AN APPRAISAL OF THE ESSENCE OF CONCEPTUAL GEOGRAPHY IN THE LIGHT OF THE CURRENT SCIENTIFIC REVOLUTION.

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Abstract

The world is in a constant state of flux. This informs Kuhn's ideals of paradigm shift. Paradigmatic re-orientation conveys the precept of philosophical change in all sciences. Geography, being a spatial science has glided through the most dynamic spate of these changes in the frontier of academic disciplines. This paper examines the paradigm shifts that have taken place in modern geography with particular reference to conceptual revolution. The paper argues that the application of mathematical techniques in geography is not new as claimed by some scholars. Geography has never been bereft of mathematization as it is tied to the revolution of the 1950s and 1960s. The main claim for the quantitative revolution is that it led to a shift from a descriptive (idiographic) to an empirical law-seeking (nomothetic) geography. This paper contends that it was basically a conceptual revolution. A revivification and clarification of concepts which has given geography a new spirit and form to remain abreast with other disciplines in the social relevance debate. The methodology and philosophy of the new geography lays more emphasis on scientific method of solving problems. Many geographic researches are systematically carried out in line with other law-seeking disciplines. Hypotheses are formulated and tested, theories have been developed and applied in solving social problems. This new frontier is confidently at home with the globalised age of cyber space/ Geographic Information System (GIS) which is amongst the emerging themes in contemporary geography which has repositioned it in tackling more complex social issues. The paper submits that the new geography now boastfully lays claim to all the essence of scientific thinking and practice.

KEY WORDS: Paradigm shift, Conceptual Revolution, Scientific method, Geographic information system, Social relevance

Introduction

Epistemological conception of geography derives from its notion as a science of areal differentiation in spatial character of people and places (Hartshorne, 1939). The phenomenological view of man-land concept of Geography was also brought up by (Kirk, 1976). Such view as above portrays the true spirit, purpose and personality of geographic enquiry. The world is in a constant state of flux (change). Academic disciplines are equally dynamic in their philosophy, methodology and subject orientation. This informs Khuns (1962) ideals of paradigm shift. Geography as a discipline has continued to keep pace with changing world orders.

Immanuel Kant in his epistemological conception of knowledge provided a place for geography among the sciences. For him, geography belongs to one of the triple fold
categorization of knowledge which he (Kant) called the spatial sciences. As a spatial science, Geography has traversed through the most dynamic spate of changes. From its earliest, idiographic phase, the philosophy and methodology and subject matter of geography has metamorphosed through different phases or traditions to the current stage of conceptual or modern geography. This is rather called the Conceptual Revolution. Amoah (1975) calls this paradigm shift as "hectic change". This conceptual phase marks what may be called the positivist, nomethetic Law-seeking or scientific tradition (Eni, 2006). In its struggle for relevance, geography has striven to keep pace with changes or development in other fields, while still tracing its antecedents. Any academic discipline that fails to trace her antecedents may end up repeating old mistakes and may eventually plunge into moribund (Ashua, 2014).

Modern geography as it is today, has gone through several revolutions. Some of which are; ideographic, deterministic to regional and currently the new geography or conceptual revolution. Quantitative revolution is said to have made a major turning point in geography as an academic discipline. This revolution took place in the 50s and 60s which marks an era historic in geographic research because it laid claim to a shift of emphasis from a descriptive (ideographic) geography to an empirical law-seeking (nomothetic) geography.

In some spheres, these changes may erroneously be conceived as the introduction of mathematics into geography while in truth, mathematics is being introduced as a tool for explicit purposes and statistical methodology, and for formal mathematical modeling. This is the melting point of conceptual debate as contended in this paper.

**Perspectives in conceptual geography**

To properly evaluate the relevance of current tradition of our discipline, it is necessary to explore the various ramifications of this current frontier.

The field of geography has expanded beyond mapping the world and exploring new countries to an abstract and difficult interpretation of physical and cultural phenomena through cyber space technology-Geographic information system (GIS) approach to a more holistic, choro-informatic approach. Johnston (1994), describes the work of geographers based on three major concepts place, space and environment.

Today the complex environmental system is electronically modeled with the help of geographic/choro-informatic technology. Conceptual geography sets out to appreciate and mobilize all environmental information systems (EIS) for relevant application by inhabitants of the earth. To properly understand the nature and relevance of conceptual geography, we need a highlight of some advocates of this all-embracing term.

Hagget (1972), proposed model building as an ambit of the new geography which is premised on the hypothetical deductive concept. This model is based on critical examination of facts in order to arrive at the several ramifications of the possible explanation to a case. It is based on formulation of hypotheses, proposition of theories, re-examination of the theory, acceptance or rejection of the theories and generalizations or inferences. This is the true spirit of scientific explanations based on scientific method.
Thus Harveys, (1969) notion of Kuhn inference that the elements of a system are states or conditions of things not the things themselves. From this, it can be inferred that conceptual geography focuses on explanation of human behavioural patterns in the context of place and situations.

Thus the values of nominalistic are that it permits us to examine problems with the prospect of achieving a solution or a policy of action (Hall, 1969). In a sense, conceptual geography is problem – solving geography as opposed to the earlier traditions of sterile description and categorization which provide less opportunity for generalization. Conceptual geography being a problem oriented geography tends to keep pace with the current of times. Positivism which emphasized quantification was criticized for its in ability to permeate all branches of the subject. In the decade between the 60s and 70s, a new orientation was advocated for geography. Radical geography emerged as a fashionable frontier with the sole objective of addressing issues of more social relevance (Eni 2006).

Radical geography devotes attention to behavioural geography which explains patterns of interaction in space and model’s change over time. The notion of relative space exemplifies this conception (Harvey, 1969). This relates to elements of human spatial organization. Profuse models, of the fast growing and burgeoning perspective of conceptual geography is geoinformatics or geographical information system that is widely applied in all fields of human endeavour for purpose of digitized data capture.

The current scientific stage in geography assumes a vantage position in handling complex environmental problems with the advent of Geographic Information System (GIS) technology. Johnston (1994), put it succinctly that with the help of the current technological development in geography it’s major area of concern, place, space and environmental challenges can be amazingly tackled. No single discipline can make claim to divulge these complex, interrelated, inter-connected, multifaceted issues in space like geography. A geographer wears the lens of viewing spatial problems from a holistic perspective. GIS helps in creation of sustainable indices to support decision making and to measure its effectiveness by facilitating the dissemination of information (Kales et al 2001, Clark 2007 & Goodchild, FU & Rich, 2007, Koutsopoulos, 2011).

The modeling tool used by geographic science to sustainable development studies is GIS. It has the capability to combine spatial data from different sources to produce new information for research. With this technique, the integration and modeling of nature and society can be achieved with ease (Goodchild, FU & Rich, 2007). GIS data are represented as point’s lines or polygon. Points represent the location of a heritage or a cultural resource. Line represent linear features such as roads, river and streams while polygons can be used to represent area features such as forest, vegetation types or other land use (Barrough, 1986). Two elements of the GIS system are important i.e raster elements and rector elements. Today more sophisticated methods of data capturing using manned and unmanned satellite space communication technology is being undertaken using the most advanced scientific invention involving sensors, radars and other modes of data collection.

In this system, electromagnetic waves of different spectra or wave bands provide the means of data capturing. These activities take place in the domain of geography and therefore go to substantiate the point that modern/conceptual geography is adequately operating in the domain of modern science.

Premised on its holistic stance the scope of conceptual geography is expansive. Another significant feature of geography which has large scale scientific ting to it is the systems approach (Ofomata 2001 Eni, 2006 Harvey 1979, Chorley and Hagget 1975 and
Njoku, 2008). This system principle is based on the emphasis in seeking interrelationship between components and emphasis on inter disciplinary effort to the solution of many problems.

**Integrated model**

The three approaches of the computer technology model processing analyzing and planning are considered by geographers as independent and conflicting endeavour (Koutsopoulos, 2011). The application of an integrated model offers an effective means of handling complicated spatial problems. Integrated spatial approach represents different manifestation of a holistic methodology, which is the foundation of choro-informatics, the new paradigm of geography.

From the traditional methods a mix of quantitative and qualitative tools to a single phased methodological model expressing that traditional paradigm. They metamorphosed into computer-based knowledge creating technology the basis of the geoinformatics paradigm to the present play integration techniques establishing a holistic-dialectic model, the foundation of the choro-informatics paradigm.

**The relevance of geography education in the new millennium Nigeria.**

Geographical knowledge is a sine-qua-non for all inhabitants of the earth. In this vein, Fairgrieve (1939) stated categorically that the knowledge of geography is needed for the training of citizens so that they will appreciate the conditions of other people outside theirs. Like all knowledge, the utilitarian role of geography is not in contest. Basically, there is need for adequate clarification of the several contributions of geographers to national development. By extension, Nigeria as a nation has benefited immensely from geographic knowledge and will continue to do so if concerted effort is directed towards geographic learning at all levels of our educational system.

In supporting the veracity of the geographer's claim to the solution of human environmental problems. Holford (1971), stated as follows;

---The significance of the contributions which geographers have made to environmental studies they have been steadfast in the recognition of the principle that understanding of the social and physical facts of the world is a prerequisite for planning whether for change or preservation: that research is needed in this field.....
The above statement underlies the valuable role of geographer in national planning. Today, due to the complexity of the social world and the myriads of environmental challenges caused by anthropogenic activities, the role of the geographer is demanded more than ever before. It is in this premise that Ofomata (2001), provided a compendium of the invaluable role of the geographer in national development planning some of which are highlighted somewhere in this paper.

**Geography and the general knowledge of areas**
Areal differentiation is key features of people, places and livelihood. Geographical knowledge is needed in a broad view in understanding environmental variation for the purposes of interaction, exchange and evaluation. Nigeria as a nation needs a national geographic Bureau for purposes of disseminating and informing the citizenry of developments outside their domain.

**The geographer and population census**
The geographer is often entrusted with the responsibility of organizing and analyzing population census, and population sample surveys. The geographers' skills are invaluable in the organization and conduct of population census (Ofomata, 2001). A geographer is equipped with the skills and knowledge in land survey, cartography area mapping and terrain analysis. Hence, he can carve out enumeration areas which are vital in conducting population count, mapping and the vital skill of terrain analysis.

**Construction works:**
This relates to a broad spectrum of construction activities such as roads, dams, bridges and in case of road construction. The geographer by his training can conduct environmental impact assessment on road project, vegetation, soil, and animal life with a view to providing solutions or improving existing policies.

**Geographic contribution to urban and regional planning**
At different times in different places geographers have played abiding role in regional development planning which involved designing master plan cities or metropolis, location of satellite towns and so on. In Nigeria geographers like A.L. Mabogunje, R.K. Udo, Afolabi Ojo among others have actively participated in designing the layout of cities. A. L Mabogunje led the team that drew the master plan for the Federal Capital Territory Abuja.

**Geography and military expectation**
The geographer's roles in military enterprise cannot be underestimated the entire war plan and operation cannot be successfully undertaken without a careful strategy of map analysis and interpretation of terrain in order to adequately and correctly cordon the enemies. In all war experiences, the geographer must be involved.

**Conclusion**
In Nigeria today as well in as other parts of the world progress in the frontier of geography has kept pace with the fast evolving world order. Geographers at all times have consciously responded to the prevailing circumstances of history. The philosophy and methodology of geography over the ages have not lost sight of the dictates of time and society. This simply explains the prevalence of several traditions in the discipline. Through its constant changes and adaptation, which is rather described as
paradigm shift, geography has proven to be a living subject. It follows therefore that the ideals of current paradigm of conceptual geography is simply in response to the realities of the current globalised world order. Geography adoption of the multiple perspectives of nomothetic radical systems and cyber space techniques are all spontaneous adjustment to the current realities of law think. Anything less than this could not have been sufficient for a discipline with a truly utilitarian focus.

The overall hallmark of the scientific approach addresses the ongoing revolutionary current. Nigerian geographers too have actively participated in and adopted the wind of change that emerged in the post World War II era. Geography in Nigeria today is a recognized school discipline as it is taught in the upper secondary and many tertiary institutions in the country. This trend reflects the recognition of the role of the discipline by policy makers and educational planners. Geographic contribution to the development of our nation Nigeria cannot be underestimated in any quarter. Yet there is need to call attention to the need for reawakening of interest by practitioners, planners and the learners judging by the progressive decline in students enrolment this area at all the levels of our educational system.

**Recommendations**

Having explored the several ramifications of conceptual, scientific geography in the current world context, also having viewed the numerous dimensions of geography knowledge and skills in providing solutions to human environmental problems as well as the need to reawaken interest in the discipline. The following recommendations are put forward.

1. Nigeria as a nation needs a national geographic Bureau where geo-information and other relevant issues of spatial knowledge will be harnessed.
2. More geography teachers have to be trained for adequate capacity building.
3. Geography laboratories/gardens should be equipped with modern facilities to facilitate effective learning.
4. Geographic information system knowledge should be made compulsory in all schools, colleges and the universities. This equips students with some geographic skills necessary in providing a general knowledge of the world.
5. A national geographical digest or magazine should be floated for expanding the horizon of the knowledge of the country and the world.

**References**


