

*Full Length Research Paper*

# **African systems of thought: Whether they fit scientific knowledge**

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**This paper aims to show that in Africa there are thought systems that can have equivalent value with the scientific practices in the Western paradigm system though it is not itself paradigmal. The Western thought system by its nature is exclusive for other traditions of scientific practice by its claim that science is deeply rational, universal and methodological. African scientific practices actually lack this method and universality because these scientific practices are found highly embedded in the culture and religion of different Africans. But these African scientific practices in most cases are as valid as and sometimes better than the so called Western science. For this we can raise the issue of African traditional medicine and Metallurgy among many other things. A qualitative method with secondary data sources like books, journal articles, and other papers is employed. The paper will explore in its first section the nature of African thought systems, in its second section it will discuss the nexus between African culture and its thought systems, then in the third section, it will see African religion and the thought systems.**

**Key words:** Science, thought system, paradigm, Western science.

## **INTRODUCTION**

Scholars and philosophers at different times presented different conceptions regarding the African thought systems whether they are philosophical, scientific or any other type. But unfortunately, most of these scholars have the position that African systems of thought are considered to be lacking an element of scientific knowledge that is believed to be based on reasoning and reflection. These thinkers are mostly pro-Western philosophers. This group of scholars includes some Africans and most Westerners. Their reason for this argument is that African systems of thought lack scientific content because African thought systems are mostly

based on unsystematic, mystical and superstitious aspects in their orientation (Cited in Mapadimeng, 2009). Despite the fact that most thinkers argued against the existence of scientific knowledge in African thought systems, there are some thinkers or scholars who argued that African and other non-occidental systems of thought could be seen as parallel practice of scientific and other sorts of knowledge. Among these scholars, we can take the arguments of Robin Horton, Sandra Harding, Paul Feyerabend and some others.

Horton, in his comparison between African traditional thoughts and Western science, argued that African

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thought systems have some elements that can be compared with Western science. For this reason, he said that Western science is not the only thought system because there are also other thought systems that can be compared to the Western theoretical science. To ascertain this, he raised the issue of African religious and spiritual thought systems (Horton, 1967a).

According to him, modern scholars and writers denied that traditional religious thinking in any sense is theoretical thinking. Horton's idea of African thought systems is an attempt of comparison using only religious and spiritual parts or aspects of African thoughts than empirical scientific practices. Of course, he tried to associate the spiritual with scientific practices. But it seems that it is not important for an Africans to tell them that they have a theoretical knowledge comparable with the modern Western science referring spiritual ways of doing things. The comparison would rather be between modern science and African traditional science although they are systematically surpassed by modern science. Horton valued spiritual parts of African thought systems although it should not be exclusively the spiritual that could be considered. For example concerning medication he stated that:

To find out what kind of stress producing disturbances are in particular traditional society, the modern doctor can probably do no better than start by taking notes of the diagnosis produced by a traditional religious healer working in a society. That means, the modern doctor sometimes may take traditional causes seriously enough to take them to test (Horton, 1967a, p.56).

Here, what Horton wants to say is that modern science can sometimes be complemented by even the traditional thought systems. But, practices that can complement Western science are not only the spiritual or the religious part of African thought system.

He further argued that religious thought is no more or less interested in the natural causes of things than is the theoretical thought of the sciences. Traditional religious theory does more than suggesting causal connections that bring no relation to experience (Horton, 1967a). Therefore, the main point of Horton's position is that although modern science is the surest and most efficient tool for arriving at beliefs that are successful, but there are also other experiences that can help us arrive at such beliefs. But as noted earlier, religious beliefs are not comparable with modern scientific practices for the reason that they are about abstract and non-descriptive things.

According to Barry Hallen, Oruka has the view that goes against the claim of ethno-philosophy which says that African philosophy is the collective conception or collective world view of people in Africa. He thought that there are rather individuals in a society who are outstanding in their thinking of different sorts (Cited in

Hallen, 2002). In response to ethno-philosophy, Oruka said the following:

The activity of reflection up on certain themes of fundamental importance to human life, the existence of a supreme being, the nature of time, the nature of freedom, the nature of death, the nature of education, etc has always been a concern to selected number of people in all societies. This kind of thinking does not presuppose a modern education and even literacy. So, it is false to presuppose that it can only take place in societies that are typed as developed (Quoted in. Hallen, 2002, p.52).

Oruka noted that there were sages not only in traditional Africa, but also in Greece, such as Socrates, Heraclitus and so on. But the difference is that the Western sages are regarded as philosophers, but the Africans are not. This according to him is a kind of Eurocentric bias.

Brown Lee argued also that if true philosophy is really a philosophy which is written and systematic, we could not call Socrates, Buddha and some others as philosophers because none of these thinkers wrote what they taught for people (Lee, 2004). To this end he said, "... that which is sagacious does not simply emerge without critical inquiry and significant reflection" (p. vi).

He also seems to argue that the term *traditional* should not be confused with the term *primitive*.

The term *traditional* according to him does not mean backward. It has rather a certain connotation as something which is not subject to external influence.

So, here, we can understand that the idea of primitiveness is given to African societies that live by their own traditions, philosophies and other thought systems. Since there are medical practitioners, metallurgy workers and sages who are critical thinkers in the traditional sense, it is enough to claim that African traditions are rich source of scientific knowledge. For this, we can see the arguments of different thinkers.

Scholars who believe in the existence of scientific knowledge in different cultures of the world include scholars like Paul Feyerabend, Sandra Harding and so on (Feyerabend, 1993; Harding, 2008). When we look at Feyerabend's claim for scientific knowledge, it is based on a pluralistic stance. Feyerabend believes that scientific practice could not have a singular path and pattern as well it must be protected from the exclusive claim of rationality (Feyerabend, 1993).

His idea is supported by Sandra Harding's claim to scientific knowledge. She is known in her critical analysis of the North Atlantic science and its claim of being the only source of scientific knowledge (Cited in Eze, 1997). Harding claims that science should look for other possibilities and belief systems in different cultures because such claims stifle the exchange of thoughts and scientific experiences.

For Feyerabend, what we call science should be viewed as one possible way of truth, but not the only one,

that is, scientific success cannot be explained in a simple way (Feyerabend, 1993). He put the case in the following way:

To say that 'the procedures you used are nonscientific, therefore we cannot trust your results and we cannot give you money for research assumes that science is unsuccessful and that it is successful because it uses uniform procedure'. This is not true because even when scientists use similar methods, they experience failure.

Therefore, scientists are like architects who build buildings of different sizes and shapes and who can be judged only after the event. It may stand up; it may fall down; nobody knows (Feyerabend, 1993, p.1).

From this we can infer that science which belongs to only a certain group cannot be considered as exclusive and the only way to truth. Science certainly can be found from different sources and cultures without being confined and bounded by certain systems and paradigms. So in this sense, Western science is one among many possible sciences. In this circumstance we can say that African systems of thought, if not as a wholesale, are sciences that can be a parallel practice with what we call science in a general sense of the term.

### **Problem statement**

When we think of scientific knowledge, what comes first into our mind is Western modern and advanced science. This is because Western science has developed dominance over other forms of knowledge systems; the technological innovations, the medical and pharmacological activities are advanced and almost unparalleled by other parts of the world. Even though Western science undoubtedly has a meaningful development or progress and is solving different human problems, its development is through overlooking or ignoring other possibilities that can be considered or taken as valuable alternatives to Western science to solve different problems. These valuable alternative knowledge systems are found in different cultures of the world including the Third World like Africa and others. In Africa there are many valuable knowledge systems both scientific and other forms of practices despite the fact that they are labeled as irrelevant for development of scientific inquiry.

Many scholars in Africa as well as in the Western world have raised different ideas concerning the issue and the nature of scientific knowledge and the African traditional thought systems.

However, in relation to the issue at hand, these scholars have no commonly agreed point. Some of them contend that the causes that African and other non-Western traditional thought systems remain unrecognized are just Western science's claim that it is the only form of genuine thought or science that all the rest of the world

should adhere to (Feyerabend, 1993). And some others contend that African thought systems have their own problems to be called scientific and systematic because of its so called mystical, superstitious and spiritual nature.

It is true that European or Western philosophers as well as scientists underestimate or undervalue the African systems of thought arguing that African systems of thought are not scientific and progressive. Because many scholars and thinkers argue that the measure of scientific knowledge is only Western science. The case that the author tried to testify is therefore, Africa is the granary of valuable thought systems that can be considered scientific practices and which kind of African systems of thought can be taken as scientific knowledge.

So, pointing out some efforts of African societies for scientific knowledge as well as changing some of the wrong conceptions of the meaning of scientific knowledge in relation to African thought systems is the author's task in this study.

### **MATERIALS AND METHODS**

This research seeks to explore African traditional thought systems about which little is known and due emphasis is ignored.

Given that there is a need to consider the social and spiritual as well as scientific value of the African thought systems. In exploring such a case, a qualitative research approach would be the most appropriate because it is a philosophical or argumentative study or analysis. The underlying philosophical perspective for this research will be analysis of cases and experiences from the African perspective.

As an approach, secondary source materials are intensively used to explore the immense African experiences in the practice of science and technology which is highly permeated or embedded in the culture and other manifestation of the people of Africa.

### **The nature of African systems of thought**

It is argued that Africans possess a thought system which is embedded in their cultures. And the way of life of the people of Africa is believed to be interactive and communal, that is, if there is something particular to the African way of life, it is their communal way of life which we do not most of the time find in the Western world. That is why the famous African scholar Cheikh Anta Diop argued that black Africa as one of the domain of the world in which people are the impoverished who today possess the least from all other continents, but it is the only continent where destitution does not prevail in spite of this poverty because of this harmony (Diop, 1989).

This does not mean that all African people have necessarily similar culture, but the point is that, although

cultures in Africa vary from one another, the way of life is through mutual understanding and belongingness as well as brotherhood rather than affirming a sort of individualistic life which is common in Western nations.

It should be noted that it cannot be hastily concluded that Africans' way of life is all about their overall thought systems and philosophy, regardless of the Westerners interpretation. It means that their communal way of life may contribute in one way or another to their thought systems. Many African philosophers and scholars believe in the communal nature of the life of African people. Having this in mind, they are observed when they pose important questions like what is the relevance of indigenous African traditional thought to the challenges of contemporary life? Do the traditional modes of thought constitute resources or impediments to the project of development in Africa? And other more questions.

For instance, Gyekye and Hountondji believe that, there is really an African way of thinking or an African thought system and also scientific practice, but their major worry is whether these African thought systems and knowledge are able to solve current issues and problems that African people face.

Their worry springs from the fact that Africa is becoming the greatest consumer of Western scientific and technological products that are in some way alien to some African problems. These alien technologies do not manifest African conditions. So for them, to argue that there are typical African thought systems, there must be a system that inspects and tests the applicability of African thought systems on African problems.

Similar observation is held by Bekele Gutema in his article (2007), titled: "Extraversion and the Goal of Education in the African Context that:

.....The African countries with few exceptions have largely remained dependent on the North. This dependence robbed them of the means and confidence to think independently. We committed an original sin when we started to believe that development in a different situation could be helpful as our model, too. This is not to undermine the importance of Western science and technology to African countries. I refer to the weakness of African countries (universities) in indigenizing knowledge produced elsewhere to address African problem. In fact this act made the educational undertaking (teaching and research) in the African case largely superfluous since we limited ourselves to serving only as Southern outposts of the metropolitan Universities and research institute. Instead of trying to understand our problems and formulating proper questions with regard to the problems, we kept in believing that somebody else has already done the thinking and it is only sufficient for us if we could copy from that ( p. 111).

African thought systems are highly intertwined. The philosophy, science, religion or spiritual and cultural

things sometimes support each other. Some thought systems can be taken as philosophy; others also are scientific, religious and cultural as well.

Oruka's conception of philosophic sage seems to go against the claim of Horton, who has drawn distinctions between the African traditional cultures and Western scientific cultures, referring to the former as "closed" cultures and the latter as "open" cultures. By "closed" cultures or thought systems, he refers to those cultures in which there is no developed awareness of alternatives to the existing and established theories or beliefs whereas the "open" cultures are those that have a highly developed awareness of different alternatives (Horton, 1967b).

Horton argued that "an obstacle to progress within the African traditional cultures lies in their reluctance to question the established beliefs owing to the fear that any threat to those beliefs could result in a horrific chaos (Quoted in Mapadimeng, 2009, p. 4).

Here, Horton's argument is that the key of the overwhelming development of Western culture or science is because it is self-critical and open for different possibilities and alternatives, and the means of African thought systems to be still unchanged is because it is not self-critical and did not find different options (ibid).

But, as noted earlier, Oruka believes in the presence of self-criticism and reflection in African cultures. This testifies that Horton's wholesale labeling of African cultures as "closed" for different reflections and alternatives, is not well supported.

On the other hand, African system of thought can be viewed as having scientific manifestation. Under this, it will be better to see cases of African traditional medicine and healing mechanisms, it is also important to see ancient African technologies and significant scientific knowledge because that ancient technological knowledge may have given rise to some technological developments of today.

Let us see first, African medicine and methods of healing: Traditional herbal medicines, generally thought to be naturally happening plant-derived stuff with smallest or no manufacturing processing that have been used to treat disease within local or regional healing practices (Cravotto et al., 2010 Cited in, Oloyede, 2010).

African traditional medicine is the set of knowledge and practice which is used in diagnosis, prevention and elimination of physical, mental and spiritual or social problems. The traditional healer in Africa in most cases develops his activities by identifying two levels of treatment, that is, physical and the spiritual levels. Carrera said "Traditional healer - as an expert on the feelings, beliefs and the dominant norms of conduct, norms of the community to which the patient belongs tries first to establish the "spiritual" cause of the ailment" (Carrera, 2010, p. 3). "Listening to the sick person or to his/her relatives, using divinatory techniques and putting himself in contact with the spirits of the ancestors, he will

decide on what has broken the equilibrium of the person or the group and which evil forces are causing the sickness" (ibid, p.3). This is considered to be the spiritual level of treatment. This way of treating diseases is labeled as a sort of mystery and witchcraft by the Westerners. In spite of the avoidance of the African traditional healers by Western thinkers, African traditional medicine maintains a strong connection between curing and spirituality, because the people of the continent live extremely on the psycho-religious values of the humans. Immediately after the main causes of the ailments are known or diagnosed and treated, the customary practitioners pass to get rid of the corporeal sorts of the sickness. Traditional medicine men to offer effective and inexpensive medication for the major diseases upset the people of the continent like malaria, abdominal illness, respiratory troubles, arthritis, sexual problems, anemia, parasite infections, mental problems, bone breakage and so on. This is what is known as the physical level of treatment (ibid).

It is believed that great majority of the people of Africa seek advice from customary experts on traditional medicine that are herbalists and others for their sickness to be treated. Following the success of traditional medicine to treat different complex causes of illness, many individuals prefer the traditional modes of treatment.

From this also, one may deduce that the approach of medication and treatment and the nature of conception of illness is different between Europe and Africa. The treatment is most of the time done by religious men and priests in Africa. This makes the separation between religion and scientific and medical practice in Africa a bit difficult.

It has been noted that traditional African medication or healing has a holistic approach unlike the Western one for the African conception of disease is conceived as spiritual or social disorder and physical illness.

It is also believed to be true that Egyptians were well known in gynecology and surgery. As Helaine Selin, who wrote a lot about Ancient African contribution to science and technology, broadly argues, the ancient Egyptians were responsible for many medical innovations. In addition to developing herbal tradition and methods of clinical therapy, they also produced a code of medical ethics that lets the physicians to give treatment to the people (Selin, 1993).

Similarly, Daniel A. Offiong stated that, African traditional healers have been variously referred to as herbalists or native doctors (native healers). The role of witchdoctors is thought to be to detect bad spirits. Customary healers are often the main source from which a large part of African population obtains its healthcare, especially since healing is far more than the curing of certain illnesses (Offiong, 1999). So, besides healing and curing diseases of different kinds, traditional medicine men do many things in their practice.

Ancient Africans and other societies were specialists of different skills. We can see Selin, who noted that Ancient Africans had their own methods of birth control which controls birth. In this regard, Egyptians were believed to use "plants and herbs for contraception whose validity and applicability has been even proven by modern medicine" (Selin, 1993, p. 41). Of course it is true that, by many scholars Egyptians were not considered as proper Africans, but there are also many evidences that logically show they were indeed black Africans (James, 2009).

It has also been explained by for instance, Diop and others that Egyptians who contributed a lot to the world were blacks. Therefore, if they were black Africans, then their heritage in different medical and other scientific practices really belong to Africa.

There are evidences that Egyptians were the first to practice surgery. Although many of them used surgery for ornamental purpose, some others used surgical techniques for medical purposes like bone setting and so on. Selin also noted that:

Egyptians were among the beginners in practicing circumcision of men. "It was a ritual performed by priests probably on large groups of adolescents or young men ( but not infants). Firstly, circumcision has been undergone by only royalty, nobility and priests, but latter, it became an obligation to undergo circumcision. For all pubertal males, perhaps it is a pre-condition of marriage, but it may have been optional or even unavailable for some young men. Regardless of the extent to which circumcision was practiced, it seems to have grown out of the priests concern for bodily cleanliness and hence purity (Selin, 1993, p. 41).

Throughout Africa, there are, as noted earlier, many traditional healers than trained medical practitioners. Some argued that during colonial rule, traditional African medicine was almost eliminated because traditional medical practice is considered by the colonial masters as witchcraft than the science of healing people.

Karen Flint stated that traditional healers, of which there were many types, are specialized according to their talents and areas of excellence. His study for instance, takes us to South African society's medical experience. He thought that "historically, the healers performed a variety of functions for African communities; these include, bringing rain, detecting bad spirits, negotiating with ancestors and using herbs and surgical procedures to mend and cure the body" (Flint, 2008, p.1.)

Here, when we see the practice of traditional medicine, it was broadly done and practiced in the ancient and past times than today. If we ask why? Flint tells us that although there are effective medicine men and herbalists in many parts of Africa, there was a restriction of practicing such things by the colonizers or the colonial rule (ibid).

It might be also true that African governments are not welcoming this sort of practice. Or at least they are not ready to encourage it.

So, according to Flint, the effort of different medicine men in South Africa made European health practitioners and white masters or government authorities quite uncomfortable. This is because the Europeans know that the traditional medicine is effective in curing many malignant diseases and if this is so, they understood that they cannot sell their modern medicine to the African market. So their best alternative was to restrict the African traditionally effective way of healing as witchcraft and nonsense. To ascertain this, it is better to see Flint's argument directly here:

The rivalry between the white masters' medicine and native South African medicine is essential to note, as it not only upsets conventional notions of traditional African and biomedical medicine, but demonstrates that medicine was yet another arena for larger colonial contest over political and cultural hegemony. The result of this competition influenced the ways in which biomedical and African healers come to conceive of themselves and largely limited healers' legal status under white rule (Flint, 2008, p. 5).

This is not the problem of a particular society in Africa. Because there are many societies in Africa in which the Western medical practitioners and government have influenced the very essence of traditional medicine. To elucidate this, it is better to see the case in Nigeria. Offiong argued "An important problem impeding an effective program of primary health care in Nigeria is the antagonism or hostility directed against practitioners of traditional medicine by the practitioners of Western medicine" (Offiong, 1999, p.126).

Therefore, we can understand that African traditional medicine, although it is as valid as the Western modern medicine, is encountering many challenges of the colonial competition and massive domination. In this case, colonial masters have contributed a lot for the deterioration of valuable African traditional medicine and its practitioners.

Saying that traditional African medicine is as valid as the Western one, it is because there is a sort of diagnosis in both cases that undertake a certain method. For instance, like there is a positive and negative effect of modern medicine, there are also positive and negative effects in traditional medicine. Let us take the idea of Mbiti, a Kenyan priest:

Purging witches and detecting sorcerers is a function for traditional healers. Certainly traditional healers identify witches and sorcerers but this is primarily in the process of determining the cause of sickness in order to determine the cure. Of importance is the fact that a traditional healer may be a witch (white or black).<sup>1</sup> Certainly all traditional healers know a lot about sorcery. It is very much like a physician who knows the positive and negative aspects of medicine - the very drugs that are used to save life can be used to destroy it (Quoted in Offiong, 1999, p. 125).

After all, we have seen that African traditional medicine is one among the thought systems of Africa as a scientific contribution. We have taken it as an African thought system because such practices are typically African society's efforts as a scientific heritage. These things also prove the fact that Africans do really have their own medical science which is different in the method of treatment from the Western modern counterpart (which is based mainly on physical treatment).

As said earlier on, African thought systems are multi-faceted. The thought systems can also be manifested in metallurgy because smelters produce iron and these iron materials can be produced according to the purpose that they have in the community and the production of iron or metals in Africa need high technological effort. Iles and Lyaya (2015), argued that:

Metals served a variety of roles within African societies, ranging from the functional and the decorative to the symbolic and the communicative. The process of winning metal from an ore is a difficult procedure, reliant on the procurement of high quality ores, ceramics and fuels and the application of complex technical knowledge. It is a resource-hungry and time-hungry technology that runs a high risk of failure, but when it succeeds it almost miraculously transforms stone into a substance with a new set of material properties. Perhaps for these reasons, rituals and symbolism often accompanied the activities surrounding metal production and metalworking, manifest in the items used to create or manipulate metal (furnaces, medicines, bellows, tuyères and tools) or the songs, movements and behaviours associated with the processes themselves (pp.481-482).

It is thus, possible to assert that metals have provided a great deal for the everyday life of the population of Africa. Therefore, from studying African metallurgy and metalworking, we can understand more about the role of metals in human cultures.

For instance, the following notion of Chirikure, Burrett and Heimann, show us how metallurgical processes are culture based:

Importantly, the purely technical acts were imbued with the non-technical rituals and belief systems. Throughout most of Sub-Saharan Africa, for instance, iron smelting was associated with human gestation and reproduction. This is sometimes demonstrated by the practice of decorating furnaces with female anatomical parts such as molded breasts. Additionally, beliefs in witchcraft were prevalent amongst many smelting communities and medicines were invariably used in metal smelting (copper, tin and iron) to neutralize the powers of inauspicious sorcerers.

Archaeologically and ethnographically, this practice is showcased by the existence of medicine pots strategically placed in either hole underneath smelting furnaces in places such as Cameroon (Quoted in Chirikure et al., 2009, p. 197).

This shows us that, African thought systems can be manifested in the form of medical practice. It can also be manifested in metal work or metallurgical processes. As typical African thought systems, this process needs high technological knowledge, because to produce metal objects and different ornaments, they need to highly heat their different furnaces. As different writers noted, the earliest African furnaces produced profound metal objects for different purposes of their encounter with nature. So, as a thought system, African traditional medicine and metallurgical processes are based on good knowledge of the technology that the time requires. This in turn shows that Africa despite the Western slanders was a continent with different cultures and respective technologies. As we have seen, many of the medical and metallurgical works are obtained before the Western science and technology come into being.

This holistic approach of African system of thought is effective in solving different African problems. But, despite the fact that African thought systems are rich in different problem solving disciplines, it could not escape the Western wholesale criticism and rejection. This Western scholars' position that there is no technological innovation and science in Africa is problematic; because it is un-doubtful that they knew the ancient technological advancements of some cultures and societies of Africa, like Egypt and other Sub Saharan African people. And some of the technologies that are applied by such cultures were even before the European civilization. It seems that their denial of even the recognition of African efforts seems intentional and the attempt to keep their monopolistic appropriation of scientific and technological innovations.

It will be wrong to argue that the scholars have no any knowledge of the African heritage and contribution even for the world, notably by the Egyptians from which probably the civilization that Europeans at least the ancient Greeks highly relied on. I strongly agree with the works of many African scholars such as Diop, Sertima, Hountondji, Chirikure and some others who strongly struggled to change the wrong attitude towards Africa by pointing out many magnificent works of ancient and modern day Africans in areas of science, medicine, astronomy, metallurgy and mathematics.

Different medical plants or herbs grow on the soil of Africa and there are also effective traditional medicine men or healers. But, both the traditional medicine men and healers are ignored by Western medical practitioners or even Western governmental bodies and at the same time by African governments and scientists.

But, it is not feasible to totally argue that Africans should not learn from the West. There are really many things that Africa should learn from the developed nations, but the problem is that, since the Western culture is developing dominance over other cultures, it does not look for an inter communication with other cultures.

So Africa is not the granary of ignorance, rather it is

repository of different technologies and scientific practices. These sorts of resources of knowledge need to be uncovered for the rest of the world. And I suggest that traditional African medicine men and individuals with other different skills should be supported and assisted by the respective governments of Africa. And there should also be an experiment for African indigenous sciences so that it will be advanced.

### **The difference between African religion and thought systems**

African religion and other systems of thoughts are believed to be highly intertwined and sometimes other thought systems are permeated in their religion.

They have a strong commitment to the universal reign of law in all spheres of existence. God is not apart from the world. Together with the world, God constitutes the spatio-temporal 'totality' of existence. As we saw earlier, the natural- supernatural dichotomy has no place in the African conceptualization of the universe. The thinking is hierarchical, with God at the apex and extra-human beings and forces, humans, the lower animals, vegetation and the inanimate world, in this order, as integral parts of one single totality of existence (Quoted in Coetzee and Roux (Eds), 2003, p.198).

As we have seen in the first portion of this chapter, African thought systems are manifested in one way by religion and the other by culture and science. Most of the day to day practices of the people of Africa are believed to be accompanied by different rituals. Sometimes, the influence of religion on cultural and other thought systems is found in different societies across the globe outside of Africa. Scientists sometimes are also influenced by some extra scientific practices. For example, we may see the case of Newton here:

Newton was strongly influenced in his thought not only by his voluminous researches into biblical apocrypha, but also by the hope that his natural philosophy (or physics) would impress on people the necessity for a divine intelligence to impact material particles their initial order and motion. He also saw the existence of God as necessary to sustain the notions of absolute space and time (Hear, 1989, p. 131).

There is a divergent view regarding the concept and the philosophy of African traditional religion. For this, some thinkers have seen Africans as if they do not have the capacity to reason on the concept of God. This led them into characterizing or giving all forms of derogatory names to African traditional religions.

This case of the intertwining relationship between religion and secularity in Africa has brought a problem when one tries to understand the thought and reasoning of Africans. Each group of society may have its own traditional religion whose dogma is embedded in terms of

the proverbs, the folklores, oral traditions, ethics and moral status of African societies. So, knowing African traditional religion in order to establish how Africans reason and think about the world around them, is an important task. That is why their culture is infusing with religious practices. For this, it is better to take what Mbiti has said about African culture and religion as it is highly integrated. He observed that "religion is permeated into different departments of the life of the Africans" (Quoted in Ekeke, n.d, p. 3). So, it seems that, the deep study of African religion is very important to know the practice of the society. Their religion is the strongest element in their traditional background and religion exerts a great influence on the thinking of the people of Africa. Ekeke argued that "Africans see the universe as created by the Supreme Being" (ibid).

A clear definition of traditional African religion is also provided by some writers like Omosade Awolalu. Here is his definition:

When we speak of African traditional religion we mean the indigenous religion of the Africans. It is the religion that has been handed down from generation to generation by the forbears of the present generation of Africans. It is not a fossil religion (a thing of the past) but a religion that Africans today have made theirs by living it and practicing it. This is a religion that has no written literature, yet it is "written" everywhere for those who care to see and read. It is largely written in the people's myths and folktales, in their songs and dances, in their liturgies and shrines and in their proverbs and pithy sayings. It is a religion whose historical founder is neither known nor worshipped; it is a religion that has no zeal for membership drive, yet it offers persistent fascination for Africans, young and old (Quoted in Ekeke, n.d, p. 4).

Here, what we can understand is that African religion is a religion which is not derived from anywhere else than Africa itself. The religions have no one founder like the Christians' Jesus or the Muslims' Mohammed. It is a religion that the peoples over all assert and knowledge are found in.

African thought systems as religion and as scientific practice may have a sort of difference, although in some instances they are similar. When, we, for instance, see different technological practices of Africa like metallurgy, mathematics, architecture and so on, they are almost scientific practices without being highly dependent on religion. The intervention of religion can be manifested in areas like medical practices, astronomy witchcraft and so on. Therefore, even though there is a difficulty to identify strictly the areas that African religion has not intervened, it is possible still to point out some thought systems that are technology oriented, not religion dependent. But, it is very difficult to have a clear and uncontroversial separation between African religions and other indigenous thought systems, that is, there are some strong ties or

nuance between the two.

Although many of African traditional thought systems are relevant for the development of Africa, if they are given a due concern, there are some practices and trends that are not to be welcomed, like witchcraft, which some societies use as a weapon to hurt other people who are considered to be their enemies; it has a negative effect. The other thing asnoted earlier, is secrecy, some people who have the skill of curing different malignant diseases and other health problems keep in secret, even die having it within them without sharing it for the rest of the people, nor even for their relatives.

Other than these, different religious activities support different scientific activities like healing and medication. Sometimes when a person becomes sick, he or she will go to the healers. The healers may have different techniques of diagnosis of the person's illness. It may be with the aid of spirits so as to have a better conception about the disease. So, here, the healer or the medical practitioner has two kinds of practices; one is when he/she physically treats the patient using different herbal medicines; the other is, when he/she brought spirits for additional understanding of the person's cause of infection. Therefore, this shows that how much religious or spiritual life of the African people and some scientific practices are integrated.

Here, it is better to take the insight of a scholar named, Dickson Nkonge Kagema; in his paper, *The Relationship between Religion and Science in Mission: Reflections from an African Christian Perspective*; Kagema argues that for African people, "God is the origin and sustenance of all things. He is outside and beyond His creation, but He is personally involved in His creation so that it is not outside of Him or His reach" (Kagema, 2014, p.49).

This means, to the people of Africa, God is the cause of all things. Therefore, religion and scientific practices in Africa are not contradictory since Africans also believe science as it is caused by God. According to Kagema, science is not only a method but a way of life. This implies that, both religion and science are vital components of Africans life.

African religious conception has a difference with that of the West in that, Western Christian religion is believed to be uninvolved in different scientific practices, that is, the realm of religion and science is different. This might be because of the conception that science advocates a rational conception of things while religion is based on faith. We can find only a few philosophers and scholars who thought that religion and science are not contradictory in the Western world. For instance, we can see Thomas Aquinas, who argued that there could be no contradiction between religion and scientific practices if man knew enough about things because both are originated from God (Cited in Kagema, 2014).

So, this has the impression that the assumed tension between religion and science is caused by human beings problem or failure to perceive of the God who is thought



to be the origin and the source of everything. Above all, it serves as the inspiration and guidance to practice different things.

### Relations between culture and scientific practice

....culture refers to the totality of the pattern of behavior of a particular group of people. It includes everything that makes them distinct from any other group of people for instance, their greeting habits, dressing, social norms and taboos, food, songs and dance patterns, rites of passages from birth, through marriage to death, traditional occupations, religious as well as philosophical beliefs (quoted in Edang, 2015. 99).

Culture is also defined by some scholars like, David Millar, Bugu Kendie, Atia Apusigah and Bertus Haverkort as follows:

Culture is defined as the way of life of a people. It is the totality of the human- created world. It comprises the intangible aspects of life – language, beliefs, myths, folktales, proverbs, histories and legend, philosophy, world-view, laws, values, attitudes, social systems, knowledge, religion, rituals, music and dance, technology, games, modes of production etc.; and the tangible – buildings, tools, clothing, medicine, food etc. and the environment – the flora and fauna etc. of the human habitat (Millar et al., 2006, p. 54).

Since this section is about scientific Knowledge and African cultures, it is better to see the definition of science. When we see the mainstream definition of science, we have the Oxford Advanced Learner's Dictionary which defines science as:

It is organized knowledge, especially obtained by observation and testing of facts about the physical world, natural laws and society. It is the intellectual and practical activity passing the systematic study of the structure and behavior of the physical and natural world through observation and experiment. The scientific method entails the meticulous process of gathering and analyzing data. Scientific knowledge is empirically verified, that is, tested through experiment and observation. In short science is a broad term that refers to any type of knowledge-base that can have some type of predictable outcome. It includes nature, experiments, outer space, and many other things. Science covers a lot of research and is an ongoing mission to discover new things and to understand them (Cited in Kagema, 2014, p.47).

These definitions are that we always encounter in different disciplines and areas. But, here, it should be seen in the perspective of the relation between culture and scientific practice in Africa. So, under this, it will be good to address issues like; how can culture and African scientific knowledge go together? And in what circumstances they differ?

To respond to the above issues, it is better to see the claim of different scholars that pointed out the fallibility of Western scholars' argument about the culture neutrality and independent structure of Western science as a background.

When we see the received view of the relationship between science and African world view, it seems to show us that they are incompatible with each other.

A Nigerian scholar, Isaac Olakanmi Abimbola is arguing that, in spite of the fact that the content of science may be general, the context within which it flourishes differs so that it is possible to have different conception of a similar science in different part of the world. He also added that the Western world view may not be necessarily compatible or incompatible with the African world views or thought systems. The two views (scientific literacy and the African world view) seem as if not mutually exclusive; because science as far as the new philosophers of science is concerned, is a human activity. Such new philosophers of science include Kuhn, Feyerabend and so on (Abimbola, 2009). So, nobody should have an exclusive scientific literacy. And from this we can possibly take the impression that, Africans can have a scientific literacy if science is a human activity and part of a human culture. Science as a human activity is also argued obviously by Harding. She is known in arguing that every science is a form of local knowledge or cultural knowledge. She argued that after the coming of Western science, it produced the currently established structure of science and she called this "the externalist epistemology" (Cited in Eze, 1997, p. 47). By *externalist*, she seems to mean alienating other experiences. This science is believed to be the only path of science that everything which does not conform to its principles is not science in real sense.

As Wahlberg, who reviewed Harding's work; Harding Sandra. *Is science multicultural?* Harding has contrasted this with the method of post-colonial science studies which observes interactions among cultures. This post-colonial science studies gives a halt to the European epistemological dream of a perfectly coherent account of all nature's regularities (Wahlberg, 1999).

Her central point is that post-colonial stand point of science as a counter argument poses modern science and technology like other cultures' way of knowing as local knowledge systems.

Here, although there is a high affinity between African culture and African science, there are also some difficulties in considering some traditional thoughts of Africa as science, because there are many things that seem difficult to understand and apply to the real progress of the continent. For instance, we can see the case of dominantly deep religiosity and reliance on spiritual powers and agencies. One cannot equate this with science or because these are not empirically provable and tangible. But, it is also possible to argue that different scientific practices are sometimes initiated

by the religion and the culture of the society. So in this regard, to some extent the argument of Horton, Gyekye and some others that some African thought systems are not compatible with the scientific enterprise and are inhibitive to the development of the continent is plausible. So, some African thought systems like believing in spiritual forces and religion by themselves are not believed to develop the spirit of rational inquiry and scientific approach. They can sometimes be effective in healing or other things, but are difficult to compare and contrast with scientific inquiry.

When we raise issues of the relation between scientific activity and culture in Africa, it should be viewed in the sense that each culture traditionally has developed different ways of practicing and making things. This doing or practicing things brought the production of materials that are useful for their encounter with nature. Science also produces materials that enhance the life of people on earth. It is in this circumstance that we take the practice of Africans or African thought systems as equally the practice of science. Their practice of things is also sometimes conditioned by their traditions. For instance, we can see the case of mathematical calculation in some cultures of Africa by Claudia Zaslavsky (1970). She argued that because some numbers are taboo for those cultures, they conceive them differently.

An interesting phenomenon is the compounding of the names of seven, eight or nine;  $7=6+1$ ,  $9=8+1$  as among the Mandyakos of the Western Sudan while in the Ga language of Ivory Coast lagoons,  $7=6+1$ , and  $8=6+2$ . This phenomenon may have been due to a taboo on speaking a name of certain numbers. Seven was a particular ominous number among the Congo and the Mossi (p. 351).

So, like these mathematical ideas in some cultures, different seemingly scientific practices are culture dependent and hence, a culture gives rise to the development of science. It is true that the root of science is a human curiosity and practice in different cultures. And this curiosity and practice is in one way or another influenced by the way of life of the society. And if we think that scientific practice is culture independent, there would be a special and neutral place for science uninfluenced by culture. One thing that can be taken as an evidence for scientific knowledge to be dependent on culture is the presence of different ways of doing things in different cultures. For example, one group of society or ethnic group may develop a well advanced astronomy associated with their culture's condition or motive; the other group of people may instead be very diligent in metallurgy, wood work different ornaments and architecture or agricultural tools. Each society may excel in different scientific activities in accordance with the interest of their culture.

Abebe Zegeye and Maurice Vambe argue that:

*Every culture has the capacity to renew itself through the*

*inventiveness of its people in their unique ecologies and through interaction with other social systems. These scholars said, African knowledge systems are the cultural expressions of the local, that is not only in and of the global, but that is the African globality from which Africa as a subject can authorize views of itself whether or not these views are taken seriously outside of the continent. According to their view, in Western thought and academy, most African thought systems or indigenous knowledge systems were desecrated and pejoratively described as superstition. Simply Africa named the granary or the repository of ignorance and "a dark continent", without its own history, culture and self-defining memories (Zegeye and Vambe, 2006, pp. 331-332, emphasis added).*

Different cultures in different areas of the World are the granary of different thought systems including the sciences, the philosophies and other forms of thought. The indigenous knowledge of the society is streamed from the culture of the people. It is this African culture which was threatened by a foreign culture. If this culture is influenced and attacked, therefore, it can be counted as a great loss of important human intellectual heritage. Because Western science cannot explain everything successfully by its own or it has limitations when it operates nature.

But if it gives the chance to other cultures to complement, it would become more successful. There is vital knowledge in different cultures of Africa that attempts to operate the working the natural world around us. African magico-religious beliefs are successful in many areas. So, for Western science, rather than simply regarding African cultures' traditional knowledge merely as magic, it would be better if it gives a functional place for it.

## DISCUSSION

After undergoing the above broad discussion, one can uphold the implications of the points of discussion. It is noted that African thought systems are the repository or the granary of different technical and spiritual knowledge systems that will be assets for the people of Africa. African science can be practiced in line with these in-depth and vast thought systems. The essence of African thought systems are difficult to figure out because of the multiplicity of cultures and experiences. But this does not mean that it is impossible to have some common characteristics of the cultures and scientific practices thereby.

Something fortunate is that since there are many different cultures in Africa, there is a possibility of having many local scientific experiences. These individual experiences produce different important knowledge systems of science, philosophy and so forth. For instance, one culture may be excellent in knowledge of

food preservation; the other may excel in metallurgical process. Others also are technically skillful in building technology, medicine and so forth. Therefore, this demonstrates the fact that the African way of doing and practicing science is not merely indifferent and unanimous as the Western scholars argued.

It is also undeniable that the African thought systems before the coming of Europeans and after colonialism are found to be different. In the pre-colonial era, there were good efforts of Africans in different fields of science.

This is perhaps because they were able to use the resource of their culture unconstrained by challenges like the inducement of the Europeans to their lands. Many argue that there is the lost science in Africa which was magnificent at a certain time in history. This includes astronomy, metallurgical works and boat building, medicine and others that were practiced by the ancient peoples of Africa very long ago before the rise of modern science. But, some of these are deteriorated with the deterioration of their respective civilizations and some others caused by the influence of Europeans during colonization. The coming of Europeans with their alien cultures to African way of living and doing things destabilized the previous experience of African people and thereby its continuity is to some extent aborted. Because Europeans were not caring for African cultures and values and it is true that their mission of owning African resources is through the reduction and elimination of those important African thought systems for African people. This has also contributed for the weakening of scientific practices and their progress.

Fortunately, since the African thought systems are deep rooted in the community, Westerners did not affect some thought systems and practices. This also shows that how much traditional thought systems are vital to Africans to solve their own multifaceted problems. Hence, even today, there are some important practices in Africa.

Since the very purpose of science is to solve the problems of the society, and African scientific practices are solving the problems of the people even though not at large, it follows that Africans had and have a science that can really fit with the science that the whole world is using today. But, the problem is, these African scientific practices are not found in the pace that modern scientific practice proceeds. And modern science, since it is based on a certain method, avoids everything that does not conform to it. So, since relevance and validity should matter when we do science, the African traditional technical practices also would better be taken as science although it lacks system and common method as Western advanced science.

## Conclusion

So, all things under this discussion led us to conclude that Western scientific knowledge is one among the possible knowledge systems of different cultures which is

advanced and different but not special and exclusively different. Not all its products are effective and applicable everywhere in the World. As it has its strong side, it also has a weak side. Its weakness can be filled by local knowledge systems of different cultures, because cultures are the repository of such knowledge systems. There should be a horizontal relationship and dialogs among different experiences of cultures so as to have a more comprehensive and strong science. Western or modern science is without hesitation the most sophisticated science that is trying to solve different problems of mankind in different fields. But, it does not solve all problems of human beings like for instance, health problems, food security problems, and environmental cases and so on. So, there is an implication that in addition to modern Western scientific knowledge system, embracing of different knowledge systems is needed if not totally, but to better solve existing human problems.

From all what discussed, there is a great implication that the African thought systems with their plural essence can be taken as an asset for scientific purpose especially if these thought systems are scrutinized in a way that undergoes experimentation and subsequent testing.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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