

THE PHILOSOPHICAL JUSTIFICATION OF THE COMPLEMENTARITY OF AFRICAN CULTURE AND SCIENCE AS A GENUINE WAY TO DEVELOPMENT

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Abstract

The promotion and propaganda of science as the only genuine direction for a country to develop is a misnomer and a prejudice. The West has acclaimed this to the dismissal of other countries' cultures especially those of the African countries. Most of the African countries suffering from inferiority complex have attempted to comply to Western prescriptions and directives in the rejection of some cultures, yet instead of moving forward scientifically and technologically they appear to crumble in those arena. Granted the development of some Asian countries such as China, North Korea, India, Japan and Malaysia, development whether scientific and technological or political and economic must not be considered by some universal criteria but should be sought on the basis of the cultural heritage of each society. African society is not an exception. In view of this logic, development should be attained as it is something that ought to be realized in the course of the people's everyday lives. In this regard, this writing call for complementarity of cultures and any borrow of technique must tally with the people's needs and aspirations which are unique to them. Given that man is rational, creative and inventive in management of conditions and circumstances based on proliferations of methods and cultures, I submit that a blend of science and a well-organized African method will enhance and accelerate African development in the dimension not wholly Western, but uniquely African.

Keywords: prejudice, technology, cultural heritage, development, Africa.

Introduction

By the Western influence and control, it is assumed that the science and technology are the pivot on which the wheels of modern societies rotate. They have changed both the intellectual and material perspectives of one's stay in planet earth. The gap in development among societies (you will agree with this writing) is the difference in technological systems. Most Western societies are more advanced in the use of science and technology to the enhancement of their environment and influence and control of developing countries of Africa.

The fact that science and its application are more pronounced in the West and other countries like Japan, Taiwan among others, does not vitiate the universality of science. One thing of note is that there is no unimodel relationship between science and technology. Though science may constitute a universalistic of planetary principle or system but when there is talk of ethno-science, it is mostly used in terms of technology, which is peculiar to culture.

Granted this nature of science, Paul Feyerabend's philosophy is the encouragement of the proliferation of ideologies and cultures. The philosophy encourages the interplay of cultures and propagates that cultures that are expedient to the understanding of reality of a society should not be discarded at the advent of another culture. Concerning the relationship between science and technology their respective positions in history are seen as two levels of cultural system. Relating scientific tradition with other traditions, Feyerabend says "today science prevails not because of its comparative merits but because the show has been rigged in its favour"¹ Explaining how this is the case, Feyerabend says "the apostles of science were the more determined conquerors and that they materially suppressed the bearers of alternative cultures"².

The implication of this statement is that science is a cultural enterprise for understanding of the physical world which is different from other cultures. One thing of note is that knowledge does not evolve from one direction. The present terrain of development of science and technology should not be at the dictate of the west and its imperialist agents. By man's rationality, citizens of African countries should be conscious that no man or country possesses the monopoly of knowledge and creative ability. That knowledge and creative tendencies are also within the Africans themselves in the name of culture.

Deduction and promotion of the complementarity of science and African culture to genuine development, it presupposes that Africa (and Nigeria in particular) must acknowledge and accept to develop those forms of technology that are appropriate, and harmonize well with the tradition, belief system, values and developmental aspirations of her people.

The Interrelatedness of the Concepts of Science and Culture

Both issues of science and culture are connected to the operation of mankind in the society. Apparently both mean the same as every cultural solution

¹ Paul K. Feyerabend, *Against Method*, (London: Verso, 1978), P. 102.

² W.H. Newton-Smith, *The Rationality of Science*, (Boston: Routledge and Kegan Paul, 1981), p. 123.

proceeds from their situational or existential problem, which may be empirical habit exhibition. The acknowledgement of science and technology to the west is that modern science and technology proceed in a systematic and well-ordered process.

For better understanding of this writing, the meaning of science and technology and culture is seen in this direction. According to Campbell “science is the field of those judgments concerning which universal agreement can be obtained”. He also sees science as a well-ordered activity of discovery and explanation of whatever has been discovered. Francis Bacon sees science as “a combination of comprehension of nature and conquest of nature”. Uduigwomen in the same trend with Bacon sees science as “a study of the mastery of man’s material environment”³. This implies the application of scientific knowledge, principles, laws and theories in solving man’s environmental problems. In the view of Carl Hempel, “science seeks to explore, to describe, explain and to predict the occurrences in the world we live”.⁴ According, to him, scientific statement therefore, must be checked against the fact of our experience, and they are acceptable only if they are properly supported by empirical evidence. Predicated on these definitions, it is seen that science is in tune with facts and must get in touch with most of the relevant facts by experience and observation and through empirical process.

Technology by its meaning is not ruled out of science. Science is inclusive of it. Technology is the physical application of scientific principles. M.E. Inyang Abia defines technology as “an area of study and practice that deals with the application of scientific knowledge to the identification and solution of problems in the different fields of human endeavour”.⁵ He further says that technology implies other such basic features as applicability, culture relatedness, growth practicability, problem-solving ability, scientific orientation and systematic application. According to him “a technology that, lacks practical palpability in solving problem peculiar to a given culture is not technological at all”. In the same pedestal, Ogbonnaya Onu says “technology

³ A.F. Uduigwomen, *A Textbook of History and Philosophy of Science*, (Aba: AAU Vitalis Book Company, 2007), p. 22

⁴ Carl Hempel, *Philosophy of Science*, (New Jersey: Prentice Hall Inc. 1966), p.1

⁵ M.E. Inyang-Abia, “Technology: Transfer and Appropriateness” in *Technology, Science and Environment: A Current Overview*, Princewill Alozie Ed. (Aba. AAU Industries, 1996) p. 33.

involves the social and economic atmosphere within which the systematic application of scientific knowledge to practice task can take place”.⁶

The interest of these definitions is that they transcend beyond what the layman sees technology to be. That is, it goes beyond those which focus on only modern industrial technology or only craft and manufacturing or on “material culture” and yet include them all. Concerning relationship between science and technology, science has been defined being distinguished from technology; however, it could be seen that modern technology and science are symbiotically related and interwoven. It is this relationship which in some cases, the use of science is seen to cover both science in its strict sense and technology. In considering the social aspects of scientific activity which brings it very close to technological activity one might use the internal structure of the scientific approach to show that it tends more and more to merge into technological approach (i.e. the method of science is the method of technology). That is why it is said that modern technology relies as much as possible on scientific method. In this paper the two terms may be used interchangeably to mean the same.

With this understanding of meaning of science and technology, it is seen that the West cannot claim to be the creator or originator of science and technology. Every society has its own *modus operandi* and therefore the present trend of its operation in Africa and Nigeria in particular must not be at the dictate of the Western countries as represented by World Bank, IMF and other imperialist agents. However, the present trends of modern science should not rule out other traditional or, cultural trends of scientific operation in other countries especially in Africa.

What is culture in relation to science? How is culture complementary to science? The way of life to a society makes up its culture. The culture of any society represents generalizations about the behaviour of many members of that society. By this description, culture does not describe the personal habits of any individual. According to Ibanga Ikpe, culture is defined as “the totality of knowledge and behaviour, ideas and objects that constitute the common heritage of a people.”⁷ Arguing on the content of culture, Ogunniyi says that culture is a phenomenon, which reflects the highest level of

⁶ O. Onu, *Technology and National Development: The Nigerian State*, (Aba: Aduco Publishers, 1984).

⁷ I. Ikpe, “The Culture of Development and Development of Culture” in *Viewpoint: A Critical Review of Culture and Society*, Vol. 1, Nos. 1 and 2, (1999), p.3.

accumulated experiences of a given society.⁸ Analysing these definitions, it could be said that culture has to do with experience of people in their interaction with one another and with their environment.

Given this view, culture cannot be separated from human experience, and it is this experience that produces it. By responding to experience man builds up culture because he has an inner life, which originated from an experience which itself has an inner meaning and which asks for meaning. According to K. C. Anyanwu, "the primary function of culture is to communicate an answer to that question and to satisfy the demand for meaning."⁹ In this understanding, there is no doubt that every society; ancient or contemporary, scientific or traditional has a culture. But cultures differ from one another as their experiences differ.

Going by the definition of culture and science it presupposes that science is a cultural enterprise for understanding of the physical world which differs in other countries. The deduction made here is that every cultural solution proceeds from their situational or existential problems which may be empirical or psychological. Being empirical shows that it is not only modern science that proceeds in that manner. The only difference is that modern science and technology proceeds in a systematic and well-ordered process. On this pedestal, science is a culture and should as well tally with other cultures. On this reasoning the present scientific operation should be compatible and complementary to other cultures and African culture is not an exception.

The Backwardness of African (Cultural) Technology by the West

Before the advent of modern science in Africa, science and technology practiced were in line with the cultural needs and values. But with the unleashing of slavery, colonization and Westernization, the outlook and priorities of Africa in terms of needs and aspirations changed. So it could be said that all these brought cultural change. In this case, it is held that African culture is dynamic and therefore amenable to change. This change does not mean that the original outlook to environmental problem will give way entirely to a new culture, rather, it should be seen that either there is an integration of a new culture into the existent cultural system or the new culture

⁸ G. Umoren, "Overview of Science, Technology Society Interactions" in *Technology, Science and Environment: A critical Overview*, Princewill Alozie, Ed. (Aba: AAU Industries, 1996), p. 16.

⁹ A. C. Anyanwu, "The Idea of Arts in African Thought" in *Contemporary Philosophy*, E.G. Floisted (Ed.), (Boston: Martinus Nijhoff Publishers, 1987), p. 243.

complements the cultural system of the people. The reverse is the case in Africa. The scientific and technological backwardness is the case. This is the resultant effect of the Western manipulations in the bid to promote dependency of technological products on them.

Modern science is a cultural enterprise, which was born and grew up in a cultural environment, which was already deeply imbued with idea of rationality. This idea, however, was based essentially on the philosophical foundations, which the west had inherited from Greek culture. Today, scientific culture has developed more than any other culture and it is making greater and greater inroads into other systems of representations, and the result of course is a disturbance in the system of values. And this is bound to have far-reaching effect not only on the culture as a whole but also on the other aspects of social life. In this sense, there must be a culture in which science thrives and is influenced by that culture, and the implications science has for that culture. By virtue of the impacts of science on societies, it may be assumed that all cultures tend towards the utmost degree of integration. This is because no society will want to be left out in the benefits science has unleashed on mankind. However, this does not mean that approach and the employment and development of science are the same in all cultures. Science as a practice and enterprise is being influenced by culture. No scientist operates in a cultural vacuum. His outlook, ideas, process, skills, ethics and attitudes are by-products of his culture. The understanding of this is that if science flourishes where a culture has certain traits, then science is manifest in any culture if at least those specific traits are fostered deliberately. In this regard Ladriere states:

In relation to traditional cultures, that is, in short, those stemming from pre-industrial periods, science and technology that industrialization brings with it may be regarded as foreign bodies but at the same time they assert themselves as systems of which the existing culture must take account.¹⁰

He also points out that since science and technology cannot take their place in traditional cultural aggregates, they introduce a restructuring effect and aid in some cases destructive disruption. This is seen in three aspects: (1) the direct effect of science on the system of representations, (2) the indirect effect of man-made environment resulting from technology and (3) growing acceptance

¹⁰ J. Ladriere, *The Challenge Presented to Cultures by Science and Technology*, (Paris: UNESCO, 1977), p. 76.

of the scientific and technological project or design for the future, with establishment of a corresponding form of temporality.

Agreeably, it is possible to create a tradition (such as science) that is held together by strict rules, and that is also successful to some extent (as exhibited in the West). But the questions are: is it desirable to support such a tradition to the exclusion of everything else? Should we transfer to it the sole right for dealing in knowledge, so that any result that has been obtained by other methods (cultures or tradition) is at once ruled out of court? For this intellectual writing the answer is a firm and resounding “NO”.

Philosophically, the reason is that the world which is explored is largely unknown entity. We must, therefore, keep our option open and we must not restrict ourselves in advance. Epistemological (Western) prescriptions may look splendid when compared with other epistemological prescriptions, or with general principles, but who can guarantee that they are the best way to discover, not just a few isolated ‘facts’ but also some deep-lying secrets of nature. For instance, the prescriptions of World Bank and IMF especially SAP appeared very wonderful and were gradually defended against any home oriented alternative for revamping Nigerian economy under Babangida’s administration

In deviance to alternative solution SAP ended in fiasco. The defence is being put forward by Obasanjo's Administration for privatisation and deregulation of the oil sector. Some patriotic intellectuals are calling for other measures to beef up the economic growth. The results of the implementation of the so-called scientifically prescribed programmes of the World Bank and IMF have been leading the country into untold hardship and famine.

The resultant effect of World Bank and IMF prescriptions and implementation is the exploitation of developing countries by the West and the internal effects are often quite terrible in terms of fostering economic inequality and social distortion. It has been noted in countries like India and China with overwhelming population, that the political commitment of the system ensures a general concern with eradicating regular malnutrition and hunger through more equal access to means of livelihood, and through entitlement vis-a-vis the state and China's achievements in this respect have been quite remarkable.

It has also been held that, with the present political system in India, it is almost impossible for a famine to take place. The pressure of newspaper and diverse political parties makes it imperative for government in power to organize swift relief. No matter how and where famine threatens whether with

a flood or a draught, an obligatory policy response prevents famine from actually occurring.¹¹

On the other hand, countries like Nigeria, Liberia, Cameroon and so on which strongly believe in the World Bank as the principal repository of today's conventional wisdom in development strategy are fraught with political and economic crisis. Lack of confidence in forging out home grown alternative economic policies confuses the government, and makes it pursue disastrous policies (such as SAP and Deregulation) with confident dogmatism and cannot be forced to change its policies even in the face of informed criticisms from newspapers and pressure groups. This has worsened the poverty situation of the country. Apparently the idea of one method to the solution of problem at the exclusion of others has not fared well for individuals and countries that have such mentality.

Bringing Feyerabend's position in relation to African metaphysics (tradition) I can say that every culture has its methods, which are expediently useful to their own experience, and African metaphysics (traditional modes of explanation) is not an exception. African metaphysics acknowledges the principle that there are many more things in nature that can be perceived with the senses. The belief in forces operating in the universe is manifest in the function metaphysics plays in African experiential and cultural milieu. It is (also) manifested more in the activities of few who have access to them, manipulate and utilise them. These are priests of traditional religions, medicine men, diviners, rainmakers, witchdoctors, sorcerers and magicians. It is only within their "modus operandi" that interpretation and understanding are given to the operation of the universe.

Compatibility of Science with Culture

Given this noted position above, there is conflict of values between the cultural system and that ushered in by science and technology. That is to say a duality of values are created. But the questions are: can the two systems of knowledge co-exist with communication? Or as the proponents of science such as Paul Feyerabend hold; must it be recognized that values are quite unrelated to science and must henceforth, if need be, remain ungrounded? These questions presuppose the autonomy of science and technology. But Udo Etuk has objected to this and quoting Mesthene says: Technology must always be

¹¹ A. Sen, "Development: Which Way Now" in *The Political Economy of Development and Underdevelopment*, Charles K. Wilber & Kenneth P. Jameson (Eds.), (New York: McGraw-Hill Inc. 1992), p. 19.

related to the society in which it develops and flourishes: that is, to its culture. For to fail to do so is to commit the error of seeing technology as an autonomous force which develops according to its own internal laws".¹² Adding to this, he says that technology is the product of intensive effort of and quest on the part of those who want it to happen.¹³

The deduction made here is that not only do science and technology take place within the ambits of a particular culture, but the impetus for their developmental trend can be aided or retarded by culture. The relationship between cultural system and science is, however, not a one-way relationship for just as culture provides the milieu for scientific development, science also affects culture in very definite ways. For instance, the integration of science into a culture may give it a new look, i.e. alters the patterned behaviour of a people by changing the cognitive, mental, institutional or physical environment in which people operate. This does not mean that science has overthrown the existent culture and become the sole system of representation. The new outlook is not aimed at eclipsing the culture, nor is it meant to create an environment which the existent culture finds alien. Rather the new system of representation serves to put the culture to its responsibility towards its people, especially such responsibilities that relate to self-preservation

So the direct impact of science on culture may be that of restructuring effect but not that of destruction of that culture. Science being a social enterprise, it does not make sense outside the cultural context. If cultural integration is an attempt to strengthen the fundamental constitution of man and if man is a social animal, it follows that every introduction into or modification of the cultural system aims at furthering the realization of man's social objective since what constitutes social has no universal understanding, but is bound to human cultures, it follows that strengthening the fundamental constitution of man is synonymous with strengthening the culture of the people.

African (Nigerian in particular) cultural systems possess the traits for unity with modern science. Our discussion so far has shown that no culture is bereft of the capacity to develop science and technology even though some people may be faster than the others as a result of certain peculiar circumstances and needs. This is so because, everywhere science does already exist in one form or another although not as structured, systematized and

¹² U. Etuk, "The Logic of Technology" in *Technology, Science and Environment: A Current Overview*, Princewill Alozie (Ed.), Aba: AAU Industries, 1996), p. 27.

¹³ Etuk. "The Logic of Technology", 29.

articulated as modern science. Earlier in this section as mentioned, history has shown how science and technology flourished in Ancient Egypt and how Egyptian culture was recognized as the embodiment of learning. Other Kingdoms such as Greek and Rome whose cultures were prone to development adopted and adapted some of the traits of Egyptian culture. It is in this light that Ralph Pounds says “Western and Eastern cultures benefited from Egyptian culture through what he refers to as ‘invention by diffusion’”.¹⁴ By this it could be said that in a way development is culture bound. This is because, it could be argued that it is the culture of Ancient Egyptians that continued and engendered development among the Greeks and then passed on to the West and continued as the driving force of development even today. Egypt would have continued to lead but for the attack on and destruction of it by the Greek Warlord—Alexander the Great.

Reasoning along the “invention by diffusion”, it could therefore be said, given the scientific consensus, that all human beings originated from a common ancestor, and also the various developmental changes that resulted in the Eastern and Western civilizations could be said to have emanated from one source. The differences that are apparent between these two cultures could be explained by environmental differences within which the cultures grew. It must be pointed out that development can take place within different cultural environments. From this it could be argued, a fortiori, that there is no culture of development and that every culture can at various times have either beneficial or negative impact on development.¹⁵

Today modern science and technology are taken to have its epistemological root in Greek. What this points to is that there must be a cultural setting for the development of science. This is implicitly put forward by UNESCO:

Over the years, various societies have developed a store of knowledge, skill and experience, which have enabled them to survive by harnessing certain aspects of their environment. This traditional love, including handicraft, trades, farming techniques and other agricultural practices should not be abandoned altogether in favour of imported modern technologies. Instead, efforts should

¹⁴ R. Pounds. *Development of Education in Western Culture*, (New York: Appleton Crofts, 1968), p.12.

¹⁵ Ikpe. *The Culture of Development...*, 5.

be made to identify any scientific root in traditional practices and base future development on them.¹⁶

The deduction from the foregoing is that the cultural setting of any society determines, to a great magnitude, how both science and technology develop, grow and how the scientific thought and processes are given priority in the scheme of things.

Culture has two important attributes or features: stability and change. According to Ibanga Ikpe, the stability in culture comes from the fact that culture is something that we acquire without noticing and cannot easily discard. This is because we acquire a new culture either consciously or through a process of acculturation, the result will be a hybrid culture comprising elements of our foundational culture and the invading culture. The foundational culture will always be there whether we want to retain it or not. The reason for this is that culture is made up of the experiences of people over a long period and we cannot unlearn such experiences, which may be completely at variance with those of the invading culture.¹⁷

Given that every Cultural system is a means of understanding and giving meaning to reality, can it be said that every culture is complete and adequate in itself? If it is so why do cultures modify in the light of new experiences by either adopting a new culture or modifying the existent one? In answer to these questions, I say that no culture is complete. Every culture needs development in order to survive. For centuries, the task man has set himself has been to decipher the world. No cultural system has an effective and comprehensive explanation to what reality is. African cultural System (Nigeria in particular) is not complete either. Where it is ineffective, it needs science where science appears to be particularly efficient in deciphering reality. Man's task today is to transform the world. To be sure, this transformation is not merely technological; it also affects social structures and is therefore political as well as technological.¹⁸ It is a political task, in the sense that scientific knowledge is allowed into the culture consciously as it relates to the destiny of human society. What I am driving at is that scientific knowledge does not eradicate the cultural values of a society, but must be admitted that cultures have stability in that they are a pattern offering inspiration and guidance. However, their contents never stop changing with

¹⁶ G. Umoren, "Overview of Science, 16

¹⁷ I. Ikpe. The Culture of Development..., 4.

¹⁸ J. Ladriere, *The Challenge Presented to Cultures*, 11

development of the specific norms, especially those provided by scientific knowledge.

At this Juncture, I cite the example of countries that grew into political and economic power because whatever foreign ideas found their ways into their territories were aligned to the culture of the environment. In China for instance, the combination of Marxist and Confucian elements in Mao's thought provided not only a new and fascinating synthesis but also some of the key ingredients in the distinctively Chinese model of development.¹⁹ Today, China with its 1.2 billion people can boast of a unique flourishing culture, which could be a result of contact with the West. Japan on the other hand, has been transformed into both a technological and economic power. This was due to their contact with the Western capitalism. The Japanese did not passively internalize Western capitalist structures and method but refined aspects of capitalism with features from its own culture. Ibanga Ikpe points out that cultural passion for efficiency both for instrument and technique contributed to the greatness of Japan.²⁰ So it could be said that Japan achieved its economic greatness by borrowing, copying and synthesizing the technology and organizational models of the West and adapting these to historic and preferred Japanese forms, structures and ways of doing things.

Conclusion

So far from the analysis of the background of culture as the people's way of life, science by its *modus operandi* is also culture-oriented and should be adopted and adapted to any cultural system based on environmental conditions and needs. In view of the progress and development made especially by China, Japan and India. The lesson to be learnt by African countries is that no culture is entirely opposed to development, but on the contrary culture can aid development if the potentials of the culture are properly harnessed. It must be noted and pointed out that developmental change of Japan, China, India and even the West is closely linked to the culture and is seen to have been a result of cumulative process-a buildup from a more traditional state. Given this temperament, African intellectuals and leadership have generally lacked the right economic and political climate for the pursuit of their intellectual goals.

¹⁹ H. J. Wiarada, "Towards a Nonethnocentric Theory of Development: Alternative Conceptions from the Third World" in *The Political Economy of Development and Underdevelopment*, Charles K. Wilber & Kenneth P. Jameson (Eds.). (New York: McGraw-Hill Inc. 1992), 92.

²⁰ I. Ikpe. *The Culture of Development...*, 6.

The reference is not simply to the weak material base of the intellectuals particularly those of the universities—a weakness, which has made many of them to devise various coping strategies, but also reference is made to the consequences of economic backwardness and political authoritarianism on intellectual performance. One of the consequences is our general scientific and intellectual dependence on the advanced countries of Europe and America. This situation has denied Africa the opportunity of having the kind of intellectual communication that can promote a better understanding of our environment (and situation). It has also led to a widening of the gap between the intellectual and the people he is supposed to serve.²¹

The growth of Chinese system has challenged and threatened the monopoly of scientific claim to inter-subjectivity and systematicity. In view of the way science is held today, and the interference of the state in advancing and promoting science Chinese traditional practice has received condemnation by the West. But Chinese communists refuse to be intimidated by the judgment of the so-called "experts" and ordered traditional medicine back into the universities and hospitals in spite of outcry all over the world that science would now be ruined in China. The very opposite occurred, Chinese Science has advanced and Western science has learned from it. Today Qigong "the ancient Chinese art of healing using breadth mind and body regulation exercise" is gaining wide acceptance in the United States medical circles. Newsweek Magazine reported that in Montenevy Peninsular Community Hospital, a surgeon in true tradition of Western science preps and cuts while the Qigong master uses his hands to feel the energy fields. The combination of the two as pointed out by patients makes healing credibly fast.²² The inference and permutation drawn here is that no culture is inferior. Much benefits abound in cross-cultural exchange provided the affected countries do so consciously and are also wise enough to select and appropriate only those aspects of foreign culture that could be modified in keeping with the needs, hopes and aspirations of their people. The disease of covid-19 that threatens the world especially the Western countries is healed and cured with traditional medicines of some cultures. India, for instance, produces and supplies hydrochloroquine which has proved helpful in the treatment and management of the disease. Is this not a scientific feat from their culture? This is a lesson to African nations.

²¹ O. Oladipo "Intellectuals and Social Change in African Context" in *Viewpoint: A Critical Review of Culture and Society Journal* Vol. 1, and 2, 1999, p. 20.

²² Newsweek Magazine, (15th December, 1997), p. 20

Africa should not see scientific development as revolutionary change—a total shift from its culture. Modern science and technology should not be seen as different and distinctive from cultural development. As pointed out above, it is in culture that science thrives. So scientific and technological development should be related to culture. In this case, there will be a form of unity and complementarity between science and culture. Such unity will be seen as emerging from the actual and present existential, concrete situation, which must reflect the needs and aspirations of the people. So, the unity of science and African culture is not an overthrow of our cultural system and values rather it should be seen as symbiotic unity. In confirmation of this complementarity Ladriere writes:

In societies where the development of science and technology has attained its most advanced forms, values and cultural patterns, which have remained unaffected by it, continue, indeed to exist.²³

As noted above the truly unifying elements in a culture are those fundamental values, which underlie; justify and give rise to all the values within the culture. Those fundamental values give conception concerning the destiny of mankind. So, what gives human life both direction and meaning is culture. Science and technology are not the foundation for a destiny. It is the culture that determines the direction of their development. It is true that science may be sometimes supported and made possible by certain elements in the traditional culture, however, more through its indirect effects than through its direct influence, it may become a clearly determining factor in culture. This is the case with highly industrialized countries where science has made great stride.

The prescriptive conclusion of this writing is that science does not erode the fundamental values of cultures. It is the culture that allows its development. Where the traditional practices of a culture are more effective, the integration of science into that culture does not erode it. African countries are not exceptions. What happens is that science only complements such practices in order to give greater meaning and direction to understanding reality. This is what is the case in China. It is in this perspective that Paul Freyerabend calls for fruitful exchange among different cultures. What must be shunned is the unidirectional model of development as propagated in the name of Western modernization (especially globalization). The West upholds that the development of Third World is only dependent on their model, but

²³ J. Ladriere, *The Challenge Presented to Cultures*, 88.

this is what Helleiner (1992) describes as “conventional foolishness” as no culture or society can claim the sole repository of knowledge. In this regard, the development objectives of the people to their culture must be such a way that development is recognized to be cumulative to the culture rather than opposed to it. The implication of this, is to change the mind-set of the African towards his culture. To make him realize that culture provides the foundation for development and that he is comfortable with his own culture. In view of the complementarity of African culture and science, it presupposes that scientific and its technological effect should tally with cultural management that is focused on the needs and condition of the environment. Leadership in Africa (Nigeria in particular) in the utilization of science in the socio-political context should adapt and integrate the scientific technique to the African cultural scene and physical environment, taking into consideration the peculiar needs, values and aspirations of African people. The essence of complementarity of African culture and science and its technological impacts is that countries in Africa especially Nigeria, should be reflectively aware and appreciate its deficiencies and lacks, and then appropriate from other scientific cultures those aspects (whose modifications in line with her experiences) could cater for her inadequacies. In this regard, it is philosophical justification of complementarity of cultures and that of any borrow of techniques which must tally with the peoples’ needs and aspirations which are unique to them, and therefore genuinely enhances and accelerates African development in the dimension not wholly Western, but uniquely African to the solution to the problem of backwardness.

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