
**PHYSICS IN THE TRADITIONAL PRACTICES OF THE IGBO:
PARADIGMS FOR ADVANCEMENT OF SCIENCE AND
TECHNOLOGY IN TODAY'S AFRICA :AFRICAN WORLDVIEW
AND POLITICS†**

J. E. Unaegbu

Cinematographer, Institute of African Studies, University of Nigeria, Nsukka

e-mail: lionlordjeff@yahoo.com

Abstract

This study examines the use of physics in the cultural practices of the Igbo. This is in a view to provide substantial paradigms for the advancement of science and technology in Today's Africa. The study is hinged on the Theory of Radical Interpenetration (Scientific Progress). Points that are investigated are Unified Field Physics, Astrophysics, Quantum Physics and Heat Transfer as applied traditionally. The library research design is utilized. The paper argues that the cultural practices of the Igbo utilizing physics are suggestions for developing indigenous advanced applied physics for the advancement of science and technology in Africa, in particular, and the world at large.

Key Words: Unified Field; Ethnophysics; Heat Transfer

PACS Nos: 12.10. ± g, 01.90.+g, 44.05.+e

†*African Journal of Physics Vol.4, pp. 201-216, (2011)*

ISSN: PRINT: 1948-0229 CD ROM:1948-0245 ONLINE: 1948-0237

1. INTRODUCTION

Background to the Study:

The Igbo are a people in Southeastern Nigeria. They constitute one of the three single largest culture groups in Nigeria. The other two are the Hausa/Fulani of the extreme northern part of the nation, and the Yoruba of the West. Their land is located roughly between latitude 5 and 7 degrees north of the Equator, and longitude 6 and 8 degrees east of the Greenwich. (Ilogu, 1974: 2) (Nwaezeigwe, 2007: 1).

They are a people known for their impressive entrepreneurial spirit. This is fueled by their cultural possession of an individual *Ikenga*. The *Ikenga* is a symbolic representation of individual Igbo achievement.



Fig 1: An Ikenga in Rest Mode in a Museum

It is embodied in a carved wooden ram-headed human figure with two horns, a machete on the right hand and a human head representing the booty on the left. It conceptualizes a man's strength in his head through his ideas and thoughts in the same way the strength of the ram is found in its head, but who unlike the ram, uses his right hand to execute the plans of his brain. (Nwaezeigwe, 2007: 14). This is the secret behind the Igbo advancement all through history (see, Fig.1).

Now, in this possession of the spirit of entrepreneur is the acquisition and application of the knowledge of Physics. Just like the ram balances itself and bends its head in readiness for a head butt with an opponent, even scratching the earth with a forelimb to apply acceleration before advancing, thereby resulting in **potential energy** being converted to **kinetic energy** and then to **heat, sound and stress**, so also, the Igbo man converts the potential knowledge in him to kinetic energy and other forms of energy through the use of his hands. This usage of Physics flourished in ancient times.

2. STATEMENT OF THE PROBLEM

We have revealed that the Igbo used Physics in ancient times. Today, the reverse is the case. This is because of a jettisoning of old ways for new ways in such a way that the baby is thrown away with the bathwater. The result is degradation in our knowledge of science and technology. We adopt the western linear worldview in this respect, rather than the curvilinear worldview of African culture. What we know of physics almost always come from modern physics which is almost totally a western phenomenon. It is imperative, then, that the old should meet the new (see, Fig.2).



Fig. 2: The Computer providing a meeting point in Africa for Western and African world views.

Significance of the Study:

There are aspects of the Igbo indigenous culture that have far-reaching bearings upon the modern ways of Physics. And the application of such cultural

knowledge may well advance science and technology in Africa. Just to mention one example of such usage, the computer scientist, Phillip Emeagwali, confessed that he developed his famous Hyper ball from knowledge of his cultural Igbo roots of Onitsha. (Acholonu-Olumba, 261).

Objectives of the Study:

The aims of this study are:

- (1) to reveal some of the cultural ethno-physics practices of the Igbo
- (2) to compare these practices with corresponding modern physics, and,
- (3) to recommend the hybridization of both modern and cultural physics practices for the advancement of physics in Africa.

Theoretical Framework:

This study is based upon the Theory of Scientific Progress (Radical Interpenetration) propounded by a philosopher, Professor Timothy Uzodinma Nwala. This is in the understanding that philosophy is taken as a forerunner of Physics.

In Nwala (1997:85), it is noted:

The course and history of human knowledge and civilization is a progressive movement from lower forms of being/ existence to higher forms, in which some... contradictions... are increasingly transformed, where there is no radical boundary between one level of existence and another, where one sheds into the other.

The researcher uses this theory to reveal that modern Physics itself gradually grew from primitive physics practiced all over the world, originally flourishing in Greece and Egypt. The discoveries of Nicolaus Copernicus, Johannes Kepler, Isaac Newton, Albert Einstein and so many other people contributed to the advancement of modern physics. What we believe in the past is constantly being transformed to higher forms. For example, there was a belief that man cannot fly in a metal object as advanced by Aristotle, with time, this was practically disproved by the Wright brothers, Wilbur and Orville Wright in 1903. (“Wilbur Wright”, 2009).

Research Methodology:

The research methodology utilized for this research is the library research design. The researcher studied texts revealing the ethno-physics cultural practices of the Igbo and also the corresponding modern physics with a view to bring about

suggestions for breakthrough hybridizations for the growth of science and technology in modern Africa. The scope of study is limited to the Igbo of Southeastern Nigeria, with the understanding that studying that cultural group would bring about revelations that would be applicable to other indigenous groups in Africa, thereby making sense of the researcher's aim to use this study to bring about suggestions that would advance science and technology in Africa.

3. ETHNO PHYSICS IN THE TRADITIONAL PRACTICES OF THE IGBO AND CORRELATION WITH MODERN PHYSICS

3.1 *Afa* and the Theory of Everything (Unified Field Theory):

Afa is a mystical language practiced by the ancient Igbo. It is the ethno-physics of the Igbo. According to its adherents, it is the machine language of the Universe, or the language with which the universe was written or formed. It is the language with which the Word that sounded out as the Big Bang was spoken. It is an ancient language believed to be potent with spiritual powers because it is imbued with *consciousness* and *divine intent* and also because it is the language that created the world, implying that it is the original language that is expressly understood by all forces, whether living or non-living. It is the first Igbo name given to speech to differentiate speech from sound. This speech has intent and consciousness and because of this, it makes a difference. For the ancient Igbo, the spoken word is powerful. It contains a message and it is alive. For example, when someone says, "I will kill you", something happens to you, you feel an emotion that is called fear. It is the spoken word from someone else that causes that emotion in you. Now the *Afa* is not only a language of spoken words, its words are believed to come alive and possess a consciousness of their own fuelled by emotions and acting as is intended by the speaker upon the victim, irrespective of whether the victim consciously heard the spoken words. This is only because everything is interconnected; every force is connected in the physical world and *every force understands Afa*. *Afa* is the sacred language of the Universe. Now to measure this in terms of Physics, the researcher will compare the *Afa* code and its resemblance to the Unified Field Theory in Physics. The Unified Field Theory in physics is a theory that proposes to unify the four known interactions, or forces—the strong, electromagnetic, weak, and gravitational forces—by a simple set of general laws. Cosmologists believe that minutes after the Big Bang which resulted in the creation of our universe, the universe was extremely hot and dense and only one force (which was all the four forces rolled into one) existed. Later, when the universe cooled, the single force resolved or disintegrated into four forces we know today. The Four distinct forces are known to control all the observed interactions in matter: gravitation, electromagnetism, the strong force (a short-range force that holds atomic nuclei together), and the weak force (the force responsible for slow nuclear processes, such as beta decay). The attempts to

develop a unified field theory are grounded in the belief that all physical phenomena should ultimately be explainable by some underlying unity. (*Unified Field Theory*, 2009).

Theoretical Application of *Afaethno*-physics by initiates, under the shadow of the Unified Field Theory:

(1) Just like the concept of the existence of four fundamental forces in Unified Field Theory, *Afa* initiates advocates that though every unit in nature is basically four-dimensional, each dimension has *four* forces. In other words, each of the four forces contains four intrinsic forces of its own, totaling sixteen. These forces are conceived by the Igbo *Dibia* or medicine man as Powers, Entities and Consciousness and each has a name in which its powers and consciousness reside. According to Professor Catherine Acholonu-Olumba, an Igbo scholar, in Acholonu-Olumba (2010: 266), “the nature of the universe is revealed in *Afa* in the number four, which is the root of *Afa* and the square root of 16”.

The Unified Field Theory advocates the existence of just one force after the Big Bang from which other forces came. This is demonstrated in 1967-68 by the American physicist Steven Weinberg(1972) and the Pakistani physicist Abdus Salam(1968). They succeeded in unifying the weak interaction and the electromagnetic interaction by using a mathematical technique known as gauge symmetry. According to this theory the electromagnetic interaction consists of the exchange of a photon, and the weak interaction of the exchange of W and Z intermediate bosons. This shows that if they can be united, then they were once from the same source. Furthermore, the GAGUT (God Almighty Grand Unified Theorem), successfully formulated by an Igbo physicist, Professor Gabriel Oyibo (See Figure three) which led to his nomination for the Nobel prize four times is based on the Unified Field Theory that everything came from one source. One of the discoveries of GAGUT was that hydrogen is the only element in Chemistry. All other elements are variations of hydrogen! So also, *Afa* initiates begin the *Afa* sixteen codes with the word, “Ofu (the one)”. This signifies that all things came from one source, “The One”.

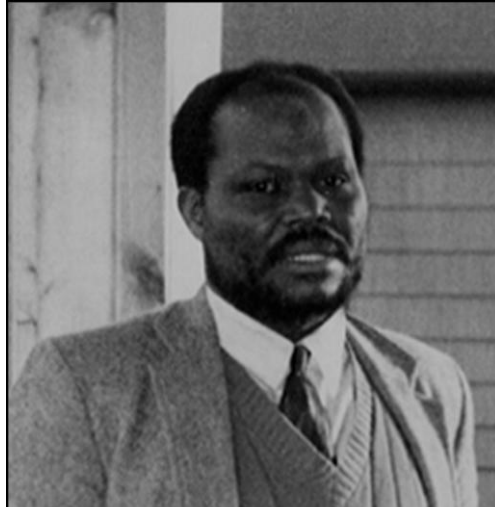


Fig. 3. *Professor Gabriel Oyibo*

(3) GAGUT advocates that the seemingly contradictory origins of the universe are the same: (a) The Big Bang, (b) the Word of God which says “Let there be Light” and there was light and (3) the African belief that the universe came out of the roaring water waves of soul and out of that water waves came the building block of the universe which is called ATUM. (Elendu, 2005). So also, Afa initiates advocate that Afa is the first spoken word. The sixteen codes of Afa are arranged to show how the Universe is formed under the umbra of Unified Field Theory (first code is “Ofu, “the One” which means a unifying one force birthing other forces) and then that the universe progressed until under the umbra of atomization in quantum physics (the last code is Agali (the One) which means “atomization”). The sixteen Afa codes are: (1) Ofu (the one); (2) Odi (God head); (3) Okala (Two/Half); (4) Ose/Oshe (Son/Christ); (5) Aka (spirit); (6) Ete (Divine Law/ Principle); (7) Ora (Sun); (8) Obi/Ogbe (Dwelling/ Cosmos); (9) Ifite (Duality, Yin/Yang); (10) Obara (Multiplicity); (11) Otunukpa; (12) Ululu (All power); (13) Otula; (14) Ogoli (The Mother Nature); (15) Akwu (Non-motion/ Equilibrium) and (16) Agali (the One). (Umeh, 1997). It occurred to the researcher, rather strangely, that if we observe carefully we will understand that “Ofu, the one” was the first source of the universe. Then appeared “Odi, God Head” in human understanding, and then there was a splitting into two “Okara” meaning that from His splitting arose a new being, “Oshe, the Christ”, then came the “Aka or spirit” and then Order, divine law and principle “Ete” was needed and created. The sun “Ora” was formed or stellar systems were formed. Then planets, dwelling and the cosmos “Ogbe”. There arose a duality in the universe, “Ifite”

when creation was done in pairs or twos (“male and female created he them”), also every force in the universe had a complementary force. This resulted in struggle and/or lovemaking between the pairs. Thus, multiplicity “Obara” arose and so on and so forth.

Practical Application of Afa ethno-physics by initiates, as Unified Field Theory:

Michio Kaku theory of Hyperspace, Stephen Hawkings theory of the Torus and Phillip Emeagwali’s Hyperball are modern aspects of the Unified Field Theory in practical drawings that advocate for an inter-dimensional communication. To Kaku, in a hyper-doughnut, we see an infinite succession of ourselves repeated in front of us, to the back of us and to our sides.... If we hold hands with the people to our sides, we are actually holding our own hands. So also, there is a practical sculpturing of a strikingly similar Hyperball or Torus found among the artifacts excavated in Igbo Ukwu of the Igbo. This application of ethnophysics by the Igbo was brought to light by the theoretical physicist and three-time nominee for the nobel prize for Physics, Professor Emeritus Alexander O.E. Animalu, while reviewing the works of Professor Catherine Acholonu-Olumba. As stated in Acholonu-Olumba (2010: 261): “unlike the other two models [hyperdoughnut and Stepen’s Torus], the Igbo Ukwu model is covered with a grid or network of equilateral triangles and interconnected hexagons, indicating a higher understanding of the underlying geometry of Unified Fields.” See Figure four. We should note that the galaxies are surrounded by spheres of energy that are shaped like dough nuts. Notice the tiny galaxy with its spiraling arms, along with a bunch of loose stars, all enveloped in the sphere of energy.

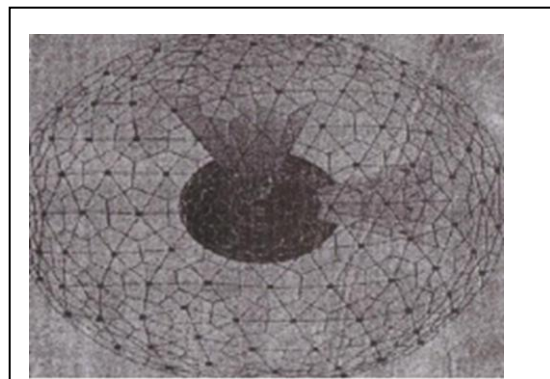


Fig.4: (a) Igbo Ukwu Torus (b) Emeagwali’s Hyperball.

- (1) The GAGUT predicts that with the Unified Field Theory there can be the healing of cells by retuning instead of killing them. *Afa* initiates are actually restoring and reconstructing at multidimensional levels, a diseased personality or social structure. (Animalu, 2009:34).
- (2) A higher application of the Unified Field Theory which may not be fully understood by modern Physicists is the disembodied travel performed by *Afa* initiates. The question may arise as to how this is to be measured in scientific terms. This is understandable because it is a direct application of the Superstring Theory. In this theory, everything in the universe—all particles and forces and perhaps space-time itself—consists of fantastically small strings under immense tension, vibrating and spinning in a multi-dimensional superspace. Extra dimensions, in addition to width, depth, height, and time, are mathematically necessary to avoid *tachyons* (faster-than-light particles) and *ghosts* (particles produced with negative probability). These extra dimensions are thought to be *compactified*, or curled up into tiny circles, and thus rendered unobservable. Different elementary particles correspond to different quantized modes of oscillation of the string. Unfortunately, superstrings theory is very difficult to calculate with and has yet to yield testable predictions. (Lindner, 2009). Although great modern physicists like Stephen Hawking disagreed with Time Travel, we can understand that everything in the universe is interconnected. We would then begin to figure out that advance physics was applied by *Afa* initiates, however in a seemingly primitive way, to travel faster than light from one place to the other within or without their bodies. The researcher is unable to conduct a full-scale scientific control experiment with an *Afa* initiate because of the secret sacredness of the order. So this remains a conjecture. Although, by a chance encounter with Professor John Umeh, an *Afa* initiate, the researcher, was informed by the former that he had correctly predicted that Barack Obama would become the first black president of the United States of America using *Afa*.

Professor Emeritus John Umeh also reveals in Acholonu-Olumba (267):

Afa is a world of meaning on various different levels and dimensions. On the demotic level, each code has four different meanings. On the Higher spiritual level, each code can be said to have seven to the power of seven meanings (as a manner of speaking), that is to say, an infinite number of meanings. You can never exhaust the meaning of Afa. After studying Afa for 30 years, one is still basically a neophyte... I have been an Afa initiate for over 62 years and yet I have things to learn. I have said it in my

books that the Igbo were the people who gave the world what is called language.... The instrument through which this was made possible was the universal language of the Afa. The sacred language of the universe.

3.2. Ethno-Astrophysics:

The ancient Igbo did not build rockets as we conceive of them today. But they measured the year by the moon. They said “onwa ato” to mean “three moons or three months”. And they measured the day by the position of the sun. They said “odida anyanwu” to mean “the falling or setting of the sun”. Phenomenon such as eclipses was seen as deeply disturbing and connotative of a great wrong in the universe. The moon bears a mark that resembles a man with a stick who is leading a dog. These are craters. The ancient Igbo story of a man leading a dog on the moon presupposes that the ancient Igbo understudied the craters on the moon, albeit from such great distance as from the earth! Cosmic designs were found in Igbo ukwu pottery brought to light by Professor Catherine Acholonu-Olumba. See Figure Five. They were also found in uli paintings.

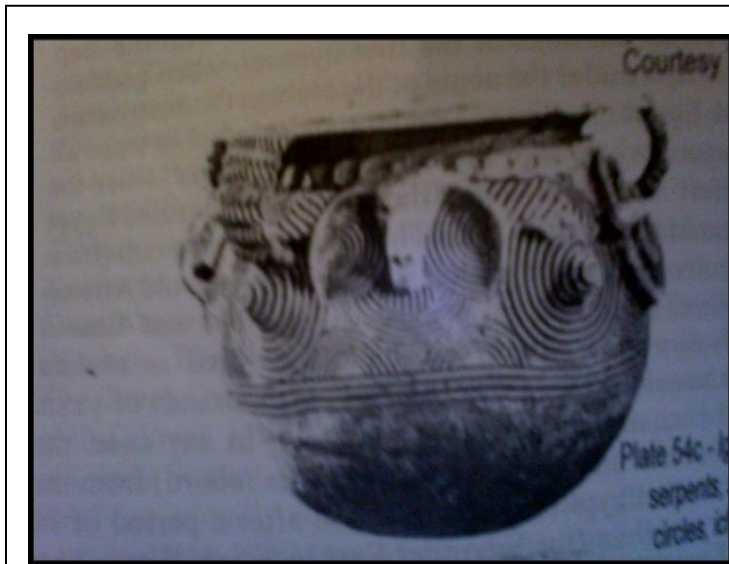


Fig. 5: Cosmic concentric designs in Igbo Ukwu pottery

The spiral nature of the designs is an indication of awareness of the form of galaxies and the order of solar systems which has orbital around each sun or star.

3.3:Ethno-Quantum Physics:

Quantum physics is a description of the particles that make up matter and how they interact with each other and with energy. Quantum theory explains in principle how to calculate what will happen in any experiment involving physical or biological systems, and how to understand how our world works. The name “quantum theory” comes from the fact that the theory describes the matter and energy in the universe in terms of single indivisible units called *quanta* (singular *quantum*). Quantum theory is different from classical physics. Classical physics is an approximation of the set of rules and equations in quantum theory. Classical physics accurately describes the behavior of matter and energy in the everyday universe. For example, classical physics explains the motion of a car accelerating or of a ball flying through the air. Quantum theory, on the other hand, can accurately describe the behavior of the universe on a much smaller scale, that of atoms and smaller particles. The rules of classical physics do not explain the behavior of matter and energy on this small scale. Quantum theory is more general than classical physics, and in principle, it could be used to predict the behavior of any physical, chemical, or biological system. However, explaining the behavior of the everyday world with quantum theory is too complicated to be practical.

Quantum theory not only specifies new rules for describing the universe but also introduces new ways of thinking about matter and energy. The tiny particles that quantum theory describes do not have defined locations, speeds, and paths like objects described by classical physics. Instead, quantum theory describes positions and other properties of particles in terms of the chances that the property will have a certain value. For example, it allows scientists to calculate how likely it is that a particle will be in a certain position at a certain time.

Quantum description of particles allows scientists to understand how particles combine to form atoms. Quantum description of atoms helps scientists understand the chemical and physical properties of molecules, atoms, and subatomic particles. Quantum theory enabled scientists to understand the conditions of the early universe, how the Sun shines, and how atoms and molecules determine the characteristics of the material that they make up. Without quantum theory, scientists could not have developed nuclear energy or the electric circuits that provide the basis for computers. There is in the quantum theory the current belief that atoms are conscious. This is highly disputed.

Upon following the path that atoms are conscious units, the ancient Igbo learnt to interact with waves and particles. According to Acholonu-Olumba (2010:14):

It is most important to mention here that quantum physics also discovered that the atom is conscious. To be conscious means to be alive. This is also in tandem with indigenous knowledge and is the science behind their treatment of natural phenomena like living entities. In spite of this very fundamental knowledge..., scientists have bluntly refused to pursue knowledge from the perspective of a conscious universe. They are still studying Reality as a passive phenomenon instead of consciously engaging it as a conscious partner in progress. The ancients knew that matter is alive and conscious and they simply cooperated with nature and were thus able to gain access into higher and lower dimensions of space and hyperspace to gain answers to life's problems.

The practice of consciously engaging matter as a conscious partner led many local Igbo experts into the practice of rain making. Scientifically, to make rain, clouds would be seeded with tiny particles to try to coax more precipitation from them. There are two primary ways to seed clouds. The first method uses the coalescence process of rain formation. Small water drops or other particles are injected into the base of a cloud. As updrafts carry these particles up through the cloud, the particles grow in size by colliding and merging (coalescing) with drops in their path. Eventually, the drops grow large and heavy enough to fall. On their way down, the drops continue to grow in size and may even fragment into many new drops.

Now, instead of doing this, the Igbo rain maker speaks a sacred language to special sacred objects which is heated on an open fire using among other woods, *ukpaka* or oil bean wood. The conscious atoms evaporate directly upwards to the sky to meet the target cloud and the action of precipitation begins. The rain maker sustains the rain by continuously speaking and heating the stone and allowing the smoke get to the target clouds. Sometimes, two rainmakers challenge themselves by canceling out each others commands to the conscious atoms. Umeh (1999:171)

3.4:Ethno-Heat Transfer

This is the most common form of ethno-physics. People do this every day in various forms. When people are cooking with a tripod upon a wooden fire, this is heat transfer through conduction and convection. When people are drying their

cloths in the sun, this is also heat transfer in action through radiation. Heat Transfer, in physics, is the process by which energy in the form of heat is exchanged between bodies or parts of the same body at different temperatures. Heat is generally transferred by convection, radiation, or conduction. Although these three processes can occur simultaneously, it is not unusual for one mechanism to overshadow the other two. Heat, for example, is transferred by conduction through the brick wall of a house, the surfaces of high-speed aircraft are heated by convection, and the earth receives heat from the sun by radiation.

Ancient and traditional Igbo culture uses heat transfer immensely. One very powerful form is the mixture of conduction, convection and radiation in healing people as described in Achebe (1958:60):

He took down the pot from the fire and placed it in front of the stool. He then roused Ezinma and placed her on the stool, astride the steaming pot. The thick mat was thrown over both. Ezinma struggled to escape from the choking and overpowering steam, but she was held down. She started to cry.

When the mat was at last removed she was drenched in perspiration. Ekwefi mopped her with a piece of cloth and she lay down on a dry mat and was soon asleep.

This method helped to heal Ezinma.

The Igbo also sleep side by side during cold seasons. The transfer of body heat from one person to the other helped to maintain a warmth atmosphere while the cold blasted outside the huts.

4. RECOMMENDATIONS AND CONCLUSIONS

There are two contemporary Igbo scientists that have utilized the ethnophysics practiced by their ancestors and then synthesized the knowledge with modern physics. They are Phillip Emeagwali and Professor Gabriel Oyibo. Their feats became ground-breaking.

Phillip Emeagwali studied a form of the *Torus* found in Onitsha just like that of Igbo Ukwu and from the knowledge he gained, he got inspiration for the formation of the Hyper ball structure that led to the supercomputer idea that earned him the right to be one of the founders of the Internet. He combined ethnophysics with modern physics of Unified Field Theory, however adapted to computer science. Today, the American Government takes his contributions to science very seriously.

Professor Gabriel Oyibo understudied the *Afa*. He speaks like an *Afa* initiate in Elendu (2005):

....that the universe came out of the roaring water waves of soul and out of that water waves came out the building block of the universe which is called ATUM. When the Greeks came to conquer us, mispronounced it and called it atom. The biblical people also called it Adam. Adam, atom, atum are the same word. But there is a building block which became the basis of the science that God used these Africans to create which is chemistry. Chemistry is the science of atum or atoms.

He synthesized his knowledge of ethno-physics, religion and modern physics and came forth with the ground-breaking GAGUT.

Therefore, this researcher recommends that there should be

- (1) a total renaissance in which African physicists and other scientists would understudy ancient ethnophysics, especially the deep *afa* (in Igbo) or *ifa* (in Yoruba), and get from them unprecedented ideas that may become revolutionary when combined with modern physics. The above two examples are already causing ripples, how much more a large-scale exodus to gaining ancient wisdom?
- (2) Government support. The Nigerian government or any other African government for that matter does not encourage very bright scientists. They are discouraged and they do not have the spirit to understudy ethnophysics. This is sad and a very uncomfortable situation for the advancement of science and technology in Africa.
- (3) Initiates to ancient orders, whether in ethnomedicine or ethnophysics or any other ethno field should not be despised as illiterates. They are actually professors in non-western knowledge! They should be employed to teach western-educated professors and scholars the ways of ancient wisdom.
- (4) A form of recognition and Prize set up by academic associations encouraging investigations into ethno knowledge in Africa.

In conclusion, the use of ethno-physics among the Igbo of southeastern Nigeria is so widespread that a full-scale investigation is needed to uncover hitherto unknown truths about the revolutionary phenomena that are daily applied in seemingly dark and shady circumstances.

The future is unpredictable. A wise direction is towards a reorientation of the educated mind. Scholars need to understand that no field of study is inferior.

Every field of study is complementary like the Unified Field Theory suggests. I will mention here the impressive and honourable delving of the theoretical physicist, Professor Alexander O. E. Animalu into the arts from science, especially from the apotheosis of science itself: Physics. His explorations in ethnophysics through the use of Solid State Physics and Geometry and the equally supportive push of Professor Willy Umezina and Professor Catherine Acholonu are well documented for posterity. But there are still many seas to cross.... How do we measure or validate the “truths” we have uncovered both in quantum physics, Unified Field Theory and contemplative ethnophysics? We, Africans, need to correctly carbon-date artefacts ourselves. We are surprised when we apply our theories and they “work”, but what we really do was adapt the theories to existing realities....

REFERENCES:

- Acholonu-Olumba, C. (2010). *The Lost Testament of The Ancestors of Adam: Unearthing Heliopolis/ IgboUkwu, The CelestialCity of the Gods of Egypt and India*. Wuse Abuja: CARC Publications.
- Animalu et al. (2009). *Biography of the foremost Nigerian Radio Astronomer Professor Sam E. Okoye*. Enugu: Ucheakonam Foundation
- Elendu, J. (2005). “Gabriel Oyibo” in *www. Elendu.Com*. An online Magazine. Web material retrieved from <http://www.Elendu.com/biographies/?GabrielLinkId=121315>
- Ilogu, Edmund (1974). *Christianity and Igbo Culture*. New York, p. 2.
- Lindner, John. (2009). “Theory of Everything.” Microsoft® Encarta® [DVD]. Redmond, WA: Microsoft Corporation, 2008.
- Nwaezeigwe, N.T. (2007). *The Igbo and their Nri Neighbours*. Enugu: Snaap Press Ltd.
- Nwala, U. (1997). *History and Philosophy of Science: with Special Essays on the “Theory of Scientific Progress” (Nwala) and “Computer Revolution and National Development” (Dr. Ben Okwuosa)*. Nsukka: Niger Books and Publishing Co. Ltd.
- Salam, A. Elementary Particle Theory (Nobel Symposium 8) edited by N. Svartholm (New York) 1968 p. 367.

Umeh, John. (1997). *After God is Dibia*. London Karnak House.
ISBN:0907015581

Umeh, John. (1999). *Igbo People: Their Origin and Culture Area*. Enugu: Gostak
Printing and Publishing Co. Ltd.

“Unified Field Theory.”. (2009). Microsoft® Encarta® [DVD]. Redmond, WA:
Microsoft Corporation, 2008.

Weinberg, S, *Phy. Rev. D*5, 1962(1972)

“Wilbur Wright.”(2009). Microsoft® Encarta® [DVD]. Redmond, WA:
Microsoft Corporation, 2008.