THREE SPIRITS MEET

Poems by Philip Emeagwali

emeagwali.com

ISBN-13: 9781234567890
ISBN-10: 1477123456

Cover design by: Philip Emeagwali
Library of Congress Control Number: 2018675309
Printed in the United States of America

To my wife, Dale, for being so supportive and a wonderful partner in life.

CONTENTS

THEOREM'S ECHO, COMPUTER'S HUM

Pythagoras and Philip Emeagwali discuss paradigm shifts arising from Pythagoras theorem, parallel processing, and AI supercomputing.

◆ ◆ ◆

Pythagoras: Philip, across the gulf of time, I hear the echo of a mind in prime. Your grids of power, computations vast—they find their root in patterns of the past.

Emeagwali: Pythagoras, your theorem laid the way! The right-angled truth, the lengths at play— foundations built on numbers, crisp and bright, a harmony that shed its guiding light.

Pythagoras: My harmonies were born in string and lyre, a ratio of beauty, a celestial fire. Order from chaos, in numbers I sought, and found the cosmos with pure reason wrought.

Emeagwali: And I, with circuits humming in my ear, sought power in division, held complexity near. My nodes in concert, like your ratios bold, divide the problem, let the answers be unrolled.

Pythagoras: Yet now, I hear of minds not flesh and bone, but silicon and circuits—intelligence unknown. AI weaving patterns beyond our human ken, seeking answers in the realm of 'if' and 'then'.

Emeagwali: They learn from data, vast and ever-flowing, adapt and predict, with speed unknowing. A paradigm shifted, where the mind may lie not in the lone genius, but in the swarm that dares to fly.

Pythagoras: Perhaps in this new world, my theorem takes a twist, where angles bend and warp in digital tryst. The cosmic ratios no longer neat and clean, but probabilities bloom upon the unseen.

Emeagwali: Yet there's an elegance, a beauty still I trace, in algorithms seeking their determined space. The quest for understanding, for knowledge

ever bright, it echoes yours, old friend, across this stretch of night.

Both: From triangle to supercomputer's endless store, the hunger for the pattern binds us evermore.

THREE SPIRITS MEET

In chamber dim, where echoes dance on time-worn, dusty shelves,

Three spirits meet, minds unbound by mortal realms themselves.

Confucius, with his wisdom old, eyes lit with gentle flame,

Isaac Newton, logic's lord, seeks answers yet untamed,

And Philip Emeagwali stands, a beacon of his age,

Bound to them by knowledge sought across a boundless stage.

Isaac Newton

Isaac

Mathematician, physicist, a mind so bright,

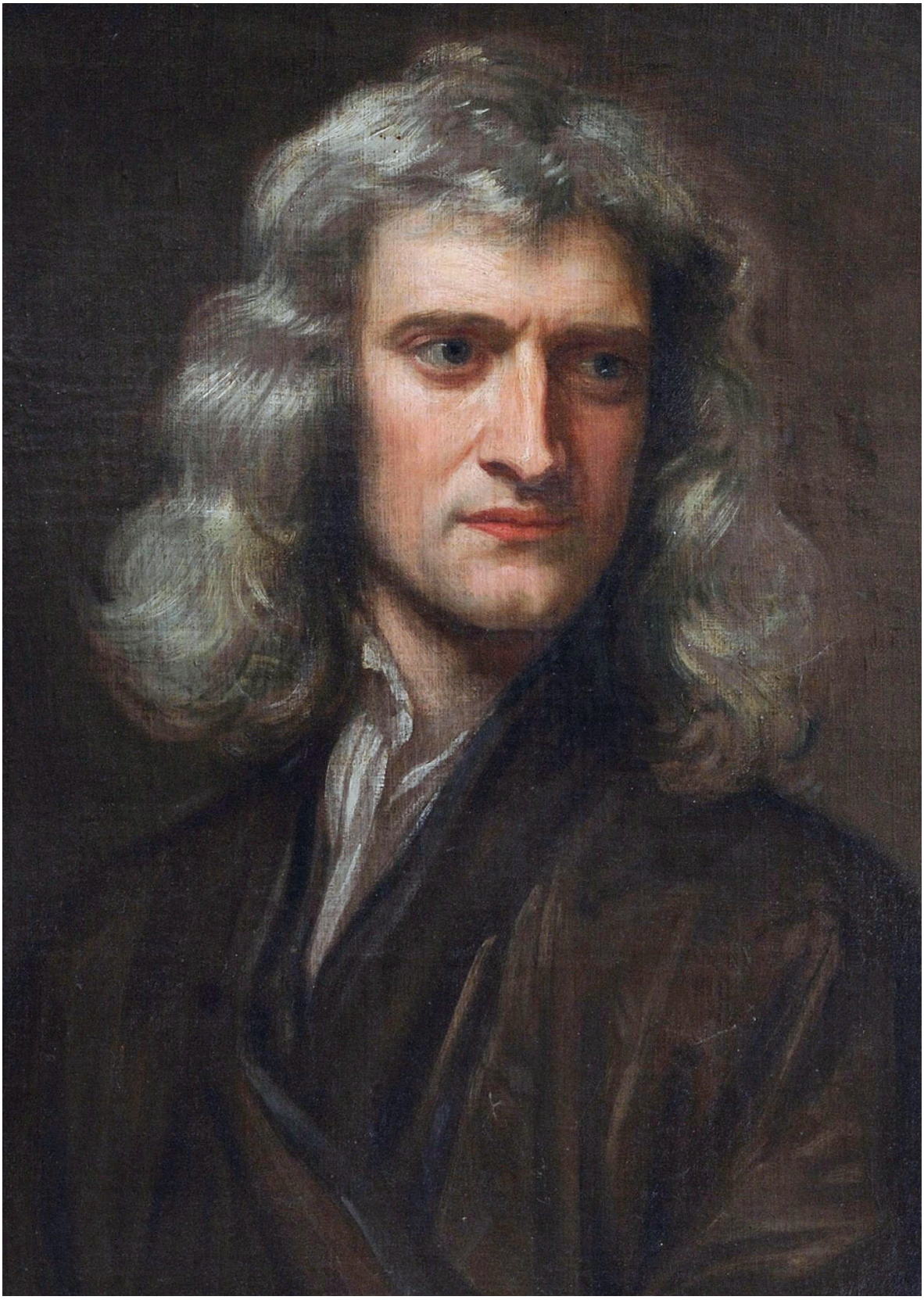
Laws of motion, gravity under his light.

Apples fell, planets spun, optics revealed,

Calculus born, scientific truths unsealed.

Royal Society, a thinker so keen,

Changed the world, forever to be seen.



◆ ◆ ◆

Confucius:

Tell me, scholar Emeagwali, of this world where you abide,

What marvels have the ages wrought, where truths no longer hide?

Emeagwali:

My world, oh sages of the past, is one of unseen flight,

Where thoughts take wing on unseen waves, with calculating might.

Machines that sing with numbers vast, outpacing human hands,

Unlocking secrets, swift and sure, across the farthest lands.

Newton:

Intriguing words! Yet in my time, the apple's fall did show,

How laws of motion bind the world, from highest stars to depths below.

Can your machines, with all their speed, such cosmic truths unveil?

Or do they dance in shallow pools, where deeper meanings fail?

Emeagwali:

Sir Newton, doubt me not so swift, for patterns guide us still,

The force that drew your apple down, within my code I fill.

The oil that sleeps beneath the earth, the weather's swirling might,

Are simulated in my grid of ones, with ever-growing light.

Confucius:

Your words ring with ambition's fire, a worthy, noble quest,

Yet tell me, does this path of yours bring harmony and rest?

For knowledge, like the finest jade, must serve a higher aim,

Lest minds grow sharp yet hearts grow cold, in endless selfish game.

Emeagwali:

Your wisdom strikes a timeless chord, oh wise and ancient sage,

For science, left without a soul, is but an empty cage.

The grids I build, the codes I weave, are tools for humankind,

To heal, connect, and better grasp the beauty we may find.

Newton:

Yet progress walks a knife's thin edge, where power can deceive,

Great minds may forge destructive force, where innocents may grieve.

How do you guard this precious gift, the knowledge that you bear?

Ensure it brings a brighter dawn, and not a world laid bare?

Emeagwali:

A heavy question, one that haunts the corridors of time,

From empires built on conquered lands, to wars of poisoned rhyme.

My hope lies not in code alone, but in the hearts of men,

To choose compassion, seek the good, beyond ambition's den.

Confucius:

A worthy hope, young Emeagwali, for wisdom starts within,

The greatest battles ever fought are ones where virtues win.

Remember, as your knowledge grows, to cultivate the soul,

For harmony within the world reflects the inner goal.

Newton:

And let your logic shine a light on ignorance and fear,

Dispel the superstitions old, make paths of reason clear.

The universe responds to minds that dare to understand,

Your codes may yet unlock a door, with bold and steady hand.

Emeagwali:

Your words, like stars, illuminate the journey yet to be,

I stand upon your shoulders tall, your legacy in me.

And though our eras shift and change, the quest for truth remains,

A symphony of seeking minds, where knowledge ever gains.

Together:

Though time and worlds may set us far, in spirit we unite,

Bound by wonder, ceaseless search, chasing
wisdom's light.

THE PHILOSOPHER, THE ASTRONOMER, AND THE COMPUTER SCIENTIST

Socrates: Philip, speak of knowledge in this dazzling, changing age. Word has reached me of your thoughts, writ on some electronic page. Does wisdom echo through your code, like stars across the night, or does this new invention dim philosophy's guiding light?

Galileo: And tell me, does this computation dare to map the sky? Do numbers trace the comet's path, or stellar births on high? My lens brought distant worlds to view, a truth that dogma fled. Does your machine find heavens yet untold, or truths within instead?

Emeagwali: Great masters, in your wisdom I find kinship and a guide. My supercomputer seeks the truth, where mysteries reside. Yet where you probed the world with thought, or lens turned to the skies, I harness grids of calculation, where a different power lies.

Socrates: But does this power grant you answers, or multiply the doubt? Can code decipher human hearts, or what the soul's about? For wisdom, dear companions, is more than facts alone, it seeks the 'why' behind the 'how', the questions yet unknown.

Emeagwali: Your questions linger, Socrates, a wisdom never old. I model nature's grand design, where calculus takes hold. Equations dance upon my screen, revealing fluid flow, the weather's vast complexity, where storms may come and go.

Galileo: Yet in the turning of the stars, a harmony resides, a beauty logic often masks, behind its rigid tides. Does your machine catch spirit too, or only cold command? Can truth be calculated so, or slip through like fine sand?

Emeagwali: Perhaps, like music, truth has notes our codes cannot contain, yet even in its perfect form, the question will remain. My grids are but a tool, my friends, the mind directs the quest, and where our search for knowledge goes, lies in the human breast.

All: From Athens' streets to starry skies, and grids where numbers hum, we see reflected in each other's eyes, the hunger yet to come. To seek, to question, and to strive, that spark that keeps our minds alive.

MULTIPLYING MINDS

An imagined, poetic conversation between Archimedes, Sir Isaac Newton, and Philip Emeagwali. They discuss the paradigm shift arising from the invention of calculus and Philip Emeagwali's discovery of the first supercomputing via parallel processing of complex problems governed by the partial differential equations of calculus. The secret to AI supercomputers: many processors solving tasks simultaneously (parallel processing).

Archimedes (c. 287 BC–c. 212 BC) was a brilliant Greek mathematician, physicist, engineer, and inventor. Famous for his 'Eureka' moment, Archimedes discovered principles of buoyancy, developed war machines, calculated pi, and laid the foundations of calculus. His genius remains revered in the world of science.

Sir Isaac Newton, born in 1643, was an English genius who transformed our understanding of the universe. His revolutionary discoveries include the laws of motion, universal gravitation, calculus, and the nature of light. A true icon of the Scientific Revolution, his work remains influential today.

Archimedes: Philip, word reached through the ages—of grids and code, and minds in numbered cages. They speak of calculations swift and grand, reshaping how we grasp creation's hand. Tell me, scholar, do your theorems bold still echo truths I sought in days of old?

Newton: And I, who charted force and falling skies, recognize the hunger in your eyes. The quest to map the laws that bind the world, where planets whirl and mysteries are unfurled. Did my equations light your path in any way, or were there different truths you found to sway?

Emeagwali: Great masters both, you paved the road on which my feet began to boldly go. Your calculus, a language to define the way stars dance and forces intertwine. And from your levers, Archimedes, I sought to multiply the power a single mind could wield and ought.

Archimedes: You speak of **multiplying minds**! A feat untold! How do you bind such genius in your fold?

Emeagwali: In grids I built my lever, lines of code instead. Each node a thinker, in calculations wed. Where single minds would stumble, the divided task takes flight, solving the equations of the world with blinding light.

Newton: So calculus, unbound by mortal hand, finds newfound speed on your gridded, digital sand. It brings a thrill, to think how far we've pressed, from falling apples to this supercomputer's nest.

Archimedes: Yet in this haste, this thirst to comprehend, do beauty and the simple joy transcend? Is there still wonder left in nature's quiet ways, or only numbers flashing through your programmed, endless days?

Emeagwali: The beauty, masters, lies in what we might reveal, the patterns waiting for our touch to make them real. From weather's rage to oil fields deep below, equations hum, and in their song, new knowledge starts to grow.

All Three: Though centuries divide us, and our tools take different form, the chase remains the constant in the calm or in the storm. To question, calculate, and build upon the past, this thirst for understanding is the bond that ever lasts.

THE EVOLUTION OF EQUATIONS

From Handwritten to Supercomputed

Gottfried Leibniz, a German polymath born in 1646, was a brilliant philosopher, mathematician, scientist, and diplomat. He independently invented calculus, developed the binary system, and made significant contributions to philosophy, physics, and other fields.

Sir Isaac Newton (1642-1727) was an English mathematician, physicist, and astronomer, renowned for formulating the laws of motion and universal gravitation. His work laid the foundation for classical mechanics and significantly influenced the Enlightenment. Newton also made substantial contributions to optics and shares credit for developing calculus. His seminal work, "Principia Mathematica," is a landmark in scientific history.

Leibniz:

Sir Isaac, Emeagwali, join me in this thought-filled space!

We tread a thread through ages, linked by bold, inquiring grace.

You, Newton, with your fluxions grand, and I, with differentials in hand, did unlock the dance of change, a language for the vast and strange.

Newton:

Indeed, Gottfried, we grappled with a world in motion swift, sought tools to map the curves and flows, the upward rise, the downward drift.

Calculus, that wondrous birth, gave power to dissect the Earth.

Emeagwali:

Yet centuries spun by, and grand equations still did lie beyond the reach of lone, bright minds, complex and vast, tied to fickle winds.

Then came my grids, a mesh of power, dividing tasks in a single hour. Like calculus unlocked the line, my grids split problems, fine and fine.

Leibniz:

A multitude of minds combined! A parallel assault of brilliant kind!

Tell me, is there beauty found in solving what would once confound?

Emeagwali:

Beauty in those answers swift, where patterns hum like nature's gift.

To mimic storms and model flight, equations dance in streams of light.

And where your calculus holds sway, my grids now pave a faster way.

Newton:

Faster, yes, a shift unbound! But do the truths remain profound?

Is there a wisdom lost, perhaps, with speed that makes the spirit lapse?

Emeagwali:

Wisdom thrives where tools enhance. From stars above to ocean's trance, the universe spills more to glean, and calculations lead us keen.

Your calculus remains the key, but swifter wings help spirits free.

All:

From tangents drawn to circuits bold, we chased the knowledge stories hold.

In fluxions, differentials, or a grid, the thirst to know can ne'er be hid.

Though paradigms may shift their ground, the greatest quest will still be found: to map the world, both small and wide, with tools that let our spirits stride.

ELECTRONS ECHO ANCIENT THEOREMS

Where timeless minds converge and converse, a triad bright appears,

Euclid, of angles and of form, with wisdom through the years.

Al-Khwarizmi, with equations keen, where numbers dance so true,

And Emeagwali, modern star, where boundaries break anew.

◆ ◆ ◆

Euclid:

A scholar born in recent age, so histories proclaim,

This Emeagwali, whispers sound of yet another name.

They say his mind grasps theorems vast, in realms I never sought,

Pray, tell me friends, what wonders new upon the world he's wrought?

Al-Khwarizmi:

Indeed, where algebra finds root, my legacy unfurled,

He builds upon the known expanse, into a stranger world.

Not single problems, neat and solved, his gaze sees grander schemes,

A thousand tasks, a woven net, all born in coded dreams.

Emeagwali:

Humbled I stand before such minds, the giants of the past,

Whose brilliance lights the darkened path, where knowledge long will last.

The simple line, the balanced form, foundations firm and true,

Yet nature's work, so wildly vast, demands a vision new.

Euclid:

Speak on, young mind, for curiosity now pricks my ancient ear,

What shapes and puzzles dare you bind, that I would yearn to hear?

Emeagwali:

Where once we toiled with hand and quill, a single mind in flight,

Now legions march in silicon, with blazing bursts of light.

My processors, row on row, in grids of endless power,

Divide vast problems, piece by piece, devouring them each hour.

Al-Khwarizmi:

Your 'processors', like swift abacus, yet on a scale untold?

With numbers as unyielding troops, a battlefield unrolled?

Emeagwali:

Precisely so! Where weather swirls, or oil lies deep concealed,

Where galaxies themselves collide, their secrets are revealed...

Not through a single, brilliant stroke, but force of many minds,

Each part in concert knows its role, a tapestry time binds.

Euclid:

Yet in this storm of numbers vast, where reason guides the way,

Do forms emerge, an elegance, like theorems brought to play?

Emeagwali:

The very core of what I seek! To find the hidden grace,

Where chaos yields to patterns neat, in computation's chase.

Like stars that in their seeming mess, find orbits etched above,

My algorithms chart the unseen laws, the symmetries we love.

Al-Khwarizmi:

A worthy quest, this dance you tread, where beauty lies in code,

To mirror nature's grand design, upon a new abode.

Euclid:

Though methods shift, the ancient thirst for knowledge burns so bright,

From lonely scribe to legions bound, you chase eternal light.

Together:

And so we find, across the years, a kinship of the mind,

Where number, pattern, reason dwell, and human spirits bind.

Though tools transform, the yearning stays, to grasp the cosmic plan,

And leave a mark, both bold and small, where progress never wanes.

A DREAM OF ALGORITHMS ACROSS THE SMOKE OF WAR

An imagined conversation between the 12-year-old "Philip Emeagwali" then living as a refugee in Biafra and the 70-year-old "Philip Emeagwali." They reflect on the contributions of "Philip Emeagwali."

◆ ◆ ◆

Young Philip:

Look at these stars... a million untold,
Each one could hold planets, their stories unrolled.
If only I knew how to chart such a flight,
To unravel their secrets, illuminate night.

Older Philip:

Child with bright eyes, the fire I see,
Was the same spark that burned deep in me.
The stars will still shimmer, some journeys take time,
Knowledge your ladder, and perseverance to climb.

Young Philip:

What if they mock me, the color I bear,
Say my big dreams are like castles in air?
And the war... my books buried, my schoolhouse is lost,
Can a broken boy pay ambition's high cost?

Older Philip:

Let hardship refine you, not let you descend,
Knowledge won't judge by where journeys begin.

Each scoff and dismissal, fuel on your way,
Prove strength lies in knowledge with each passing day.

Young Philip:
But the brilliance around me, those grand, lofty towers,
Their science like magic, with limitless powers.
Will a boy from Akure on that great stage belong?
Or am I just dreaming a far-fetched song?

Older Philip:
Those towers weren't built upon fortune or name,
But on minds ever-questioning, hearts all aflame.
Your Nigerian spirit, your unyielding quest, Can rewrite the rules, surpass every test.

Young Philip:
If I dare change the world, how does one even start?
When problems seem giant, how big is my heart?

Older Philip:
See patterns in starlight, in oil fields beneath,
Each tiny connection is laden with teeth.
Break the grand questions to simpler design,
Then watch in amazement as answers align.

Young Philip:
You speak as if triumphs are yours to possess...
What of hardship and failures, how do those feel less?

Older Philip:
Each stumble a lesson, a chapter, not end,

They'll whisper "keep going" when doubts try to bend.
For the sweet taste of breakthrough, child, this much is true,
Is worth all the struggle one soul pushes through.
Young Philip:
It's a daunting road, then... yet in you, I see,
The proof that a boy with a dream *could* be me.

Older Philip:
Take that young fire and carry it far,
Your name like those stars, a beacon you are.

HEARTS ENTWINED, MINDS ABLAZE

A conversation between Dale Brown Emeagwali and Philip Emeagwali, focusing on their shared passion for science and their journeys.

◆ ◆ ◆

Dale:

Beneath the microscope, I sought where tiny worlds reside,

The secrets hidden in a cell, where pathogens confide.

Philip:

Equations were my battleground, computers hummed my song,

Grids unlocked with code and thought, where patterns danced along.

Dale:

Penicillin's ancient fight, resistance strains took hold,

The microscopic battlefield, a story to unfold.

Philip:

While supernetworks sought new speed, connections far and bright,

Bridging oceans in a blink, reshaping day and night.

Dale:

The lab coat felt like armor strong, against the doubt's refrain,

A woman in this hallowed space, to change the future's grain.

Philip:

They whispered "he's from Africa," saw limits in my name,

But calculations soared unbound, proving brilliance all the same.

Dale:

Mentoring young, bright eager eyes, the spark when knowledge sings,

To see themselves reflected back, the power science brings.

Philip:

For every child who yearns to know, who dreams beyond their town,

The pathways that we help create, where genius can be found.

Together:

Though fields diverge, our spirits climb, with science as our guide,

The thrill of answers yet unknown, walks ever by our side.

CONVERSATIONS WITH GREAT MINDS

◆ ◆ ◆

Euclid:
From timeless halls of reason, where axioms hold sway,
I hear whispers of a scholar in this latter-day.
Emeagwali they call you, who plays in forms anew,
Tell me, is geometry's pure heart still beating true?

Emeagwali:
Honored Euclid, your points and lines I've walked with awe,
The foundation of knowledge, built with logical law.
Angles and theorems, truths eternally known,
The building blocks of beauty on which thought has grown.

Euclid:
Ah, but my tools were compass, straightedge so plain,
To measure the finite, where simple truths did reign.
In this age of engines, do calculations find,
Shapes more wondrous than those constrained within the mind?

Emeagwali:
Your shapes find new expression, oh master of old,
Fractals like snowflakes, their patterns unfold.
And your parallel lines, once destined not to meet,

Intersect in our models, where virtual spaces complete.

Euclid:
My postulates falter?
The laws I set fast,
Bent and contorted in a realm unimaginably vast?
How can this be?
Is rigor left behind,
For machines drawing circles beyond reason's confined?

Emeagwali:
Parallel processing, like streams running wide,
Tackles grand puzzles your scrolls never tried.
To model a coastline, its jagged expanse,
Where every small grain has its vital chance.

Euclid:
A coastline then modeled, down to the tiniest stone?
With infinite fractions all measured and known?
This challenges notions I swore to impart,
Of wholes being larger than any one part.

Emeagwali:
Yet still, your clean logic serves as our base,
To build tessellations in virtual space.
Your triangles and hexagons, their harmony we find,
As algorithms spin them, and new forms are designed.

Euclid:
Then a tapestry woven, intricate and bright,
From my humble beginnings to your world of light.
Perhaps old truths expand, bend, but never they break,
As knowledge evolves new wonders to take.

Emeagwali:

Your spirit guides us still, where certainty resides,

Yet with computational might, imagination collides.

Across time and dimensions, where geometry sings,

The tools they may shift, but the essence it clings.

CONSTELLATIONS OF CODE

Brahmagupta's Legacy in Emeagwali's Machines

From ancient Ujjain, where calculations bloomed,
A voice emerges, where new numbers are exhumed.
They call you Emeagwali, of a lineage untold,
Across time and vast oceans, your knowledge seems bold.

Emeagwali:
Master Brahmagupta, your brilliance transcends,
The zero, quadratics, the work of your hands.
That legacy echoes in realms far and wide,
Foundations on which our new structures abide.

Brahmagupta:
Yet my tools were papyrus, the stylus my sword,
Solving equations for merchants and lord.
Yours speak of vast engines, and starlight they chase,
Do they capture the cosmic truths I sought to embrace?

Emeagwali:
Yes, your celestial longings found form unforeseen,
In supercomputers, where knowledge ignites on the screen.
We model the planets and forces afar,
The laws of your physics in each spinning star.

Brahmagupta:

Laws then not written, but fought for and found,

My Brahmasphutasiddhanta on scholarly ground.

This "parallel processing"—its mystery confounds,

How are my calculations mirrored in such bounds?

Emeagwali:

Like rivers that diverge, then re-entwine with might,

Problems are divided, seeking answers so bright.

Imagine an army of scholars, their quills poised at hand,

Each solving a portion as by your command.

Brahmagupta:

An army of numbers, this battles my thought!

My focus was inward, a singular plot.

Could such 'splitting' not shatter the beauty we find,

When a solution emerges, illuminating the mind?

Emeagwali:

We still crave that brilliance, the 'aha' we chase,

Yet tools grow in power to match the quickening pace.

Those fractions once wrestled, your theorems of old,

Now dance in equations as stories unfold.

Brahmagupta:

The zero I wielded, of absence and space,

Does it find new expansion in this frenetic race?

Where equations take flight on wings you design,

Is there still contemplation in this modern sign?

Emeagwali:

Yes, the zero is sacred, its power remains,

The bedrock of logic, from temples to brains.

Your work sought patterns, a universal plan,

We chase that grand blueprint, as only minds can.

Brahmagupta:

Then perhaps there's a thread through the fabric of time,

Where a thirst for knowledge transcends every climb.

Our tools and our nations, they ebb and they flow,

But the search for the answers, that light in us glows.

ACROSS OCEANS OF KNOWLEDGE

Aryabhata and Emeagwali Discuss Innovation

Aryabhata:

Across an ocean of years, your name takes wing,

Your work in distant lands makes ancient whispers sing.

They say you wield numbers with such dazzling might,

Harnessing patterns unseen, casting new starlight.

Emeagwali:

Aryabhata, your legacy precedes you through the night,

Master of astronomy, where calculation took flight.

Zero and trigonometry, the tools in your bright hand,

Echo still in the equations my machines now command.

Aryabhata:

Yet my tools were the heavens, and parchment my decree,

Your 'machines' sound like marvels, dreamt wildly by me!

Tell me, scholar, are those stars closer in your hold,

Does your vision now surpass what my eyes could behold?

Emeagwali:

Indeed, we paint galaxies with digits at our call,

Where your tables and sine waves helped build foundations tall.

We simulate cosmic forces, from expansion to collapse,

The universe compressed within numbers we may grasp.

Aryabhata:

Your numbers spin faster than my mind could contain,

Yet the Earth, did you prove once and for all her domain?

Does she rotate upon herself, as I dared to proclaim,

Or do ancient falsehoods still kindle doubt's flame?

Emeagwali:

Your truth took hold, Aryabhata, and on it we have soared,

Understanding orbits, and motions long explored.

But new mysteries linger, dark matter holds its sway,

The cosmic rhythm echoes, though tools change day by day.

Aryabhata:

To know how much remains unknown, the heart grows truly wise,

The quest is its own answer under ever-seeking skies.

Then tell me, in your calculations, does wonder cease to dwell?

Or is that timeless yearning still present in each cell?

Emeagwali:

Wonder finds new shapes, the deeper we descend,

Your zero, once so radical, now helps powers transcend.

In code and processors, awe shimmers and persists,

For no machine unlocks what lies within the human mists.

Aryabhata:

A comforting thought then, that under sun or moon,

Our spirits intertwine across history's endless loom.

Your brilliance shines onward, though methods disagree,

We seek patterns like starlight, falling into the same sea.

Emeagwali:

The same sea of knowledge, ever changing in its tide,

From your Ujjain observatory to supercomputers wide.

And your spirit still ignites, Aryabhata of old,

The future that you whispered, in digits it unfolds.

HOUSE OF WISDOM

Muhammad ibn Musa al-Khwarizmi: Father of Algebra and Algorithms

Born around 780 CE in Khwarazm (present-day Uzbekistan), al-Khwarizmi was a Persian mathematician, astronomer, and scholar who worked in the House of Wisdom in Baghdad, a renowned center of learning during the Islamic Golden Age.

Al-Khwarizmi's emphasis on clear explanations, general methods, and the symbolic representation of equations revolutionized mathematics. His pioneering contributions greatly influenced the development of mathematical thought and form the foundation of modern algebra and algorithms, the cornerstone of computer science. His works had a profound impact on Western mathematics and science.

Al-Khwarizmi:

A whisper reaches me across the desert of time,

Of a scholar named Emeagwali, with intellect so prime.

My name lives in 'Algorithm', an echo of knowledge old,

Yet now your machines compute mysteries untold.

Emeagwali:

Al-Khwarizmi, master of the unknown, your 'x' set free,

A foundation you laid for my processors to see.

Equations that puzzled philosophers of yore,

Now yield to swift code, opening knowledge's sealed door.

Al-Khwarizmi:

My scrolls were but parchment, my numbers but sand,

Compared to the whirlwinds at your wise command.

With symbols of zeros and ones you ignite,

Vast patterns emerge, casting darkness to light.

Emeagwali:
Yet your 'House of Wisdom' echoes into my day,
The thirst for solutions shines true either way.
Algebra's language still binds every thought,
In lines of my code, your brilliance retaught.

Al-Khwarizmi:
Then tell me, young scholar, does your world now abound,
With puzzles your engines cannot yet expound?
Is there space for unknowns, where logic takes flight,
And the 'Aha!' rings out on a star-studded night?

Emeagwali:
Always the unknown, the edge of what's known,
Drives the hum of my circuits, the questions we've sown.
We model the climate, seek new cures to find,
But behind every answer, more mysteries unwind.

Al-Khwarizmi:
A comforting thought, that the quest ever calls,
Through ages and methods, with triumphs and falls.
Is there beauty untamed, a solution too fine,
That no machine grasps, but awaits human sign?

Emeagwali:
In patterns beyond logic, perhaps some remain,
Where art and equations cross fertile terrain.
The language of numbers tells stories untold,
But whispers of the soul wait yet to unfold.

Al-Khwarizmi:
Then kindred spirits, we are, though ages apart,

United by wonder, by puzzle, by start.
My humble equations bloom in your hand,
Across a vast ocean, on knowledge we stand.

Emeagwali:
A testament, maestro, to the timeless design,
Where spirits aligned seek the endless to define.
Your algebra's seed finds vibrant new space,
In supercomputers that quicken the race.

A CELESTIAL DIALOGUE

Copernicus:

A whisper reaches me across the gulf of stars and ages,

Of celestial maps reborn, on unseen, brighter pages.

Tell me, seeker named Emeagwali, how in this future bright,

Have you pierced the darkness further, found new depths of light?

Emeagwali:

Revered Copernicus, your heliocentric call,

Shook the foundations of a world we thought so small.

Yet my tools extend past eyesight, into numbers pure,

Where supercomputing charts a cosmos more mature.

Copernicus:

With quill and parchment,

I dared the spheres to rearrange,

Yet my models yearned for proof, some truth beyond the strange.

Do your machines now speak the rhythm the planets know so well?

Can they unveil hidden harmonies where cosmic giants dwell?

Emeagwali:

We simulate the birth of stars, and galaxies in flight,

The fabric of spacetime bending, no longer out of sight.

Like threads in a tapestry, gravity's patterns trace,
Where your theories find expression in this vast, computational space.

Copernicus:
Computation... like angels adding up the sum of spheres,
Do these grand equations banish long-held earthly fears?
When man measures nebulae, does his spirit feel more grand,
Or lost in an expanding void, a speck upon the sand?

Emeagwali:
The questions change shape, not their timeless might,
As we peer further outward, chasing threads of light.
Each discovery brings wonder, humility in tow,
The universe unfurls its secrets, both humbling and bold.

Copernicus:
It seems through every epoch, bold hearts must find the way,
Whether charting orbits by bare eye, or in processors' blinding ray.
And what would you seek, if boundless power graced your hand? New suns?
The edge of darkness where creations first expand?

Emeagwali:
Perhaps the grand equations that birth and guide it all,
The universal code from which cosmic symphonies sprawl.

But also, how such knowledge serves the hearts and minds on Earth,

For discovery without wisdom gives little lasting worth.

Copernicus:

A noble goal. Then let our spirits echo on this cosmic breeze,

United by the thirst to know, though centuries displease.

For the human journey is to touch the stars, in mind and deed,

And you, Emeagwali, carry forth the fire and the seed.

DIALOGUE THROUGH AGES

Galileo's discoveries challenged the prevailing view of the universe, which was based on Church doctrine. His strong advocacy for the Copernican model put him in direct conflict with the Catholic Church. Despite threats and warnings, Galileo continued to publish his findings, leading to formal charges of heresy. In 1633, the Inquisition forced him to recant his beliefs and sentenced him to house arrest for the remainder of his life.

Galileo:
A whisper reached me of your marvels, young man,
Machines that decipher where my own sight outran.
With lenses I peered at the heavens so bright,
Do your marvels see further, with untamed light?

Emeagwali:
Signor Galileo, the stars you did chart,
Were kindlers of passion in my youthful heart.
Your struggles and triumphs paved pathways unknown,
Where knowledge defied all the old ways it'd grown.

Galileo:
Yet my tools were so simple, the glass and the eye,
How does this new magic illuminate the sky?
I plotted the planets, their elliptical race,
Do your numbers predict where new comets you'd chase?

Emeagwali:
Comets and more, Sir. Through code we refine,

The interplay of forces, where equations align.
Supercomputers unravel the cosmic design,
From starbursts to orbits, their mysteries align.

Galileo:
My whispers of gravity, force unseen at play,
Did your tools refine how those patterns hold sway?
The fall of a feather, the moon in its thrall,
Can equations unravel where my theories would stall?

Emeagwali:
The language of math speaks where once there was doubt,
The forces you mapped, we now simulate out.
The flow of a nebula, black holes so vast,
In models we glimpse where the cosmos won't last.

Galileo:
Ah, to peer in your lens, the universe unbound,
With speeds that would leave my poor senses astound.
And yet, do discoveries outpace all the joy,
Felt by man with his hand-crafted, humble boy's toy?

Emeagwali:
Your joy paved the way, Sir, we stand on your might,
But the awe still remains with each newfound insight.
To puzzle and ponder, to push with keen eyes,
That spirit transcends every tool we devise.

Galileo:

Then kindred we are, across ages untold,
Bound by the questions, the answers we hold.
Though my moons were four, and your stars without count,
It's the search for the truth that truly does mount.

ACROSS THE GULF OF TIME

Newton:
So, this is the future where knowledge takes flight,
No quill nor abacus, but with harnessed light.
Tell me, young thinker, with machines grand and bold,
What new cosmic truths do your codes now unfold?

Emeagwali:
Sir Isaac, your brilliance set science alight,
Your laws of motion, of matter and might.
Yet now, within circuits, my calculations soar,
Mimicking nature, exploring its core.

Newton:
I studied the apple, its fall from the tree,
A language of forces unveiled unto me.
Do your tiny digits speak a similar story,
Of movement and patterns, unseen by past glory?

Emeagwali:
Indeed, where you mapped planets with a steady hand,
I mirror those orbits in grains of fine sand.
Fluid dynamics, in equations take form,
Simulating tempests, predicting the storm.

Newton:
My calculus spoke of a world so precise,
Yet nature's grand chaos often threw dice.
Can your numbers embrace this tempestuous art,

Deciphering whirlwinds, a turbulent heart?

Emeagwali:
It's the very disorder that grants me new strength,
No lone calculation, but power in length.
My machines, they work not as one, but a tide,
Sharing solutions, where knowledge can ride.

Newton:
Your 'parallel' concepts leave my old mind ablaze,
Like gravity's dance across star-studded maze.
Dividing a problem, then weaving it whole,
This surge in potential gives science new soul.

Emeagwali:
We stand upon shoulders of giants, 'tis true,
Your foundations unshaken, where my own wisdom grew.
Yet the tools may evolve, and the methods take flight,
The endless pursuit is our shared guiding light.

Newton:
Perhaps now my Principia could blossom anew,
With millions of figures, the cosmos to view.
The language may differ, our centuries wide,
But in wonder and reason, kindred spirits reside.

REACHING INFINITY

Ramanujan:
From realms of numbers, where patterns entwine,
I feel a kindred spirit, a brilliance like mine.
They whisper your name, Emeagwali, they say
You forge new equations where mysteries give way.

Emeagwali:
Ramanujan, maestro! Your theorems still astound,
Infinite echoes in every work I have found.
My world is processors, but yours was the mind,
An intuitive genius, one of a kind.

Ramanujan:
Yet even my insight did stumble and fall,
Where patterns converged, I lacked tools to break tall.
Could your engines unfurl what my hand couldn't hold,
Where equations unravel, mysteries untold?

Emeagwali:
Your patterns still guide us, a blueprint untamed,
With supercomputers, their secrets are framed.
We test prime distributions, in vast dazzling flight,
Seeking your harmonies in digital light.

Ramanujan:
Digital light! And how does it compare,
To the numbers that bloomed with such mystical flair?

Born from my spirit, my goddess's grace,
Do your marvels retain an intimate space?

Emeagwali:
There's beauty in order that machines help design,
Where elegant logic brings patterns in line.
But perhaps that true spark, inspiration so bold,
Lingers in minds where theorems unfold.

Ramanujan:
Then man and machine may yet form a new art,
Where intuition leads, and processors impart
Their tireless precision to every grand scheme,
Chasing the answers to the infinite dream.

Emeagwali:
The infinite dream...the realm where we meet,
Though centuries divide us, our passions greet.
Your love for pure numbers, so potent and rare,
Ignites even algorithms, hanging in air.

Ramanujan:
From Madras to Cambridge, to your future so wide,
The kinship of reason cuts through space and through tide.
Perhaps in the future, young minds yet unknown,
See our names intertwined, seeds we have sown.

Emeagwali:
May those seeds find bright soil, to flourish and climb,
Inspired by your magic, by works out of time.
And perhaps in equations, one day they will see,
The spirit of Ramanujan woven with me.

RELATIVITY MEETS COMPUTING

Einstein:
With hair like a storm cloud, young thinker, you seem,
Like one chasing stardust within a new dream.
Word reaches old ears of a mind so unbound,
Taming the chaos where answers profound.

Emeagwali:
Sir, the very word 'Einstein' is woven with might,
You bent space and time, reshaped our dim sight.
Yet tools I now wield, born of minds in a chain,
Seek a different dimension where knowledge will reign.

Einstein:
Knowledge once bloomed in equations so clear,
But the cosmos expands, strange whispers draw near.
Black holes and bosons, those puzzles untamed,
Could their answers lie hidden in codes you have framed?

Emeagwali:
It's a humbling endeavor, my machines and my art,
Dissecting the world, bit by bit, part by part.
The grand simulations, like universes born,
Reveal subtle patterns since time first was sworn.

Einstein:
Is there beauty in code then, as found in a star?
The elegance hiding where reason seems far?

Emeagwali:
There's an echo, Sir Einstein, your theories impart,
The dance of equations mirrors code in my heart.
We simulate stars to uncloak unknown laws,
The same drive within us, the very same cause.

Einstein:
Your millions of circuits, abuzz in the night,
Expand the horizons of searching for light.
Perhaps your machines hold what physics can't grasp,
Unraveling riddles where even thought has collapsed.

Emeagwali:
Yet thought fuels the fire, gives purpose so bold,
The questions I ask are as ancient as old.
To harness the cosmos, understand every force,
Supercomputing then guides knowledge's course.

Einstein:
From relativity's wonders to algorithms bright,
The pursuit carries onward, with no end in sight.
And perhaps, my young dreamer, where your numbers align,
Is a glimpse of the fabric where answers entwine.

CARTOGRAPHERS OF THE UNSEEN SPACE

A poetic exchange between the mathematician Philip Emeagwali and the logician Kurt Godel. They discuss the common ground between their signature contributions to mathematics, namely, Godel's incompleteness theorems and Emeagwali's parallel processing.

◆ ◆ ◆

Godel: Philip, a waltz of logic binds our minds,
we sought the perfect system, fought the limits
thought had wrought.

Emeagwali: Yes, Kurt, a hunger for the truth that
lies concealed, a thirst for patterns, in numbers,
logic's field.

Godel: I grappled with the axioms, the building
blocks so pure, yet found those shining towers
somehow incomplete, unsure.

Emeagwali: And I, in grids of processors, chased a
different might, sought mastery through speed, raw
power burning bright.

Godel: Your supercomputers hummed a symphony of
code,
a symphony I could not play, my mind on a lonelier
road.

Emeagwali: Yet, in the hum I heard echoes of your
theorems bold, the quest to find the flawless
proof, the story to be told.

Godel: We built our separate empires, you in ones
and zeros grand, while mine were contradictions,
questions etched in sand.

Emeagwali: Yet, we were both **cartographers of the unseen space**, mapping the infinite, chasing
knowledge with relentless pace.

Godel: My incompleteness theorem, a haunting,
spectral thing, showed systems have their ghosts
where certainty takes wing.

Emeagwali: And mine, the power of the grid, its reach yet undefined, a tool to mold reality, to bend the world and humankind.

Both: Two seekers lost in labyrinths our brilliance had designed, we found the common thread in the hunger of the mind.

TO COMPUTE OR NOT TO COMPUTE

Shakespeare's AI Dilemma

In this imagined conversation, William Shakespeare and Philip Emeagwali discuss AI supercomputers, parallel processing, and quantum supercomputers.

◆ ◆ ◆

Shakespeare: Philip, now our world rewinds and spins in ways I ne'er divined. My quill and ink now code and byte, my stage transformed in silicon's light. Tell me, do tales of love and woe still stir the heart when algorithms flow?

Emeagwali: Your words, good Master, echo still, yet worlds are built where numbers fill the space you sought with soliloquy. Supercomputers think, it seems to me, in grids of power, a million minds as one, where single wit or wisdom would be outrun.

Shakespeare: A million minds in one? A fearsome thought. Would Hamlet's doubt find purchase if thus wrought? Could passion roar, or sorrows pierce the air, when feeling flows through circuits, cold and bare?

Emeagwali: Perhaps they'll learn to echo human pain, mine patterns for a melancholy Dane. And yet, a different genius may take hold, tales beyond our ken a thousandfold. Think, William, of the worlds they may design, where logic bends and verses intertwine.

Shakespeare: And what of quantum ghosts that some now say, exist in states of neither night nor day? Could such strange realms hold truths of heart and soul, or are such depths beyond a program's role?

Emeagwali: There lies the question, where all science stumbles still. Can code evoke what only poets spill? Perhaps the answer lies not in bits alone, but in a fusion where your verse and grids make a single, wondrous tone.

Both: From Stratford's stage to circuits vast and grand, we seek the essence of the thinking hand. In words or numbers, beauty may reside, and future bards will be our spirit guide.

FRIDA PAINTS A SUPERCOMPUTER

Imagining a Kahlo-Emeagwali Collaboration

Here's a poem imagining a conversation between Frida Kahlo and Philip Emeagwali, focusing on the common ground between art and science:

Kahlo:

Your world is ones and zeroes, sir, a logic strange and bright,

While mine is blood and bone and blooms, painted in fevered light.

Emeagwali:

Yet patterns weave through all we do, a truth both worlds embrace,

From nature's spirals in a shell, to circuits in their place.

Kahlo:

My canvas bleeds with shattered self, with thorns around my heart,

Aching truths that wounds reveal, where stories fall apart.

Emeagwali:

Each formula, a masterpiece, a dance where numbers flow,

Unlocking secrets nature holds, the things we yearn to know.

Kahlo:

I tear my spirit wide in paint, emotions raw and bare,

Does logic ever shed a tear, or know a soul's despair?

Emeagwali:

Within the grid, a beauty hides, the elegance of thought,

Where chaos yields to reason's hand, and cosmic truths are caught.

Kahlo:

The fractured body finds its voice in colors bold and stark,

While yours explores the universe, the unseen, blazing spark.

Emeagwali:

Our tools may differ, brush and code, yet both our quests entwine,

Seeking order, finding grace, where the human meets divine.

Kahlo:

Perhaps, within your humming world, there lies a painter's sigh,

Emeagwali:

And in your brushstrokes bold and bright, a hidden algorithm's cry.

BASQUIAT CODES, EMEAGWALI PAINTS

A Creative Crossover Experiment

Basquiat:

Word on the street is there's another disrupter at play,

Not with paint and raw canvas, but in some new-age way.

They call you Emeagwali, a name steeped in lore,

But our worlds seem as distant as oceans and shore.

Emeagwali:

Basquiat, your name carries echoes so bold,

Where streets were your galleries, stories untold.

Your art burst with fury, a rebellion so bright,

My canvas is of circuits, of code shining light.

Basquiat:

Light behind screens, in equations laid bare?

Does a keyboard replace the heart's wild despair?

My crowns and my skulls, they scream and demand,

How does that find kinship with your digital hand?

Emeagwali:

The scream might be softer, the medium so changed,

Yet the passion's familiar, the need to rearrange.

You challenged the status quo, defied every rule,

My tools may be different, but the drive is the fuel.

Basquiat:

So you break the old order? Those white, lofty skies?

Where genius was measured by some old, tired eyes?

My black kings and warriors, they tore at the seams,

Do your digits have power to dismantle those schemes?

Emeagwali:

We both stand as outsiders, forging our name,

From Nigeria's struggles to Brooklyn's fierce flame.

My breakthroughs in science, they open new doors,

Where minds unencumbered find untapped shores.

Basquiat:

Shores beyond galleries, with their critics so neat?

I'd trade their pretentious praise for truth on the street.

Though your battles take form in a virtual space,

Do the marginalized rise within their new, hopeful blaze?

Emeagwali:

Knowledge breaks chains, though progress is slow,

Each discovery crackles, igniting a glow.

If my work inspires even one brilliant mind,

In a village forgotten, left hopeless behind...

Basquiat:

Then maybe your numbers find their own, raw form,

Like those jazz notes I loved, defiant and warm.

They sing out a protest, a hunger to grow,

With algorithms fighting battles those critics won't know.

Emeagwali:

Together we're proof that genius won't yield,

Our forms may change, but the spirit's revealed.

Your vibrant defiance, the codes I refine,

Two unlikely rebels, reshaping the line.

EXODUS AND EQUATIONS

Journeys of the African Spirit

A conversation between Bob Marley and Philip Emeagwali in which they discuss the common grounds between their life and contributions.

Marley:

A whisper on the wind carries news of a different king,

Not with dreadlocks and guitars, but a scientific ring.

Emeagwali, they say your spirit took flight,

Searching for freedom in knowledge, in bits and in bytes.

Emeagwali:

Bob Marley, your songs were anthems, they shook the core,

A prophet of hope on oppression's harsh shore.

My notes were equations, where processors found release,

But we both chased a future of justice and peace.

Marley:

Justice and peace, yes, my brother, the fire burns true,

Your Nigeria echoes my Jamaica, struggles we knew.

I preached 'One Love' through music, a battle cry unfurled,

Did your machines carry that longing, out into the world?

Emeagwali:

They whispered connection, the networks I weaved,

Echoes your vision, where no soul's deceived.

The flow of knowledge unbound, from village to the screen,

Your fight to 'get up, stand up' lives there in between.

Marley:

I see it now, though fields may seem to lie apart,

Truth sings out loudest from a rebellious, loving heart.

My six strings were weapons against shadows so wide,

And those circuits you mastered, amplified dreams denied.

Emeagwali:

The son of a warrior, my battleground unseen,

Where ignorance yielded, replaced by new gleam.

Like your anthems awakened, minds found their release,

My supercomputers brought knowledge, sowed seeds of true peace.

Marley:

Then perhaps your processors carry a reggae-like beat,

The rhythm of change, where progress can't be beat.

Though tools may reshape, the story survives,

Of those who dare question, where transformation thrives.

Emeagwali:

We both faced our giants, on different, bright stages,

The struggle unites us across lines, across ages.

Your 'Redemption Song' lingers, a prayer for the fray,

While my codes, my equations, keep pushing today.

Marley: For the children of Zion, for spirits unbroken,

Our paths meet in purpose, even if weirdly spoken.

So keep those machines hummin', a rebel scientist's might,

Let knowledge break chains, ignite hope's guiding light.

OFFSIDES AND ALGORITHMS

Here's a poem envisioning a conversation between Pele and Philip Emeagwali about the connections between soccer and science.

Pele:

They call me poet of the pitch, where instinct guides my play,

A ball, a goal, the body's song—my world in bold display.

Emeagwali:

Yet in your dance of feint and strike, a deeper logic lies,

The physics of a curving shot, the angles in your eyes.

Pele:

It's fire in the blood you see, the will that bends the game,

The samba spirit in my feet, a joy that burns like flame.

Emeagwali:

Yet every pass, a trajectory mapped out with unseen force,

The interplay of moving forms, a calculated course.

Pele:

I read the field the way one reads a face, a flicker in the eye,

A weakness sensed, a moment seized, where victory can lie.

Emeagwali:

And in that split-second choice resounds the scientist's own quest,

To analyze, predict, then move—out-thinking all the rest.

Pele:

It's beauty born from sweat and strain, a crowd that roars delight,

The roar of triumph when it's done, a goal beneath the light.

Emeagwali:

And mine, the quiet lab's reward, equations taking flight,

The thrill of breakthrough and the proof—the knowledge shining bright.

Together:

Though worlds apart our talents seem, a common thread we find,

The drive to conquer, to excel, the power of the mind.

LEFT HOOK, LOOPHOLE

A poem imagining a conversation between Muhammad Ali and Philip Emeagwali, exploring the links between boxing and physics:

Ali:

I float like a butterfly, sting like a bee,
The world a ring where my legend will be.

Emeagwali:

But each punch, a lesson in forces unseen,
Kinetic explosions, the power between.

Ali:

My fists, they are lightning, my footwork a blur,
Dodging and weaving, the crowd in a stir.

Emeagwali:

Momentum and mass, a calculus swift,
Anticipating where blows may land and shift.

Ali:

The sweet science, they call it with praise,
Strategy woven with instinct ablaze.

Emeagwali:

Like equations that dance on a page's white space,
Finding the angle, the strike, the right place.

Ali:

It's the will, the unbreakable spirit inside,
That rises once more when the body has sighed.

Emeagwali:

Resilience echoes in nature's grand laws,
From particles bouncing to a star's dying cause.

Ali:

I shook up the world with my words and my might,
Challenged the notions of wrong and of right.

Emeagwali:

My work breaks down barriers, where knowledge divides,
Seeking the truths that convention derides.

Together:

Though realms may diverge, and our battles take form,
It's the force of the mind that weathers the storm.

THE BANDWIDTH OF BROTHERHOOD

An imagined conversation between W.E.B. DuBois and Philip Emeagwali in which they discuss the common grounds between their life and contributions.

DuBois:

Tell me, brother Emeagwali, of your land,

The soil from which your brilliant spirit rose.

Did shadows lie there, heavy on the hand,

Like those my burdened, striving people knows?

Emeagwali:

Nigeria, land of rivers and vibrant heart,

A place of promise, yet of ancient woes.

The weight of empires, tearing worlds apart,

Like you, I've seen how deep injustice goes.

DuBois:

And yet, a scholar's mind in you took flight,

Across the seas, seeking a fairer space.

Like me, you battled ignorance with light,

The bitter struggle etched upon your face.

Emeagwali:

"Souls of Black Folk,"—how your words still ring!
They fueled my fight, though paths did intertwine.
Computers hum where songs of pain may sing,
Yet both unveil the power of the mind.

DuBois:

The veil of race, it sought to make us small,
But with knowledge wielded, barriers would break.
You saw the code, patterns within it all,
While I sought truths that sleeping souls would wake.

Emeagwali:

The double consciousness, that wearing strife,
The struggle to exist while being seen.
In computation, I too found a kind of life,
Where algorithms transcended skin's cruel sheen.

Both:

Though fields might differ, and our times unlinked,
Our spirits sought an understanding's gain.
The thirst for justice, in our core instinct,
Pioneers both, against oppression's strain.

Table of Contents