

# CONSCIENCISM

## SCIENTIFIC AND PHILOSOPHICAL EVALUATION

### Part One

By

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An erroneous philosophical interpretation of a theory does not affect its structure and scientific content. Rather, it reflects a defective analytical mind and general intellectual mediocrity, characteristic mainly of men who always mistaken their ignorance for knowledge.

After the 1966 coup, a number of articles about both Consciencism and Kwame Nkrumah himself appeared mainly in a magazine known as the **Legon Observer**. One cannot fail to notice that the tone of most of these articles is far from being academic because their authors did not even bother to hide their strong feelings and unrestrained prejudices.

### Prejudices

Personal prejudice masquerading as objective academic analysis is a most dangerous poison of the mind; and the reader who wants to form an objective judgement on the issue at stake finds themselves in a rather difficult position and sometimes becomes more confused.

A most disturbing observation about issues of this nature is the tendency of many intellectuals to dismiss a new theory, not on account of its lack of validity, but principally because their own limited knowledge prevents them from comprehending it especially when such a theory contradicts their own Establishment idea. The harm which this practice has caused to rapid development of knowledge is very monumental.

Consciencism has, since 1966, been presented to the Ghanaian and African public in a highly negative and extremely biased manner that if nothing is done about it its cognitive and educational significance will forever be lost to our society.

This paper is the first of a series of articles aimed at opening a fresh intellectual discussion of Consciencism, and will therefore attempt to deal with what I consider to be the most difficult and controversial aspect of the book, namely, the theory of Categorical Conversion.

A great scientist once said that the fate of a profound thought is always mysterious because most of the time it does not obey the laws of conventional logic. There are so many examples in the history of science to support this assertion, but I will cite only three of them.

### **The Periodic Law**

The first is the Mendeleev's Periodic Law, together with the Periodic table of the elements which has become a historical document of immense consequence, signifying mankind's first information on a new law of nature. But many scientists, contemporaries of Mendeleev hearing of and becoming acquainted with this system of the elements for the first time, could not understand it.

Mendeleev was a chemistry professor at the University of St. Petersburg at the time he discovered the periodic law. Scientists now believe that laws of nature, discovered by man, differ in the volume of knowledge they enable us to acquire, and as to the field of learning they are valid in. This makes it difficult to compare them with one another. But all of nature's laws are comparable in their most vital aspect – the possibility they provide for predicting new phenomena and foreseeing the hitherto unknown. In this respect, the periodic law has no equal in the history of science.

For example, the Periodic Table of the elements itself was compiled before the structure of the atom was discovered, but it reflects even the details of electron structure and retains its prognostic power to this day.

### **Energy Distribution Law**

The second example is about the Energy Distribution Law by the outstanding Austrian physicist Ludwin Boltzmann (1844-1906) who discovered completely new paths in theoretical physics, but whose brilliant investigations were subjected to ridicule during his life time by conservative German philosophers. He derived the classical energy distribution law for the molecules of an ideal gas. At that time atomic and molecular conceptions were regarded by many as naïve and unsuccessful. Boltzmann committed suicide and it was long after his death that the importance of the situation he described was indisputably confirmed.

## **Non-Euclidean Geometry**

The third and the last example is Lobachevsky's discovery of the non-Euclidean geometry which had very hostile reception by his contemporaries and even his own students. Some of his own students described it as monstrous nonsense, insolent defiance of logic and commonsense.

Lobachevsky initiated the treatment of problems that could not have arisen in the former state of mathematics, including that of the geometric structure of real space. But scientists now know that without it, the theory of relativity, one of the greatest achievements of modern physics, could not have been developed.

The categorial conversion was the theory Kwame Nkrumah employed to explain his position on what was known as the fundamental question of philosophy – spirit or matter, which is primary? Kwame Nkrumah asserted the primary reality of matter with spirit as an emanation of matter, through categorial conversion.

### **Analysis**

After a painstaking analysis of the foundation on which the theory rests, I became aware of the problem or the difficulty of the philosophers and other social scientists who have so far commented on Consciencism since the overthrow of the CPP government in 1966. But what was most ridiculous of all was the claim by some of them that they have refuted the theory.

The issue or the problem which the reader will soon discover is more of lack of understanding of the phenomenon described by the theory, which is clearly beyond the scope of the social sciences, and which can only be properly confirmed or refuted by natural science. The social sciences simply lack the appropriate tools for proper scientific investigation of this phenomenon.

There is no way anyone can explain this phenomenon in the framework of the social sciences and therefore any pretensions on the part of the social sciences to know the ultimate truth must be abandoned. They must also transform themselves from the way they are most of the time used in this country as instruments of agitation and propaganda into the pursuit of genuine scholarship and research.

An outstanding scientist observed that one of the chief obstacles both to understanding among scientists and to the understanding between scientists and the general public is the tendency of some scientists to judge other fields in terms of methods used in their own fields.

Kwame Nkrumah himself has already explained this situation when he stated on page 85 of *Consciencism* that “In a way, it is not the philosophers of today but the natural scientists who are the successors of the ancient philosophers”.

But applying the methods of natural science in this investigation, we are not permitted to accept the theory without question as infallible. This is principally because scholarship is incompatible with a “religious” attitude to the works of our founding fathers. Therefore, in studying Nkrumah’s legacy, we must distinguish which statements did play their role in particular historical periods, which remain hypothesis, which were distorted in the past years, and what today continue to be effective and have a positive and creative importance.

### **Accepting a New Theory**

Again, for a newly-born theory to be accepted in natural science, two conditions must be satisfied. First, the theory should explain experimental facts already established. Second, it should predict some new facts. If the latter are indeed discovered, the theory is considered to be true. But in physical theory, the explanation should be in terms of mathematical expressions and equations to present a quantitative description of the observed phenomena.

This particular point is very important because science, as a physicist put it, does not recognise the practice whereby the winner is not criticised. In fact, he always is, and very fundamentally. Until the winner can prove every step in his competition with nature, victory is not recorded. Therefore, in the attempt to verify the scientific and philosophical validity of this theory, it is necessary to establish the extent to which the steps taken by the author to arrive at this conclusion were in conformity with existing laws of nature or they contradict these laws.

STEP ONE: “Linear evolution is incompatible with the evolution of kinds, because the evolution of kinds represents a linear discontinuity. In dialectical evolution, progress is not linear; it is, so to say, from one plane to another. It is through a leap from one plane to another that new kinds are produced and the emergence of mind from matter attained.” *Consciencism*, page 26.

The scientific confirmation of this statement can be found in the process of transition from subsonic to supersonic motion in aerodynamics. A feature of supersonic gas flows is that deceleration is attended by the formation of discontinuity surfaces in them. When a gas passes through these surfaces, its parameters change abruptly: the velocity sharply diminishes, and the pressure, temperature, and density grow. Such continuity surfaces moving relative to a gas are often referred to as shock waves, while the immovable discontinuity surfaces are called stationary shock waves or simply shocks.

## **Novel Phenomenon**

We know from the history of physics that when an infinity appears in theoretical models or formulas, this implies that there is a novel phenomenon fundamentally different from the one the very models and formulas describe, and an infinity appeared in aerodynamic formulas when the velocity of a body approached the velocity of sound in the medium where the body moved; the resistance of the medium to such motion turned out to be infinite. This would mean that supersonic motion would be impossible. But we see modern aircraft flying with velocities far exceeding the velocity of sound in air.

The explanation for this situation is that the aerodynamic formulas referred to describe the resistance in a continuous medium without abrupt jump in density and pressures. The transition from subsonic to supersonic motion is associated with violating this condition: a shock wave appears in the medium in front of the body, and there occurs a jump in the density and pressure of the medium at the front (of) the wave. Taking this phenomenon into account, aerodynamics was reviewed to include the case of the discontinuity of the medium, and infinity disappeared from theoretical formulas. They gave correct and finite value for the resistance to supersonic motion.

STEP TWO: “In Newton’s first law of motion, a body’s power of linear self-motion is denied. Newton would also deny a body’s power of rotary self – motion.” Page 80. “But even the theory of gravity while it does explain the current motion of bodies (including rest), is properly silent over the question of antecedents. It does not face the question why bodies move at all, how it is that the heavenly bodies, for example, come to be moving: but only how they keep moving and why they keep moving as they do.” page 81.

The issues raised in *Consciencism* concerning Newton’s laws of motion are valid in modern natural science. This is because classical mechanics does not aim at the investigation of the properties of bodies. It only studies the position of bodies in space and their velocities at any instant of time. So that, here, the fact that all bodies consist of atoms and molecules is completely disregarded.

Classical mechanics comprises three basic branches: Statics, Kinematics and Dynamics.

- (a) Statics deals with the laws for the composition of forces and the conditions for the equilibrium of material bodies under the action of forces.
- (b) Kinematics provides a mathematical description of all possible kinds of mechanical motion, regardless of what causes particular kind of motion.

(c) Dynamics investigates the effect of the interaction between bodies on their mechanical motion.

Scientists know that the triumphal advance of Newtonian mechanics led to attempts to explain everything in terms of this mechanics only, and it was the development of quantum mechanics that brought an understanding of the futility of such attempts. It was also found that Newton's laws hold only while objects move at velocities small when compared with the speed of light. This restriction became clear after Einstein had developed the relativistic mechanics. The relativistic mechanics has not debunked Newton's laws. It has only established the limit of their applicability.

In the study of the structure of matter, quantum mechanics has become the principal means of studying and solving problems in this field, which means that the laws of classical mechanics are not valid here. The theory of the structure of matter is now believed to be the most complicated branch of modern natural science. It utilises practically all the achievements of physics and an enormous mathematical apparatus.

STEP THREE: "Philosophical Consciencism does not assert the sole reality of matter. Rather it asserts the primary reality of matter. Here again, if space were absolute and independent, matter could not with respect to it be primary. Therefore, philosophical consciencism, in asserting the primary existence of matter, also maintains that space must, to the extent that it is real, derive its properties from those of matter through a categorial conversion. And since the properties of space are geometrical, it then follows from philosophical consciencism that the geometry of space is determined by the properties of matter." page 88.

In everyday life and in classical mechanics, for example, we got accustomed to time and space having absolute meanings. It turns out that these concepts are approximately correct and departures from them in everyday life are quite insignificant. The departures from the classical ideas become clearly visible only when micro particles are investigated and also in outer space conditions which modern physics has already begun studying.

From the point of view of modern science, there is no absolute time. However, it is psychologically difficult to readjust oneself to relativity of time, especially as this relativity manifests itself only at relativistic velocities.

Again, the problem of the geometric structure of real space, from the standpoint of modern natural science, comes within the domain of physics and cannot be resolved by means of pure geometry. Its specific feature is that no geometry represents spacial relations with absolute accuracy; the molecular structure of matter, for example, precludes the existence of solids of dimensions perceivable by touch that would have the geometric properties of an ideal sphere.

Therefore, the application of geometric rules to the solution of concrete problems inevitably produces only approximate results. So our concept of the geometric structure of real space boils down to a scientifically justified conviction that one geometry provides a better description of actual spacial relations than others.

Although the theory of relativity uses the formulas of non-Euclidean geometry, it does not follow that Euclid's geometry must be discarded. The non-Euclidean geometry, also as we can see, has established the limits of the applicability of the Euclidean geometry, just as the relativity theory has established the limits of the applicability of classical mechanics.

STEP FOUR: "According to philosophical consciencism, qualities are generated by matter. Behind any qualitative appearance, there stands a quantitative disposition of matter, such that the qualitative appearance is a surrogate of the quantitative disposition." Page 87

One of the most spectacular scientific confirmations of this assertion is the phenomenon of electric charge carried by electrons and protons the exact nature of which is still unknown. But we do know that these charges are of opposite character and give rise to invisible forces acting in the space around each particle. It is through the action of these invisible electric forces that we can detect the presence of an electric charge. The important point here is that whereas there can be particles without an electric charge, an electric charge does not exist without a particle.

STEP FIVE: "Philosophical consciencism claims the reality of categorial conversion. But if the conversion from one category to another category is not to represent a mere apparition, a philosophical will-o'-wisp, then a conversion must represent a variation in the mass of its initial matter. The conversion is produced by a dialectical process, and if it is from a lower logical type to a higher type, it involves a loss of mass." Page 89

The phenomenon Nkrumah describes here as the loss of mass also exists in Einstein's mass-energy relation  $E=MC^2$ , which seems to violate the law of conservation only at first glance. But a careful study reveals that the energy we had not taken into account and which led to the apparent paradox is the binding energy which is also known in physics as mass defect.

By simply adding together the masses of the particles constituting a complex nucleus, we have neglected the energy liberated in the process. For example, to measure the atomic masses, an atomic mass unit (amu), equal to 1/12 of the mass of carbon isotope  $^{12}\text{C}$  is used in atomic physics. In electron mass  $m_e=0.000548$  amu, proton mass  $m_p=1.007276$  amu, and neutron mass  $m_n=1.008665$  amu.

With the exception of hydrogen atom which comprises only a proton and an electron, we found that there is a paradox for more complex atoms: the mass of the atom is much lower

than the summed free masses of its constituent particles. For a helium atom, the sum of the two protons, two neutrons and two electrons is 3.2519 instead of the atom's mass of 2.0141.

STEP SIX: "If higher categories are only surrogates of quantitative process of matter, they are not empty apparitions but are quite real." Page 89. The scientific confirmation of this statement is that even though electromagnetic waves are the results of interaction of particles, they are real and have their independent existence.

STEP SEVEN: "Since matter is a plenum of forces in tension, and since tension implies incipient change, matter must have the power of self-motion original to it. Without self-motion, dialectical change would be impossible". Page 90.

The scientific confirmation of this is the phenomenon of radioactive disintegration of atomic nuclei, where an atom of one element converts into an atom of another element without external conditions. Radioactive decay is an internal property of the nucleus, on which external causes have a negligible effect. Experimental data confirm that the types of radioactive decay (α-decay, β -decay), most commonly used in absolute dating for all practical purposes, do not depend on external conditions.

Only when radioactive transformations are associated with the trapping of electrons in the electron shell can external conditions have any appreciable effect, insofar as, in principle, a nucleus without an electron shell cannot experience transformations of such type.

The seven steps we have examined so far are in complete conformity with established laws of nature, and the theory therefore can confidently be said to have a solid scientific foundation. It is now very clear that the claims by some social scientists to have refuted it are totally baseless. These claims have now been proved to be based on ignorance rather than knowledge.

A prominent philosopher stated some time ago that philosophical quests and theoretical reflection begin when direct knowledge is unattainable because cognitive possibilities are limited at a given moment of mankind's historical development. This is why striving for full knowledge always outrun knowledge itself in the history of mankind.

### **Categorial Conversion**

The employment of categorial conversion for the possible solution of the fundamental question of philosophy is one of such philosophical quests which is solidly based on the achievements of modern science, and is therefore a step in the cognition of the objective world.



Philosophy, as we know, has certain prognostic capabilities in relation to natural scientific research, as it can work out in advance the categorial structures necessary for this research. The idea of atomistics which is of cardinal significance for natural science originally emerged in the philosophical systems in the world of antiquity and developed in various philosophical schools until natural science and technical progress reached a level permitting the transformation of the philosophical prediction into a concrete scientific fact.

It is very clear that such philosophical predictions can be confirmed or refuted only by natural science, and therefore exaggerating the capabilities of the social sciences in this area can be positively harmful. For example, it took mankind over two thousand years to correct the error of the ancient philosophers who believed that the atom was indivisible.

The French philosopher, August Comte, declared almost a century ago that it would never be possible to learn about the chemical composition of the stars. But like many other pessimistic predictions, Comte's assertion was soon disproved. The method of spectral analysis of white light developed by physicists and checked out in the laboratories numerous times proved to be a reliable and effective method of determining the chemical composition of distant objects.

The idea which caused so much harm was put forward by Aristotle in about 350 B.C. This was that everything is made up of earth, air, fire and water. Although it was not based on fact it survived for over two thousand years and even the parliament of Paris in 1624 passed a law compelling all chemists to teach Aristotle's idea "on pain of death and confiscation of goods". See *A School Chemistry for Today*, by F.W.Goddard and Kenneth Hutton. Second edition 1961, page 4.

A very important point which must be made clear is that philosophy does not establish facts with the same degree of trustworthiness as science. It may and frequently does advance ideas and propositions that anticipate the future of science as is now the case with categorial conversion. But it is always science that provides the decisive proof of their accuracy.

My greatest shock of all was the attempts to mystify mathematics by the assertion that the 5th chapter of *Consciencism* could only have been written by someone with some acquaintance of mathematics. What our senior colleagues of the pen ought to have remembered is that philosophy is not limited to any particular branch of knowledge. It is the approach to its study by individual universities which tends to create this limitation for the purpose of academic convenience, that is, to establish course content for the purpose of examination.

## Conclusions

The seven steps which we have just examined are much more advanced and therefore require far greater scientific knowledge to grasp their significance than the use of mathematical logic in the chapter five of the book.

Mathematics originated and developed as part of natural science and for a long time the progress it made was due mainly to requirements of physics and mechanics. It provides for other science the language of numbers and symbols suitable for expressing various relations between natural phenomena. But prior to applying mathematics the physicist, the chemist or the economist must attain a profound understanding of the essence of the phenomena under study and partition it into parts subject to mathematical treatment.

For example, the main peculiarity of a physical problem is that a physical process is always considered in it. Although the solution of the problem is reduced to a number of mathematical operations, the correct solution of the problem in physics is possible only if the physical process involved is understood correctly.

The organised propaganda against Kwame Nkrumah and his contribution to knowledge by our senior colleagues of the pen after the 1966 coup was very similar to what happened to all the great men whose names were associated with the solution of the herculean task that had faced humanity for over two thousand years and which was only solved in the first half of the 19th century. This task was the discovery of the non-Euclidean geometry.

This important achievement in the history of thought is associated with the names of Nikolai Lobachevsky (1792-1856) Janos Bolyai (1802-1860) and Carl Gauss (1777-1855).

Despite all the difference between the people who made this great discovery – in their temper and nationality, in their attitude to their results – they all faced one thing in common: an almost complete misunderstanding and even hostility on the part of their colleagues and the general public.

Lobachevsky's interest in non-Euclidean geometry caused him to be viewed in Russia as a crank, at best. Worse, he was attacked in a humiliating and ignorant article in **The Son of Fatherland** periodical, and there were mocking and rude remarks by distinguished contemporaries. All of Lobachevsky's students turned their backs on him. At his funeral, when it is common to praise a deceased's deeds, nothing was said about the subject that was the main thing in his life – non-Euclidean geometry.

Jonas Bolyai also had a bitter life. He died in 1860, and his burial ceremony resembled a ritual of oblivion. Only three people were present to see his remains placed in a nameless grave, and the entry in the church register read: "his life was passed uselessly".

Carl Gauss, the greatest European mathematician of the time, was an example of common sense. He clearly realised the scale of perturbations in geometry (and not only geometry) that would be occasioned by the discovery for non-Euclidean geometry; but he also realised what the reaction of his colleagues and contemporaries would be to the discovery itself and to those who would dare to support it openly. He preferred to retain his status in society; he chose a quiet life and did not publish the result of his work. See *Space, Time and Gravitation*. by Yu.Vladimirov, N.Mitshievich and J.Horsky. Page 23.

But without the discovery of the non-Euclidean geometry, the theory of relativity, one of the greatest achievements of modern physics could not have been developed. The theory of relativity is one of the greatest attainments of human thought. It has played a tremendous role in the development of our ideas about the universe and has revolutionised physics. It has a leading position by right among the great achievements of the advanced physical thought of the twentieth century.

The reference to the theory of relativity has added a new dimension to the problem under discussion. It is common knowledge that new works of popular and already known writers on a particular subject immediately attract universal attention, whereas novices have to battle against stiff odds. In the case of *Consciencism*, it was even suggested that Kwarne Nkrumah was not the author and that the work could only have been written by someone else.

How come that in the case of Special Theory of Relativity, it was the other way round, and that it was virtually an unknown clerk of the Swiss Federal Patent Office, Albert Einstein, who gained acclaim when three works by three separate authors were recognised as crucial to this discovery?

To explain this question further, the author of (the first) one (1904) was the Dutch Professor Hedrik Lorentz (1853-1928), one of leading lights in theoretical physics, winner of the 1902 Nobel Prize in physics. The author of the second work (1906), a brief review of which had been published in (1905), was the celebrated French Mathematician Henri Poincare (1854-1912), also famous for his research in physics and the methodology of science. Finally, the third work (1905) was written by a clerk of the Swiss Federal Patent Office, Albert Einstein (1879-1955).

Why was the credit for this monumental discovery not attributed to Professor Lorentz or Poincare as was the case with *Consciencism*, but to Albert Einstein? A clear answer to this

question was given by Wolfgang Pauli in his well known article "Theory of Relativity" first published in 1921 in the prestigious *Mathematical Encyclopedia*. The article was subsequently reprinted and translated into other languages.

Pauli concludes his account of the history of the Special Theory of Relativity with (these) words: "It was Einstein, finally, who in a way completed the basic formulation of this new discipline. His paper of 1905 was submitted at almost the same time as Poincare's article and had been written without previous knowledge of Lorentz's paper of 1904. It includes not only all the essential results contained in the other two papers, but shows an entirely novel and much more profound understanding of the whole problem".

Another eminent physicist, Max Born, recalls his impression after reading Einstein's paper. "Although I was quite familiar with relativistic idea and the Lorentz transformation, Einstein's reasoning was a revolution to me".

In the case of *Consciencism*, the opportunity for exhaustive analysis of the book by the intellectual giants who reviewed it had not yet presented itself when the coup came in 1966, and since it was not only Kwame Nkrumah who was on trial politically but also his contribution to knowledge as well, any proper intellectual and unbiased analysis of the book after the coup was completely out of the question.

*Consciencism*, which was published in early 1964, was reviewed by top intellectuals in March the same year, and a pamphlet containing the speeches of all the six men connected with the review was published on 2nd April 1964. These six men were: Professor Willie Abraham, Habib Niang, Massaga Woungly, Dr. Bankole Akpata, H.M. Basner and S.G. Ikoku.

Despite the unquestionably great intellectual abilities of these men, their review did not cover all what I consider to be the most essential of the book, due mainly to the incredibly short period of time they had for such a gigantic task, especially as a number of the phenomena described in the book are still revealing themselves and therefore becoming more comprehensible with the advance of history.

Professor Abraham, in his review, made the following suggestion: "Equipped with the ideas of categorial conversion, *Consciencism* then moves to a complex discussion of the philosophical problems involved in the 'hard facts' already cited. Inevitably, perception has to be discussed in relation to the hard facts. It is at this point that *Consciencism* introduces the somewhat novel idea of qualities as perceptual surrogates. It is to be hoped that at a future date the author will develop this idea which is very interesting indeed". See *Launching Consciencism*, page 6.

A critical analysis of some of the articles on *Consciencism*, written after the 1966 coup, revealed attempts by their authors to use classical ideas to examine phenomena operative only in the ultrasmall world. But the fact is that the ultrasmall world has its own laws and that the laws of conventional logic are not valid here. The complexity of cognition, as a top physicist put it, lies in the fact that absolutely different laws are operative in the hierarchy of things – in ultrasmall, the ordinary, and the ultrabig; and that there are great limitations to extending the laws of the ordinary world of things to other scales.

It is this fact that some of those who claim to have refuted the theory of categorial conversion failed to take into account. Kwame Nkrumah himself stated in *Consciencism* that “Our classical philosophers have then without much ado closed the dossier pleasantly identifying the limits of their own knowledge with the limits of what can be”.

One of the greatest intellectual problems in this country, as I can see, is a hidden conflict between knowledge and ignorance mistaken for knowledge.

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