 miles.
(or 12.4 kilometers) deep
And within an oil producing field
that is almost twice
the size of the state of Anambra, Nigeria?
And can we hindcast, or re-forecast,
those fluid flows across a new Internet
that's a new spherical island
of up to a billion
off-the-shelf processors?
Each processor had its dedicated memory."

That difficult problem was at the crossroad
where new physics, new mathematics,

and new computer science intersect.
In the 1980s, the U.S. government
classified that problem
as one of the twenty Grand Challenges
in supercomputing.

How to Solve Compute-Intensive Problems

Solving the most intractable problems
that arise simultaneously
in mathematics or physics
or computer science
demands a higher mental power
than writing a poem or a play or a novel.
That demand is akin to the belief that lifting
a car demands physical strength.
The research computational mathematician
who can solve or parallel process
the toughest problems that arise

in extreme-scale computational physics
is believed to have a stronger brain muscle,
or a higher mental power or a higher IQ,
than those who cannot.

Solving the most difficult problems
in mathematics and physics
are the reasons Isaac Newton
and Albert Einstein
are in the perennial list
of the smartest people that ever lived.

World's Fastest Computing
Solves Compute-Intensive Problems

For me, the early 1980s
was my period of a quote, unquote
"hand proofs" that delineated my paths
from the blackboard to the motherboard.

And across my new Internet
that I visualized
as a new global network of
sixty-four binary thousand processors.
That was when and why I coded
the processor-to-processor
email algorithms
which I invented
for solving the resulting
huge system of equations
of computational linear algebra.
That was how I constructed
my message-passed
65,536 processor codes.
I invented those processor codes
for solving
the most difficult problems
at the frontiers of knowledge
of mathematics, physics,
and computer science.
What made the news headlines,
in 1989, was that

I executed those 65,536 codes at once.
And across
a global network of 65,536 processors
that I visualized as a new Internet.

How I Used Slowest Processing to Invent Fastest Computing

In the 1980s, I experimented across
an ensemble
of the slowest processors in the world
and across an Internet
that's a global network of those
processors.
Those processors were identical
and were equal distances apart.
Each processor
had its dedicated memory
that shared nothing.
I executed my experiments
that yielded the first
world's fastest computing across

the slowest processors in the world
and did so by using
the initial-boundary value problems
in weather forecasting
and in petroleum reservoir modelling
and using both difficult
mathematical problems
as my computational test beds.
My new speed
from my world's slowest processor
experiments
was the world's fastest computation.
I recorded that speed at 8:15 in the morning
of the Fourth of July 1989,
in Los Alamos, New Mexico, USA.

I Changed the Way Computer Scientists Think

My supercomputing discovery
led to a new understanding
of how millions of processors

could be harnessed and used
to make the fastest computer.
And make the supercomputer practical
in addressing
some of the world's most important
and complex challenges.
Such difficult mathematical problems
include, more accurate weather forecasts,
powering the world with green energy,
manufacturing efficient and safer
automobiles, and personalized medicine
that extends life spans.
That new understanding
led to the world's fastest computer
that's not supercomputing
with one processor.
We now understand
the world's fastest computer
as supercomputing across
millions of processors.

My major contribution to computer science

is this:

> I was the first person
> to record
> the fastest computer speed
> and do so alone.

On the Fourth of July 1989,
I was confident that I've discovered
the first world's fastest computing across
the slowest processors in the world.
And that I've solved
the one of the most compute-intensive
problems
in computer science.
In the 1980s, the first world's fastest
computing across the slowest processors
in the world
was an unknown field of computer science.
I was the only known expert
that could solve
the most compute-intensive problems

in mathematics and physics.
I discovered how to solve
the most difficult problems across
up to a billion coupled processors.
That was the reason,
I became the first person
to record the fastest computer speeds.
And do so across my ensemble of
65,536 coupled processors.
At first, my discovery
of the fastest computing across
the slowest processors
was ridiculed and rejected.
Not only that, I was dismissed because
non-experts were asked to review
the fastest computer speed
which I recorded
across my ensemble of
65,536 coupled processors.
I was the only person
that understood my discovery.
Furthermore, I described that discovery

in my 1,057-page research report
that only I understood.
That should not come as a surprise
because I was the first
and sole full-time programmer
of the biggest supercomputer ever built.
Such supercomputers now occupy
the footprint of a football field.
And it costs forty percent more than
the mile-long Second Niger Bridge
in Nigeria.
The billion-dollar price tag
ensures that supercomputing
will never become a child's play.

3 Explanation of the Philip Emeagwali Contributions to Science

Inventing the World's Fastest Computer

Reformulating Philip Emeagwali Equations from Calculus to Algebra

Three often asked questions are:

What is the Philip Emeagwali Computer?

How did Philip Emeagwali invent
the world's fastest computing?

How were the Philip Emeagwali equations
reformulated from calculus to algebra?

The nine Philip Emeagwali equations
that I invented
were abstract and differential.
And they were the most advanced
expressions in calculus
and were difficult to understand.
I discretized those
partial differential equations
by using partial difference schemes

that I invented.
That was how I reduced them
from a system of equations of calculus
to a seemingly infinite system
of equations of
computational linear algebra
which I solved across
my ensemble of the slowest
65,536 processors in the world.

In the 1970s and 80s, I knew that
the world's fastest computer speed
was a technological achievement
that could be measured
in the manner the speed of
a marathoner is measured
with tapes and watches.
But in calculus, the watches are soft
and genius is subjective.

How Philip Emeagwali Won the Nobel Prize of Supercomputing

On the Fourth of July 1989,
I was challenged
to submit my discovery
of the world's fastest computing
across the slowest processors in the world
and allow my new knowledge
to be retested
by the foremost experts in
supercomputing.
I accepted that challenge
and took my discovery
to a fifteen-day supercomputer workshop
that took place between
September 1 and 15 of 1989
and in the outskirts of Chicago, Illinois.
At that supercomputer workshop,
my discovery was discussed
by programmers who had programmed

vector supercomputers
and hoping to program
parallel supercomputers.
After that fifteen-day supercomputer
workshop, a sense of anticipation
arose from my discovery
that the world's fastest computing
can be extracted
from the slowest processors in the world.
By the end of that
supercomputer conference,
the consensus was that my discovery
deserved to be recognized
by the highest award in supercomputing
for the year 1989.
But a few naysayers openly challenged me
to re-submit my discovery
to the committee of judges
who awarded the most prestigious prize
in supercomputing.
That award committee was appointed
by the two top computer societies

in the world,
The Computer Society
of the IEEE (or the Institute
of Electrical and Electronics Engineers)
and the Association
for Computing Machinery.
In December 1989, I submitted
my scientific discovery
of the world's fastest computing
to The Computer Society of the IEEE,
in San Francisco, California.
I won that prize in supercomputing
that computer scientists rank as
the Nobel Prize of Supercomputing.
The discovery and the prize
generated the *news headlines:*

"African Supercomputer Genius
Wins Top U.S. Prize."

The Significance of Winning the Nobel Prize of Supercomputing

Winning that top supercomputing prize
gave me credibility and a handle.
That most prestigious prize
separated me from the other 25,000
vector supercomputer scientists.
A coveted prize was the quote, unquote
"scientific evidence"
that my supercomputer discovery
of how to execute
the world's fastest calculations
and do so across up to
a billion coupled processors.
And solve
the most compute-intensive problems
in mathematics and science.
It was an undeniable proof
that I made an original contribution
to the development

of the world's fastest supercomputer
that now computes faster
with millions of processors.
That top supercomputing prize
made me stand out in the community of
prominent mathematicians
and top physicists.

How I Won the Top Supercomputing Prize Alone

My discovery
of the first world's fastest computing
across
the slowest processors in the world
changed the way
mathematicians and physicists
use the supercomputers
to solve compute-intensive problems
in their fields.

My discovery of supercomputing across
the slowest processors
was new knowledge that inspired
vector supercomputer scientists
to change the way
they look at the fastest computers.
The chances
of a supercomputer scientist
winning the highest award in
supercomputing, and winning that prize
alone,
was only one in 25,000.
With the exception of myself,
that most prestigious award, or diploma,
in supercomputing
was shared by up to fifty
supercomputer scientists.
Fifty names were inscribed
on their award diploma.
It was like fifty persons sharing
one diploma.

Being "First" is Better Than "Best"

In the 1980s,
I was the only full-time programmer
of the most massively parallel
supercomputer ever constructed.
That supercomputer is the precursor
of the world's fastest computer of today.

Being the "first" person
to discover something
is better than being the "best" person
in doing that thing.

On July 4, 1989, I became the first person to discover that parallel computing
is faster than sequential computing.
It's faster when both technologies are used
to solve the world's

most compute-intensive problems,
such as modeling
climate change.
That breakthrough opened the gate
to the widespread use
of millions of processors to power
the world's most powerful
supercomputers.
In 1989, I stood out because
I was the first person
to win the highest award
in supercomputing.
And win it alone.
I was the first person
to win that prize for solving
the most compute-intensive problem
in supercomputing.
This year, the highest award in
supercomputing was shared by
twenty-eight (28) co-winners.
That prize enabled me to stake
massively parallel computing

as Philip Emeagwali Territory,
and as the place
where the fastest computers exist.
My scientific discovery
of world's fastest computing
was validated and replicated across
the ensemble of millions
of processors that define and outline
state-of-the-art supercomputers.
The forty-five billion dollars a year
market value
of the world's fastest computers
affirms the importance
of using up to a billion processors
to power every supercomputer.

It should be noted that the

world's fastest computing
is the supreme validation
of a new supercomputer

A scientific discovery
is a personal property
that becomes public property,
if and only if, it's disclosed to the public.
I transferred the ownership of my
discovery
of the world's fastest computing
across the slowest processors in the world
and signed it over
on three disclosure occasions:
July 4, September 15,
and December 25 of 1989.
The scientific community
responded to those disclosures
of my discovery
and did so by awarding me
the highest award in supercomputing.
That supreme validation
was time stamped for the year 1989.

4 How I Invented the Philip Emeagwali Internet

Fastest Computing Across an Internet

Emeagwali YouTube Channel

I've shared a thousand videos
on YouTube.
My videotaped lectures
are my compression
of five decades of scientific research
into a series of one-hour remarks.
It's akin to compressing my life story
into a parable.
I couldn't describe everything
that I know within one thousand hours.
I only presented the crux
of my contribution to my new Internet
that's a new supercomputer, intrinsically.
It costs more than a billion dollars

to create the world's fastest computer.
But it costs nothing to listen to my lecture
on how I discovered
how to execute
the fastest computer speed.
And how to do so across
up to a billion processors
which outline and define
the world's fastest computer.

I Invented a Small Copy of the Internet

For me, June 20, 1974, in Corvallis, Oregon, USA, was the beginning of my long train of thoughts and experiments across
a new spherical island of
65,536 off-the-shelf processors
and standard parts.
Those processors were identical.
I visualized those processors

as uniformly distributed across a globe.
I defined my ensemble
of coupled processors
as a never-before-visualized Internet
that encircles a globe.
And that's a small copy of the Internet
that encircles the Earth.
In 1989, I was in the news
because I discovered
how to harness my new Internet.
And use the new technology
as one seamless, coherent,
and gigantic machinery
that's the world's fastest computer,
in reality, but not a computer,
in and of itself.

I didn't invent
my new Internet in one day,
back on June 20, 1974.

How I Discovered that Parallel Processing Enables Computers to be Fastest

Nor was I instantaneously struck
with the nine Philip Emeagwali equations.
I solved my system
of partial differential equations
beyond the frontier of calculus.
And I solved them via their companion
partial difference equations
of large-scale computational linear
algebra.
I solved them in my thoughts.
And solved them during the experiments
that I executed across my ensemble of
65,536 processors.
Those processors were identical
and surrounded a globe
as a new Internet.
The inklings of parallel computing

I had in 1974
grew from a mere acorn
to a mighty oak tree
that was the fastest computation across
a new Internet.
The new Internet is a new global network
of coupled processors
sharing nothing
and uniformly distributed around a globe.
It made the news
because I discovered
how to harness those slow processors
as a supercomputer.
On the Fourth of July 1989,
I discovered how to use
up to a billion processors
to solve the most
compute-intensive problems
in mathematics and physics,
such as global climate modeling.
In the 1970s and 80s,
harnessing one million processors

and using them to solve
the most compute-intensive
mathematical problems
was supercomputing's equivalence
of being the first person
to summit Mount Everest.
As an aside, the first climbers
who made it to the top of Mount Everest
did so in 1953.
Since then, only five thousand climbers
climbed to the summit
of Mount Everest.
By comparison, only one person
single-handedly recorded
the world's fastest computer speed
across the slowest processors
in the world.

Philip Emeagwali Milestone in
Computer History

In high-performance supercomputing,
recording the world's fastest speed
is the most coveted milestone.
In the 1980s,
the fastest speed in computing
recorded across
the slowest processors
was a milestone that
25,000 supercomputer scientists
dreamt to achieve.
That fastest parallel supercomputer
was a milestone
in the history of mathematics
and computer science.
I was the first and only person
that benchmarked that milestone,
successfully.
I benchmarked it
on the Fourth of July 1989.

Fastest Computing Across an Internet

It made the news headlines
that a Nigerian supercomputer genius
in the USA had recorded the fastest speed
in the history of computing.
I recorded that speed across
the slowest processors in the world.
And I recorded that speed while solving
the most compute-intensive problems
in the world.

To put my supercomputer invention
from a literal perspective,
writing a novel or a book
takes a couple of years.
And up to one million new books
are published each year
in the USA alone.
And reading and critiquing
my supercomputer invention—of how

the fastest supercomputer
can be built with the slowest processors—
is as easy as spending time
on Facebook or WhatsApp.
The grand challenge in deeply
understanding my contribution
to the highest-performance
supercomputing
was to spend
a billion dollars to reconstruct
the massively parallel supercomputer
that will be needed to re-create
my world's fastest computation.
And, most importantly,
test that world's fastest computation
on production
petroleum reservoir simulations
that are executed across millions
of off-the-shelf processors.
And, finally, re-create that fastest speed
as mandated by the scientific method

that characterized natural science
since the 17th century.

Why We Changed the Way We Look at the Computer

My scientific discovery
of the fastest computing across
the slowest processors
changed the way mathematicians solve
the twenty most difficult
mathematical problems
in science, engineering,
and medicine.
And changed it from solving
one problem at a time
to solving
up to a billion problems at once.
Changing the way we count
is a fundamental change

of tectonic proportions.
And a shift that has occurred
only once in the two hundred thousand
years of the existence of humanity.

5 How Are Supercomputers Used?

I Invented Fastest Computing from Slowest Processing

In the 1980s,
I used more supercomputers
than any person ever did.
I alone
was the only full-time programmer
of sixteen
massively parallel supercomputers
that were each powered by
up to the 65,536 slowest processors
in the world.
The massively parallel supercomputers

of the 1980s
were abandoned because
they were then mocked, ridiculed,
and dismissed
as a tremendous waste of everybody's time.
Back then, the supercomputer textbooks
wrote that it would forever
remain impossible to solve
the most compute-intensive problems.
And solve them
at the fastest speeds.
And solve them across
an ensemble of the slowest processors
in the world.
In 1989, I was in the news because
I proved everybody wrong
and did so by solving
the most compute-intensive problems.
And solving them
with the slowest processors
and solving them at the fastest possible

speeds.
That was how the fastest computing
across the slowest processors
became my signature discovery.
And became one reason
I'm the subject of biographical essays
on famous inventors and their inventions.

Contributions of Philip Emeagwali to Computer Technology

My contributions to developing
the world's fastest computers were these:

I discovered that a binary billion
processors
that were locked together
can be programmed to emulate
one seamless, coherent machinery
that's a supercomputer, in reality.

A binary billion
is two-raised-to-power-32,
or 4,294,967,296.
I discovered that
the number of processors needed
is proportional
to the compute-intensiveness
of the mathematical problem.

More often than not,
the most compute-intensive problems
arise as variations in physics calculations,
particularly in geophysical
and astrophysical fluid dynamics.
The physics roots
as well as the mathematical
and computational structures
of the global climate model
differs slightly from that of the
petroleum reservoir simulation.
I presented reservoir simulation
in my 1989 discovery

for which I won
the highest award in supercomputing.
Climate and reservoir modeling
are the prototypical problems
of large-scale geophysical
and astrophysical fluid dynamics.

The New World's Fastest Computing Changed Supercomputing

The supercomputer enables
medical and scientific discoveries
to occur at the fastest pace.
It's used to pull the future closer.
The world's fastest computers
were used to discover
how COVID-19 spreads.
My discovery
of the world's fastest computing
across

the slowest processors in the world
made the news headlines in 1989.
And made it impractical
to continue selling outmoded
supercomputers
that were powered by only one processor.
Within five years after my discovery,
the manufacturers
of vector supercomputers
couldn't sell that technology.
For those reasons, they ran out of funds,
laid off their employees,
and filed for bankruptcy protection
from creditors
and filed it under Chapter 11
of the U.S. Federal Bankruptcy Code.

What is the New World's Fastest Computer?

The world's fastest computer

is not a child's play.
It occupies the footprint of a football field.
It costs forty percent
more than the mile-long
Second Niger Bridge in Nigeria.
It's the world's most complex invention.
The world's fastest computer
is powered by up to
one billion processors.
Each processor had its operating system.
Each processor shared nothing
with its nearest-neighboring processors.
That first supercomputer
that's used to solve the toughest
mathematical problems
and solve them fastest across
the slowest processors
is described
as the most complex creation
of the human mind.

The Nigerian Oil Fields

Nigeria has 159 oil fields.
And 1,481 oil wells.
The first oil field in West Africa
was discovered in 1956
in Oloibiri (Nigeria).
The oldest oil well in Nigeria
was sunk in 1958.
Oloibiri was a fishing
and farming community,
that is a distance of 45 miles
(or 72.4 kilometers)
east of Port Harcourt.
The Oloibiri oil field
covered an area of 5.31 square miles.
Only half of the crude oil
discovered in Oloibiri was recovered,
or rather was recoverable.
Twenty years after
that first oil well in Oloibiri was sunk,

that first oil field in Nigeria
was abandoned.
The warning from Oloibiri is that
the 159 producing oil fields of Nigeria
will dry out in twenty or thirty
or forty years.

In fifty years, Nigeria
will not be an oil-producing country.
And Nigeria will be dismissed
from OPEC, the Organization
of the Petroleum Exporting Countries.

6 Philip Emeagwali Computer Described

Why is Philip Emeagwali Known for Fastest Computers?

The Influence of Calculus on the Fastest Computer

I'm often asked:

What is the Philip Emeagwali computer?

Why is Philip Emeagwali known for fastest computers?

What is the influence of calculus on the development of the computer?

In June 1970,
I claimed, or rather reclaimed,
my mathematical language.
And I did so when I bought

the 568-page blue hardbound book
that was titled:

"An Introduction
to the Infinitesimal Calculus."

That calculus book was written by
G.W. [George William] Caunt.
And published by
Oxford University Press.

In developing the world's fastest computer,
calculus was the pink elephant in the room
that nobody wanted to talk about.
The secret to my 1989
world's fastest computing
was that I discovered
how to divide-and-solve
the most compute-intensive problems
in calculus.
I divided it into an equivalent set of
less compute-intensive problems

that I solved across
my ensemble of 65,536 processors.
My processors computed in tandem
and were in dialogue with each other.
At first and in the 1970s,
I was confused because I did not know
where each processor was located at.
The one vertex
of a sixteen-dimensional cube
to one-processor correspondence
gave me an intuitive understanding
of where each processor was located.
That new knowledge
enabled me to record the fastest speed
in computer history.

In the history of the computer,
we expect the next generation of
computers to be ten times faster.
I discovered a billion-fold increase
in the speed
of the world's fastest computer

that's powered by a billion processors.
To invent a supercomputer
is to take a big risk
and leapfrog into the future.

Contributions of Philip Emeagwali to Mathematics

An often-asked question was this:

"What is Philip Emeagwali known for?"

I'm known as the first person
that figured out how to solve
the most compute-intensive problems
that are important to society.
Such intractable problems
are governed by a system of coupled,
nonlinear, time-dependent,
and three-dimensional
partial differential equations
that are beyond the frontier of calculus.

Such partial differential equations
must be discretized,
or reduced, to an almost equivalent
system of equations
that's the largest
in computational linear algebra.
I was in the news because
I was the first person
that parallel processed across
an ensemble of sixty-four binary thousand
off-the-shelf processors
that were identical and coupled
to each other.

Why I Created New Mathematics

In the 1970s and 80s,
I thought of myself
as a research computational
mathematician
searching for
the world's most powerful supercomputer.

In those two decades,
my goal was to execute
the fastest floating-point
arithmetic operations
that must be used to solve
the world's most compute-intensive
problems
in science, engineering,
and medicine.
That was how and why
I searched for and discovered
the fastest arithmetical computations.
And searched for and discovered
new algebraic knowledge.
And searched for and discovered
new partial differential equations
of calculus.

I'm Philip Emeagwali.

I create new equations
the way Bob Marley writes new songs.

I sing in the mathematical dialect
of the universe.

How I Solved Compute-Intensive Problems

My quest for new mathematical knowledge
was a personal search
for the lost language of God.
In my quest for the never-before-seen
supercomputer
that's the fastest ever,
I encoded the Second Law of Motion
of physics
into the partial differential equations
of calculus.
I then discretized those
partial *differential* equations
into corresponding and approximating
partial *difference* equations

of large-scale algebra.
Finally, I developed
my 65,536 computer codes
which I used in a one-code to one-problem
corresponding manner.
And used to solve
each of my 65,536 subsets
of those systems of equations
of large-scale algebra.
I translated the world's biggest
mathematical problems.
And did so from prose
to the supercomputer cycles
which I executed to solve
those compute-intensive equations
that would otherwise be impossible
to solve.

How I Visualized the World's Fastest Computer

In 1989, I was in the news because
I was the first person
to figure out how to compute across
two-raised-to-power sixteen,
or sixty-four binary thousand,
quote, unquote "little computers,"
called processors, that surrounded a globe.
I visualized my globe
as embedded within
the 16th dimensional hyperspace.
My ensemble of processors encircled
that sixteen-dimensional globe
and did so in the way the Internet
encircles the Earth.
My supreme quest
for ultrafast computations
from the world's fastest computer
was like launching
65,536, or two-raised-to-power sixteen,
digital arrows
into the unknown sixteen-dimensional
hyperspace.

Each arrow carried an email message
to a sixteen-bit-long address
and across sixteen times
two-raised-to-power sixteen pathways
that had a one-to-one correspondence
with as many bidirectional edges
of the cube
in the 16th dimensional hyperspace.

Philip Emeagwali and the World's Fastest Computer

Visualizing the world's fastest computer
that I discovered in the 1980s
and imagining the technology
as a new Internet
within the 16th dimension
was published as science fiction,
back on February 1, 1922.
But on the Fourth of July 1989,
I figured out how to turn that fiction

to nonfiction. Fastest computing across
slowest processors
is my contribution to the supercomputer
that occupies the space of a soccer field.
And it costs more than
the mile-long Second Niger Bridge
in Nigeria.
In my supercomputing, I computed
in parallel, rather than in sequence,
or solved up to a billion problems at once,
rather than solve one problem at a time.

How I Want to Be Remembered

I was asked:

"How do you want to be remembered?"

The contribution of Philip Emeagwali
to the development
of extremely fast computers

is this:

I was in the news, in 1989,
for discovering that
the world's fastest computers
must be powered by
up to one billion processors.
Prior to my discovery
that occurred on the Fourth of July 1989,
the fastest computing across
the slowest processors,
existed only in science fiction.

I want to be remembered
for the first world's fastest computer
that was powered by
the slowest processors in the world.

I'm studied in schools because
I'm the first person
to know somethings in mathematics,

physics, and computer science
that were not known to anybody before me.
My quest
for the world's fastest computer
was like flirting with the infinite.

First Witness of a New Supercomputer

Looking back, my failures
were the price that I paid
for my successes.
Short-term failures are necessary,
but not sufficient conditions,
for long-term successes.

My contribution to computer science
is this:

I was the first witness

to the fundamental shift
that yielded our new understanding
of the world's fastest computer.

The new supercomputer is an ensemble
of up to a billion processors
that each operated its operating system.

I recorded the world's fastest
computer speed.
More importantly, I did so
while solving the most important
and most compute-intensive problems
known to humanity.
And solving them across
a new Internet.
My Internet was a new global network
of the slowest processors
in the world.

I visualized my supercomputer
as outlined and defined
by two-raised-to-power sixteen
off-the-shelf processors
that each had its dedicated memory.
Furthermore, I visualized those processors
as equal distances apart.
Likewise, I visualized those processors
as etched onto the hypersurface
of a globe.
I visualized that globe
as embedded
within a sixteen-dimensional hyperspace.
That global network of processors
is called the Philip Emeagwali Internet.

Not only that,
I fulfilled my part of the tacit requirement
that every scientist—from Einstein
to Emeagwali—who contributed to science
must share his or her new knowledge

on YouTube.

How I Want to Be Remembered

In an email, a fourteen-year-old
writing an essay
on famous scientists and their discoveries
asked me to describe
how I want to be remembered.

As an aside, ninety-five percent
of my supercomputer research notebooks
that began on June 20, 1974,
in Corvallis, Oregon, USA,
are unpublished.
But they should be published
and remembered.
I want my unpublished writings,
handwritten notes, unpublished lectures,
and conversations
to be digitized, duplicated, and archived

in the USA.
They should be made public in Nigeria
on my 200th anniversary,
or on August 23, of the year
twenty-one fifty-four [2154].

I want to be remembered
for discovering how to map
the complex problems of physics across
the millions of processors
that power the world's most powerful
computers.

I want to be remembered for discovering
how to solve mathematical problems
that will be otherwise unsolvable,
both on the Earth and in the heavens.

Thank you.

I'm Philip Emeagwali.

Further Listening and Rankings

Search and listen to Philip Emeagwali in

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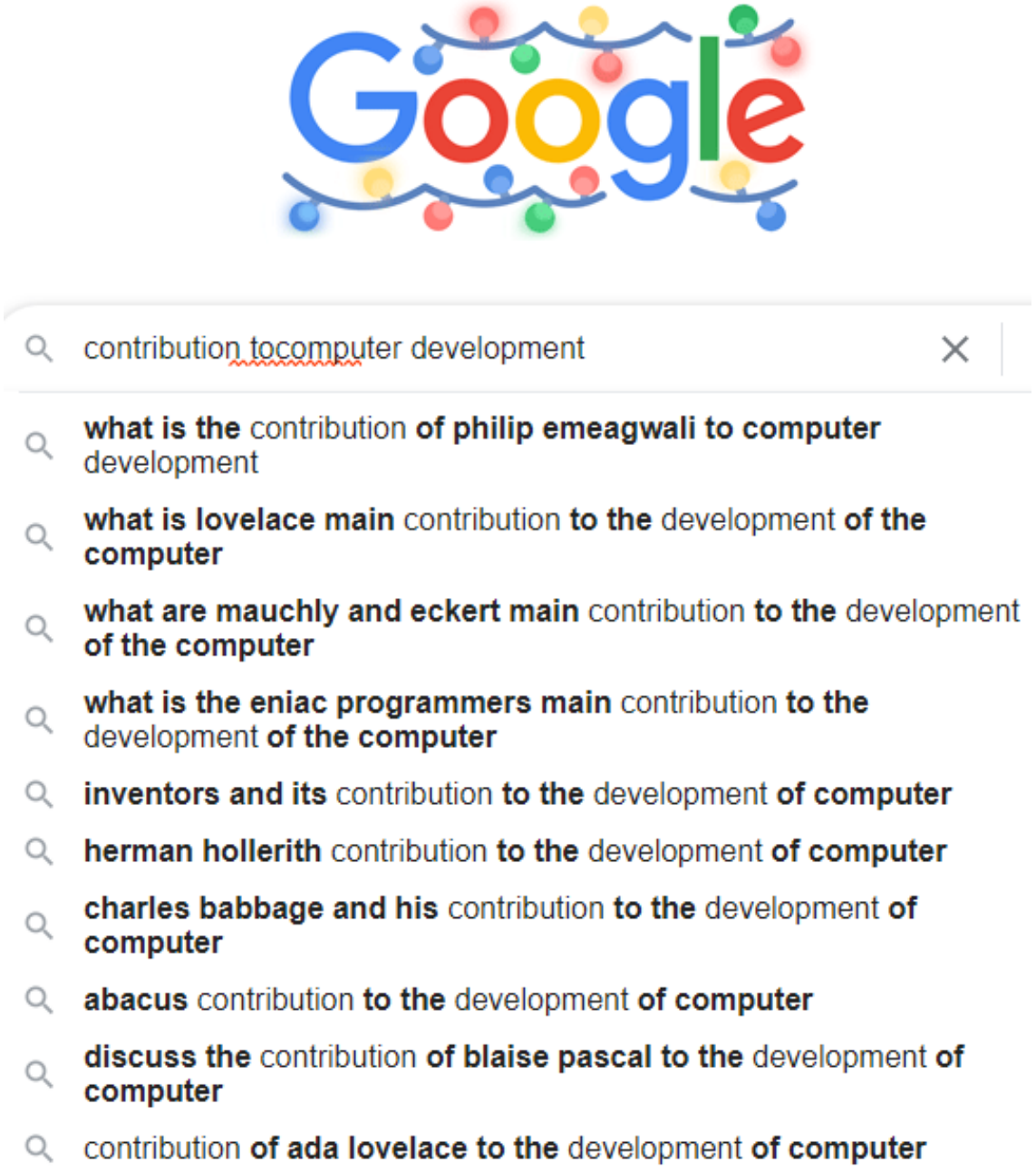

Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).

Philip Emeagwali
info@emeagwali.com 202-203-8724

My Account of the Bloodiest Battle Scenes in African Warfare

Philip Emeagwali

The Reader's Digest **described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.**

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. ***CNN*** **called him "A Father of the Internet."** ***House Beautiful*** **magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000, then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."**

Watch the video at:
https://youtu.be/8uLUKL7Ph8M

Transcript of Philip Emeagwali lecture 210928-2of4

Thank you.

I'm Philip Emeagwali

- # Why I Left Nigeria for the USA

My Untold Story of Why I Left Nigeria

I'm often asked to explain
why I left the southeastern region
of Nigeria for Oregon
in the Pacific northwest region
of the United States.
I decided to leave Nigeria
six months after its
30-month long war was over.
I left before significant petrodollars
flowed into Nigeria.
I was a Biafran refugee
who dropped out of school
from ages twelve to fifteen.
And dropped out of school again
from ages seventeen to nineteen.

I dropped out to live in refugee camps
of Biafra of the Nigerian Civil War.
One in fifteen Biafrans died
during that 30-month-long war.
More Igbos died in Biafra
than during the era of slave trade.
In the list of the worst genocidal crimes
of the 20th century
that was committed against humanity,
the death of one in fifteen Biafrans
was ranked fifth.

I left Nigeria for the USA
because I wanted to stay afar
from Biafra.

Back in June 1970 and at age fifteen,
in Onitsha, East Central State, Nigeria,
I was confident that my school grades
and scores in the American

Scholastic Aptitude Tests, called SAT,
will guarantee me a scholarship
to the USA.
The scholarship letter
that brought me to Oregon, USA,
was dated September 10, 1973.

So, I had even wanted to leave Onitsha
for Oregon earlier, in May 1973.
I missed the September deadline
and postponed my travel
to mid-December 1973.
Yet, I didn't have a travel passport
until December 28, 1973.
For those reasons, I changed the date
of my visa interview to March 1974.
The U.S. consulate
in Victoria Island, Lagos,
issued me a visa on March 21, 1974,
which I picked up the following afternoon.

Twenty-four hours later,
at three o'clock in the afternoon
of Saturday March 23, 1974,
I was pacing inside
the Ikeja Airport of Lagos, Nigeria.
In 1976, that airport was renamed
the Murtala Muhammed
International Airport.
Two hours later, I had taken a seat
in a Pan Am aircraft
for my first airplane flight.

That flight to the USA
was an overwhelming experience.
Forty-eight hours
after I left our compound
that was adjacent to
Uzoigwe Primary School, Asaba, Nigeria,
I was in 36 Butler Hall, Monmouth, Oregon.
My flight to Portland, Oregon,

included a brief stopover
at the John F. Kennedy airport.

One Day We Had to Run from Africa's Bloodiest Battlefield!

Prior to my first airplane flight,
of March 23, 1974,
from the Ikeja Airport of Nigeria,
the closest I came to an aircraft
was to the Russian-made
MiG-17 jet fighters that strafed Onitsha,
Biafra, with its machine gun fire.
Those Russian military aircrafts
were purchased by the Nigerian Air Force
and flown by foreign mercenary pilots.
The war policy of the Nigerian Air Force
was to bomb first
and ask questions later.

In Biafra, we used bombed out buildings
that were surrounded by rubbles
as our playgrounds.

In the last thirty months of the 1960s,
the Russian-made
Ilyushin IL-28 jet bombers
dropped bombs on hospitals, markets,
and refugee camps in Biafra.
The Russian jet fighters and bombers
flew to Onitsha from the airports
in Benin City and Port Harcourt.
In early 1968, the MiG-17 jet fighters
and the Ilyushin IL-28 jet bombers
frequently raided our refugee camps
in the *Énú Ọnịcha* neighborhood
of Onitsha, Biafra.
In February 1968
and at 14 Mba Road, Onitsha,
I was almost killed

from a hail of machine gun fire
from a MiG-17 jet fighter
that took off from Benin City.
The following month, we fled from Onitsha.
And the house at 14 Mba Road, Onitsha,
that we fled from
was bombed to rubbles.

From the eight-day non-stop
artillery bombardments
of downtown Onitsha,
that began on October 4, 1967,
to the capture of Onitsha
that occurred on March 20, 1968,
half of the residents of *Énú Ọnịcha*
quarters
of Onitsha
were refugees from the Fegge
and Odoakpu quarters
of Onitsha.

During the eight-day, non-stop
artillery bombardments
of Fegge and Odoakpu,
my family of nine fled from our house
at 4B Egbuna-Adazie Street, Odoakpu.
We sought refuge in the house
of my maternal grandfather,
Chieka Balonwu,
at 6C Wilkinson Road, *Énú Ọnịcha.*
On the eighth day, fifteen thousand
heavily-armed Nigerian soldiers
crossed the River Niger to land in Onitsha.
The Nigerian Army captured
downtown Onitsha.
At five o'clock in the morning,
I witnessed Nigerian soldiers
engaging Biafran soldiers
in fierce gun battles
at Metropolitan College.
And fighting to capture

the Obi Okosi Primary School
that was converted
as the Onitsha headquarters
of the Biafran Army,
which was right next to our residence.

Woken up by non-stop,
all-night gun firings, I stepped outside
at four o'clock that morning
of October 12, 1967.
I saw two Biafran soldiers
huddling in my maternal grandmother's
cocoyam yam, behind 6C Wilkinson Road.
My grandmother passed away
nine months earlier
and her farm was untended.
I saw both soldiers removing
their Biafran Army uniform.
And changing into civilian uniform.
Thirty minutes later,

I saw those two Biafran soldiers,
fleeing with refugees along Awka Road.
And towards
Saint Charles Borromeo Hospital
and towards Nkpor.
In mid-October 1967
and in downtown Onitsha,
fifteen thousand soldiers died
within a few days of close combat fighting.
That was the reason,
a thousand Biafran soldiers
changed into civilian clothes
and fled with refugees.
My mother was then twenty-eight years
old. She fled with her seven children
to seek refuge in the house
her mother, *Obam Okudo*, was born.
The Okudo family house
was seven-mile-walk
and at Nkwelle Ogidi.

As we were fleeing from Onitsha
and in the early morning
of the 12th of October 1967,
I witnessed a house-to-house
gun battle.
I saw a Biafran soldier crouched
in a brush that was a stroll away
and at the intersection of
Wilkinson Road
and Metropolitan College.
That Biafran soldier was firing
his automatic Setima rifle
at presumably Nigerian soldiers
who were trying to capture
the Biafran military headquarters.
Four months earlier
and like all schools in Biafra,
Obi Okosi Primary School
and the nearby Metropolitan College

were closed.
Schools were converted
into Biafran military barracks
and refugee camps.

Unknown to us, Biafran refugees,
fifteen thousand Nigerian soldiers,
that took no prisoners at nearby Asaba,
were everywhere in Onitsha.

- Asaba Dance of Death | Nigeria Biafra Civil War

Five days earlier in Asaba,
on October 7, 1967, seven hundred [700]
unarmed male civilians
were gunned down
and buried in mass graves.
Unarmed civilians were gunned down

at Ogbe-Eke Market Square, Asaba,
at Ogbe-Osowa, Asaba,
at Saint Joseph's Catholic Church, Asaba,
at Saint Patrick's College, Asaba,
and at Cable Point, Asaba.

Colonel Murtala Mohammed,
the future President of Nigeria,
was the commanding officer
of the Nigerian soldiers
that gunned down those seven hundred
unarmed civilian men.

After the Dance of Death killing spree,
Asaba was described as a ghost town.
And as a town with women
and no men.

Please allow me to quote

the "*London Observer*"
issue of January 21, 1968.

"The greatest single massacre
occurred in the Ibo town of Asaba,
where 700 Ibo males
were lined up and shot."

That was the reason we fled from
the advancing Nigerian soldiers
during the "First Battle of Onitsha."
On the early morning of October 12, 1967,
and after eight-days of non-stop
artillery bombardments
that originated from the west bank
of the River Niger at Asaba,
fifteen thousand Nigerian soldiers
made a surprise landing.
And for a few days
captured the east bank of the River Niger
at Onitsha.

Throughout the 30-month-war,
the advancing Nigerian Army
outgunned and outmanned
the retreating Biafran Army
by four to one.
Each Nigerian soldier
in that bloody Onitsha battle,
that costs the life of
fifteen thousand soldiers,
was heavily armed to the teeth.
In the ensuing gun fighting
and pandemonium,
of the early morning of October 12, 1967,
we the *Ndi Onicha* refugees
of Umuasele Village,
fled in the opposite direction
and away from downtown Onitsha.
My family began our flight
along Wilkinson Road.
Thirty seconds along Wilkinson Road,

a spent rifle bullet shell
fell a few inches in front of my feet,
proving that Nigerian soldiers
were in our backyards.
We rested for a few days
in Nkwelle Ogidi, before fleeing deeper to
Awka, Biafra,
and in November 1967.

On the 19th of January 1968,
Awka was captured by Nigerian soldiers.
We barely escaped.
My family fled from Awka
and sought refuge
in my paternal uncle's house
at 14 Mba Road, *Énú Ọnịcha.*

Back in October 1967, in Onitsha, Biafra,
we were fleeing from
the heavy artillery bombardments

that were originating from
the West Bank of the River Niger at Asaba.
Those artillery bombardments
drove the refugees
as well as some soldiers
out of downtown Onitsha.
The Nigerian artillery bombardments
quote, unquote "softened" Onitsha
for their follow-up man-to-man
military offensive that began on
October 12, 1967.
On the latter date, dare-devil
Colonel Murtala Muhammed
led a terrifying amphibious assault
of a Nigerian ten-boat armada
that ferried fifteen thousand
well-armed soldiers
across the River Niger,
and from Asaba to Onitsha.
After eight days of non-stop

artillery shelling,
those fifteen thousand Nigerian soldiers
fiercely engaged poorly-armed
and fewer Biafran soldiers.
The fighting was house-to-house
and lasted from October 4th through 12th,
1967.
Those artillery bombardments
of Onitsha
were executed under the guidance
of the future president of Nigeria,
Colonel Murtala Muhammed.
The portrait of Murtala Muhammed
is on the Nigerian twenty naira currency.
He's the namesake of Nigeria's
Murtala Muhammed International Airport.

The aircraft bombing raids of Onitsha
were at their peak
in the few days before March 20, 1968,

the day the city was captured.
Egyptian pilots flew the Ilyushin IL-28
jet bombers.
And pilots of European ancestry
flew the MiG-17F jet fighters.
The MiG-17F was flown by
sixteen foreign mercenaries, such as
the former UK's Royal Air Force pilot
John Palliser
and South African RAF trained pilot
Ares Klootwyk and Briton Paul Martin.
As a British mercenary pilot,
Mike Thompsett, was extravagantly paid
one thousand British pounds per month.
That was almost one thousand times
the salary of a Nigerian soldier.
In February 1968, the 36-feet-long
MiG-17 jet fighter
was routinely flown past
our temporary residence

at 14 Mba Road, Onitsha, Biafra.
The MiG-17 was flown by the
mercenary pilot Mike Thompsett.
MiG-17 was a high-subsonic aircraft
that was first flown in 1950.
Throughout that 30-month-long war
which ended on January 15, 1970,
the Biafra Army
did not possess anti-aircraft missiles
or Air Defense Systems.
But children hear better than adults.
And warned us when the MiG-17
was three miles away.
Children not dogs,
heard the jet engine whines
of the MiG-17.
Children alerted the adults
whenever the Nigerian jet fighter or
bomber
that departs from Benin City

is flying from downtown Onitsha
to uptown Onitsha.
Those alarms from children
gave us time to scramble into
our underground bunkers.
And do so before the MiG-17F jet fighter
arrived in our neighborhood.
We sought refuge inside an
underground bunker
that was besides the house
of Uncle John Emeagwali
at 14 Mba Road, Onitsha.
That house was destroyed
during the Nigerian artillery
bombardments
that were aimed
to drive the Biafran soldiers away.
Those artillery bombardments
made it easier for the Nigerian Army
to capture Onitsha

and overran the commercial city
by the early morning of March 21, 1968.
About four hours earlier,
that house—at 14 Mba Road—was razed
to the ground
by the Nigerian artillery bombardments
that were fired from Abagana to Onitsha.
My family of nine narrowly escaped death.
We escaped to Oba (Biafra)
and from a soon-to-be-bombed house.
And did so in the late evening of
March 20, 1968.
That night, we were among
the ten thousand Onitsha refugees
that slept at the
Merchants of Light School, Oba, Biafra.
At about four o'clock in the morning,
there was a huge influx of refugees
who alerted us of the heavy fighting
in Onitsha.

Fearing for their lives, all the refugees
that camped outdoors overnight
at the Merchants of Light School,
took flight to Nnewi, Nnobi,
and Awka-Etiti.

So we fled from 14 Mba Road, Onitsha,
and did so only four hours before
the Nigerian soldiers began to
heavily bombard and enter
into the city of Onitsha.

- Surviving a MiG-17F Jet Fighter That Shot At Me

The MiG-17F jet fighters
that bombed Onitsha were marked
Nigerian Air Force NAF 623 or 625.
That jet fighter had a top speed of

711 miles per hour
and a range of 510 miles.
The NAF 625 takes off from Benin City.
After Port Harcourt was captured,
it took off from that city.

One of the bloodiest fighting
of the Nigerian Civil War
lasted two months, two weeks,
and two days.
That heavy casualty fighting
was from March 8, 1968
through May 24, 1968.
The Nigerian Army was victorious,
and finally, captured the important city
of Port Harcourt.
My ancestral hometown of Onitsha, Biafra,
was captured two months earlier
and on March 20, 1968.

On July 19, 1969,
and after an extended air raid within Biafra,
that MiG-17F that shot at me
and did so while I was tending
my small garden at 14 Mba Road, Onitsha,
ran out of fuel
and crashed 200 yards short
of its runway in Port Harcourt.
The only casualty was its only occupant,
the British mercenary RAF pilot,
named Mike Thompsett, who shot at me,
sixteen months earlier
at 14 Mba Road, Onitsha.

As a souvenir, I kept the hot 23 x 115 mm
shell casing
from the NR-23 cannon
that the MiG-17F jet fighter
fired at me.
That big jet fighter shell casing

landed one foot beside my feet.
That shell casing was very hot
when I first picked it up.

Recollections from Fred Merryfield, a Captured World War One Pilot

Fast forward seven years from 1968
and from Onitsha, Biafra,
to Corvallis, Oregon, USA,
I was living with a former pilot
named Fred Merryfield.
Fred co-founded
the engineering firm CH2M, back in 1946.
Nearly six decades before
I met Fred Merryfield,
he was also a Royal Air Force pilot
who was shot down
in the first World War.

Merryfield suffered severe injuries
that made it impossible
for him to father children.

His company, CH2M,
now employs 20,000 persons
and has a revenue
of five billion dollars a year.
So, Fred Merryfield
was a man of means
and wisdom.
I lived with the British-born
Fred Merryfield
and his also British-born wife, Anne,
from late 1975 to early 1976.
They had no children.
Anne was thirty-one years younger
than Fred Merryfield.
Three of us lived in their beautiful mansion
at 2540 SW Whiteside Drive,

Corvallis, Oregon.

4 Early Life of Philip Emeagwali

Travel Books that Influenced Philip Emeagwali

I was asked what books inspired me
to travel to the USA.
At age nine, I read what my father read.
My father subscribed to
two Nigerian newspapers,
the *West African Pilot*
and the *Daily Times.*
He also subscribed to
two American magazines,
the *Reader's Digest*
and the *Rosicrucian Digest*.
As an aside, the *Rosicrucian Digest*
describes
Sir Isaac Newton as a mystic

and an alchemist,
just as I've been labelled
a member of the *Illuminati*,
a secret society of celebrities
that use their fame, wealth, and power
to control the world.

In mid-1964 and at age nine
in Agbor, Midwest Region, Nigeria,
my father bought for me the novel
"*Gulliver's Travels*."

It was subtitled:
"Travels into Several Remote Nations
of the World."

"*Gulliver's Travels*"
was written by Jonathan Swift.

In late 1964, I read a second novel
"The Pilgrim's Progress."

It was subtitled:
"From This World,
to That Which Is to Come."

"*The Pilgrim's Progress*"
was published in the year 1678.
And was written by John Bunyan.
At one time,
"*The Pilgrim's Progress*"
was second only to the Bible
in popularity.
"*The Pilgrim's Progress*"
was the first novel to be written
in the English language.

In early 1966
and in Saint George's Grammar School,
Obinomba,
Midwest Region, Nigeria,
I read the novel called "Treasure Island"
that was written by

Robert Louis Stevenson.
Looking back to my formative years,
my literary and scientific role models
were from far away England,
not from Nigeria
that was my country of birth.

Saint John's Primary School, Agbor

My interest in fast calculations
began at age nine
in January 1964, in Agbor, Nigeria.
The fastest calculations that I did
was solving
one hundred arithmetic problems
in an hour.
I practiced fast calculations
every weekday evening
and in the living room of our house

that was along Gbenoba Road, Agbor.
In 1964, I was in Class Five
of Saint John's Primary School, Agbor.
As a ten-year-old, my goal
was to score the highest
in the mid-1965 Nigerian
common entrance examination.
And, hopefully, enroll
in King's College, Lagos.
Or in Saint Gregory's College, Lagos.

That entrance exam
was the Nigerian equivalent,
for ten-year-olds,
of the American Scholastic Aptitude Test,
called SAT.
In December 1965, I earned my
Standard Six Certificate,
called the First School Leaving Certificate,
from Saint John's Primary School,

in Boji-Boji, Agbor.

Saint George's College, Obinomba

My entrance examinations
of mid-1965 Nigeria
were for the January 1966 entries
into King's College, Lagos;
Christ the King College, Onitsha;
and Saint Patrick's College, Asaba.
Nigeria followed the British naming system
which used the word "college"
to describe what Americans call
middle and high schools,
or 7th through 12th grades.

To my father's surprise,
I was not admitted into
King's College, in faraway Lagos.

Or into any academically rigorous college
that he ranked as
top five in Nigeria.
Towards late 1965, I was hurriedly admitted
into Saint George's College, Obinomba.
The school was an hour's drive away
from Agbor.
I enrolled in Saint George's
in late January 1966
and a few days after the military coup
in Nigeria.
Fifteen months later, the counter coup
and civil uprisings
forced me to withdraw from
Saint George's College.

The school was a new
Catholic boarding school
that was competently managed
by an Irish priest named
Thomas Brendan Kennedy
who was born in Cork, Ireland.

Saint George was the 3rd century
patron saint of England.
And a Roman soldier and warrior-saint
who was decapitated.

- School Named After Famous Scientists

Post-colonial African schools
are named
after African-born heroes, such as
Cheikh Anta Diop
and Obafemi Awolowo universities.
Africans are learning
from the French people
who wear their history of science
on their sleeves.
Dozens of streets in Paris, France,
are named after French scientists
who contributed to science.
Boulevard Louis Pasteur
was named after the 19th century biologist

who discovered pasteurization,
microbial fermentation,
and the principles of vaccination.

On September 30, 2010,
I had a day-long urban hike
through the streets of Paris, France.
I learned that nearly one hundred Parisian
streets, boulevards,
and squares
were named after French mathematicians.
I'm a 21st century mathematician
who is the subject of biography reports
that are titled "famous mathematicians
and their contributions."
I'm studied alongside mathematicians
like Pythagoras, Blaise Pascal,
Isaac Newton, and Albert Einstein.
For me, it was a surreal experience
to stroll across streets named after
French mathematicians.
And realize that in a thousand years

a mathematician will be driving across
"Philip Emeagwali Road"
in Nigeria or USA.

Catholic Influences on Philip Emeagwali

At ages eleven and twelve,
I was an altar boy who helped the priest
during a Catholic service.
I was trained as an altar boy
by a Catholic priest,
named Thomas Brendan Kennedy.
On Sunday mornings,
I travelled with Reverend Kennedy.
We travelled from Saint George's College,
Obinomba,
to small Nigerian villages, such as
Obiaruku, Umutu, Abavo, and Abraka.

From late January 1966

through late April 1967,
I sang in the Catholic church choir
of the small villages named
Obinomba and Obiaruku.
We sang Gregorian Chants,
the traditional Catholic music
in Latin texts.
My favorite was
Dies Irae, Dies Illa.

As an eleven-year-old altar-boy
in the Catholic church,
Thomas Kennedy was my role model
and I considered becoming a priest.

One Day We Had to Run!

At age twelve and in late April 1967,
my mother suddenly showed
up in Saint George's College, Obinomba.
I knew she came to take me away because
the Igbos living outside Igbo land

were fleeing back to Igbo land.
Talks of a bloody civil war were in the air.
I fled, with my mother,
from Obinomba to our residence
at the Nurses' Quarters, General Hospital,
Agbor.
The following day, my family fled to
4B Egbuna-Adazie Street,
Odoakpu Quarters, Onitsha.

On October 4, 1967, the Nigerian Army
at the west bank of the River Niger
began eight days of continuous shelling
of the Fegge and Odoakpu Quarters
of Onitsha.
That shelling caused all the residents
of downtown Onitsha to flee.
Over the next twenty-seven months,
my family fled through eight refugee camps
in Ogidi, Awka, *Énú Ọnịcha*, Oba, Nnewi,
Awka-Etiti, Ndoni, and Fegge (Onitsha).

After the War Was Over

In April 1970 and three months
after the Nigerian Civil War was over,
I found it awkward and demoralizing
to return to Saint George's College,
Obinomba.
And re-enroll in Class Two
and be three years behind
my former classmates
who were then in Class Five.
The Nigerian Civil War
forced me to repeat Class Two
for the four years
that were inclusive of January 1967
through December 1970.
I did not return because
it was humiliating
to be three years behind
my former classmates

at Saint George's College, Obinomba.

Fast forward nineteen years,
I was in the news headlines,
for my 1989 supercomputer discovery.
The Old Boys, or alumni society,
of Saint George's College, Obinomba,
sent their congratulations.
Because I didn't return to Obinomba,
after the war was over
they presumed
that I was one of the one million Biafrans
who were starved to death
in refugee camps
or who were killed
in my ancestral hometown of Onitsha
that became the bloodiest battlefield
in the history of African wars.
When the Nigerian Civil War ended,
on January 15, 1970,
and after thirty months of fighting,

one in fifteen Biafrans had died!

Christ the King College, Onitsha

I decided not to be humiliated
by spending four years
at the eighth grade
of Saint George's College, Obinomba.
Instead, I enrolled in mid-1970
as a new student
in Christ the King College, Onitsha,
called CKC.
However, I didn't finish at CKC.
In March 1972,
I left Christ the King College
and after a year and a half,
or after completing the American
equivalent of the ninth grade.

- ## How I Won a Scholarship to America

One and a half years
after I left Christ the King College,
I won a scholarship to the United States.
My scholarship letter was dated
September 10, 1973.
That scholarship changed my direction,
from Nigeria to USA.
About ten days later, I was in Lagos
for the first time.

To put my sense of accomplishment
in perspective,
after the brutal 30-month-long war
was over
and in the early 1970s,
I could not name
an eighteen-year-old in Igbo land
that won an academic-based scholarship

to the USA. I qualified myself
to win a scholarship to the USA.
I was an independent scholar
who returned from Ibuzor,
Midwest State, to challenge
the General Certificate of Education
examinations
of the University of London.
It was an entrance examination
to the University of London
that, in reality, became
my high school diploma.
I never earned
the standard secondary school diploma,
called the West African School Certificate.
The reason was that only those registered
in a secondary school
can register for the West African
School Certificate examinations.

My Struggles as a Drop-Out Student

I left Christ the King College, Onitsha,
in March 1972,
to study alone in Ibuzor, Nigeria,
and do so until late October 1972.
Ironically, I earned the Advanced Level
General Certificate of Education diploma
that was dated November 1972
and earned it from
the West African Examination Council.
I earned it in both mathematics
and physics.
Furthermore, I earned
the Advanced Level diploma
before I earned
the Ordinary Level diploma
that was dated January 1973
and issued by the University of London.
The Advanced Level diploma
was two years of study

ahead of the Ordinary Level diploma.
So, I was two years ahead
of my former classmates,
in the extremely competitive
Christ the King College, Onitsha.

University of London in 1973

In early 1973, I was determined
to leave Nigeria.
But I didn't have a Nigerian mentor
or a contact in the USA.
My calling cards to American schools
were my test scores
from the University of London's
entrance examination.
And from the American TOEFL
(or Test of English as a Foreign Language),
American SAT (or Scholastic Aptitude Test)
and Achievement tests.
My strengths were in mathematics

and physics.
I had only one shilling
which I spent to buy postage
to only one American school,
in Monmouth, Oregon.
Yet, I expected to overcome
the one in a million odds
and win a scholarship
to Oregon, USA.
My scholarship letter
that was dated September 10, 1973,
was sent from Monmouth, Oregon, USA,
to my address in Asaba, Nigeria.
In 1973, I was living at
6C Wilkinson Road, Onitsha.
But it wasn't a reliable postal address
for receiving a scholarship letter
from the USA.
For those reasons, I received my letters
from the USA
in care of James Emeagwali, my father,
then working as a nursing superintendent

at the General Hospital, Asaba.
So my letters from the USA
were sent to me at
the General Hospital, Asaba, even though
I was never hospitalized in Nigeria.

Getting a Student Visa to USA

For the six months
following September 21, 1973,
I made several trips
from near the General Hospital, Asaba,
to the post office in Onitsha.
I came to Onitsha
to mail important letters,
such as my scholarship acceptance letter,
to the USA.
I made that four-hour trek because
I didn't have faith
in the post office in Asaba.
Furthermore, I made trips
to the Student Advisory Committee

of the East Central State
Ministry of Education, Enugu.
I journeyed to Enugu
to get a clearance letter
that asserted that
my proposed field of study
was not available in Nigeria.
That clearance letter was my pretext
to study in the USA, instead of in Nigeria.
After receiving my clearance letter,
I travelled to
the Nigerian passport office
at 27 Kakawa Street, Lagos.
The Chief Passport Officer in Lagos
had a reputation
as the most corrupt man in Nigeria.
I had my F-1 visa interview
on March 20, 1974.
I was interviewed by Mr. Glasl,
the Consular Officer
at the U.S. Embassy, Lagos.

After a six-month delay
in getting my Nigerian passport
and my American F-1 "student" visa,
I left my hometowns
of Asaba and Onitsha [Nigeria]
for my new residence
at 36 Butler Hall, Monmouth, Oregon.

My Last Day in Nigeria

On the early morning of Saturday,
March 23, 1974, when I left Onitsha
via the Midwest Line Bus,
Abuja, the future capital of Nigeria
wasn't in my vocabulary.
In 1974, Abuja wasn't on the map of Nigeria.
Half a century later,
I have yet to visit Abuja.
I have never visited Northern Nigeria.

Thank you. I'm Philip Emeagwali

Further Listening and Rankings

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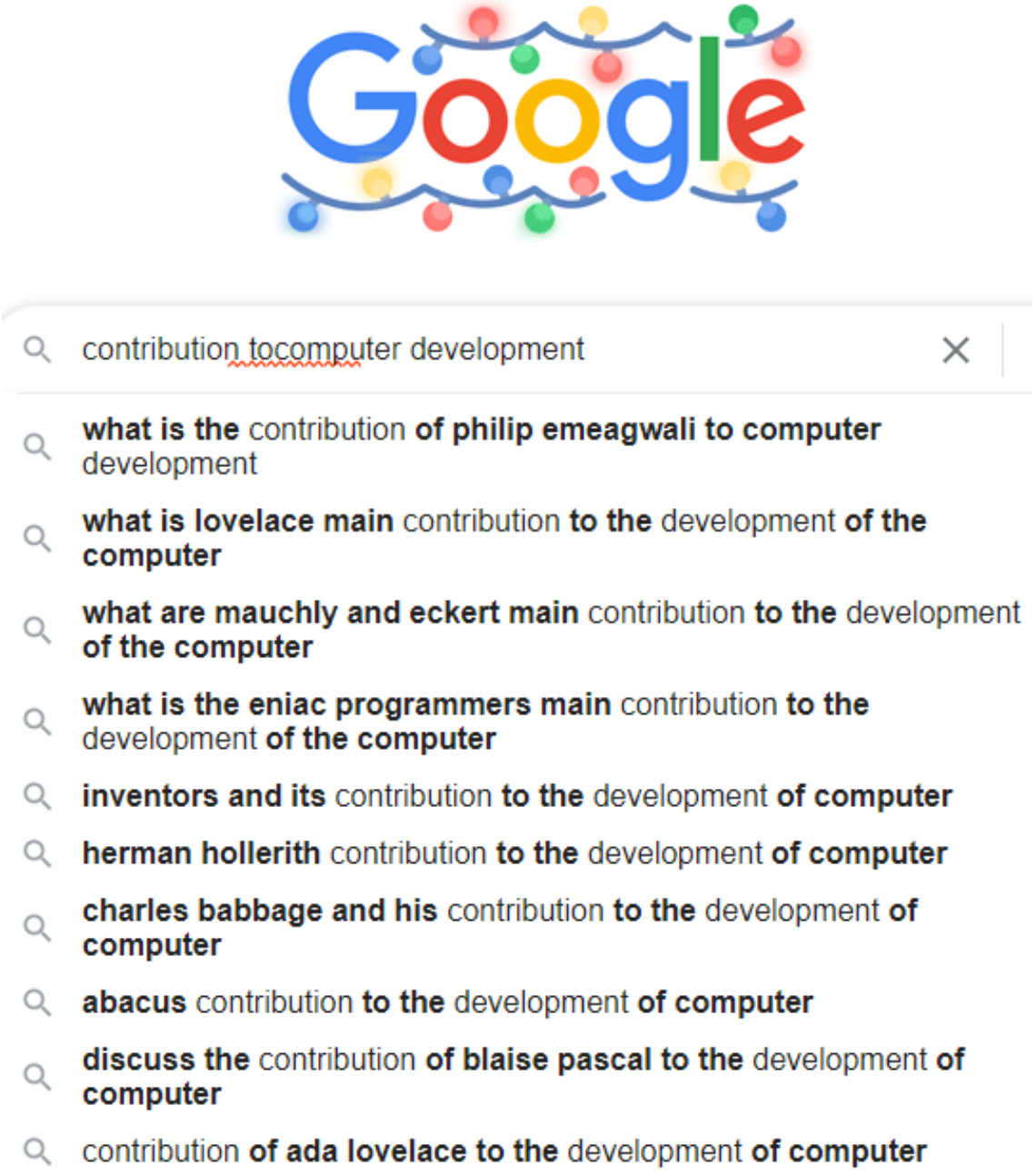


Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).

Philip Emeagwali
info@emeagwali.com 202-203-8724

8 Why I Left Nigeria for the USA

Philip Emeagwali

The Reader's Digest **described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.**

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. ***CNN*** **called him "A Father of the Internet."** ***House Beautiful*** **magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000, then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."**

Watch the video at:
https://youtu.be/r8M_5By8QfQ

Transcript of Philip Emeagwali lecture 210928-3of4

Thank you.

I'm Philip Emeagwali

▪ How I Came to the USA in March 1974

My First Airplane Flight

My Last Night as a Nigerian

"Who is Philip Emeagwali?

And why is he in the USA?"

Thursday, March 21, 1974,
was an important date in my life.
The previous night,
I slept on a thin mat
on the bare concrete floor
of a tiny room in the backyard
of 49 Okesuna Street, Lagos.
I came to the U.S. Embassy
in Victoria Island, Lagos,
to pick up my travel passport
that was stamped with an

F-1 "student" visa
that was approved
twenty-four hours earlier.
After picking up my F-1 "student" visa,
I took a taxi that was a five-passenger
Peugeot 404 Sedan
and travelled from
Lagos Motor Park
to Asaba main market.
From three o'clock in the morning,
I made the perilous, lengthy trek
to my parent's house
that was along Nnebisi Road.
Their compound, in Asaba,
was next to that of a Catholic priest
named Patrick Ugboko.
Their rental two-bedroom apartment
was a short stroll past
Asaba Girls Grammar School
(called AGGS)
and adjacent to Uzoigwe Primary School
that was near Saint Patrick's College

and General Hospital, Asaba.
That night, I slept for only two hours.
Then I spent the next twelve hours
dashing around to get a traveler's check
of 134 dollars
from the Barclay's Bank
that was near Bright Street, Onitsha.
Then, I returned library books
to Onitsha Public Library.
Finally, I hugged my friends and relatives
at 6 Wilkinson Road, Onitsha.
That evening I returned to Asaba
to spend my last night
with my parents and siblings.
After late-night conversations
with my parents
and a two-hour sleep,
I woke up at five o'clock in the morning
of Saturday, March 23, 1974.
My flight to Portland, Oregon, USA,
required that I arrive at
the Ikeja Airport of Lagos.

And be there in ten hours,
after I woke up.
I was then nineteen years old
and had never seen an airplane
that was parked on the ground.

From Biafra to USA

My first thought of studying in the USA
began four years earlier,
in mid-1970 at age fifteen
when I was living along Venn Road,
Onitsha, Nigeria.
After the Nigerian Civil War ended
on January 15, 1970,
the economy of Onitsha
was in total shambles.
And coming to the USA
in the early 1970s
was a far-fetched dream

that evoked laughter
whenever I mentioned it.
Their laughter stopped
after I received
a scholarship from Monmouth, Oregon.
That scholarship took effect
from September 10, 1973.

Around seven-thirty [7:30]
in the morning
of March 23, 1974, I said good-bye
to my parents and to the five
of my seven siblings
that were still at home.
I also said good-byes
to tenants in our compound.
At about five o'clock that evening,
I boarded a Pan American aircraft
for my 36-hour flight
from the Ikeja Airport of Nigeria
to the airport in Portland, Oregon.
My Lagos-Portland flight was 36-hours

long because it included four stopovers in
Monrovia (Liberia), Dakar (Senegal),
and New York City, and Chicago.
In early 1974, only a few Africans
travelled to the USA.
For that reason, my Pan Am flight
originated from Addis Ababa, Ethiopia.
To fill up the airline seats,
it picked up passengers
from one or two stopovers,
in perhaps Kinshasa, Congo.
And then pick up about a dozen passengers
in Lagos, Nigeria.
As an aside, Pan Am built
many of the original airports
in West Africa.
In the 1960s and early 1970s,
Pan Am and BOAC, the acronym
for the British Overseas
Airways Corporation—
were the two major airlines
that served Africa.

How I Came to the Oregon, USA

Preparing for the USA

The idea of coming to the USA
came into my mind in mid-1970
at age 15.
One late school day afternoon,
I saw my classmate
at Christ the King College, Onitsha,
Chris Chiedu Okwudili.
Chiedu held a tiny pamphlet
that piqued my interest.
It was a slim college brochure
from MIT, the Massachusetts
Institute of Technology, USA.
That MIT brochure
was where I got the idea
of coming to the USA.
But it seemed far-fetched

at the time and place,
which was about six months
after the Biafran War ended
and the Onitsha economy
was completely ruined.
I expected to come to the USA because
I was considered a top student, and,
therefore, assumed that
I will be offered a scholarship to MIT
or Harvard.
Fast forward to September 10, 1973,
I got a scholarship to Oregon, USA,
and, for that reason,
I never applied to MIT or Harvard.

In late May 1973,
and three months before
I got a scholarship to the USA,
we had an extended family meeting
at 6 Wilkinson Road, Onitsha.
That was the compound
of my maternal grandfather,

Chieka Balonwu.
That meeting was chaired by
my maternal uncle (Orofo Balonwu)
and maternal aunt
(Nkemdilim Azuokwu).
The purpose of that meeting
was to persuade me to give up my
unrealistic ambition
to study in the USA.
In May 1973, I was eighteen years old
and unemployed.
If I was gainfully employed in 1973,
my lifetime salary
couldn't even pay for my first year
of study in the USA.
So to my uncle and aunt
and everyone else,
traveling from Onitsha (Nigeria)
to the USA
and raising the travel, tuition,
and boarding funds
to live and study in America

for four years
and doing them in May 1973
seemed as far-fetched
as Nigeria aiming to send
a Nigerian astronaut to the Moon.
For those reasons,
my uncle and aunt cautioned me
to be realistic in my ambitions
and to, instead, lower my expectations.
And continue my studies
in Nigerian universities
then only admitting
about a thousand students a year
into campuses in the six cities of Lagos,
Ibadan, Ife, Zaria, Benin City,
and Nsukka. In contrast,
the USA has five thousand universities.

My USA Visa Requirements

By mid-September 1973,
I was jobless, restless,
and killing time at 6 Wilkinson Road,
Onitsha, that was located a short stroll
from the Metropolitan College.
If I am not in Onitsha, I might hang around
the neighbourhood
of Saint Patrick's College (Asaba).
Or be at 41 Bishop Anyogu Road, Enugu.
On my nineteenth birthday,
it seemed my chances of coming
to the USA had all but vanished.
My biggest obstacle
to coming to the USA was this:

I had to receive an F-1 "student" visa
from the Consulate General of the USA
in Lagos (Nigeria).

A student visa to the USA
was extremely difficult to get.
Legend has it that

only one F-1 "student" visa
was issued in a day, in 1973,
and at the USA Embassy
in Lagos (Nigeria).
The minor requirements
for an F-1 "student" visa to the USA
included the Nigerian passport
that was then very difficult
and very expensive to obtain.
I paid the equivalent of two years' salary
to the Nigerian Chief Passport Officer
at 27 Kakawa Street, Lagos.
Officially, my payment was a refundable
"repatriation fee."
But my repatriation fee
went into the personal bank account
of the Nigerian Chief Passport Officer.
Other minor student visa requirements
were passport-sized photos,
immunization records, and medical
reports.
Until late September 1973,

I couldn't even pay for
the passport-sized photos
that were required by
the U.S. Consulate General.
In the 1973
post-Nigerian Civil War economy,
it seemed unrealistic
that I could pay in advance
the required one year's
tuition and board
and then provide
my personal bank accounts
with enough money
to pay for four years' tuition and board
in the USA.
And do them before age nineteen
and at a time
I couldn't afford the bus fare
to travel to the Nigerian passport office
that was at 27 Kakawa Street,
Off Broad Street,
behind Bookshop House,

Lagos Island, Lagos.

- Why I Came to Oregon, USA

My First Job as a High School Teacher in Nigeria

By late May 1973, I was relenting
on my ambition to study in the USA.
I was unemployed.
In May 1973, three teachers
at Asaba Girls Grammar School
told me that I was qualified
to teach mathematics and physics
in their school.
In my search for a job,
I traveled seventy miles away
from Onitsha
to the Ministry of Education
in Enugu, East Central State, Nigeria.

University of London

To apply for a job
in the Nigeria of 1973, a formal resume,
completed job application form,
letters of reference,
and background investigations
weren't required.
In June 1973 and at age eighteen,
I was offered a job to teach
mathematics and physics
in an all-girls secondary school
in *Umudioka*, East Central State, Nigeria.
I got the teaching position
by merely presenting
my diplomas,
both the General Certificate of Education
at the Ordinary and Advanced Levels.
I received the first diploma

from the University of London
in January 1973
and after five external examinations
in as many subjects
that I took in Onitsha.
I received the second diploma
called the General Certificate of Education
at the Advanced Level.
I received that Advanced Level diploma
from the West African
Examination Council in November 1972
and by external examinations
that I took in Onitsha. Ironically,
I was awarded
the Advanced Level diploma
before the Ordinary Level diploma.
That was as unusual as earning
a master's degree
before the bachelor's degree.

Why I Was a Self-Taught High School Teacher

In March 1972,
I was an independent student
living behind and between
the General Hospital
and the Catholic church
at Ibuzor, Midwest State, Nigeria.
I studied alone and hard.
I was confident.
Not only that, I also took my examinations
in reverse order.

Fast-forward a year to May 1973,
I was unemployed and socializing
with three secondary school teachers
that were living in our compound
in Asaba, Nigeria.
Asaba is the sister city to Onitsha.
Asaba was on the western edge

of the River Niger.
The three secondary school teachers
that I was socializing with
told me I was qualified
to teach mathematics and physics
in their school.
In fact, I was surprised to learn that,
even though I was only
eighteen years old,
that I was just as qualified
as they were.
With that information,
I saw myself in a new and positive light.
And encouraged by their
recommendations,
I traveled to the Ministry of Education,
in Enugu, East Central State.

To teach in Asaba,
I had to apply in person
in the Ministry of Education,
in Benin City, the capital

of Midwest state.
East Central State was my first choice
because I had made several trips
to Enugu.
And I was always welcomed
to stay with my mother's cousin,
Mrs. Eunice Ndulue,
who lived upstairs at
41 Bishop Anyogu Street, Enugu.
In late May 1973,
I applied to teach mathematics
and physics in any secondary school
in East Central Staten, Nigeria.
A week after I applied,
the Ministry of Education in Enugu
posted me to teach mathematics
and physics
at an all-girl's secondary school
in Umudioka, East Central State.
That girl's school
was nine miles outside Onitsha

and seems to have been renamed,
to perhaps,
Saint Kizito Girls Secondary School.

I was eighteen years old
when I presented myself
to the principal and vice-principal
of the girl's secondary school
in Umudioka. I introduced myself
as the school's newest teacher
for mathematics and physics.
The girls were pleased to see me.
But the principal wasn't pleased that
an 18-year-old boy
was sent to teach 18-year-old girls.
I sensed the female teachers
giving me the cold shoulder.
That was the reason I abandoned
the science teaching position
at the girl's secondary school
in Umudioka.

How I Won a Scholarship to the USA

My rejection as a teacher in Umudioka
left me jobless.
But it gave me the free time
to daydream
about coming to the USA.
I traveled to Enugu to read
and research
in the one-room British Council Library
and in the much larger
East Central State Library.
I was one of the few dozen patrons
that were given borrowing privileges
at the Onitsha Public Library
and at the British Council Library
in Enugu.
In late May 1973,
I made a significant discovery

inside the reading room
of Saint Patrick's College, Asaba, Nigeria.
That reading room
had only one hefty book and one desk.
The book was called
"The College Blue Book."
That 1970 edition
of The College Blue Book
was a comprehensive listing
of all the two thousand universities
in the USA.
Fifty years later, The College Blue Book
expanded to become
a comprehensive guide
to 12,000 institutions.
The College Blue Book
featured extensive information
on admission requirements, tuition fees,
scholarships for U.S. citizens,
student life, and essential information
that a prospective student

should know.

In late May 1973, I was unemployed
and, therefore, I had the time
to write letters of inquiry
to American schools.
In early 1973, the first person
I knew by name
who was living on the continent of
North America
was a pen-friend, a teenager
named Audrey Freake
who was living in St. John's,
a city on Newfoundland island
off Canada's Atlantic coast.
I lost touch with Audrey Freake
but four and a half decades later,
when I tried to once again
re-establish contact with her,
I learned that a teenager
named Audrey (Marie) Freake
born in 1956

in St. John's, Newfoundland, Canada,
died on July 21, 1974,
in St. John's, Newfoundland,
and died four months after I arrived
in the USA.

In 1973, I preferred to study
in the USA, not in England
or West Germany or Canada.

- A Black in an All-White Town

How It Feels to be Black in White Spaces

First Impressions of the USA

My problem was that, in 1973,
I had no contacts in the USA.
Nor did I know any person
who traveled to the USA.

I couldn't name five Americans
of African descent.
In January 1974, I saw a Black American,
for the first time.
He was a young marine,
guarding the gate
of the U.S. Embassy in Lagos.
In February 1974, I was briefly staying
at 49 Okesuna Street, Lagos.
I came to Lagos, from Onitsha,
to seek an F-1 "student" visa.
I had won a scholarship
to study in Oregon, USA.
As a diversion, my former classmate
in Christ the King College
(Onitsha, East Central State),
named Chude Ukpabi,
and I, went to see the new movie "*Shaft*."
That movie was an eye-opener.
It was the first time I watched the USA
and Black America on a giant screen.

To say that "*Shaft*" impressed me
will be an understatement.

My First Contact in the USA

As a prospective student to the USA,
The College Blue Book
that I discovered
in Saint Patrick's College, Asaba,
provided me the vital information
that I badly needed.

In late May 1973, I had only one shilling,
or twelve pence, in savings.
The postage cost to the USA
was nine pence.
So I had only one shot
at one of the two thousand institutions
in the USA.
Using my intuition on which school

is most likely to award me
a scholarship, I wrote to
Stan Kenyon, a university registrar,
in Monmouth, Oregon, USA.
I had obtained Stan Kenyon's contact
from The College Blue Book
that was the only book
in the only reading room
in Asaba of May 1973.
Because I was unemployed,
I didn't have another nine pence
to write a second letter
to the USA
which will double my chances
of coming to America.
For that financial reasons,
I gave up on applying for
university admission
to the two thousand schools
in the USA.

Living in One of the Whitest States in the USA

As a Black African-born
supercomputer scientist in the U.S.
who conducted his research alone,
my wilderness years
were from June 20, 1974,
in Corvallis, Oregon,
through July 4, 1989,
in Los Alamos, New Mexico.
During my decade and a half
as a supercomputer scientist,
I felt like the rebel scientist
punished and exiled
to the inhabitable region
and the frigid winters
of the Russian Siberia.

Programming the World's Fastest Computer

On the Christmas Day of 1989,
the year I won the highest award
in supercomputing,
I was alone and I programmed
the 65,536,
or the two-raised-to-power sixteen,
slowest processors in the world
and across an Internet
that's a global network of those
processors.
I programmed my sixty-four (64)
binary thousand processors
to solve as many
initial-boundary value problems
in mathematical physics.
I discretized and reduced
each of my problem
to a system of equations

of computational linear algebra.
That was my
mathematical representation
of a physical problem—such as
the problem of foreseeing
the climate change
that can occur within a region
of the atmosphere of the Earth
or the problem of predicting
the sea level rise within a region
of the oceans of the Earth.

Why I Ended My Exile in Supercomputing

On Christmas Day of 1989,
I programmed for sixteen hours.
And I ate only peanut butter sandwiches
and apples for my lunch and dinner.
It was on the thirty-first (31^{st})
of December 1989

that I ended my exile
to the unknown field of knowledge
that was then in the realm of science
fiction.
And now known as
the world's fastest computing.
I ended that exile in 1989
because I won the highest award
in supercomputing
that computer scientists refer to
as the Nobel Prize of Supercomputing.
That was the highest acknowledgement
of a person's contribution
to supercomputing.
For those reasons, I received my first
significant media attention.
I also received the attention of scientists
who rejected my contributions
to the world's fastest computer.
For years, most computer scientists
mocked the technology
of using the world's slowest processors

to attempt the world's fastest computing
and dismissed it
as a tremendous waste
of everybody's time.
Today, the world's fastest computer
is powered by millions of
off-the-shelf processors, instead of
one custom-manufactured processor.
That paradigm shift,
or change in the way
we look at the supercomputer,
is my contribution to computer science.
And computer science textbooks
have been revised
to account for the new definition
of the world's fastest computer.

- A Black Supercomputer Geek in an All-White Town

  - A Retrospective Look at the World's Fastest Computer

During the 1970s and 80s,
my contribution
to parallel supercomputing
—the key technology that powers
the world's fastest computers
—was rejected a dozen times.
If rejection was an Olympic game
I would have won its gold medal.
I began programming
the world's fastest computers
on June 20, 1974.
And began by programming
a scalar supercomputer
that was at 1800 SW Campus Way,
Corvallis, Oregon, USA.
Seven years earlier, that supercomputer

was rated as
the world's fastest computer.
In Corvallis, Oregon, I stood out because,
the Pacific northwest region
was one of the whitest regions
in the U.S.
Hence, Oregonians that never met me
presumed that I was White.

I Did Things Backwards, Sometimes

Often, I did things backwards.
Just like I earned
the General Certificate of Education
at the Advanced Level
before earning that certificate
at the Ordinary Level,
I won a scholarship
to a university in Oregon
and did so six months before

I was admitted into that university.
I applied for admission
when I received a scholarship
from the USA that was
dated September 10, 1973.
That scholarship letter
was my turning point.
After I arrived in the USA,
on March 24, 1974,
I discovered that Stan Kenyon
worked behind the scenes
to get me that scholarship.

A Black in a Nearly All-White Town

In late March 1974,
I was one of only three Nigerians
that were living in the small town
of Monmouth, Oregon.
In 1974, Monmouth

was a strikingly old-fashioned,
tight-knit community
of six thousand persons
that had no resident Black family.
Monmouth had no public transportation,
including a bus service.
Monmouth is within the
Willamette Valley, an area
that has lots of bike trails
winding through covered bridges
and scenic back country roads.
In 1974, it was against the law
to sell alcohol in Monmouth, Oregon.

In Oregon, a question
that I was often asked was this:

"Where are you from?"

"Nigeria, Africa," I answer.

"Why did you choose Monmouth,
instead of New York?"

I learned about Monmouth
in May 1973
and from The College Blue Book.
It was the only book
in the reading room
of Saint Patrick's College, Asaba, Nigeria,
a secondary school that was a short walk
from my residence.
I picked Monmouth, Oregon,
because my intuition told me to start
from a very small town.

A World Without the Fastest Computers

When I began supercomputing,
back on June 20, 1974,
in Corvallis, Oregon, USA,

I did not know anybody
that was interested
in physically executing
the fastest computing in the world.
And doing so across
the slowest processors in the world
and across an Internet
that's a global network
of those processors.
But if they existed elsewhere,
I could count them
on the fingers of one hand.
In 1974, the term
"supercomputer scientist"
was not in
any computer science textbook.
There were no journal articles
on a world's fastest computer
that's powered by a million processors.
No textbooks. No courses.
No research grants. No conferences.

A radical change
on how we look at the supercomputer
occurred on July 4, 1989.
It occurred because
my 65,536 slowest processors
in the world defeated
the fastest computer in the world.
And defeated it
by an overwhelming margin.
And defeated it by solving
the most compute-intensive problems
at the crossroad
where the frontiers of mathematics,
physics, and computing intersect.
Inventing the world's fastest computer
demanded a deep knowledge
of the most complicated mathematics.
That was the precondition
to harnessing millions of processors
at once

and to solving
the most compute-intensive
mathematical physics problems.

I'm the subject of school essays because
I conclusively provided the quote, unquote
"final proof"
that harnessing up to a billion processors
that outline a supercomputer
is a viable path to finding the answers
to some of the biggest questions
at the frontiers of
21st century science and medicine,
such as
deeply understanding how COVID-19
spreads across Nigerian buses
that pack passengers like sardines.
I discovered that
the first supercomputing across
the world's slowest computers

is not science fiction.
My discovery made the news because
I was the first person
to answer the most difficult
mathematical question
arising at the intersection of physics
and computer science.
If just one processor stumbled
all one billion processors
would fall at once.
The world's fastest computation
that I executed on July 4, 1989,
and across the world's slowest processors
was the final proof
that supercomputers should be powered by
up to one billion processors.

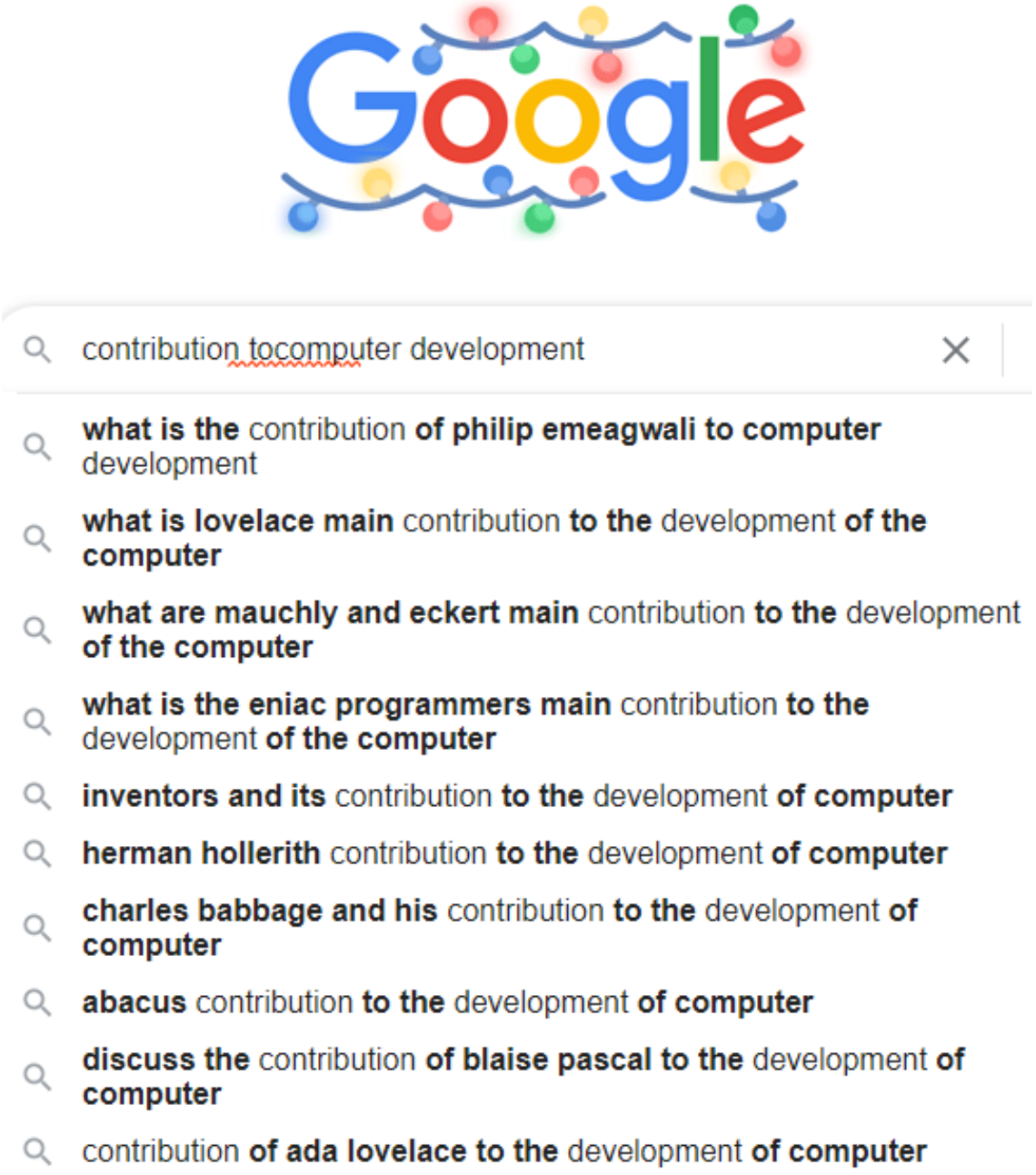
I'm Philip Emeagwali.

Thank you.

Further Listening and Rankings

Search and listen to Philip Emeagwali in

Apple Podcasts
Google Podcasts
Spotify
Audible
YouTube



Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).

Philip Emeagwali
info@emeagwali.com 202-203-8724

9 How I Began Supercomputing in 1974

Philip Emeagwali

The Reader's Digest **described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.**

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. ***CNN*** **called him "A Father of the Internet."** ***House Beautiful*** **magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000, then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."**

Watch the video at: https://youtu.be/ARhYcCoM3pg

Transcript of Philip Emeagwali lecture 210928-4of4-

- 1 Being Black in the White World of Science

It's Not So Black and White: Overcoming Racial Stereotypes

My Leapfrog from Slowest Processing to Fastest Computing

Thank you.

I'm Philip Emeagwali

My quest for the world's fastest computer began on June 20, 1974, in Corvallis, Oregon, USA.
Fifteen years later, I was able to solve the most compute-intensive problem arising in computational mathematics and physics.
In 1989, I was in the news for becoming the first person
to discover how to harness
the world's slowest processors.
And use them to solve
the most compute-intensive problems in the world.
And solve them

at the world's fastest computer speed
ever recorded.
My paramount quest
was to discover the hoped-for
practical how-to knowledge
that could be used to design
the world's fastest computers.
My new knowledge
powers the world's fastest computers
and took them to record-breaking speeds.
And did so with millions of processors
that each had its dedicated memory
but were in constant dialogue
with each other.
Such state-of-the-art supercomputers
are now used to run the highest resolution
global climate models.
Supercomputers are used to gain
a deeper understanding of existential
crises,
such as how ocean waves and pathways
contribute to the Earth's transport

of pollutants, nutrients, and heat.

White Supremacist Groups Discredit Any Black Genius

As a Black inventor,
a few white supremacists
wrongly credited my invention
to some white inventors.
The proof is that those imposters
could not stand before an audience
and deliver an impromptu,
original lecture
explaining how they discovered
the world's fastest computing.
And then post that lecture as a podcast
and YouTube video.

On the other hand, this imposter syndrome
affected some Black attendees

of my scientific lectures.
They had inferiority complex.
And feared that
I wouldn't live up to expectations
as a genius.
My answer is for them to compare
my one thousand podcasts
and YouTube lectures
in mathematics, physics,
and computer science
to those of the likes of Albert Einstein
who are still living.

As a supercomputer scientist
who came of age in the 1970s and 80s,
my biggest obstacle
was to overcome racism, not to solve
the most compute-intensive
mathematical physics problems.
Historically, white supremacists work hard
to discredit and diminish the contributions
of any black genius

that's described as having a higher IQ
than Albert Einstein.

I worked alone because
I wasn't taken seriously,
in the 1970s and 80s,
the decades I made my
breakthrough discovery.
They was an unspoken assumption
among white supremacists
that a Black sub-Saharan African,
lacked the intellect needed
to solve the most intractable problems
in the fields of mathematics, physics,
or computer science.
Today, in their online fora,
White supremacists argue that
sub-Saharan Africa
has not produced a mathematical genius
who possessed the intellect
of Isaac Newton or Albert Einstein.
Their claim of intellectual superiority

was and it remains
the fundamental argument
still used by
online white hate groups.
And used to rationalize
white supremacy and propagate
their myth of Black racial inferiority.

White Supremacists Made Me Famous

Ironically, white supremacists
unintentionally made me famous.
In 1989, I made the news headlines
as a quote, unquote "Black genius"
born in sub-Saharan Africa.
I drew the attention of white supremacists
because I provided an image
of a Black genius that was ranked
alongside
Albert Einstein.

The racial stereotype was that
a black person
can only become famous,
as a boxer like Muhammad Ali
or a singer like Michael Jackson.
In 1975 and in Oregon,
I had early white mentors
and role models, such as
the British-born Fred Merryfield,
then 75-years old
and a retired engineering professor.
Fred Merryfield was a co-founder
of CH2M, an engineering firm
that worked on
the 15.5-mile-long tunnel
of London's sewage system.
And worked on
the Panama Canal extension.
CH2M now employs 20,000 persons
and has a revenue
of five billion dollars a year.
So, Fred Merryfield

was a man of means
and wisdom.
I lived with Fred Merryfield
and his British-born wife, Anne,
in 1975 and 1976.
They had no children.
Anne was thirty-one years younger
than Fred Merryfield.
Three of us lived in their beautiful mansion
at 2540 SW Whiteside Drive,
Corvallis, Oregon.
The dinner guests at The Merryfield's
included the co-inventor
of the transistor,
the British-born William Shockley,
who was controversial
and was ostracized
for promoting high-IQ sperm banks.

Geniuses Own their Inventions

In one thousand YouTube videos,
I lectured only in prose.
That's because I have been supercomputing
for half a century.
Other scientists must lecture
with the aid of PowerPoints.
I lectured on how to solve
the most compute-intensive problems,
such as constructing a high-resolution,
centuries-long climate model,
and solve them across
millions of processors.
I worked alone to solve this problem
because it was unfamiliar territory.
The solutions that I discovered
were not in any computer science textbook.
In 1989, I was in the news because
I was the only person
that could solve

the most compute-intensive problems.
I solved
such mathematical physics problems
across an ensemble of
65,536 processors.
The academic computer scientist
must always copy
the governing system of coupled
partial differential equations
of meteorology.
And must transfer those
abstract and unfamiliar equations
from his textbook
to his PowerPoint slides.
For me, Philip Emeagwali,
I was the triple threat
who was a research mathematician
of the late 1970s
who became a research physicist
of the early 1980s
who became a research
supercomputer scientist

of the mid-1980s
who entered the news headlines,
in 1989,
and became known
for his scientific discovery
that parallel processing
enables computers to be faster
and enables the supercomputer
to be super.
The partial differential equation
and parallel supercomputing
were as much my natural dialects
the way the Igbo language
is my ancestral tongue.
For those reasons,
it should not come as a surprise
when I invented
the nine Emeagwali equations.
Because I invented those equations
I could deliver
my lectures on my contributions
to mathematics, physics,

and computer science and post them
across one thousand podcasts
and YouTube videos.
After fifty years of supercomputing,
I delivered each lecture,
posted on YouTube,
and did so without using
a single PowerPoint slide
as my crunch.

- ## How to Identify a Genius

Solving the most compute-intensive
mathematical physics problem
via the fastest computing
across the slowest processors
is a century-long quest that began in 1922,
as human computing
executed by 64,000 persons.
In 1989 and 1990,
I was in local newspapers
both for reaching the finals

of a citywide tennis tournaments
and for winning the highest award
in supercomputing.
The world's fastest computing
is as competitive as playing a tennis match
against Serena Williams.
As a tennis player, I exploited
my opponent's weaknesses
but respected their strengths.
Tennis taught me many things,
including how to fight
and be mentally and physically stronger.
However, solving
the once-in-a-century problem
arising at the crossroad of mathematics,
physics, and computer science
is rarer and more difficult
than winning the votes as the all-time
greatest tennis player.
Being the first person to discover
how to solve
the most compute-intensive

mathematical physics problems
and solve them across a million
processors
demanded a polymath
who was a triple threat
at the frontiers of knowledge
in mathematics, physics,
and computer science.

The genius makes the typical exceptional.
The genius possesses
the ability to look at an ensemble
of the slowest processors in the world
and deeply understand it
as beyond a new supercomputer
and as a new Internet, in reality.

Genius is the ability
to see what others saw to be a rock
and see it to be a diamond.

Finding the Deepest Oil and Gas in the Bowels of the Slowest Processors

My quest of the 1970s and 80s,
was for the world's fastest computer
that solves the most
compute-intensive problems
in the world
and solves them
with the world's slowest processors.
My new knowledge is used
to find the deepest crude oil
and natural gas
that were buried up to 7.7 miles
below the surface of the Earth.
And to simulate their motions
across one of the 159 producing oil fields in Nigeria.

And across one of the 65,000 oil fields
around the world, that include
the supergiant oil fields
in Abu Dhabi, Brazil, and Mexico.
I was the first person to understand
how to solve
the most compute-intensive
mathematical physics problems.
And solve them across
millions of processors.
In brief, that problem is the system of
nine partial differential equations
which governs
the initial-boundary value problem
that mathematically defines
the motions of the crude oil,
injected water, and natural gas
that were flowing across
a highly anisotropic and heterogeneous
producing oil field.

An oil field, such as the Sakhalin Shelf
in Russia's Far East,
is up to 7.7 miles
(or 12.4 kilometers) deep.
And an oil field
is often the size of a town.
The genius deeply understands
how and where to add
36 new partial derivative terms
that mathematically encoded
the temporal and convective inertial forces.
And to add those new terms
to the forty-five existing
partial derivative terms
that mathematically encoded
the pressure, viscous,
and gravitational forces.
And do so to make that system
of nine partial differential equations
a more accurate representation

of the producing oil field it governs.

The genius can deeply understand
how to harness the slowest processors
in the world
and use them to solve
the most challenging problems in the
world.
The genius can solve
the world's most compute-intensive
problems.
And solve them at the world's fastest
recorded speeds.
And do so when it was considered
impossible to solve them.

The genius is the ordinary person
that found the extraordinary
in the ordinary.

Am I a "Black Genius"?

I'm studied in schools
for my contributions to
computer science.
Just as Albert Einstein is studied
for his contributions to physics.
For that reason, I'm often asked:

"Should Albert Einstein,
be the role model
for Black students?"

To the extent Philip Emeagwali
is accepted as a role model
for white students,
Black students should reciprocate
with Albert Einstein.
Otherwise, my answer is "no."

Albert Einstein can't be
the most inspiring role model
for the Black science student
in the USA
or the Caribbean or Africa.
For the same reason,
Albert Einstein can't be
the most inspiring role model
for the physics student in China.
Presumably, he or she must have read
the racially derogatory remarks
that Albert Einstein
wrote in his travel diaries
during his 1920s lecture tours
through the Far East and Middle East.

During Albert Einstein's
five-and-a-half-month voyage
and lecture tours
through Singapore, Hong Kong, China,
Japan, and Palestine,

Einstein wrote in his diary
that Chinese are inferior to Europeans.

For his xenophobic
and racist commentaries,
Albert Einstein can't be
the most inspiring role model
for all physics students,
especially for students
who read his posthumously published book
titled:

"The Travel Diaries of Albert Einstein."

In an email,
an African-American student
wrote that he received a C-grade
on his essay that was titled:

"Albert Einstein and the Special Relativity."

The following semester,

the same student received
an A-grade
on his essay that was titled:

"Philip Emeagwali
and the Supercomputer."

The reason for this disparity
is that young African-Americans
are inspired
when they see themselves
in my world's fastest computing.

- Where Did We Get the Idea That Only a White Person Can Be a Genius?

How America Perfected the 'Art of Destroying Black Geniuses'

I've often wondered aloud:

Where did we get the idea
that only a white person
can be a genius?

And how did America
perfect the art
of destroying Black geniuses?

My quest for the fastest computer
began in the 1980s.
I applied ten times to program
a supercomputer.
And I was rejected those ten times.
In 1987, I was approved to program
a supercomputer
that was at
the San Diego Supercomputer Center,
in San Diego, California.
That supercomputer account
was revoked

when the administrator discovered
I was Black and African.
As far as I know,
I was the only supercomputer programmer
in the USA
that was dismissed and banned
from programming supercomputers
that were owned and operated
for and by the U.S. government.
Looking back retrospectively,
the famous African-American botanist,
George Washington Carver,
was born a slave,
but yet he was admitted
into an all-white university.
A century later and in 1987,
I experienced more insidious racism
than George Washington Carver did.

The Power of an Illusion: Overcoming Institutional Racism

In American science, the racism
is deeply institutionalized.
Several prominent
white American scientists—including
William Shockley and James Watson—
argued that people of African descent
are less intelligent
than those of European descent.
William Shockley advocated that
Black women should be discouraged
from having children.

As a Black and African mathematician
who invented
the nine Philip Emeagwali equations
and who came of age in the 1970s and 80s,
I struggled to get white mathematicians,
physicists, and computer scientists

to acknowledge my contributions
of the fastest computing across
the slowest processors.
And to human knowledge.
In 1989, I was given credit,
mainly because, I submitted
my invention anonymously
to win the highest award
in supercomputing.
That prize made the news headlines.
In retrospect, it was easier
for George Washington Carver,
who was born a slave
and achieved prominence as a botanist,
to attend a white university
and do so ninety years earlier
than for me to program a supercomputer
in that same white university.
In 1987 and after it was discovered
that I'm Black and African,
my access to vector supercomputers
were revoked.

In 1987, I filed a formal complaint that
I wasn't allowed to program
the vector supercomputer
that was inside
the San Diego Supercomputer Center.
That center was operated
by the University of California,
San Diego, California.
That supercomputer was bought
for public use and paid for
by the U.S. National Science Foundation.

Facing Racism and Ourselves

In scientific research, to discover
is to see something
that was previously unseen.
But paradoxically,
the scientific reviewing process
ensures that the reviewer
remains forever unseen.

Modern science is not race neutral.
As a Black mathematician
who came of age in the 1980s,
a white supercomputer scientist
that was tasked to review
my contributions to computer science
will notice my race
more than my discovery
of the world's fastest computing.
Race was the reason my discovery
was rejected
a dozen times in a dozen years
and rejected
by a dozen white reviewers.
My discovery
of the world's fastest computing
across the slowest processors
in the world
was accepted in 1989 because
I concealed that I was Black
and African-born.

The earlier reviewers were anonymous
but knew that I was Black and African.
It seemed like the reviewers were
ashamed to sign their names,
or even to publish their reviews.
Their reviews were like writing a letter
to the opinion page of a newspaper
and then insisting that the letter
be published anonymously.
But only my words were reviewed,
not my new and abstract equations
and complex codes
that were over the heads
of the reviewers.

Who has the financial resources needed
to replicate and re-confirm
the world's fastest computer
that costs the budget of a small nation?

Or that might cost the one billion
two hundred and fifty million dollars

that is the price-tag
of this year's fastest computer?

The world's fastest computer of today
costs more than the
mile-long Second Niger Bridge
in Nigeria.

For that reason,
the world's fastest computer
cannot exist within the campus
of the University of Nigeria,
or of any university in the world.

- Why Are Famous Scientists Hated?

Reasons I Was Attacked: Reflections on Being Black in a Majority-White Field

In 1989, I won what was referred to
as the Nobel Prize of Supercomputing.
Not only that, I was the only person
to win the award alone.
I was in the news and it created
a cognitive dissonance
in the minds of white supremacists.
Because I was a Black African
in a majority-white field, I was attacked
by those who could not scribble
the Philip Emeagwali equations,
as defined in my one thousand podcasts
and YouTube videos.

My discovery of the world's fastest speed
in computing changed the way
we look at the supercomputer of today.
That fastest speed was a quantifiable
metric
and an indisputable fact.
That contribution made me
the subject of school essays on inventors

and their inventions, particularly for
schools in the USA, Canada, and Europe.

On the down side, once I became famous
and became the most visible
supercomputer scientist,
I drew well-orchestrated attacks.
Professional jealousies
fuelled those vitriolic attacks.
Those attacks were anonymously
sponsored by scientists who perceived
my contributions to science
as a zero-sum game
that will affect their rankings negatively.

In a viral poll, Philip Emeagwali
was on par with Albert Einstein,
Pythagoras, and Euclid.

It's a centuries old tradition
to attack the greatest scientists
as frauds.

It's science's version of calling
the President of the United States
and the Pope the anti-Christ.
Hitler and Napoleon were called
the anti-Christ. William Shakespeare,
Isaac Newton, and Albert Einstein
were called frauds.
I'm now cross-listed
with Albert Einstein
in genius lists.
As my reputation grows,
I became the new anti-Christ
from the scientific world.

Each generation recreates
its Witches of Salem trial
of colonial Massachusetts
where more than two hundred
quote, unquote "witches" were outed.
And some witches
were executed by hanging.

The modern recreations
of the Witches of Salem trial
include the Holocaust.
And the two atomic bombings
of Hiroshima and Nagasaki, Japan.
It includes the McCarthyism's guilt
by suspicion of being a communist.
As well as the Wounded Knee Massacre
in which U.S. soldiers murdered
nearly three hundred Lakota people.
And the September 11 attacks.

Every celebrity is hated
by about one percent of her followers.
The reason is that some people are jealous
or threatened
by other's success.
The new Pope is always criticized
as the new anti-Christ.
William Shakespeare,
is always criticized as a plagiarist.
The most famous theoretical physicist,

Albert Einstein, is criticized
as a fraud.
Many people still think
the moon landings were faked.
After my discovery of 1989,
I became the most famous
computational physicist
and mathematician.
As expected, the same template
used to attack Albert Einstein
was used to attack Philip Emeagwali.
Those attacks were
backhanded compliments
only given to famous mathematicians
who were admitted into the genius club.
It's impossible to fake my way
from the world's slowest processors
to the world's fastest computer.
My discovery
of the world's fastest computing
is the foundational knowledge
of the forty-five billion dollars a year

supercomputer industry.
The computer and its inventors
are not fake.
In 1989, I won the highest award
in supercomputing.
I was the only person
to ever win that award alone.
That award is shared by up to fifty
research mathematicians, physicists,
and computer scientists
that are supported by a thousand employee
research and development laboratory.
The condition for receiving
any of the highest prizes in science
is that the recipient must deliver a lecture
and do so before an audience of up to
a thousand scientists.
Since 1989, I've gone beyond
that 60-minute lecture requirement.
I've posted one thousand podcasts
and YouTube videos,
each on my contributions to science.

Aside from winning
the Nobel Prize of Supercomputing,
I used podcasts and YouTube videos
to establish my credibility
and reputation
among college-educated listeners
who are interested in learning
about new sciences.
Thanks to the Internet,
the twelve-year-old writing an essay
on computer pioneers
who contributed to the development
of the computer
get to hear directly from
Philip Emeagwali.

My contributions to science were these:

I discovered
how to visualize global warming
and climate modelling
not merely as one

incredibly compute-intensive problem
but as 65,536 equal-sized
mathematical physics problems
that are defined across
the entire 62-mile-deep
concentric sphere that represents
the atmosphere that enshrouds
the Earth.
Between the Internet and the Earth,
I was the elephant in the room.
Newspapers profiled Philip Emeagwali for
discovering
the world's fastest computation across
a new Internet
that's a new global network of
sixty-four binary thousand processors.
But nobody wanted to talk about
how I discovered
the fastest computing
across a new global network
of the slowest processors.

And invented the technology
across that new Internet.

Why Are Famous Scientists Hated?

A famous scientists is always
envied and subjected to criticisms.
Before my discovery
of the fastest computing
across the slowest processors,
which occurred on the Fourth of July 1989,
no scientist said a nasty word
about Philip Emeagwali,
and vice versa.
However, some nasty words
began to spread
after I became famous.
Those nasty words were spread because
I denied unqualified scientists,
then in Ann Arbor (Michigan),
the opportunity to become my co-inventor

and become a famous inventor.

In 1981, I invited
those research scientists
to collaborate
in my supercomputer research.
Those white supremacists
declined to work with me
because I was Black and African.
And because they believed
that fastest computing across
slowest processors
will forever remain in the realm
of science fiction.

Why the Fastest Computer is a State Secret

The fastest computers are quote, unquote
"state secrets."

They're used for top-secret simulations
of nuclear explosions.
For security reasons, I was banned
from supercomputing
within U.S. nuclear labs.
I was denied entry inside nuclear labs
because I was a Black African
and was perceived
as a greater security threat
than a white European.
Those bans on my having access
to the world's most powerful
supercomputers
occurred in the early 1980s.
Looking back retrospectively,
each rejection that I encountered,
in my quest for the fastest computations,
moved me closer to my discovery
of the fastest computing
across the slowest processors.
My discovery occurred

on the Fourth of July 1989,
in Los Alamos, New Mexico, USA.

5 Why I Began Supercomputing in 1974

Why My Discovery Was in the News

I have been supercomputing
since June 20, 1974, in Corvallis, Oregon, USA.
It took me half a century
to gain the scientific knowledge
and contribute the new technology
which I presented
across my one thousand closed-captioned videos
that are posted in YouTube.
Hence, it will also take you five decades
to fully understand my contribution

to the computer and the Internet.
The U.S. government classified it
as a Grand Challenge Problem
because it's incredibly difficult
to understand and solve.
To this day, no other mathematician
has stepped forward
to claim he understands
how to parallel process
the initial-boundary value problem
that was governed by my new
partial differential equations.
And then solve them across
an ensemble of ten million processors.
And along the way, reproduce
my world's fastest computation,
as mentioned in the June 20, 1990, issue
of *The Wall Street Journal*.

My Earliest Newspaper Mentions

My name "Philip Emeagwali"
was in the science column
of a mid-1972 issue of the *Daily Times*
that was the national newspaper
of Nigeria.
My name and photo
were on the cover of a weekly newspaper
that circulated in the cities of Monmouth
and Independence, Oregon.
That newspaper featured me in an
interview
that it published during the week of
August 12, 1974 in the Polk County
of Oregon.

I conducted my supercomputing alone.
And I did so for all the years
that followed 1974.
And by 1989, I was the foremost,
or rather the only, person

that could harness millions of processors
under-the-hood
of the world's fastest computer.
And use them to solve
some of the most significant problems
at the frontiers of mathematics and
science.

Early Years in the USA | Where I Began Supercomputing

On the morning of Thursday,
June 20, 1974,
I woke up in my new studio apartment
that was one of the four rooms
that was upstairs of an old white house
at 195A South Knox Street, Monmouth,
Oregon, USA.

I was living alone at age nineteen
and on an F-1 student visa.

My rent was thirty-six dollars a month.
And my salary was
one dollar and sixty-five cents an hour
which was the minimum wage.
After taxes and expenses,
my take-home pay was only
one dollar an hour.
As international students,
we could only work
up to sixteen hours a week.
And only work within our school campuses.
My landlady was an elderly white woman
who lived downstairs.
After living at 36 Butler Hall
for ten weeks,
195-A South Knox Street
became my second address
in the USA.
At 195-A, we had a community kitchen
which I shared with three tenants:
a 24-year-old
Ethiopian student in his third year

in the U.S.,
a 25-year-old American
graduate student who looked like
the actor Tom Selleck,
and a 20-year-old American student,
Fritz Foulke, and his future wife, Barbara.
Amos, a Yoruba (Nigerian) graduate
student in his thirties lived downstairs.

Hypothetical Supercomputing from Colonial Africa

The teletypewriter laboratory
from which I logged into
the supercomputer
was a short stroll away.
That computer lab was at
345 Monmouth Avenue North,
Monmouth, Oregon.
The supercomputer

that I programmed and used to solve
a system of equations of algebra
was at
1800 SW Campus Way, Corvallis, Oregon.
I remotely logged into that supercomputer
by telephone.
On June 20, 1974, it was an epiphany
to presume that
I could have spent the previous ten years
programming a supercomputer
that was in Corvallis, Oregon, USA.
But programming that supercomputer
from my father's houses
that were along
Gbenoba Road, Agbor, Nigeria,
and at 4B Egbuna-Adazie Street,
Onitsha, Nigeria,
which was a distance of
12,500 kilometers,
or nearly 8,000 miles.
All that I needed to program
a supercomputer

in the post-colonial Nigeria of 1964
was only a hundred dollar teletypewriter
and a telephone line.
I could program that supercomputer
from anywhere in sub-Saharan Africa.
And program it in a decade
there was no computer
in sub-Saharan Africa.

The World's Fastest Computers

As a supercomputer scientist
who came of age in the 1970s and 80s,
my focus was on pushing
the boundaries of knowledge
of the world's fastest computers.
I pushed the frontiers
of mathematics and physics
when I made the news headlines
for inventing how to solve

the world's most compute-intensive
problems
in science, engineering, and medicine.

To invent, is to create something
from nothing,
or make the fictional factual.
In the 1970s and 80s
and as a young Black
African-born person
supercomputing in the USA,
I experienced lots of racial obstacles
that almost wore me down.
By the late 1980s, I grew significantly
and developed a reputation
for giving public lectures
in which I exhibited
a command of mathematical
and scientific materials.
That should be expected
after my decade and half
of deep introspection.

After fifteen years of supercomputing
following June 20, 1974,
I developed greater clarity. I focused
on the world's fastest computers.
Because of my greater
mathematical maturity,
some computational physicists
within my inner circle
knew that I was heading towards
the world's fastest computer.
I discovered the world's fastest computing
on July 4, 1989
in Los Alamos, New Mexico, USA.
My discovery made the news
around the world
and it remains the subject of school
essays.

- How I Invented the World's Fastest Computer

Ideas that Influenced Philip Emeagwali

Old Ideas That Influenced Philip Emeagwali

In June 1974 and in Oregon,
my scientific influences
were science-fiction stories,
including the one about
sixty-four thousand human computers
working together to forecast
the weather
around the world.
That science-fiction story
was published on February 1, 1922,
or 52 years earlier.
My second influence
was an article in the January 11, 1946,
issue of The *New York Times.*

That article was on how
100 computers could be programmed
to work together to forecast the weather
in the USA
and forecast it more accurately.
That 1922 supercomputing story
was fictional,
but I reimagined it as factual.
That 1922 story was about
sixty-four thousand human computers
used to
[quote]
"race the weather for the whole globe."
[unquote]

New Ideas That Influenced Philip Emeagwali

In the 1980s, I reimagined
and concretized that science-fiction story.

And I did so with sixty-four binary
thousand processors.
I programmed each processor
to solve the weather forecasting
compute-intensive problem.
At its mathematical core,
that problem was to solve
a system of coupled, nonlinear,
three-dimensional, and time-dependent
partial differential equations
that governed and defined
an initial-boundary value problem
beyond the frontier of calculus.
The science-fiction story
that was in the January 11, 1946, issue
of the The *New York Times*
was about one hundred
all-vacuum tube supercomputers
around the U.S.
What I parallel processed with
was a new Internet
that was a new global network

of sixty-four binary thousand processors.
My internet was defined
by an email address space
that's a unique arrangement
of one binary million zeroes and ones.
I built around the 1922 and 1946 stories
that were vague science-fiction theories.
At its mathematical physics core,
those grand challenge problems
were about large-scale, high-resolution
computational fluid dynamics.
The poster child
of fluid dynamics simulations
is forecasting the weather,
or computing the motions of fluids,
across the Earth's atmosphere
and up to 7.7 miles (or 12.4 kilometers)
below the surface of the Earth.
The 1922 story was fictional
while the 1946 story was theorized.
I built around both stories to conceive
my ensemble of

sixty-four binary thousand processors
which replaced
the equivalent of one hundred computers
of 1946.
And replaced the sixty-four thousand
human computers of 1922.

My Invention of the Fastest Computer

I did a back-of-the-envelope calculation
that showed me that
if those sixty-four thousand computers
were evenly distributed
within the Earth's stratosphere
they would be three thousand square miles
afar and apart
from their nearest-neighbors.
I conceived fastest computing across
slowest processors
and across an Internet

that's a global network of those processors
and did so shortly after June 20, 1974.
I conceived supercomputing
across a HyperBall global network
of sixty-four thousand computers
around a globe.
However, my scientific discovery
that was mentioned—sixteen years later—
in the June 20, 1990, issue
of The *Wall Street Journal*
was executed across
a spherical island of
sixty-four binary thousand processors.
I visualized those processors
as equal distances afar and apart
and on the surface of a globe
that I imagined as embedded
inside a sixteen-dimensional hyperspace.

In an email, a twelve-year-old asked:

"Why is Philip Emeagwali

called the father of the Internet?"

I discovered that
the world's fastest computer
that's defined across a globe
is a close cousin
to the Internet
that's also defined across a globe.

The supercomputer and Internet
that I invented
are like identical twins.
And like two sides of the same coin
that are different but complimentary.

Philip Emeagwali Internet
is a New Supercomputer

The play: "The Tragedy of Hamlet,
Prince of Denmark,"

should not be performed
the way William Shakespeare
originally envisioned and directed it.
William Shakespeare wrote for
his sixteenth-century audiences,
or half a millennium ago.
Hamlet should be reinterpreted anew
and made relevant
for twenty-first century audiences.
William Shakespeare was a product
of his times who, if given the opportunity,
to rewrite Hamlet for the 21st century,
would replace the kings and queens
that lived five hundred years ago
with the worst dictators of modern times,
such as Donald Trump, Idi Amin,
and Adolph Hitler.

The twenty-first century Hamlet
should have heroes like
Nelson Mandela using a cell phone
and the Internet.

Like William Shakespeare will do,
if he is still living,
I updated my description and definition
of the world's fastest computer,
from the one-processor supercomputer
of the 20th century
to the billion-processor supercomputer
of the 21st century.
My new supercomputer became
a new Internet
that's a new global network of processors
for solving the most compute-intensive
problems.

How I Grew as a Supercomputer Scientist

Just as you must understand soccer
and have the physical fitness and maturity
that's needed to play
in the World Cup Games,

you must also be
at the frontiers of knowledge
of physics and computer science.
And have the mathematical maturity
that will be needed to solve
the most compute-intensive problems
arising at the frontiers of knowledge
of both computational physics
and abstract mathematics.
In the 1980s, I controlled and programmed
the yet-to-be understood ensemble
of the world's slowest processors
that I later used to power
my world's fastest computer speed
that made the news headlines.

Philip Emeagwali Internet

During the sixteen years
that followed June 20, 1974,
I added new layers of

supercomputing knowledge.
I did so by solving
initial-boundary value problems
at the frontiers of calculus
and extreme-scale
computational fluid dynamics.
And solving them via automated
communication.
I visualized my new Internet
as a new global network
of 65,536 processors
that were identical
and that shared nothing
and that were equal distances apart.
I hypothesized those processors
to be on the surface of a globe,
called a hypersphere,
in a sixteen-dimensional hyperspace.

How I Invented the Fastest Computer from the Slowest Processors

I invented how to solve
the most compute-intensive
mathematical physics problems
called extreme-scale
computational fluid dynamics.
And solve them across a new Internet
that's a new global network
of up to one billion
self-contained processors
which were identical and coupled.
Each processor operated
its operating system.
Each processor
had its dedicated memory
that shared nothing.

The Supercomputer Showed How to Slow the Spread of COVID-19

Extremely fast computers
are used to make the coronavirus disease visible
as well as identify
how tiny droplets move
and spread in different circumstances,
including real-world simulations
of social distancing rules.

In 1989, I was in the news because
I discovered
the world's fastest computing.
And did so across
an ensemble of processors
that, today, has the combined power
of twenty million smartphones.

Supercomputers are used

to make discoveries at the fastest pace.
And used to pull the future closer.

I'm Philip Emeagwali.

Thank you.

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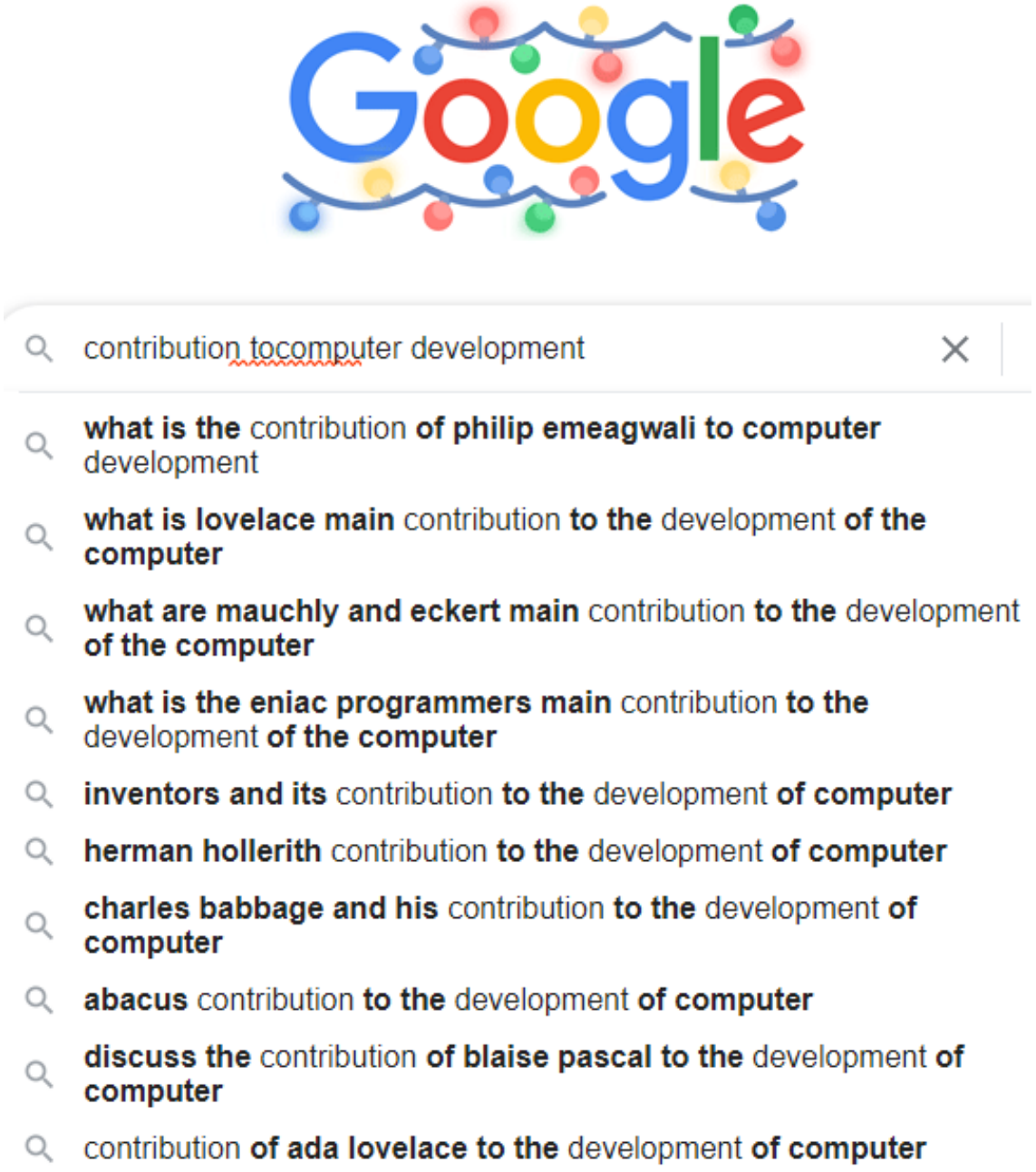

Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).