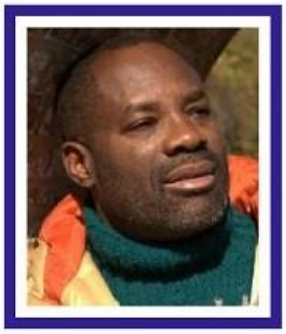
37 Father of the Modern Supercomputer



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37.1 How I Turned Supercomputer Fiction to Fact

37.1.1 Who's Philip Emeagwali?

The modern supercomputer
is a tool
that enables the mind
to go where the eyes cannot see.
To invent
is to turn **fiction** into **fact**.
In 1989,
it made the news headlines
that an African supercomputer genius
in the United States
has experimentally discovered
how and why parallel processing
makes modern computers **faster**
and makes the new supercomputer
the **fastest**,
namely, the Philip Emeagwali formula
that then United States President

Bill Clinton described
in his White House speech of
August 26, 2000.

I am that African high-performance
supercomputer scientist
that was in the news in 1989.
Since my 1989 invention
of the massively parallel processing
supercomputer,
I felt like the ancient mariner
who travelled around the world
to tell his story
to different people.
Trying to understand
the modern high-performance
supercomputer
that is a new **internet**
that I invented
and trying to understand
that new supercomputer
as the global network of

65,536
equidistant processors
that I programmed back in 1989
and trying to understand
that massively parallel processing
supercomputer
as a small copy
of the planetary-sized internet
and trying to understand
that fastest supercomputer
without the life story of its inventor
is like looking at an **embroidery**
from the wrong side of the cloth.

37.1.2 I Am Well Known But Not Know Well

I am well known
but I am not known well.
Eleven out of ten people

did not understand how I
experimentally discovered
how and why parallel processing
makes modern computers **faster**
and makes the new supercomputer
the **fastest,**
namely, **the Philip Emeagwali formula**
that then United States President
Bill Clinton described
in his White House speech of
August 26, 2000.
My experimental discovery
that the massively parallel processing
supercomputer
is 65,536 times faster than the computer
occurred
on the Fourth of July 1989
in Los Alamos, New Mexico,
United States.
That experimental discovery
was first reported

by The Computer Society
of The Institute of Electrical
and Electronics Engineers,
called the IEEE.
My experimental discovery
was first reported in 1989
as a press release
from the IEEE office
in San Francisco, California.
The IEEE followed up its 1989
press release
with a detailed report that explained to
the supercomputer community
my experimental discovery
of how I made
the impossible-to-compute
possible-to-compute.
The IEEE is the **acronym**
for the Institute
of Electrical and Electronics Engineers.
The IEEE

is the world's largest technical society.
My mathematical inventions
of nine partial differential equations
of modern calculus
were first reported
by the SIAM
and first reported
to the research mathematics community.
The SIAM is the **acronym**
for the Society
for Industrial and Applied Mathematics.
The SIAM is the world's largest
society of mathematicians.
My contributions to human knowledge
that both the IEEE and the SIAM
described in their flagship publications
was how they understood
my supercomputer inventions
and my mathematical discoveries.
The IEEE and the SIAM
did not describe how I understood

the massively parallel processing
supercomputer
that I invented
and how I understood
the partial differential equations
that I invented.
A discovery or an invention
is like the moon.
It has two parts:
the **visible** part and the **hidden** part.
Back in 1989,
the news media were reporting
the **concrete** and the **visible** parts
of my technological inventions
and were ignoring
the **abstract** and the **invisible** parts
of my mathematical discoveries.
For that reason, I said that:
I am well known
but I am not known well.
I am well known

as the high-performance
supercomputer scientist
that experimentally discovered
the massively parallel processing
supercomputer.
I am well known
as the internet scientist
that invented a new internet
that is a new global network of
65,536 tightly-coupled processors
with each processor
operating its own operating system
and with each processor
having its own dedicated memory
that shared nothing with each other
that were already available
in the market anyway.
But I am not known well
as the extreme-scale
computational physicist
that discovered that
the most important law in physics

is violated
during its most important application
—namely, **recovering**
otherwise **unrecoverable** crude oil and
natural gas
and recovering them
from abandoned oil fields,
such as the Oloibiri oil field
of Bayelsa State, Nigeria
that was **discovered**
in 1958
and discovered
as the first oil discovery in West Africa
but abandoned twenty years later
in 1978.
But I am not known well
as the mathematical physicist
that invented
how to solve the **toughest problems**
arising in extreme-scale
computational physics.

But I am not known well
as the extreme-scale
computational mathematician
that discovered critical,
century-old errors
in the most important equations
in the history of mathematics.
But I am not known well
for correcting that mathematical error
and doing so by inventing a system of
coupled, non-linear, time-dependent,
and state-of-the-art
partial differential equations
of modern calculus.
For me—**Philip Emeagwali**—
inventing the modern
parallel processing supercomputer
that can parallel process
or solve a million problems (or
processes) **at once**
and that can solve them

at the fastest speeds
recorded in computational mathematics
and inventing
the massively parallel processing
supercomputer
that can solve
the toughest mathematical problems
in computational physics
was like a songwriter
using his guitar
to accompany his song and dance.
The high-performance supercomputer
of yesterday
was the instrument
for the extreme-scale
computational physicist
that became your instrument
and your computer of today.

37.1.3 Wizardry is Making the Impossible Possible

In high-performance supercomputing,
wizardry
is making the impossible-to-compute
possible-to-compute.
The ensemble of 65,536
processors
that were already available
in the market
that I experimentally discovered
to be a new supercomputer
and to be a new internet
and that I figured out
how their processors could be
programmed
and harnessed as one seamless,
cohesive whole supercomputer
were exclusively available to me alone.
In the 1980s, that ensemble of 65,536
commodity processors

was available to me alone because
the ensemble was abandoned
by the community of 25,000
vector processing supercomputer
scientists
that were led by **Seymour Cray**.
That ensemble of processors
was abandoned
because it was then considered
impossible
to harness the potential
supercomputer power
of the slowest 65,536
processors in the world
that merely performed
47,303
calculations per second per processor.
In the 1980s, it was **impossible**
to harness the supercomputer potential
of the slowest processors
and to use the speed of that new

massively parallel processing
supercomputer
to solve otherwise unsolvable
problems arising in mathematical
physics.
On the Fourth of July 1989,
I mathematically and experimentally
invented
how to solve 65,536
initial-boundary value problems
of modern calculus
and of the most extreme-scale
computational physics.
It made the news headlines
that I invented
how to solve the toughest problems
arising in mathematical physics
and how to solve them
at once, or in parallel,
and how to solve those tough problems
together

and how to solve them
at the then unheard of speed of
3.1 billion calculations per second.
That speed was the world's fastest
supercomputer speed
of the 1980s.
Before my discovery
that occurred
on the Fourth of July 1989,
it was indeed **impossible**
to experimentally discover
the potential power of the
massively parallel processing
supercomputer.
It was then impossible
to experimentally discover
the **aggregate power**
of 64 binary thousand processors.
It was then impossible
to invent
how to harness

those plentiful, powerful, and
inexpensive processors
that were already available
in the market
and how to use them to solve
the toughest problems
arising in extreme-scale
computational physics and mathematics.
The June 14, 1976 issue
of the *Computer World* magazine
interviewed the supercomputer experts
that were attending
the 1976 National Computer Conference
in New York City.
The *Computer World* magazine
asked those supercomputer experts
if it will ever be **possible**
to invent
how to harness the potential
of the parallel processing supercomputer
and if it will ever be **possible**

to harness that supercomputer-hopeful
and harness the technology
to experimentally discover
the fastest computations
that could be executed **across**
an **ensemble** of processors.
The unanimous opinion
of those supercomputer experts
was summed up in an article
that was published
in the June 14, 1976 issue
of the *Computer World*.
That *Computer World* article
was written by **E. Drake Lundell Jr**,
who was the computer industry editor
of *Computer World*.
That *Computer World* article
was titled:

[quote]
“**Research in Parallel Processing**

Questioned as 'Waste of Time'."
[unquote]

The reason I was **not** discouraged
by that *Computer World* article
was that I was only twenty-one [21]
years old when it was published.
Being young and foolish,
I had the **time to waste**
in the impossible pursuit
of the massively parallel processing
supercomputer.
I spent the fourteen years,
onward of 1976,
conducting my research
on how to parallel program
a massively parallel processing
supercomputer
and on how to parallel program
that high-performance supercomputer
to compress 180 computing-years

to just one supercomputing-day.

37.2 How I Made the Impossible Possible

37.2.1 Making the Impossible Possible

To discover or invent
is to make the **impossible** possible.
At age 19
and as a mathematician-in-training,
I solved my equation
to get it right.
At age 35
I grew to become a polymath
that was trained for sixteen years
and I solved my equation
to **not** get it wrong.
I discovered how to solve

the toughest problem
in calculus
and how to solve it
by thinking outside the box
and thinking
beyond the frontiers of calculus
and thinking
how to more accurately reformulate
that calculus problem
from the laws of physics
and thinking
how to more accurately reformulate
that calculus problem
to large-scale algebra
and thinking
how to solve that calculus problem
not on an isolated processor
but in parallel and **across**
64 binary thousand
processors

that were already available
in the market anyway.
For me, **Philip Emeagwali**,
that unconventional thinking
was an epiphany
because I discovered
that the solution to the toughest problem
in calculus
transcended calculus.
I discovered that, trying to solve
the toughest problem in calculus
and trying solve
that grand challenge problem
within only calculus
is like seeking a material solution
to a spiritual problem,
or turning to alcohol
to mend a broken heart.
In the *terra incognita*
of the massively parallel processing

supercomputer, only a **polymath**
can make the **impossible**-to-compute
possible-to-compute
and do so by solving
a **multi-disciplinary**
grand challenge problem
and experimentally discovering
how and why parallel processing
makes modern computers **faster**
and makes the new supercomputer
the **fastest.**
Only a **polymath**
can solve that tough problem
and solve it alone
and present his **proof-of-solution**
in videotaped lectures
that can be watched
from anyplace and anytime.
It's impossible
for a research, high-performance

supercomputer scientist
that is **not** a **polymath**
that is **not** at home in physics,
that is **not** at home in mathematics,
and that is **not** at home in computing
to invent how to solve
the initial-boundary value problems
that are governed
by a system of coupled, non-linear,
time-dependent, and state-of-the-art
partial differential equations
that is the toughest problem
in calculus
that are classified as hyperbolic.
It's impossible
to invent
how to solve that extreme-scale problem
and how to solve it **across**
a new internet
that is a new global network of

64 binary thousand processors
that is a new supercomputer
and a new computer.
It's impossible
to invent how to solve
those 64 binary thousand
initial-boundary value problems
of modern calculus
and how to solve them **across**
a new global network of
65,536 computers
that are identical
and that are equal distances
apart.
It's impossible for me
—Philip Emeagwali—
to experimentally discover
their **solutions**
and their **times-to-solutions**
and to discover them

without being at the frontiers
of mathematical, scientific,
and technological knowledge.
It's impossible for me
to invent
the new supercomputer
and discover it **across** a new internet
that's defined and outlined
by 64 binary thousand
tightly-coupled processors
that shared nothing with each other.
It's impossible
for me to invent
the massively parallel processing
supercomputer
without foremost
mathematically understanding
or experimentally discovering
how to solve
the same initial-boundary value

problems
and how to solve them
on only one **isolated** processor
that was not a member
of an ensemble of processors.
My understanding of the modern, fastest,
parallel processing supercomputer
that computes with ten million
six hundred and forty-nine thousand
six hundred [10,649,600] processors
is **deeper** and **surer**
than it was—sixteen years earlier—when
I programmed the sequential processing
supercomputer
that used only one processor.
I programmed
sequential processing supercomputers
on June 20, 1974
and at age nineteen.

I programmed the sequential processing supercomputer
that was at
1800 SW Campus Way,
Corvallis, Oregon, United States.
In 1974, **I programmed supercomputers**
that were powered by
only one **isolated** processor.
That processor was not a member
of an ensemble of processors.
Sixteen years later,
I understood high-performance
supercomputers better
and, largely, because I had
experimentally discovered
how to massively parallel program
the **slowes**t 65,536 tightly-coupled
processors
in the world
and how to harness those processors

to cooperatively solve
one computation-intensive problem
arising in physics and mathematics.
The poster boy
of computation-intensive problems
is the general circulation model
that is used to **foresee**
otherwise **unforeseeable**
global warming,
or used to foresee
parts of the Earth
that could become
horrifically inhospitable
for our children's children.
On the Fourth of July 1989
in Los Alamos, New Mexico,
United States
I invented
a new supercomputer
and I invented

how to solve
the most computation-intensive problem
arising in physics and mathematics
and I invented
how to solve that problem
and how to do so at the **fastest** possible
supercomputer speeds
ever recorded.
The June 20, 1990 issue
of *The Wall Street Journal*
recorded that I—**Philip Emeagwali**—
had invented
how to use the **slowest**
65,536 tightly-coupled processors
that shared nothing with each other
that were already available in the market
and how to use those processors
to simulate the flow of crude oil and
natural gas
flowing one mile deep

and flowing **across** an oilfield
and how to use those processors
to simulate the motions
of crude oil and natural gas
and how to do so
to enable the petroleum geologist
to **recover** otherwise **unrecoverable**
crude oil and natural gas.
That excruciatingly-detailed
supercomputer simulation
that I executed
via massively parallel processing
across a new internet
and that I invented,
or executed
by processing a million things **at once**,
is used in the **Niger Delta** Region
of Nigeria
and used to **discover** otherwise

crude oil and natural gas.

My mathematical contributions
to the calculus
used to simulate the flow of
crude oil and natural gas
was the cover story
of the May 1990 issue
of the *SIAM News*.
The *SIAM News*
is the flagship publication of SIAM.
And SIAM
is the acronym for the Society of
Industrial
and Applied Mathematics.
The SIAM is the number one society
for mathematicians
and the *SIAM News*
is where a newsworthy contribution

to mathematics is first reported.
In the June 1990 issue of *SIAM News,*
a research computational mathematician
that thoroughly reviewed
my mathematical discovery
and contributions to mathematics
wrote that:

[And I quote]

"I have checked
with several reservoir engineers
who feel that his calculation
is of real importance and **very fast**.
His explicit method
not only generates lots of megaflops,
but solves problems **faster**
than implicit methods.
Emeagwali is the **first**
to have applied a pseudo-time approach

in reservoir modeling."
[end of quote]

Once upon a time,
in the 1980s, to be exact,
the mathematics teacher
did not know the mathematical steps
needed to harness the power of
a new internet
that is a new global network of
processors.
The reason my contribution
to the modern supercomputer
—that is a new internet—
was front page news
in top mathematics publications,
such as the *SIAM News,*
was that I—**Philip Emeagwali**—
was the first
computational mathematician
to invent

and write down the mathematical steps
for how to use a new internet
that is a new global network of
64 binary thousand
tightly-coupled processors
that shared nothing with each other.
I invented
how to harness that new internet,
as *de facto*
one cohesive, seamless,
high-performance supercomputer
that computes in parallel.
I invented
how to use that new supercomputer
to **discover** otherwise elusivecrude oil
and natural gas.
Once I wrote down
my mathematical steps,
other computational mathematicians
could follow the
Philip Emeagwali's algorithm.

Mathematicians use my algorithm
to program **across**
64 binary thousand, or more,
tightly-coupled processors
that shared nothing with each other.
Mathematicians use my algorithm
to discover and recover
otherwise elusive
and unrecoverable crude oil
and natural gas.
Modern mathematicians
use the new knowledge
from my massively
parallel processed communications
and computations
that were synchronized
across my new global network of
65,536 tightly-coupled processors
that shared nothing with each other
and that were already available
in the market anyway

and use that mathematical discovery
to solve problems
that are otherwise unsolvable.
My quest for the solution
to the toughest problem in calculus
did not follow a straight line.
I made mistakes but I was open
to quick course corrections
that took me to the unknown world
of parallel processing across
a new internet
that is a small copy
of the global internet
that encircles the Earth.
My new internet
is a new global network of
64 binary thousand processors.

37.3 How I Opened the Door to the Supercomputer

37.3.1 Discovery of Philip Emeagwali Opened the Supercomputer Door

My 1989 **experimental discovery**
of how and why parallel processing
makes modern computers **faster**
and makes the new supercomputer
the **fastest**
namely, **the Philip Emeagwali formula**
that then United States President
Bill Clinton described
in his White House speech of
August 26, 2000
occurred at the frontier of knowledge
about the massively parallel processing
supercomputer.
That **invention**
of the massively parallel processing
supercomputer
that occurred on the Fourth of July 1989

in Los Alamos, New Mexico, United States
led me to discover that
inventing a new technology
creates a need for a new vocabulary
and a new narrative
for the histories of science and technology.
After my **invention**
of the high-performance supercomputer,
I became like the **ancient mariner**
who travelled around the world
to tell his story to different people.
Since 1989, school children
are asked to do a school report
on the contributions of **Philip Emeagwali**
to the development of the supercomputer.
Back in 1989, it made the news headlines
that a lone wolf
African supercomputer wizard
that worked alone for sixteen years
across supercomputer laboratories
in the United States

has **invented**
the massively parallel processing
supercomputer
and has invented
how to parallel compute,
or solve a million problems (or processes) **at once**,
instead of solving only one problem
at a time.
Those newspaper articles wrote that
his **invention**
of the high-performance supercomputer
will have rich, fertile,
and far-reaching consequences.
That African supercomputer wizard
invented
how to always perform the **fastest**
supercomputer calculations
and how to perform them
by solving a million problems (or processes)
at once,

instead of solving only **one problem**
at a time.
I—**Philip Emeagwali**—
was that African supercomputer scientist
that was in the news
back in 1989.
I was in the news
because I **experimentally discovered**
that the fastest speeds
in supercomputing
can always be recorded
with massively parallel processing
technology.
That technology
enabled me to massively
compute 65,536 things **at once**,
or in parallel at as many processors.
My **experimental discovery**
that parallel processing
is the engine that drives the

computer to compute **faster**
and drives the supercomputer
to compute **fastest**
made the news headlines
onwards of 1989.
My **invention**
was widely recorded,
from supercomputer publications
to the June 20, 1990 issue
of the *Wall Street Journal*
and that invention remains
the most talked about invention
in the history of computing.
My **invention**
made the news headlines because
I **experimentally discovered**
the fastest computation
and I **invented** the technique
across the **slowest 65,536**
tightly-coupled processors

that are commonly available
in the market.
My **invention**
of the high-performance supercomputer
made the news headlines because
I **invented parallel processing**
and I invented the technology
when everybody **rejected**
parallel processing.
I **invented** parallel processing
and I invented the technology
as a **lone wolf** supercomputer
programmer.
I **experimentally discovered**
the fastest computation
and I invented the technique
for discovering it by harnessing
the **total computing power**
of a parallel processing machine
powered by an ensemble

of the **slowest** 65,536
tightly-coupled processors
in the world.
I **experimentally discovered**
the fastest computation
that could be recorded
with parallel processing technology.
I **experimentally discovered**
the fastest supercomputer
and I invented the technology
when the supercomputer textbooks
and the leaders of thought
in supercomputing
predicted that parallel processing
will not work within
the high-performance supercomputer.
I **invented**
the massively parallel processing
supercomputer
and I invented the technology

when computational physicists
warned that
it will forever be **impossible**
to compute many things
(or process many processes)
at once.
When I **invented**
the high-performance supercomputer,
the 25,000 vector processing
supercomputer scientists in the world
that were led by **Seymour Cray**
believed that
parallel processing will forever remain
a huge waste of everybody's time.
I **invented** how to harness
the high-performance supercomputer
that computes with a million,
or more, processors that were already
available in the market
and how to harness those processors

to massively parallel process
and how to harness the
fastest, parallel processing
supercomputer
to solve the toughest problems
arising in computational physics,
such as when solving
the initial-boundary value problems
arising in calculus, science,
and engineering.
I **invented**
how to harness parallel processing
and harness the technology
to solve the most extreme-scale problems
arising in modern algebra.
I **invented**
how to harness the high-performance
supercomputer
and harness it to solve
the toughest problems

arising in extreme-scale
computational physics.
That **invention**
was critical to solving the most vexing
grand challenge problems
arising in science, technology,
engineering, and mathematics.
I **invented**
how to harness parallel processing
and harness the technology
to solve the computation-intensive
problem that is described
as petroleum reservoir simulation
and that was classified
by the United States government
as one of the twenty
most vexing grand challenges
in supercomputing.
My **invention**
of how to solve a million problems

(or process a million processes) **at once**
and how to compute simultaneously
while solving the most
computation-intensive problems
arising in extreme-scale
computational physics
made the news headlines because
I was an unknown black, sub-Saharan
African supercomputer scientist
that challenged the most well-known
and well-regarded
supercomputer scientists
of the 1970s and ‘80s.
Those leading lights of computing
and supercomputing—namely,
the likes of **Steve Jobs**, **Seymour Cray**,
and **Gene Amdahl**—warned that
parallel processing will forever
remain impossible.
I was warned that

I will never discover
the massively parallel processing
supercomputer.
I was warned that
I will never record the fastest speeds
in computation
and record those speeds **across**
my ensemble of the slowest 65,536
tightly-coupled processors in the world.
But on the Fourth of July 1989,
I discovered
that the toughest problems
arising in extreme-scaled
computational physics
that were believed to be impossible
to solve
on only one processor
are, in fact, possible to solve, **across**
a massively parallel processing
supercomputer

powered by a new global network
of the **slowest**
sixty-five thousand
five hundred and thirty-six [65,536]
identical processors
that were already available
in the market
and that is a new internet, *de facto*.
I **invented**
how to solve
the toughest problems
arising in supercomputing
and how to solve those problems
across
my new global network of processors
that I named
a "primordial internet"
and that I **visualized**
as a small copy of the internet.
I **visualized** that new internet

as a new global network
of 64 binary thousand processors
that I could harness
to both communicate synchronously
and to compute simultaneously
and to solve 65,536 problems
and to solve them
with a **one-to-one** correspondence
between problems and processors.
I **invented**
how to massively parallel process
and how to compute **across**
my new global network of
64 binary thousand processors
that is a new internet.
I **invented parallel processing**
and I invented the technology
when it was written
in all supercomputer textbooks
that it will forever remain **impossible**

to theoretically **invent**
how to parallel process
and to invent
how to parallel compute **across**
eight processors.
In the 1980s, I **theoretically**
and experimentally discovered
that my new internet
is a new supercomputer
and a new computer, *de facto*.
The African-American poet,
Mari Evans, said:
"Speak the truth
to the people."
My scientific truth was **controversial**
in the 1970s and '80s.
In those two decades, I was banished
from the community of
25,000 vector processing
supercomputer scientists.

I was forced to parallel program
abandoned massively parallel processing supercomputers
as a lone wolf.

37.3.2 Opening Doors to the Modern Supercomputer

The June 14, 1976 issue
of the *Computer World*
—the flagship publication
of the computer world—
carried an article titled:

[quote]
"Research in Parallel Processing Questioned
as '**Waste of Time.**'"
[unquote]

My **experimental discovery**
that occurred
on the Fourth of July 1989
was that parallel processing
is not a huge waste of everybody's time.
The reason my **experimental discovery**
of parallel processing
was science cover stories in 1989
was that it opened the door
to promising lines of research
in science, mathematics, engineering,
and technology.
My invention
of the massively parallel processing
supercomputer
opened the door
to extreme-scale computations
arising in physics, mathematics,
chemistry, and medicine.

My invention
of how to massively parallel process
and how to process **across**
millions upon millions
of already-available processors
opened the door to a new world
in which extreme-scale computations
that were previously
impossible to compute
on a vector processing supercomputer
are now **possible** to compute
across a new internet
that is a new global network of
equidistant and **identical**
processors
that were already available
in the market anyway.
Briefly, the most
computation-intensive problems
arising in physics

include problems arising from
using the laws of physics
and encoding those laws
into systems of
partial differential equations
of modern calculus
that are then reduced
to systems of equations
of algebra
and that are then further reduced
to an equivalent set of
floating-point operations
of arithmetic.

37.3.3 Contributions of Philip Emeagwali to the Computer

I'm **Philip Emeagwali**.
I contributed

to the development of the
high-performance computer
and I contributed
by inventing
the technology of parallel processing
that is embodied in most computers
and embodied in all supercomputers.
Philip Emeagwali
is the subject of school reports because
my contributions
changed the way we think of
the supercomputer.
In the old way
and before my invention,
we thought of the supercomputer
as solving only one problem
at a time.
In the new way
and after my invention,
we think of the supercomputer

as solving
millions upon millions of problems
at once.
On the Fourth of July 1989,
I experimentally discovered
that the high-performance
supercomputer
must be powered by
the largest ensemble of
processors
that were already available
in the market anyway.

37.3.4 Philip Emeagwali: Father of the Modern Supercomputer

The new high-performance
supercomputer

is the fastest computer
that must compute with numerous
processors.
The new high-performance
supercomputer scientist
is the extreme-scaled
computational mathematical physicist
that adapted
to the massively parallel processing
supercomputer.
The modern supercomputer scientist
had to adapt to massively
parallel processing
or risk using
only a tiny proportion
of the millions of
central processing units
and millions of
graphics processing units
that powers that high-performance

supercomputer.
I predicted the speedup
of the massively parallel processing
supercomputer
that I experimentally confirmed
and recorded
on the Fourth of July 1989.
After my experimental discovery
of parallel processing
the number of parallel processing
supercomputers exploded.
Before the Fourth of July 1989,
it was said that
parallel processing is a beautiful theory
that lacked experimental confirmation.
After my experimental discovery
of parallel processing,
all high-performance supercomputers
were parallel processing **across**
thousands of central processing units

and **across** as many
graphics processing units,
and even **across**
millions of processors and co-processors.
To this day, the geometrical sketches
of how each of my 65,536
processors
were connected
to its sixteen nearest-neighboring
processors
and connected
in the sixteenth dimension
is widely reprinted in school reports
on the contributions
of **Philip Emeagwali**
to the development of the computer.
My illustrations of my theorized
never-before-seen new internet
that is a new supercomputer
and a new computer

and that I visualized
as a new global network of
central processing units
were hailed as beautiful
and reprinted without any attribution
to **Philip Emeagwali**.
Parallel processing, or doing many things
at once, instead of doing only one thing
at a time
was ridiculed by **Seymour Cray**
who was the leader of 25,000
vector processing supercomputer
scientists.
Philip Emeagwali
began programming supercomputers
on Thursday June 20, 1974
in Corvallis, Oregon, United States.
On the Fourth of July 1989,
Philip Emeagwali
was the lone wolf fulltime programmer

of the most massively parallel processing
supercomputer ever built.
I programmed the precursor
to the modern supercomputer alone.
I programmed it alone because
the community of 25,000
vector processing
supercomputer scientists
of the decade of the 1980s
that were led by **Seymour Cray**
scorned, ridiculed, and rejected
the parallel processing supercomputer.
Those 25,000 supercomputer scientists
followed the vector processing vision
of Seymour Cray
and dismissed parallel processing
as a huge waste of everybody's time.
For the decade and half
that preceded
the Fourth of July 1989,

I was mocked
by the supercomputer community
and mocked
for attempting to parallel process **across**
processors.
I was advised that I was attempting
to process the impossible-to-process.
Some research mathematicians
asked me to comment
on the role of beauty
in my invention
of my massively parallel processing
supercomputer.
In my mathematical analysis,
beauty comes first
and truth comes second.
In my physical experimentation,
it is vice-versa.
The beauty of parallel processing
resides in the speed

of the supercomputer.
I invented
how to reduce 180 years
of **time-to-solution**
on one computer
to only one day
of **time-to-solution**
across a new internet
that is a new supercomputer
and a never-before-seen computer.
Before my **invention**
of the massively parallel processing
supercomputer
that occurred
on the Fourth of July 1989,
the word “supercomputer”
referred to a supercomputing machinery
that is powered by only one
central processing unit.
After that **invention,**

the word “supercomputer”
referred to a supercomputing machinery
that is powered by up to
ten binary million
central processing units.
For me—**Philip Emeagwali**—I explained
my contributions
to the development of the supercomputer
as my invention
of how to integrate
millions upon millions of
central processing units
and how to do so to emulate
one seamless, cohesive CPU.
My **virtual** CPU
is faster than the fastest
vector processing unit
that can be manufactured.
I invented
a machinery that is a supercomputer

in speed, or by definition,
but yet a new internet *de facto*.
I was asked to be a prophet
and to prophesize
how the computer will look like
in one thousand years.
In his book titled
“Natural History,”
the Roman author Pliny the Elder
explained that the breadth of Asia
should be "rightly calculated."
Pliny’s book was written in Latin
and was published
between the years 77 to 79,
or about two thousand years ago.
The Latin translation for the phrase
"rightly calculated"
is “*sane computetur*.”
In that sense, the word “computer”
was first used 2000 years ago.
Each generation redefined the word

“computer.”
Our descendants definition
of the computer
will change to perhaps become
syno**ny**mous
and correspond to our phrase
“planetary-sized super-brain
that enshrouds our Earth.”
For our post-human descendants
of Year Million,
I foresee each person
as a super-intelligent cyborg
that is part human, part machine,
and part computer
with a great sense of humor.
I foresee their super-brain
as enshrouding even the Solar System
and as one super being
that can live forever.