

## SECTION C: SOCIAL SCIENCES AND HUMANITIES

### Science And Technology: Redefining The Human Society

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#### **Abstract**

*This study examined science and technology: redefining the human society. An explanatory research design was adopted with attentions on observations and secondary sources. The paper also used illustrations and justified some views involving religious beliefs and assumptions with examples of scientific breakthroughs in printing, media, computer, IVF, internet banking among others. The paper noted that changes in human society are ubiquitous and pervasive which affect all facets of human endeavor. Besides, changes in human society are propelled by several factors but not limited to innovation, creativity, technology, transmission, diffusion, and colonization, imposition of foreign rules, war and necessity. By far, the most exerting pressure is that science and technology, at every era of human existence, had made remarkable changes in the said areas. The study finds out that in every epoch, science and technology defines the social reality of the people and they accept it as an integral part of the society. Thus, printing became a reality in this nineteenth centuries. In this era, life cannot be imagined without digital programs (hardware and software). The paper concludes that science and technology is major catalyst that defines human society at every epoch that make human activities faster, cheaper, and convenient as such, transformed the human society remarkably. Among other things, it was recommended that federal and state governments should sponsor learners in higher degrees in robotic engineering and with cautions on ethical consideration in scientific investigations in the global space.*

**Keywords:** Science, technology, human society, scientific enquiry/investigations and modernism

## **Introduction**

A famous scientist, Albert Einstein acknowledged the power of science and technology in defining the human society and social interaction and tactically gave a caution when he said, "I fear the day science and technology will surpass social interaction the world will have a generation of idiots". From primitive era to the post-modern or contemporary time, one underlining factor of human existence is change. What is responsible for this outstanding transformation is science and technology. Unarguably, science and technology has transformed the human society remarkably over the centuries. This transformation permeates all facets of human endeavor from farming, child rearing, war strategies, manufacturing and communication. In fact, it has also affected human social relations, and by so doing defines the human society at every moment. New scientific breakthroughs redefine it. The position of this paper is that science and technology defines the human society and continues to redefine the human society much more than any other human activity (including religion). The paper relies on observation and secondary sources. In this paper few examples were used to illustrate and justify the assertion, that science defines and redefines the human society. One basic aspect of any society is its religious beliefs, as such, religion had played dominant roles in most societies. And in cause of doing this, it defines the human society from a religious point of view but scientific reality gives a more concrete and overriding definition of the human society.

## **Literature review**

### **Man as a creative being**

What differentiate man from other social animal is his consciousness and his imaginative ability, according to Karl Marx:

"A spider conducts operations that resemble those of a weaver, and a bee puts to shame many architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labor process we get a result that already existed in imagination of the laborer at its commencement".

The quotation above was made by Karl Marx, a famous philosopher of the 19<sup>th</sup> century. Man by this quote is not an abstract entity squatting in one corner of the world. But an

active being, able to create and recreate his universe, it is his power of imagination and creativity that puts him apart from animals. Man has been able to alter his natural environment much more than any other animal. For instance, the same way bees build their hives 5,000 years ago is the same way they do today. Meanwhile humans have been able to move from caves to skyscrapers within the same time frame. To Marx, the special property of human nature is its creative intelligence, the ability to raise a structure in one's imagination and then to erect that same structure in reality.

At the most abstract level, consciousness and its ability to direct activities were the distinctive characteristics of human beings.

The existence of the Earth, and all therein, plants, animals, minerals, including man has remained a mystery. There are basically two contending theories. They are theory of spontaneous creation and the theory of evolution. These two theories have attempted to explain the existence of man on earth. However, they have divergent opinions and are diametrically opposed to each other. Whatever maybe the case, scholars in these two ideological camps would never deny changes made in the human society by science and technology. These changes permeate all aspects of human endeavor. There is hardly any aspect of human activity that has escaped the attention of science. Science and technology has made improvements and outstanding contributions in the areas considered impossible before now. For instance, about a century ago, it will be unimaginable to speculate that someone in Africa could have a wireless communication with people in the United States of America (USA), Russia or any part of the world. Such speculations could be termed as "witchcraft" or "heresy", such an insinuation was sufficient to take the life of an individual. As it were science seems to be saying that "all things are possible". In this 21<sup>st</sup> century one could transverse three continents in a day. He could have his breakfast in Africa, lunch in London and dinner in the U.S. A (Chuku 2011). Thus science and technology has collapsed time and space. In the past could anyone imagine the emergence of an incubator that could hatch thousands of chicks which is much more than what the natural process offers through natural incubation by hen. In the same vein, there are genetically modified crops that have good quality combinations.

The essence of these examples is to illustrate the efficacy of science and technology and how it has transformed the human society in all its facets. Science is a continuum, ever seeking newer, easier, better and perhaps cheaper techniques of improving the human society. To this extent, the application of scientific knowledge to human society is limitless, endless and infinite. There are whole ranges of possibilities in science. In fact, anything could be achieved. The human society as we know it today may be altered significantly in the nearest future by science and technology (Chuku, 2022). Certainly the future of social interaction will be determined by science and technology. It may be possible for people to have their honey moon in the moon or the red planet (Mars). Robots may perform house chores; women may no longer be pregnant as conception/gestation may take place outside the womb. Apparently, when the industrial revolution came up with some inventions such as the printing press, some religious organizations rejected the innovation only to make use of it later. In fact, at a period in Nigeria, a religious set prohibited watching television as it was described as the "devil's box". This was the

attitude of some persons with regards to scientific applications. This implies that issues on human behavior should not be treated in absolute terms but tentatively as humans are capable of perceiving phenomenal differently at the different epoch in human existence (Chuku, 2022).

What is human society? It is not easy to capture the entirety of the human society in all of its ramifications in a single sentence or definition. This attempt is perhaps well captured in Chinua Achebe's *Things Fall Apart*.

According to him, "A man who calls his kinsmen to a feast does not do so to save them from starving. They all have food in their own homes. When we gather together in the moonlit village ground it is not because of the moon. Every man can see it in his own compound. We come together because it is good for the kinsmen to do so". So, it is not the environment that constitutes the human society though it may influence the human society, rather, it is what people bring to bear in cause of social interaction. In a more concrete term, what constitutes a church or school is not the church or school building rather it is what members of the church or students/teachers bring to bear in their interactions. Church or school buildings do not constitute the society by mere facts of the buildings. According to Igbo (2003: p32), "Society does not refer to the buildings, the roads and communication, infrastructure, motor cars and those other physical objects to be found in cities and towns, rather, a society is an organized group of individuals who occupy a defined geographical area and who are joined together by relationships and patterns of behavior (culture) which distinguish them from other groups or individuals who do not share these relationships or who have different patterns of behavior". Though the issue of geographical imitation or boundary as a concept in defining society is no longer tenable as science and technology has collapsed space and time. Hitherto, the definition of society with geographical boundary was accepted by scholars but the scientific reality now indicates clearly that people could belong to a society where they are not physically present. They could interact with the members of that group and in fact make their financial contributions online, by implication they are members of that society. Essentially, this is the central thesis of Thomas Kuhn in his book, "the Nature of Scientific Revolution" (Kuhn, 1996). He explains how changes or new paradigm emerge in a scientific community. For instance, when heliocentric theory came it toppled geocentric theory.

### **So what is the human society?**

Society lacks a watertight definition. There are differences in meaning due to differences in conceptual and theoretical approach to the definition. Chinonye (1967) refers to society as merely the basic fact of human association. He also defined it as the group within which men can live a total common life rather than an organization limited to some specific purpose or purposes. Other sociologists see it as a number of individuals connected by interaction. To Jack (1973), society is made possible by the interactions between and among its members, therefore, society is more or less than what its members bring into it. From each of the definitions offered so far, it could be agreed that society is that group within which men can live a total common life that is not limited to some specific purposes and with all kinds or degrees of relationships and interactions. Haralambos and

Holborn (2007) conceptualized the human society as the total complex of human relationship that grew out of action in terms of meaning and relationship, intrinsic or symbolic. In a nutshell, society could be conceptualized as a web of social relationship. It is the complex of organized associations and institutions within any human environment. Human environment is another dimension of human society. People make or earn their living from their immediate environment. They also make use of the natural resources as part of their social life. Thus, people living in coastal or forest belt make use of the timber or mangrove in building their houses, furniture and cooking. In cause of doing this, they could develop social interaction.

### **Types of human society**

As we have different people, so also we have diverse societies. Sociologists, anthropologists, historians and scholars who are interested in the study of the human society have over the years identified different types of human societies. This includes; primitive society, traditional society, folk society, open society, closed society, aristocratic society, meritocratic society, agrarian society, industrial society, modern society and post-modern society. Broadly speaking, sociologists have identified two main types. They have been called different names; mechanic, organic. Recently, two new concepts have been developed to represent these two types of societies, the communal and associational societies, Onyanna (et.al, 2000).

### **Modernism vs post modernism**

In current sociological thoughts, there are basically two contending theories with regards to the features and characteristics of modern society and of post-modern societies. Modernism as a concept suggests new ideas or current methods of doing things in contrast to traditional methods (Chuku, 2017). The argument of modernism is that, sociological investigations of the founding fathers of sociology marked the beginning of modernism. The founding fathers were particularly interested in the changes that were occasioned by the industrial revolution; they therefore sought to provide explanations to these emerging societies. Their explanations were scientific. They differ greatly or markedly from the old traditional ways of explanations which were mythical and Metaphysical. They sought to provide explanations through scientific methods which were factual hence they are often described as social factice (Ritzer 2000). The theory of the founding fathers suggests that by virtue of the changes in the human society, the best way to understand the human society is through scientific approach.

The human society and human behavior are observable and quantifiable. The human society from Durkheim's point of view is that society is external to the individual but constraints the individual. There are sociologists who believe that the human society could still be described as the same way the founding fathers of sociology did in the past. These scholars believe that humans are still living in a society that can still be described as modern based on the theory of the founding fathers. Proponents of this modernization theory include, Jurgen Habermas and Anthony Giddens, on the other hand, a group of erudite scholars such as Jean Baudrillard, Jean Francois Lyotard, Frederick Jameson and Koroker. These scholars argued that the society has changed dramatically than the way the

founding fathers described it. Humans now live in a quantitatively different society that should be addressed as postmodern society. This new society needs to be talked about in new and different ways, quite distinct from the theories of the founding fathers (Ritzer 2000).

The central theme in the theory of modernity is that life, the world and its system are far more similar to the ground narratives of the classical theories of the founding fathers. They vary, and as a result their theoretical models are still relevant in explaining the contemporary society. For postmodernists, the post-modern era is a new historical epoch that is supposed to have succeeded the modern era of modernity.

The postmodernists tend to reject the theoretical perspectives outlined previously and as well as the way in which the thinkers created their theories. The postmodern society is dominated by productive technologies like TV, radio, internet, robots, and high information technology and the like. The post modern society is therefore a technological society with global economy. Commerce could be conducted without physical contact through e-commerce and e-banking. As a technological sophisticated society, information could be spread round the globe within seconds. Events could be relayed automatically as they unfold anywhere in the globe. The postmodern society defies the limitation of the definition of society as a geographical place. In other words, people could belong to different societies where they do not have direct physical contact and could also be influenced by such societies. Science and technology have collapsed space and time, people in Africa could belong to societies in Europe or America. Through information communication technology, particularly, the social media; people could converge in the cloud through zoom meetings or create platforms in the social media where they could interact constantly (without physical contact) which is the hallmark of any society. Postmodernist's theorists argue that the world is moving towards a monoculture championed by America. One of the postmodern features that diffused from America is the fast food restaurants often referred to in sociological theory as "McDonaldization of the society" (Ritzer 2000).

### **Scientific breakthrough and the emergence of social realities**

This paper is explanatory in nature. It seeks to explain how science and technology has transform the human society and how it has defined the society through scientific breakthroughs particularly the use of technological products. For instance, in child rearing, the use of diapers has replaced the use of napkins. Children are exposed to the use of electronic and computer devices such as computer games today.

### **Stages of human development**

Most founding fathers and classical theorists are of the opinion that human has passed through some stages of development to the present stage of human existence. Auguste Comte, for instance, posited that, man passed through three stages, the first theological, second metaphysical and the last scientific or positive stage. At the theological stage every social phenomena was explained from religious point of view. At the scientific stage, man has attained the positive stage where social reality could be explained not from a religious stand point but from an objective point. There are basically three communication

revolutions in human history. They are Writing, printing and the advent of telecommunications, computers and digitization (Gunaratne, 2001). A revolution effects a change in societal power structure. When printing machine was invented the major religious fate associated it with “Satan” and therefore, rejected the use of the printing machine for some decades. However, when the reality dawned on them that it was a mere invention and had no satanic inspiration, they began to subscribe to it. In this present era and by the maximal utilization of various printing machines, science and technology has redefined social reality up to the point of erasing erroneous religious beliefs. Thus printing undermined the power of monopoly of the elders, who preserved in oral form the accumulated knowledge of preliterate people.

Likewise printing ended the information monopoly of the church, the clergy and elites. The invention of digitization has drastically changed in so many ways, making communication easily accessible to a great percentage of the population. This demonstrates the advantages of modern technology; and its abilities to reach the masses in cheaper and convenient ways. In the light of the above, when printing machine was invented in 1440 through the works of Guttenberg, where he was able to devise a machine that would apply pressure to an ink surface resting on a print medium such as papers, clothes and other printable materials also adding a hand mold to the press, which was able to generate precise and quick moveable types in large quantities. His invention grew globally and marked what is known as the printing revolution. After nearly 500 years later, printers still apply his technology, but only in a more efficient and faster method. Other types of printing machines invented include xerograph printer, laser-jet printer, ink-jet printer, 3D printer, all in one printer and wireless printer. At this point, it is germane to state that the invention of new technologies often creates the fears of unemployment. Again religious organizations and the general public were suspicious of the printing machine initially on the ground that it may create unemployment for script writers. So also, people speculated that with the invention of computers, electronic devices such as robots that unemployment may increase. These speculations were done without considerations of the multiplier effects of technological breakthrough. So rather than the printing and or computers breeding unemployment, it rather generated opportunities for job creation. Same is applicable for cell phones. As it were science, has redefined social interaction through the use of telecommunication systems. It is now a reality that one could communicate with anybody in any part of the globe with both audio and visual.

### **Science and technology redefining natural processes**

One area where science and technology has impacted positively is on the reproductive system of plants and animals. Science has been able to apply technological knowhow in reproduction of plants thus, leading to mass production and varieties. If not for science and technology, the source of protein such as animal and plant protein would have been grossly inadequate if they were to be supplied only through the natural process. Scientific breakthroughs had led to high human population and had reduced infant and maternal mortality (Ikimalo, 2019). The issue of impotency has also been addressed by science and technology in assisting reproduction. According to Ikimalo (2019) “assisted reproductive technology is defined as all treatments and procedures that include the in-vitro handling of the human sperm or egg or embryo for the purpose of establishing a pregnancy” These

include in-vitro fertilization (IVF) Gamete intrafallopian transfer (Gift), Zygote intrafallopian transfer (ZIFT) and so forth. With the innovation of IVF women who have reached menopause or have fertility issues can still be pregnant. It also assists in male infertility that is when sperm find it difficult to penetrate the eggs, and then the cells from the sperm are fused to penetrate the eggs (Ikimalo, 2019). In this way science has redefined the natural process of procreation and may continue to do so.

### **Globalization**

Globalization is a concept used to describe the growing interdependence of world's economies, cultures and populations, brought by across border trade in goods and services, and the flows of investment, people and information. The wide range effect of globalization are complex, however, the underlying factor is the contribution of technology to globalization. Science and technology has redefined trade and commerce. People all over the world can trade as if they are within the same locality thus giving rise to the development of the globe as a village. Science and technology ended the era of trade and barter and now it has redefined the society in such a way that there are no trade barriers or boundaries, and has also redefined the means of communication and transactions. Today, the trend of financial transactions is moving towards crypto currency.

### **Conclusions**

The central issue of this paper is on science and technology: redefining the human society. The paper concludes that science and technology is a major factor in defining and redefining the human society. It also notes that in all societies religion plays a predominant role in defining social interaction, even when religious organizations defines the society, the scientific definition overrides religious definition. The paper as well notes that in cause of science and technology harnessing natural resources, it creates scientific products which replaces the traditional products that helps in redefining the human society. It was further noted that change is pervasive and that change caused by science and technology permeates all aspects of human endeavor and has transformed the human society. Above all, the definition of human society with geographical boundary is no longer accepted within the scientific community since science and technology has collapsed space, time and boundary.

### **Recommendations**

Base on the reviewed literatures and conclusions drawn, the author recommends as follows:

- ❖ That the federal and state governments should sponsor her students for higher degrees in robotic engineering as this would enhance the technological development of the country.
- ❖ Inclusion and implementation of computer education in curriculum of primary schools in Nigeria should be made compulsory.
- ❖ There should be proper monitoring and regular advice on the use of hardware and software to avoid gross abuse by individuals and groups in the global space.



- ❖ That religious organizations should train their leaders to acquire scientific knowledge to enable them understand that scientific knowledge is not against the faith.
- ❖ Since the current global reality shows that this is era of digital knowledge, for Nigeria to make maximal utilization and to be part of the global trend, Nigeria should improve on her energy supply.

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