AFRREV IJAH
An International Journal of Arts and Humanities
Bahir Dar, Ethiopia
Vol. 2 (3), S/No 7, July, 2013: 1-19
ISSN: 2225-8590 (Print) ISSN 2227-5452 (Online)

The Unity of Knowledge: History as Science and Art

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Abstract

The study of history dates back to the classical times and its contributions to the development of human society have generated a lot of scholarly debate. The spectacular inventions which scientists had made by the late 18th century had not only contributed significantly to man's knowledge of the universe and natural phenomena but also to the improvement of the material lot of humanity. Scientific and technological advances fired the imagination of historians to such a high degree that they began to question whether the scientific method would not be applied to better understand the human past. The attempt by historians to assert the scientific status of their discipline was the genesis of the heated debate as to whether history is a science, an art or both. This paper argued that scientific method is not peculiar to the sciences; it is also applicable to history. Scientific and historical methods are systematic, sequential, logical and progress in clearly defined steps.

As a humanistic and literary activity, however, history is both science and art. The author concluded that since both scientists and historians contribute in many significant but different ways to the development of society, scientists, historians and humanists should de-emphasize the unitary view of knowledge and emphasize its essential unity.

Introduction

Man is the fulcrum around which every creation revolves. At every stage of human civilization or development, the primary concern of man has been how to use his enormous potentialities and talents to utilize the resources of nature to improve his living conditions. As human societies evolved, man's inquiry spirit, his efforts to achieve mastery of his environment and unlock the secrets of nature as well as his quest to lead a better, ordered and progressive life made him to become a conscious and curious learner. Learning and teaching as continuous processes led to the emergence of modes of thought or academic disciplines. In other words, art, literature, theology, philosophy, classics, grammar, rhetoric, natural sciences, history and jurisprudence developed as intellectual pursuits.

Centres of teaching and learning accompanied the emergence of vistas of knowledge. Great scholars also appeared in various areas of intellectual pursuit. Thus we had famous scholars like Plato and Socrates (philosophers), Herodotus, Thucydides, Ranke, Toynbee, Ajayi, Dike (historians), Leonardo da Vinci, Michelangelo, Paul Cezanne, Ben Enwonwu, Obiora Udechukwu (artists) and Euclid, Albert Einstein, Isaac Newton, Steven Weinberg, Chike Obi (scientists). These scholars represented different epochs in human history, from the ancient or classical times to the modern era. Classical and renaissance scholars in particular focused their attention more on discovering new ideas, new methods and techniques of teaching and documenting knowledge of their disciplines and how best to explain and understand the universe, natural phenomena, the nature of man and human society.

The antiquity of science is very well known. Aghadiuno (2000) noted that during the ancient civilizations of Greece, China, India and Egypt, men applied the prevailing scientific knowledge to agriculture, medicine, industry, construction and in the explanation of nature and natural phenomena. But it was not until during the scientific revolution of the 18th and 19th centuries in Europe that modern science developed. The scientific revolution was characterized by a new method of inquiry called the scientific method. According to Strayer and Gatzke (1984:473), the scientific method essentially involved "a careful observation and controlled experimentation and rational interpretation of results, preferably by use of mathematics". Outside the scientific method which became the framework on which scientific inquiries were conducted, other consequences of the scientific revolution included the formation of scientific societies, a chain of discoveries and inventions and the appearance of scientific journals. A French philosopher, Auguste Comte (1798-1857), propounded the secular philosophy of positivism which extolled the values of science and reason. Comte's last phase of human development or evolution was the positive or scientific stage (preceded by the theological and metaphysical stages) which stressed substance or concrete reality as opposed to speculation or abstraction (Levack, Muir, Maas & Veldman, 2004; Strayer & Gatzke, 1954). Scientific knowledge, with its emphasis on empirical data, became the highest form of knowledge which would inevitably lead to human progress.

By the end of the 18th century, scientists had made marvelous and spectacular inventions and contributed significantly to man's knowledge of the universe, natural phenomena and improvement of his material lot. These developments fired the imagination and enthusiasm of the humanists, notably historians, who began to question whether the scientific method would not be applied to better understand the human past. Historians in particular began to assert the scientific status of their discipline. Positivist historians sought to equate history with the natural sciences which have certain general laws. They began to contend that if scientists could discover "new

truths" or make inventions using the inductive reasoning, historians could also use the inductive view of historical method to reconstruct the past of mankind more objectively or accurately from available facts derived from historical sources. The eminent German historian, Leopold von Ranke (1795-1886), advocated that the historian should reconstruct the past "as it actually happened – *wie es eigentlich gewesen*", (Ranke, 1972:57). John Bagnell Bury (1861-1927), also poignantly declared in his 1903 Cambridge University inaugural lecture that "history is simply a science, no less and no more" (Bury, 1972:223). The foregoing provides the background to the claim of the scientific status of history by historians. But Bury's controversial dictum was perhaps the real genesis of the heated debate about whether history is a science or an art. The discussion of the meaning, nature, method and uses of history and science which follows will help the reader to ascertain,

(i) whether history is science or art, and

(ii) whether this debate which has raged for over a century is a worthwhile academic enterprise.

Science: Meaning and Method

(a) *Meaning*

Science has no generally accepted definition because of its complex nature. Scientists, philosophers of science and science educators define the discipline from their various perspectives. Hornby & Wehmeier (2000:1051), for example, define science as "knowledge about the structure and behaviour of the natural and physical world, based on facts that you can prove, for example by experiments". It is also "a system for organizing the knowledge about a particular subject, especially one concerned with aspect of human behaviour or society" (Hornby & Wehmeier, 2000:1052). Woodburn and Obourn (1965) defined it as that human endeavour that seeks to describe with ever-increasing accuracy the events and circumstances that occur or exist within our natural environment. In the opinion of Ogunniyi (1984), science is an attempt by human beings to organise their

experiences about nature into meaningful systems of explanations. There are also the ethical and attitudinal aspects of science which require scientists to be honest, accurate, objective and open-minded in conducting their experiments and reporting their findings so that they do not mislead both the scientific community and humanity at large. Human nature makes scientific facts tentative and not absolute. This perhaps explains why Abdullahi, quoted in Okoli (2003:5), defined science as "activities accumulating into a testable, verifiable and falsifiable body of knowledge." Science is, therefore, not only seen as a body of accumulated facts, a method or process, a product of scientific inquiry but also involves ethics, attitudes, concepts, theories, laws and principles (Aghadiuno, 1985; Okoli, 2003).

(b) ***Scientific Method***

In order to understand, interpret and explain events and natural phenomena as they occur, scientists carry out their investigations or researches following certain science process skills known as the scientific method. Wikipedia defines scientific method as "a body of techniques for investigating phenomena, acquiring new knowledge or correcting and integrating previous knowledge". Through the scientific method, scientists gather information to build new knowledge and restructure or even reject existing knowledge or facts. The method of science follows a specific pattern. According to Esomonu (2003), scientific inquiry should be methodical, systematic, orderly, sequential, logical and progresses in clearly defined steps. It comprises the following vital steps, namely;

(a) Identification and clear definition of a problem

(b) Making observations

(c) Collection of data or doing background research

(d) Formulation or construction of relevant and appropriate hypothesis

(e) Designing experiments for testing the hypothesis

(f) Analysis of data

(g) Drawing objective conclusion based on data analysed, and

(h) Communication of results.

Scientific inquiry is a human action that is executed on the framework of scientific method. As a step by step method of inquiry, it yields results that are empirical, tentative, measurable, acceptable, doubtful, verifiable, reproducible and reversible. Scientific findings are not absolute; they are subject to change especially in the light of new evidence. It is therefore absolutely imperative that scientists should make their methodology and data available for scrutiny by other scientists who may utilize the opportunity to verify processes and results by reproducing them. Science is dual in nature because it is a method (process) and a product of scientific inquiry. Due to the openness of the scientific method, it is a widely accepted research process.

History: Meaning and Method

(a) ***Meaning***

Like science, history does not lend itself to a single universally accepted definition. Ajaegbo (1991) defined history as the investigation, interpretation, record and study of all those aspects of the past of mankind, available either in memory or on material, which have meaning and significance to the present and future of society. In the opinion of E.P. Cheney (1927) history is a body of facts about the past activities of man, to be studied, understood and explained. According to Carr (1980:30), it is "a continuous process of interaction between the historian and his facts, an unending dialogue between the present and the past". In the view of Allagoa (1978), history may be defined as the study of man through the evidence of his past actions. Ifemeje (1988) defined it as a body of knowledge about the past actions of man ascertained through inquiry, inferences, interpretations and generalizations, and is available in the form of records or in the memory of man. Although there is no generally accepted definition

of the discipline, there seems to be consensus among historians that history deals with the past activities of man in society. The actions or activities of man are investigated, interpreted, analysed and utilized not only to understand the past of mankind but also to solve present and future problems. In the apt words of Zeleza (1990:2) history "is not simply a representation of the past but a process of reconstruction in which certain aspects of the past are abstracted and are acted and lived by people in the present". History is not only a study of the past but also a field of inquiry. It is both a process and the result or product of inquiry. A better understanding of human behaviour, institutions, values, relationships and problems in the past will make it possible for us to address similar elements, circumstances and challenges in the present.

(b) ***Historical Method***

If history is a study of the significant events concerning the past actions and activities of man, it follows that there is a method of finding out what man did in the past, how he did it and the consequences of his past actions. The historian commonly studies the actions of men who lived in an age or society different from his own. The process of inquiry into the past experiences of man is called the historical method. Like the sciences, the method of historical inquiry is systematic, organized and also follows a step-by-step approach. It consists of the following stages:

Identifying/Defining a Problem

History is a social activity and the historian proceeds with the identification of the human action, activity or problem he wants to study. The events that took place in the past of any given society are so many that it will be difficult for the historian to study all the events that happened. The historian must isolate an aspect of that past to study. In the words of Afigbo (1978:31), "to record all the events that ever happened in history is beyond human ability, since no mind can possibly comprehend even all the aspects of the event that took place at any one moment in a given society". A historian can, however,

study an aspect of a global phenomenon of immense significance to mankind within a particular period. The Second World War, for instance, is a global phenomenon which the historian can study in terms of time, space and society.

Collection or Gathering of Evidence

A historian collects evidence or historical facts for the study of the past. Historical facts are available to the historian in oral forms, documents, artifacts or material remains of man. Evidence constitutes the raw materials of history. The historian collects his facts by asking questions of how, why, what, when and where.

Selection and Arrangement of Facts

In the course of collecting evidence, a historian is confronted with a myriad of facts or a mass of evidence. Since not all facts are historical facts, the historian has to sift and select what he considers significant facts of history while he discards insignificant or irrelevant facts as unhistorical. He then arranges his evidence in order of importance.

Analysis and Interpretation of Data

The recovery of the actions and institutions of man in the past is different from the past itself. The historian should critically analyse and interpret historical events and situations to establish a historical truth. He has to explain how and why certain events occurred, how certain institutions started and how certain individuals or groups of individuals influenced certain events and situations. A historian verifies his facts and interprets historical phenomena in terms of cause and effect relationship, processes of change, stability and continuity. He has to show how and why one historical event led to the other.

Evaluation

One important task of the historian is not only to record history but to evaluate it. The historian lives in the present but largely studies the past. He should not be a slave or prisoner to the past. He should rather detach himself from the past and ensure that his facts are

accurate. According to Carr (1980:30) "the historian without his facts is rootless and futile; the facts without the historian are dead and meaningless". A historian evaluates his facts and shows the essential interconnections of these facts. He gives meaning and significance to the events, activities or institutions he has studied. Smith (1978) stated that in evaluating events of the past, a historian should extract from the past lessons for the present and future as a way of helping humanity to understand and handle its problems. Historical facts become useless if they are not evaluated.

Presentation of Findings

The final stage in historical method is presentation of research findings or results. This may take the form of published books, dissertations, journal articles and conference papers. Historical facts are not historical conclusions. A historical truth is a statement that has been verified, evaluated and accepted by expert or professional historians. The book, dissertation, journal article or conference paper – the final product of the historian - is subject to verification, acceptance, modification, revision or refutation.

The world of nature and natural phenomena constitute the object of scientific inquiry just as the entire human past is the object of historical inquiry. A thorough examination of the scientific and historical methods has revealed that both fields of knowledge follow certain steps in investigating, explaining and reporting the world of nature (living and non-living things), natural phenomena and past actions and experiences of man respectively. Man is the common denominator in both historical and scientific inquiries. However, the methods of historical and scientific research may not be exactly the same for all the stages nor are the tools or facilities for research exactly similar.

History is Both Science and Art

According to Esedebe (2003:7), science can mean three things;

(a) It can mean knowledge

(b) It can mean knowledge of nature

(c) It can mean scientific method

That history is a mode of knowledge is incontestable. It became an independent academic discipline – an intellectual pursuit – in the 19th century. In most cases, the historian writes about events he did not witness and about an age and society he was not a part of. When he therefore sets out to discover and interpret the facts about the past actions and experiences of man, he employs critical thinking to produce what Collingwood (1978:134-204) calls "scientific history" or according to Marwick (1970:20) historical work based on "objective empiricism". A historian can critically verify and evaluate his facts and write history based on empirical evidence. Empiricism is not the monopoly of scientists. Facts are not tested in laboratories alone; they can be investigated and cross-checked in the field as well. Smitha (2005:2) opined that in the pursuit of his vocation, the historian draws from many primary sources, employs the knowledge of other disciplines and tries to be as scientific or empirical as possible in his quest to establish historical truth.

The scientist collects his mass of evidence from observations, experiments and measurements in the laboratory or in the field. He also employs inductive and deductive reasoning in his investigation. The historian collects his facts from oral traditions, songs, inscriptions, documentary sources and artifacts which are often kept in museums. The historian also uses both inductive and deductive methods to explain how and why human beings took certain actions in the past and the consequences of such actions. Moreover, since history is what we know as a result of inquiry, the historian uses such features of inquiry as observation, investigation, and classification, formulation of hypothesis and testing of evidence to reconstruct the past. In reconstructing the past, the historian embraces aspects of disciplines in the humanities, social sciences and even physical and biological sciences.

Historical and scientific knowledge or conclusions are not absolute. Historical and scientific facts undergo revision or rejection, in the light of new evidence. For example, prior to the rise of African historiography after the Second World War (1939-1945), some Western scholars stuck in the Western tradition of historical scholarship not only saw traditional African societies as static and unresponsive to challenges and innovations but also erroneously claimed that history was synonymous with written records. The pioneers of new African historiography particularly K.O. Dike and J.F. Ade Ajayi used oral traditions to prove that history did not begin with the invention of writing and also showed that traditional African societies underwent tremendous movements and changes in response to internal and external developments. African revisionist historians had also used orally transmitted evidence and archaeological evidence to slay the dragon of Hamitic myth, husbanded by C.G. Seligman, which attributed the great achievements of African peoples to light-skinned outsiders who came down from the North. Similarly, atoms were hitherto thought and accepted to be indivisible. It is now known that atoms can be split into protons, neutrons and electrons which are also made up of small particles known as quarks. In the apt words of Esedebe (2003:12), despite "its indisputable accomplishments, science is at last becoming fully aware of its own inadequacies. Scientists now talk of probabilities and tendencies rather than laws". So if the historian does not establish conclusive evidence for his account of the past activities and experiences of man, he should not be seen as operating on an unscientific platform.

One of the criticisms levelled against the historian as a scientist is his inability to predict. From the observations of a scientist, he formulates a tentative theory or hypothesis to explain his facts. He then makes predictions based on his hypothesis. The historian can equally make predictions. Every human society has witnessed wars, revolutions and economic or religious crises at one stage of its development or another. No two wars are exactly the same but all wars share common causes and consequences. Wars and revolutions may occur as a result of land disputes, excesses of a dictatorial

regime, nationalist aspirations, religious intolerance, military invasion, etc. Similarly, the consequences of wars often include destruction of lives and property, hunger, change of leadership, peace pacts, reforms, territorial or administrative re-organisation and seizure of lands. A historian can use his knowledge of the causes of a revolution in a given society to predict the outbreak of a similar revolution in another society unless the elements that trigger off revolutions are averted. It is instructive that the predictions of a historian cannot be as precise as those of the scientist. For example, a historian can use knowledge of past crises in Nigeria to predict that the Boko Haram menace can lead to war and disintegration of the country but he cannot predict the exact year and time this might happen.

There is also the argument that the historian cannot write objective history because he studies the past of human societies he was not part of. Science, like history, has its own ethical standards. A scientist who is dishonest, individualistic, secretive, impatient, careless, unsteadfast and exhibits negative approach to failure will obviously present a subjective or false scientific report. The same is true of a historian who does not employ the canons of historical scholarship. Objective history as understood by Ranke does not exist. Ajaegbo (1994) observed that there is nothing like total and complete historical objectivity because it is difficult to approach historical writing or problems entirely without pre-conceived notions. Given the same mass of evidence about a particular historical phenomenon, two historians may differ in their evaluation or judgement resulting from their differences in orientation, professional training, interests, ideologies or ethnic affiliations. However, in collecting, sifting, arranging, verifying, analyzing and interpreting his corpus of facts, a historian should not allow his beliefs, ethnic considerations, material attractions, age or society he is studying to becloud his sense of reasoning and judgement. He should detach himself from the event he is investigating and employ the services of many sources of history and other disciplines in his research. Only through critical methods and inter-disciplinary approach to historical studies can a fairly accurate, verifiable and acceptable historical knowledge be produced.

History, like the sciences, deals with the general and universal. In both history and the sciences, the unique and the general are inseparable. Generalization is not alien to history. But the historian is not really interested in the unique, but what is general in the unique. He is also concerned with the link between the unique and the general. For example, revolutions are common phenomena in historical studies, but no two revolutions are the same in terms of causes, course and consequences. Similarly, no two animals or birds of the same species are exactly the same. If the scientist uses laws and theories to describe or explain natural phenomena, the historian "constantly uses generalizations to test his evidence" (Carr, 1980:63).

The scientist and the historian document the report of their findings to the public in form of books, journal articles, inventions, conference and seminar papers. Both, however, differ in their styles of presentation or reporting. While the scientist pays little attention to literary skills, presents short papers or in a few pages of equations and often has collaborators, the historian usually works alone and skilfully employs the power of communication, imagination and creativity to present the outcome of his research. Communication is an art. In the apt words of Marwick (1970:12) "at the core of the historian's activities there lies the problem not simply of establishing what happened, but of ***communicating*** his discoveries". A historian should possess the language skills necessary for effective communication of historical facts to the public. The historian re-creates the past with words and ideas. It is the literary style and artistic charm of the historian that make his work an art. According to Okafor (2010), a historian is required to show good literary and narrative ability and give intellectual and aesthetic pleasure to his reader. The events of the past become more significant, relevant, intelligible and meaningful when the historian presents them in an elegant prose. In the opinion of Azide (2006), unlike the scientist, the historian must present his narrative in an elegant, aesthetic and exciting manner.

Relevance of Science and History to Society

The debate on whether history is art or science may partly explain why our leaders, policy makers, fellow compatriots and even some academic colleagues see historical studies as a monumental waste of money, time and energy. To such uninformed people, history has nothing to contribute to national development because the past has nothing to do with the present and future of mankind. There is no doubt that scientific and technological studies and achievements have enabled man to conquer his environment, land men and women in space, improve communications, medical and transportation facilities, increase agricultural productivity, raise the material conditions of the people and manufacture deadly weapons of offence, defence and destruction. Our aeroplanes, posh cars, submarines, skyscrapers which adorn our magnificent cities, electronic and electrical appliances/devices which are the products of science and technology are some of the material values of science to man. These scientific achievements hoodwink us into viewing humanistic studies such as history as trivial intellectual pursuits.

A scientist is a member of the human society and must operate in the context of this society. In conducting his scientific inquiries, the scientist must be guided by his sense of history otherwise he loses track of his observations, experiments, measurements and records of past scientific triumphs. Scientists must keep accurate records of the processes of their past achievements and failures as vital springboards for future researches. History is the collective memory of society, "the repository of a people's consciousness" (Zeleza, 1990:1). No person can satisfactorily explain human conduct and human affairs without reference to the past. Any individual – scientist, soldier, driver, politician, historian, teacher, typist, footballer, lawyer, doctor – who loses his or her memory is a person adrift. As a memory or the experiences of a society, historical education directs the society by telling her members who they are, what transpired in the past and where they seem to be going. History enriches human experience and inculcates in us self-knowledge, knowledge of others and a sense of

patriotism and national pride. History holds the key to our understanding of past problems, tragedies and achievements. One of the greatest lessons of history is that it teaches us to learn from our past mistakes and enables us to avoid making similar mistakes in future. We also build on the achievements and inspirations of the past.

We can only maintain one united, peaceful and prosperous Nigeria if our God-given resources are equitably shared, if we promote religious and ethnic tolerance and if we emphasize those elements that tend to unite us instead of those tendencies that tear us apart. The molestation and massacre of Easterners, mainly the Igbo, in various parts of Nigeria between 1966 and 1967 and their forced exodus to their home towns significantly contributed to the tragic Biafra-Nigeria war of 1967-1970. Today the Boko Haram sect or Islamic fundamentalists are on the rampage, bombing, maiming, killing and destroying the lives and property of fellow citizens. Many of the victims are Christians from the South living in the North. Since Nigerian leaders and their followers learn little or nothing from history, the intensity and savage brutality with which the dastardly acts are committed portend inevitable outbreak of a long-drawn hostility.

Conclusion

History and the sciences are important intellectual pursuits. History concerns itself with the study of the past actions and experiences of human societies, while science tries to study and understand nature and natural phenomena. Historians and scientists conduct their researches following certain process skills called historical and scientific methods respectively. Scientific and historical methods are systematic, sequential, logical and progress in definite steps. Scientific method is therefore not peculiar to the sciences; it is also applicable to history and the social sciences.

The historian and the scientist share a number of characteristics in their search for knowledge, with differences of degree not as absolutes. As Haddock (1980:151) succinctly put it,

> the historian, no less than the physicist, employs precise and rigorous methods in his enquiries; but the way in which inferences are drawn and theories tested, the assumptions that inform observation, measurement and prediction in the natural sciences, preclude the wholesale adoption of such methods in the human studies.

The historian and the scientist seek to discover ***what is not yet known***. Both are creative thinkers. The scientist can repeat his experiments. The historian cannot call for a repeat performance of the past but he can use critical methods to re-create or re-construct the past of mankind. The past can also repeat itself but not in exactly the same way. A historian continuously looks for new sources of information just as the scientist tries new experiments. While scientific inquiry is mainly conducted in laboratories, the historian interacts with his sources and facts in libraries, museums and the field. Scientists and historians also start with facts and end with facts. Human error and the subjective element can never be completely eliminated in history and the sciences. Man is at the centre of all knowledge which is essentially geared towards a proper understanding of man, human society, nature and natural phenomena. Scientific and humanistic studies should complement each other. Man can only prevent the destruction of the human race and his scientific and technological achievements if he has self-discipline, wisdom, moral judgement, patience and humane spirit which are the values history inculcates in him. Historians, humanists and scientists should de-emphasize the unitary view of knowledge and emphasize its essential unity. The ultimate goal of research should be how to use human knowledge garnered from different branches or fields of learning to combat hunger, illiteracy, disease, poverty and create peaceful, just and progressive human societies. The debate on whether history is science or art is therefore not a worthwhile academic enterprise. It seems to me a sheer waste of money, time and energy. History is both science and art. It is scientific in its method and technique but literary and artistic in its presentation.

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