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THE COEXISTENCE OF SCIENTIFIC PRINCIPLES AND THE THEORY OF CREATION: AN EPISTEMOLOGICAL APPROACH

PAUL ANDREW[*], NICOLA BROWN[*], DEVON CROSSFIELD[*], LENNEY GRANT, VIVIAN NICHOLAS[*], SHARON GOLDING[*], DAVE H[*]

ABSTRACT

The purpose of this article is to synthesize an understanding of the Christian's approach to education and to highlight the difference in epistemic attitude between science and religion: to account for the conflict between science and religion and ascertain what characterizes the relationship between science and religion. The researchers engaged in a review of the literature related to a Christian's perspective on philosophy and education using knowledge of the body of research that we have been exposed to as post graduate students. Hence, the researchers developed this document by synthesizing our understanding of the Christian's approach to education as it relates to the co-existence of scientific principles and the theory of creation from an epistemological perspective. This was done descriptively using the deductive approach.

INTRODUCTION AND BACKGROUND

"Whatever knowledge is attainable must be attained by scientific method and what science cannot discover, mankind cannot know" is a statement made by Bertrand Russel in1935 (Billingsley et al, 2013). Much ado has been made about the source, truth and validity of knowledge. Similarly, the rift between science and religion has been the topic of much debate on human development. One of the most prolific and impressive intellectual development since the 16th century has been empirical science. Similarly, religious beliefs has been in existence as long as human existence and is now flourishing exponentially (Plantinga, 2014). The question of whether science and religion are inversely related is as pertinent now as ever. Recent resurgences of religion and religious beliefs in many parts of the world cast considerable doubt on this thesis (Plantinga, 2014). The relation between these two great cultural forces has been tumultuous, many-faceted, and confusing. This article will concentrate on the coexistence between science and religion.

Staver (2010) explains that "scientists seek truth through observation, experimentation, and analysis of physical evidence. The methods of science are empirical in character, and scientific knowledge is expressed in theoretical frameworks, which are founded on extensive varieties of empirical evidence" (p. 23).

[*]Northern Caribbean University, Mandeville, Manchester, Jamaica.
Correspondence E-mail Id: editor@eurekajournals.com

Evolution, plate tectonics, and quantum mechanics are examples of theoretical frameworks which are founded on scientific knowledge. But as Staver (2010) continues, these theories are continually being tested, being under constant refinement and revision, and are many times subjected to potential replacement by new theories that better explain and predict man's observations of and experiments on natural phenomena.

Staver (2010) purports that "explanations of natural phenomena in terms of God are not part of modern science and its search for truth". However, Brand (2004) quotes Polkinghorne (1994) and Ratzsch (2000) as saying that there is reason to believe that Christianity provides the ideal embryo for the germination of modern science. He goes on to suggest that the creation of the universe by a rational, intelligent God explains why the universe is so intelligible and open to our scientific investigation. Brand (2004) believes that since Christianity offered such a rational God, this can explain why Christians expected the world to be understandable, and why it is worthwhile investing one's energy and time into systematic investigation of nature.

Brand (2004) also believes science must also assume that nature is uniform, with universal processes and patterns. For a Christian, these characteristics and assumptions of science are founded in belief that the universe was created by a rational God who is faithful and consistent (Brand, 2004). A secular scientist does not have such a foundation, and must generally accept these concepts as mere assumptions. Today, science as an institution has rejected the creation account as its foundation, but continues to be successful. The central question for this discourse is does truth come through scientific methods or by revelations through nature by an intelligent Creator. Would the denial of the existence of a rational Creator eventually weaken science by undermining its foundation? Does science have sufficient momentum to maintain its rapid progress?

METHODOLOGY

The review of the literature involved three phases. These phases were: the broad scan, focused review and comprehensive critique (Glatthorn, Joyner, & Rouse, 2005). In the broad scan, a general review of the literature was done as the major data source. This involved research reviews and meta-analyses. The purpose of this phase was to ascertain a picture of what is known on the topic and to assist the researchers in identifying a concise and manageable position.A focused review was also done, using ERIC as the major source. The purpose of this phase was to develop and organize the document from a conceptual framework to the sub-headings in the related literature (Glatthorn, Joyner, & Rouse, 2005).

The final phase was the comprehensive critique, reviewing all sources related to the topic. The purpose of this phase was to provide a scholarly foundation for the article (Glatthorn, Joyner, & Rouse, 2005). Here, the article was positioned to existing studies and existing research work by demonstrating our familiarity with the research field in order to establish credibility (Creswell, 2009).Summaries were drafted of the most relevant articles, using the existing research to establish a theoretical framework for our subject area or position (Creswell, 2009).

As a result, the literature review gives a precise overview of previous research conducted related to the main position of the paper. The review was also used to integrate and summarize what is known in the research topic, what is learnt from others and to stimulate new ideas. Consequently, the literature review ends by creating a summary of the main themes and an explanation of how the current work contributes to the body of knowledge within

the research area of the research topic (Creswell, 2009.)

THE NATURE OF TRUTH AND VALIDITY OF KNOWLEDGE

The branch of philosophy which studies the nature of truth and the sources and validity of knowledge is epistemology. Questions that deals with an enquiry of the truth, and how do we know are the concerns of epistemology. Brennen (2001) highlights the idea that epistemology deals with issues such as the criterion of knowledge, the possibility of knowledge, the sources of knowledge, the grounds of knowledge, and the right to believe.

Knowledge encompasses all that which is absolutely certain, and excludes probable knowledge. It is that which is significant and informative as opposed to knowledge which is trivial and is more than or opposed to belief (Brennen, 2001). In order for a phenomenon to be called knowledge, it must fit certain criterion and constitutes genuine knowledge as opposed to opinion or belief. The criterion is called the justified-true-belief account. John Hospers cited in Klemke (1986) that a true knowledge must meet certain requirements1) truth requirement (i.e., objective requirement of knowledge), 2) subjective requirement that deals with believe of the proposition being true, and 3) evidence requirement and this address the coverage or adequacy of the evidence in supporting the proposition of the truth (see also, Brennen, 2001).The sources of knowledge include the senses, revelation, authority, reason and intuition.

RELATIONSHIP OF SCIENCE, PHILOSOPHY AND RELIGION

Science, philosophy and religion are inextricably connected and share many borders. Thomas (1998) postulates that every scientific concept begins as philosophy and ends in art. It arises in a hypothesis and flows into achievement. Thomas further states that philosophy provides to science the consciousness needed to make it useful to humanity. However, while the aim of science is to uncover new facts, the aim of philosophy is to reorganize our prevailing beliefs in such a way as to incorporate those new facts and to ask new relevant questions.

Knight (2006) in discussing reality, purports, that as people look at their surroundings they would notice that the environment is intelligible or logical. “The universe apparently operated according to consistent laws that can be discovered, communicated, and utilized in making trustworthy predictions. Modern science is predicated upon this predictability” (p. 170). Knight (2006) also suggests that the study of nature enriches humanity’s understanding of its environment, and can provide answers for many questions not dealt with in the Bible (p. 180).

It is important to note that similar to science, philosophy also uses logic in its critical work of the intellect (Brennen, 2001). Hence, logical reasoning and dialectical clarification of meaning are as necessary to science as to philosophy. Brennen further states that philosophy and science share certain methods of investigation. In terms of self-sufficiency, science is said to be weak in regards to methods and is not inherently capable of dealing with the whole range of human experiences.

One’s philosophy to a great extent is determined by one’s beliefs. There are major world religions but for our study the main focus is on the Christian’s basic beliefs in the Bible. God created man perfect, man rebelled against God but in spite of man’s rebellion, he was not left without hope. “To restore in man the image of his Maker, to bring him back to the perfection in which he was created, to promote the development of body, mind, and soul, that

the divine purpose in his creation might be realized, this is the object of education, the great object of life." White (1903). When individuals recognise that man has an eternal purpose, the attitude to life will be different.

It was Spinoza a famous seventeenth century philosopher, who stated that "in order to live the most perfect life on earth you need to find out why you are here then live your life accordingly" (p.54)To White, the purpose of God in creating human beings was one of constant growth so that man would constantly reflect the glory of the Creator.

Therefore, human beings had capacities that were capable of almost infinite development. Because of disobedience, man's physical powers became weakened, his mental capacity was diminished, and hence, his spiritual vision was obscured. To Spencer (1909), who believes in the principle of self-preservation his attitude to life would be survival of the fittest. This breeds a culture of bullying as everyone strives to outclass each other.

Within the context of Christianity, the primary source of knowledge is the Bible. According to Knight (2006) the Bible is not 'a divine encyclopaedia' with an exhaustive source of knowledge. Rather, the Bible "in answering the most basic questions…provides a perspective and a metaphysical framework that furnish a context in which to explore unanswered questions and to arrive at unified answers. Yet, all truth is measured against the Bible.

Truth for the Christian is that humans, who are made in the image of a Creator God, exist in a supernatural universe in which God cares about man enough to reveal himself to them throughout the ages of history. Humans exist in a fallen state, but God still communicates with them so that they could arrive at truth through correct interpretation of the Bible and through the guidance of the Holy Spirit.

E.G. White states, "The word of God, like the character of its author, presents mysteries that can never be fully comprehended by finite beings. But God has given in the Scriptures sufficient evidence of their divine authority. His own existence, His character, the truthfulness of His word, are established by testimony that appeals to our reason; and this testimony is abundant.

True, he has not removed the possibility of doubt; faith must rest upon evidence, not demonstration; those who wish to doubt have opportunity; but those who desire to know the truth find ample ground for faith." (p. 170). Nature is another source of knowledge. Through scientific exploration and even through casual observation, the inhabitants of earth can see through the natural world themes of love and hate, death and life; good and evil. This is the truth about life as it exists. Reason and intuition are other sources of knowledge, but only as they fit in with the scriptures. "The Bible then is at the heart of Christian philosophy and provides the knowledge framework in which all subject matters are evaluated" (p. 183).

Brennen (2001) compared the approach of Christian Scientists and secular scientists and found that the Christian and secular scientists agree that there are developmental patterns in plant and animal life. She also found that Christian and secular scientists adhere strictly to the laws of evidence as they proceed with their search into the ways of nature.

On the other hand, Brennen (2001) found that Christian and secular scientists disagree on the theory of origin. Christian scientists believe in the doctrine of special creation, while secular scientists believe in the theory of evolution.Furthermore, Christian scientists are said to be impelled by humane, professional, and religious motives as they pursue their discipline, while secular scientists have no such

concerns. To Christian scientists, natural law is a reflection of the divine law and, in a limited sense, an indication of what God is. Also, Christian and secular scientists have different motives for pursuing their study. The assumption which led to the formulation of their hypothesis or the theory by which their data are interpreted may be also fundamentally different (Brennen, 2001).

THE COEXISTENCE OF SCIENCE AND PHILOSOPHY

Brennen (2001) examined the work of science based on some its aspects and compared them with philosophy. This shows that the two must coexist in order for human beings to arrive at a more objective and comprehensive knowledge.While the aim of science is to uncover new facts, the aim of philosophy is to reorganize our prevailing beliefs in such a way as to incorporate those new facts (Brennen, 2001).Science isto observe processes and construct theories, while philosophy is to criticize and coordinate ends. Whereas science is analytically descriptive, philosophy is synthetic in interpretation.

The need for philosophical work is on the increase because the more science we have, the more philosophy we will need. While science gives us knowledge, only philosophy can give us wisdom. Philosophy seems to fill the gaps created by science. One of the aims of philosophy is to pose and attempt to answer questions which are not dealt with by other disciplines. Questions which may not have practical utility, but which have profound impact on the quality of human lives. Science is one of the disciplines which do not deal with these questions. Since scientists deal strictly with problems which they can potentially solve with demonstrable conclusions, this approach has left large fields uncultivated and neglected. These include: (1) the rearing of children; (2) the conduct of business and family; (3) interpersonal relationships (4) politics; (5) psychology; (6) history, and (7) law, just to list a few. Philosophers seek to provide answers to these problems although an element of conjecture may remain in whatever conclusion is reached. Philosophy is thus necessary because it provides a basis for actions which arise from life's situations. Philosophy becomes the lamp that enlightened our darkened path (Brennen, 2001).Moreover, to Brennen, scientific innovations themselves such as in vitro fertilization, euthanasia, cloning, and genetic engineering have given rise to new ethical concerns. Professions affected by these innovations, and by extension the judicial system, have not been able to keep up with these innovations and are left with innumerable questions which need to be answered.

SCIENTIFIC PRINCIPLES THAT SUPPORT THE COEXISTENCE OF SCIENCE AND RELIGION

There seem to be harmony between science and technology in relation the theory of creation. Two of the scientific principles that lend support to the theory of creation are the conservation of mass energy and increasing entropy. These two principles belong to the law of thermodynamics. Thermodynamics is the branch of science concerned with the relations between heat and mechanical energy or work, and the conversion of one into the other. The first law of thermodynamics speaks about the conservation of mass energy. It supports the idea that nothing is being created or annihilated in the present order of things. That is, matter is neither created nor destroyed.

The second law of thermodynamics deals with increasing entropy. Entropy is the tendency toward disorder and randomness. This means that there is a tendency from the highly organized downward to the less organized.

Never is there an increase of order without an outside force. This is essentially a confirmation of the universal law of decay and death in accordance with the Biblical version of the doctrine of creation. Evolution is thus a contradiction of increasing entropy. That is, proceeding from chaos, disorder and randomness to orderliness, from nothing to something and from ignorance to intelligence (Brennen, 2001).

On the other hand, in relation to fossil records, science and the creation theory disagree.Fossils are remnant, impression or trace of an animal or plant of a post geological age that has been preserved into the earth's crust. Christians believe that if evolution were a fact, the fossil evidence would reveal a gradual changing from one kind of life into another, and would have to be the case regardless of which variation of the evolutionary theory is accepted. Also, if evolution were founded in fact, the fossil record would be expected to reveal beginnings of new structures in living things. There should be at least some fossils with developing arms, legs, wings, eyes, and other bones and organs.

Brennen (2001) also believes that if living things were created, the fossil records would not show one type of life turning into another. Instead, she suggest that they would reflect the Genesis statement that each different types of living things would reproduce only according to its kind (Gen. 1:11). Brennen also believe that if living things came into being by an act of creation there would be no partial, unfinished bones or organs in the fossil record. It would mean that all fossils would be complete and highly complex, as living things are today.

SCIENCE-IS IT ALWAYS TRUTH

The debate between the nature and reality of truth is unending. I agree with Staver (2010) who postulates that "the irreconcilability of conflict is a two-way street". DespiteAlexakos' assumptions that creationists are dogmatic, there are scientists who believe that religion is unable to document the truthfulness of its concepts, whereas science can. "Christians believe that the Holy Bible is the source of true science, and modern science should be rejected when its ideas are in opposition to God's word." Inferences erroneously drawn from facts observed in nature have, however, led to supposed conflict between science and revelation; and in the effort to restore harmony,interpretations of Scripture have been adopted that undermine and destroy the force of the word of God" (Staver, 2010. p. 38).

David Long's article, Scientists at Play in a Field of the Lord, generated at the opening of the Creation Museum on Memorial Day, 2007. He attended the rally to get the reaction of the different participants in the protest. According to Long (2010) there seemed to be a fear of the impact of a creation museum, so "a loosely affiliated network of regional scientists, atheists, and activists planned and executed a protest rally just outside the museum gates. This ''Rally for Reason'', as they termed it, would stand in opposition to the ''dangers'' that many at the rally thought the museum posed for science" (p. 213).

There was probably some cause for concern on the part of this group as scientists in different fields were discovering that many results that are rigorously proved and accepted start shrinking in later studies. Clifford Goldstein, an eminent Christian philosopher, suggests that there are any questions that challenge science today. He suggests that the only thing that science can do and should do is to describe reality and try to predict what it would do and try to harness that reality for the benefit of humanity.

Goldstein (2012) discussed the idea that science was based on the replicability of scientific investigations. He further shared an interesting

article by Lehrer from the New Yorker. Most of the time, scientists are aware ofthe results they want, and of course, that can influence the results they get but now some of the well-established, multiple confirmed findings have started to look very uncertain. "It's as if our facts were losing their truth: claims that have been enshrined in textbooks are suddenly unprovable…If replication is what separates the rigor of science from the squishiness of pseudoscience, where do we put all these rigorously validated findings that can no longer be proved? Which results should we believe?"

However, Alexakos (2010) commenting on Long's paper thinks that even though "dialectics frame the epistemology of science and nature, it is rarely mentioned by either scientists or science educators, and remains relatively unknown to the general population. Rather than dialectic, science is instead more often presented as a quantitative accumulation of knowledge. It is taught as a prescribed, deterministic system of beliefs and procedures, not as a way of thinking or making sense of processes in nature" (p. 239). Alexakosdefines dialectics as "an epistemological framework that represents such a reasoning and method of understanding of nature (and therefore of science) as a process of transformations" (p. 238). "Since science, like nature, is dialectical and complex and continually transforming, science students and teachers, including professors, need to be acquainted and experienced with such an epistemology; otherwise science ''beliefs'' become dogmas no different from creationism" (p. 240).

Seals (2010) also commenting on Long's work concluded that it is necessary to be tolerant of faith-based belief systems within the science classroom. He also discovered that many of the scientists who left their legacy were creationists. He cited Lamont who states that "many Bible-believing scientists have worked since Charles Darwin made evolutionary thinking popular". This should clearly show that confidence in the Bible was not replaced by Darwin's ideas. Those scientists who have remained faithful to the Bible since Darwin's time have continued to find that the Bible and scientific investigation are completely compatible (p. 252). After an impassioned presentation Seals (2010) was confronted by one of his students, who told him, 'Mr Seals you don't know everything.' He submitted, "I taught evolution as fact with no alternatives and with no discussion regarding possible flaws with the theory." This statement caused him to look closely at evolution and he was surprised to an impressive list of scientists who were creationists. He cited these names and the field of science from Lamont.

- Physics: Newton, Faraday, Maxwell, Kelvin
- Chemistry: Boyle, Dalton, Ramsay
- Biology: Ray, Linnaeus, Mendel, Pasteur, Virchow, Agassiz
- Geology: Steno, Woodward, Brewster, Buckland, Cuvier
- Astronomy: Copernicus, Galileo, Kepler, Herschel, Maunder
- Mathematics: Pascal, Leibnitz, Euler

Settelmaier (2010) also looked at Long's article and she regards it as an invitation to be co-participants with the scientists' Rally for Reason against creation science. She is struck by the tension between two opponents. On one side there are Christian proponents who want their children protected from godless scientists. On the other, scientists are suggesting that exposing children to the Genesis creation would be putting America back into the Dark Ages. I concede with Settelmaier that the ongoing debate closely resembles the church vs heretic conundrum of the middle age era.

Given this two-way conflict, tension between science and religion as ways of knowing constitutes a significant chapter in the history of science and humans' cultural heritage. This

tension has not always been negative. As substantiated by White (1903), "since the book of nature and the book of revelation bear the impress of the same master mind, they cannot but speak in harmony.

By different methods, and in different languages, they witness to the same great truths. Science is ever discovering new wonders; but she brings from her research nothing that, rightly understood, conflicts with divine revelation. The book of nature and the written word shed light upon each other. They make us acquainted with God by teaching us something of the laws through which He works. Inferences erroneously drawn from facts observed in nature have, however, led to supposed conflict between science and revelation; and in the effort to restore harmony, interpretations of Scripture have been adopted that undermine and destroy the force of the word of God.

When consideration is given to man's opportunities for research; how brief his life; how limited his sphere of action; how restricted his vision; how frequent and how great the errors in his conclusions, how often the supposed deductions of science are revised or cast aside…Rightly understood, both the revelations of science and the experiences of life are in harmony with the testimony of Scripture to the constant working of God in nature (pp. 58, 59).

The discussion on science, religion and philosophy is more than a two way conflict. It leaves many questions to be answered and creates many opportunities for further research. It would, however, be fair to say that the researchers are also influenced by their life's experiences. Growing up in the Caribbean which all of us have done, we have seen how a mango tree is grafted. The fruit is improved following the grafting process. However, if that seed were to bear fruit, it resorts to the original or it totally loses its ability to reproduce. We have also seen a cross between a horse and a donkey. A mule is the product, but this mule cannot reproduce. And even more rare, but quite probably, are individuals who are born with both male and female sex organs.

They are classed as hermaphrodites and are not able to reproduce. We concede with the biblical creation model which recognizes that one kind cannot change into another and that the changes come about as a result of variation within the created kinds and not descent from a single common ancestor. Science explains a lot about nature and many fascinating scientific inventions have made life easier for man. But does science answer all of life's problems. That question is still to be answered.

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