AFRICAN SCIENCE

Can there be other methods, methodologies and approaches to scientific inquiry? In the book Introducing African Science: Systematic and Philosophical Approach I argued that alternative science is not only possible but imperative. My thesis rose, in part, from the indigenous scientific culture in Africa and in another part, from the precarious position to which the Western science has led humanity. That Western science developed from ethno-culture of Europeans is no longer in doubt. This position is confirmed by Western scholars like Sandra Harding who writes that the so-called science as we know it today is actually an ethno-science that rose from the cultural world-view of Western people. This suggests that alternative sciences are possible. However, that science as we know it today has failed in some ways also suggests that alternative sciences are imperative. I also pointed out that to pursue such a project portends the inevitability of yet another alternative logic, the structure and rules of which would necessarily be determined by the structure of the form of alternative science one wishes to develop. In any case, one suggests an extension in terms of rules and structures to our logic and not necessarily a unique logic. Take for example our experience with quantum mechanics which, as Hans Reichenbach (144-159) remarked, could not be axiomatized by the classical two-valued logic but rather could be straight-forwardly axiomatized by the Lukasiewicz's alternative three-valued logic. This is a point corroborated by J. M. Bochenski in his The Methods of Contemporary Thought (78). Here, we propose similar logical extensions clad with truth-value glut where the third value is read as both true and false. This type of three-valued logic model somewhat defies contradiction because of its structural and legal dynamism and that means more expressive power than what is conventional in standard logic. It allows for cross pollination and cross fertilization of thought. In our alternative science it would translate to structural exchanges and complementarity with Western science. The theory of African science has been undergoing systematization at the Calabar School of Philosophy, a philosophical movement aimed at promoting intercultural philosophical inquiry as well as Africa's contribution to thought. Other notable members of the school and their thoughts include: Innocent Asouzu (Ibuanyidanda or complementary reflection); Chris Ijiomah (Harmonious monism); Ephraim Essien (Compatibility theory); Jonathan Chimakonam (African science and Ezumezu logic); Mesembe Edet

(Afroxiology); Andrew African Science 2 Uduigwomen, Chris Akpan, Egbai Oja, Kyrian Ojong and Godfrey Ozumba (Njikoka Philosophy). George Musser writing in the Scientific American of November 2012, states that "the ultimate limits on reason come from quantum physics, which says that some things just happen and you can never know why." This emphasized ignorance is actually an enlightened one, in that one at least knows why one can never know why. This makes allusion to the dynamic logic model in play (three-valued logic), which is why scholars like Musser aver that quantum physics provides for example, "a model for human behavior in which apparent irrationality makes total sense." But the question as to what constitutes the criteria for rationality quickly betrays the lopsidedness of the system. In Musser's words, "to be rational (in conventional time) simply means adherence to principles of classical logic. So, if we would have an extended logic without the constraints or legal limitations of classical logic, what is rational in the new dynamic/loose logic, might be totally irrational in classical logic. At such a point, as it appears now in the alternative logic of quantum mechanics, one can say of a theory that seems to make sense in an unconventional way, "I know why I can never know why". In the book referred to above and in other papers, I systematized preliminary structures of a culture-dependent Igbo-African science and also developed an alternative Igbo-African threevalued logic model for it as extensions and complements of existing Western models. In this theory, very much like quantum physics experience, one could say that one makes sense out of apparent irrationality but only in the light of classical logic. So I submit that alternative science necessarily demands extensions to our logic – to the African logical tradition. Many African scholars have attempted what could be called a rough description of African science; some were inadvertently led into errors because they wished to do away with metaphysics. Ozumba leads this pack: he defines African science as the "African man's way of observing, systematizing, testing, confirming facts of his environment, with the aim of achieving a high level of understanding of his environment to aid him in controlling or manipulating the forces of nature to his advantage or at least to escape the heavy consequences of uncertainties which characterize natural phenomena" (Ozumba 2000: 20). By focusing on the African man's way, Ozumba refers to the unsystematized indigenous practices which are nonstandard. Again, the point to note here is the reference to both facts and forces outside of which it would be wrong African Science 3 to say that Ozumba's definition captures the very essence of systematized African science which makes it different from Western science. In reaction to Ozumba, Uduigwomen and Akpan ask: "If this is [the definition of African science], then what makes it different from Western science since this is exactly what the Western scientists also do?" (2009: 302). This criticism is tenable because some Western trained African scholars usually fall into the error of supposing that whatever qualifies as science must take a full

empiricist dive. This leads them into unsuccessful and unhelpful attempts at weaning African science of its embedded metaphysics. Even Uduigwomen and Akpan still fall into such mistake in their definition of what they call modern African science by excluding metaphysics, although in the body of their work they showed that it is a necessary part of African science. They define it as activities aimed at understanding, explaining and exploiting nature for African man's use (303). Except for grammatical reconstructions, their definition is in every way identical with the one offered by Ozumba which they criticized. Asouzu (no date: 3) observes that the reason why those who work on the project of systematizing African science try to strike off the metaphysical is because African scientific experience in its original form is couched in, or anchored on the mythico-religious method: a method evaluated as the reason for the stagnation and lack of progress of African science. However, one may ask, are there no such supernaturalisms in the history of Western science? Sandra Harding for example describes modern (Western) science as ethno-science, suggesting it is the local knowledge system of the west but imposed on other cultures (Harding 1997: 45). Supporting this view Alozie who classified African science into functional, structural and historical (Alozie 2001: 6-19) maintains that science however it is practiced is a cultural phenomenon (3-6). This means that the African scholar who wishes to systematize African science to institute it as a field of progressive research should not shy away from affirming the metaphysical as an integral part of African scientific experience. What we call science therefore should be that which describes what makes up reality in African world view. And since the metaphysical for the African is no less an aspect of reality as the physical, our science, even when systematized, must not turn a blind eye to it. In a way, describing and explaining the metaphysical is one of the main distinguishing factors of African science. A science which does not include the metaphysical in its map of reality is surely not the African science. African Science 4 From the foregoing, a question may be asked: what is Western science and what is African science? If we define Western science as a body of organized knowledge whose pursuit is tied to the principle of empirical, testable and demonstrable protocol, then we may have to define African science as a body of organized knowledge concerned with enquiries into all shades of reality in the African world view supported with rational explanations. The difference is that in the former, scientific enterprise is restricted to a segment of reality namely, the empirical, while in the latter, there is no such restriction. All sides of reality are covered provided the methods of enquiry offer explanations and results that are rationally tenable. Rationality is here employed to depict explanations that range from verifiability (in positivist understanding of the term) to coherency (in African logic sense of the term). Based on these explications, as we attempt to construct a theory of African science, we here offer justifications for our study. The greatest challenge to the project

of systematizing African brand of science is weaved into the questions: what is the need? What can African science offer that Western science could not offer better? Answers to these two questions constitute the justification for the project on African science. We respond in four point paragraphs: There is a need to raise a science fit with an African indigenous thought system. The present author in his paper "Outline of African Logic for the Development of Thought, Science and Technology in Africa," argues that African intellectuals have not excelled in inventive and theorizing exercises because the background logic of Western science does not cover the mappings of their indigenous thought system. And not necessarily as some Western scholars contend, that they cannot think. Hence, raising an African brand of science with an African logical tradition [an extension to universal instrument of logic] as its algorithmic model will offer a fair platform for African intellectuals to compete in science and technology with their counterparts in the west. There is a need also, for an alternative science which will be eco-friendly as Western science now present serious environmental problems. The dangers facing our world and mankind in particular ranging from tsunami, tornadoes, earthquakes, flooding, draught, food shortage, diseases etc., which daily threaten the very fabric of life, have outgrown the capacity of Western science. Also, different scientific experiments have proven dangerous for our environment and unsafe for life. All this points to the fact that a new science that would be eco-friendly and African Science 5 capable of taming the excesses of nature is required. There is need for a science that can offer safe and adequate energy to the world. The world is facing a huge energy crisis which in many ways has increased the misery of men. Hunger, poverty, high mortality rate, crimes, diseases and wars are fought for the world's scarce resources. Finally, there is a need for an alternative science to complement the efforts of Western science with novel approaches to the study of nature. Some of the methods of African science include: Akọ-nwalee, Akọ-ijụ-ase, Akọ-ime-obi, Akọ-nyiri-onwe, Akọ-nso-n'azụ. The criteria of African science are as follows: Usoro (process), Njikọ Ala-mmụọ na Ala-mmadụ (confluence of the natural and the sub-natural worlds), Mmepụta isiokwu (articulation of research problem), Mmeputa achọba (formulation of hypothesis), Ichọ-ụzọ (experiment), Omenala (theory), Ichaụzọ (setting aside), Iwu (law), Inabata na iju Achọba (asserting and denying of hypothesis). For the African Scientific Methodologies we have Research Customs: Traditional Leap and Research Custom: Conventional Similitude. Some notable theories in African science are: ụwa-ezu-oke, Ọdịbendi, Amasị-amasị and Ifeomimi. Some Laws of African Science we have identified include: Egwueji (The Law of the Means), Iwuibe (Law of magnetism), iwu-ndiiche (Law of discordance) and Iwu-nyiri-onwe (Law of Uniformity).

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