

# TECHNICAL KNOWLEDGE: A GUIDE TO CREATIVITY AND INVENTION FOR SOLVING HUMAN PROBLEM

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## **Abstract**

This paper sought to examine technical knowledge as a guide to creativity and invention for solving human problems. Different philosophies of technology are postulated by philosophers in this modern era. In what sense can technology serve as a way of knowing and covering hidden truth? Technology is a means of attaining wealth, power and taming nature. But, modern technology tends to undermine the value of human life. The thesis of this study is that appropriate technology is the philosophy that advocates for the ideal use of technology to enhance human life and biosphere. Thus, technology ought to be designed to improve human lives, ecological integrity and cultural well being of people.

**Key words:** Technology, Knowledge, Creativity, Invention, and Human problem.

Philosophy is applied in every terrain of human discipline. In the field of technology, philosophy has exerted enormous role by examining the human needs that evoke technology for their satisfaction. These needs are assessed in terms of its determinants as well as how people come to know about them. It is man and society that determine what kind of technology to be developed and the schemes that are supposed to be considered first.

Technology is associated with engineering. According to Poel (2010), engineering is characterized as an activity that produces technology such as: research, development, design, testing, patenting, maintenance, inspection, and so on. It deals with corporations involved in technological activities. Hence, leading engineers contributed greatly in the industrial development of the society in which they operate.

In the same manner, technology also works hand in hand with science. Scientific knowledge is the engine house of technological inventions. It establishes a connection between knowledge and production i.e. theory and practice. A theory is implemented in practice. In this regard, ideas and practice are working together mutually with regard to exchange and application of relevant information (Maduabuchi, 2015). Thus, scientific knowledge is implemented in industry to produce technologies that enhance human lives in the society.

## **Conceptual Clarification of Key Terms**

The key concepts in this study are: technology, creativity and innovation. The term Technology is derived from two Greek words “Techne”, which means “art” and “logos”, which means “science” or “discourse”. Etymologically, technology is the discourse or science of craft or arts i.e. craft knowledge (Reydon, 2016). Arts can be practical and industrial.

Hence, technology is the scientific study of design and use of tools. In other words, it is the means and methods used to produce and deliver goods and services for industrial, commercial, military and other purposes. In line with this assertion, Marquit (1995) defined technology thus:

Technology denotes the systematic, conscious application of knowledge by a society to meet its culturally conditioned real and perceived physical, biological, and spiritual needs and to guarantee its continued social existence. This knowledge is the socially accumulated understanding of how human labor and available material resources and artifacts are integrated by a society; the aspect of the society primarily involved here is its particular set of historically conditioned social relations of production (p. 417).

Technology is, therefore, conceived as the means by which man makes and uses tools to provide for material needs. Technological knowledge is designed for the achievement of practical purposes.

Another term that is associated with this work is creativity. Creativity can be seen from many perspectives. A common man's understanding of creativity can be conceived as the act of turning new and imaginative ideas into reality. In other words, Mesthene (2007) conceived that creativity is the process of bringing something new into being. In the words of Torrance (2009: 6), creativity is "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results." In this regard, creativity is conceived in line with philosophy of science. Likewise, the term creativity can also be implied in other fields of human of human endeavour like business, politics, and economics and so on.

Creativity is associated with innovation. *Merriam Webster Dictionary* on line defines innovation as the act or process of introducing new ideas, devices, or methods. Although innovation and invention overlap semantically, they are quite distinct. Invention is a discovery of something or new product of imagination which has not previously been in existence. But, innovation refers to something new or to a change made to an existing product, idea, or field.

### **Philosophy of Technology and Creative Invention**

Philosophy of technology is the driving force of technical invention. This epistemic inquiry revolves around philosophy and technology. Philosophy of technology is a novel field of investigation, which emanated as a product of twentieth century development when technology is exacting enormous influence in the world.

Right from time immemorial, philosophers have been reflecting on technology. Francis Bacon conceived technology as the integral part of natural philosophy. The inquiry in natural philosophy heavily relied on the construction of instruments, devices and other works of craftsmanship to make empirical investigations possible. Hence, technological knowledge is a knowledge gained from systematic empirical discovery, which is used to extend man's power over nature to the benefit of society and its inhabitants.

It is good to highlight that technology is not just a means of devising instruments or equipments for practical purposes alone. In *Die Technik und die Kehre*, Heidegger (1962) postulated that technology is a way of knowing and uncovering hidden things. In the same line of thought, Bacon envisaged that a good technical work tends to validate the truth of the purported theories about principles and causes in nature. In Heideggerian sense, technology can be conceived as a specific

mode of controlling reality in which reality can only appear as raw material to be manipulated. Man interacts with nature in such a manner as to discover the hidden truth about nature. Thus, modern technologies are devised to realize the previous unrealized potentials inherent in nature. For instance, power plant and hovering dam compel nature to deliver energy resource at will whenever it is necessary.

However, philosophers have postulated different philosophies governing technology. Drengson (1982) promulgated one of the philosophies that technology is a means of attaining wealth, power and taming nature. In this sense, technology is conceived as a very powerful force directing social progress. Human beings have entangled themselves with the products of technology in such a manner that technology is applied to nearly everything in this modern world. But, technology can have certain catastrophic effects on human lives and the environment. There is the need for conscious and reflective use of technology.

Thus, the evolution of philosophy of technology and technological design entail that human beings should strike a balance between technology, human value and its geographical environment. Before committing human efforts to the development of new technologies, man should consider the value and ends it will serve to promote human lives. Appropriate technology is the philosophy that specifies the ideal use of technology to serve good human ends and biosphere. It is only in this sense that technology can be designed to improve human lives, ecological integrity and cultural well being. This is important in order to address the negative impacts of technology in this modern time.

### **The Symbiotic Relationship between Science and Technology**

Science and technology are related but two distinct disciplines. Science is quite different from technology. The main activity of science is discovery. Scientific knowledge is geared towards discovery of theories. On the other hand, technology deals with invention. Thus, technological knowledge is the patents and blueprints for an invention.

Although technology is quite distinct from science, technology cannot do without science. Scientific ideas, theories and methods are applied in the industry towards the attainment of practical goals in technology. According to Bunge (1966), technology is an applied science. This is so because technological knowledge is the outcome of the methods of science to practical problems. Without research in basic science, applied science and technology will come to a fester.

Furthermore, the nexus between science and technology is significant in scientific and industrial revolution of the modern period. Hence, scientific knowledge of scientific revolutionaries is implemented in the industry for technological inventions. The industrial revolution in 18<sup>th</sup> century has transformed the world. Modern society cannot do without industries. Infrastructures in the society have developed as a result of science and technology.

Science and technology complement each other in many areas. For instance in biotechnology, science and technology collaborate in genetic engineering to boost development in agriculture and medicine. Since technology is an avenue for extending the frontiers of science, science is a means of generating new technology. Scientific theory is implemented in practice for practical results.

### **Evaluation**

This work establishes that technology is geared to serve human essence to satisfy the experienced need in the society. But, over reliance on science and technology tend to promote scientific realism which conceives physical theory as the best account of reality. This mindset tends to

enslave human beings as animated machines in factories and industries. Enforcing engineering procedures and technocratic control to all facets of human culture is repellent. There is the need for re-orientation of human values for evolution to appropriate technological design.

Science and technology play a symbiotic role in so many areas like genetics and genetic engineering. Although a lot of benefits accrue to genetic engineering in the area of agriculture and medicine, it militates against natural design for human lives. Human beings are different from other lower animals. The influence of nature and nurture are very important in human development. None can do in isolation from the other.

Industrial revolution of the modern period brought unprecedented development of technology. On the other hand, it posits a challenge to both human and ecological factor of the environment. The wrong use of technology is inimical for survival of humanity. Diabolic weapons like nuclear design can be rechanneled to produce light rays for electricity and other useful technologies that can enhance human lives in the society.

### **Conclusion**

This paper has examined technical knowledge as a guide to creativity and innovation for solving human problems. Scientific knowledge is embedded on sciento-technical rationality which is the driving force for technological innovations. Science, technology and engineering collaborate in the infrastructural development of the society. Appropriate use of science and technology is important to promote ecological integrity necessary serve good human ends and biosphere.

### **Recommendation**

There is the need for scientists, engineers and technicians to design technologies that enhance the value of human of lives. Ideal use of technology is essential for the propagation of human species. On this note, technological inventions that are harmful to human lives should not be encouraged.

Although Genetic engineering and bio-technology is good to promote medicine and agriculture, they ought to be guided by ethics more especially as it pertains to human lives. Ethical evaluation of technology is necessary in order not to subject humanity to horrible threats. Thus, modern technologies are to be used to promote human lives and biosphere.

Scientists and engineers should collaborate to preserve the ecological capacity under human use in the biosphere so as to maintain natural environment for healthy living in the society. Environmental pollution from factories and industries is a menace to human lives. It leads to environmental degradation.

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