# Technology Renaissance for Innovation and Productivity: Art and Design Perspective in Nigeria.

**Seyi-Gbangbayau, P. S. & Omoniyi, O.G.**
Department of Art and Design
The Federal Polytechnic
Ilaro, Ogun State, Nigeria
E-mail: paul.seyi-gbangbayau@federalpolyilaro.edu.ng, seyigbangbayau@gmail.com, Omoniyi.seun@gmail.com
Phone: +2348035177053, +2348022378136, +2349055556542

## ABSTRACT

The emergence of technology and its growth have left no field of study untouched. Arts and Design are no exception. Although the relationship between art, science and technology is of age, it becomes noticeable from the drawings and work of Leonardo da Vinci during the high renaissance through early and mid-nineteen century when kinetic art was introduced to the present digital age where art has completely had been influenced by technology. This research discusses how technology has positively affected some branches of art especially in Nigeria. Although, only few artists particularly sculptors have embraced technology in the production, finishing and presentation of their works. Even these few artists and their work have not been scholarly documented. This paper researched into the influence technology plays on art with attention on kinetic sculpture and the possibilities of the Nigeria sculptors looking into the production of functional sculptures rather than the traditional static and art for aesthetic purpose alone. The methodology employed for the research includes literature review, studio experiment, photography and analysis of some technology-related sculptures by two of Nigeria Sculptors. The paper recommends that the art syllabus and curriculum for all levels in Nigeria should be redesigned to accommodate the new trend in technological and digital development.

**Key Word**: Art, Technology, Kinetic, Renaissance and Design.

**iSTEAMS Proceedings Reference Format**
Seyi-Gbangbayau, P.S. & Omoniyi, O.G. (2019): Technology Renaissance for Innovation and Productivity: Art and Design Perspective in Nigeria. Proceedings of the 16th iSTEAMS Multidisciplinary Research Nexus Conference, The Federal Polytechnic, Ilaro, Ogun State, Nigeria, 9th – 11th June, 2019. Pp 71-80. www.isteams.net - DOI Affix - https://doi.org/ 10.22624/AIMS/iSTEAMS-2019/V16N2P10

## 1. INTRODUCTION

The saying that two parallel lines don't meet is not applicable to art as two parallel lines meet at varnishing point. This assertion is applicable to the relationship between art and technology as the two fields of study have embraced and intercepted each other at several points. It must be noted that art at all ages has been connected to science or technology in one way or the other at different degrees. As stated by Almeida, 2012, the use by artists of scientific discoveries and innovations can be traced a long way back. In history, most art media and tools like paints, led, dye, axe, and chisel, metal are related to science and technology by source and production. Art and science are in many ways mutually enabling and related. (Strosberg, 2010). The works of the most versatile European High Renaissance master Leonardo Da Vinci especially his drawings and writings show the influence of art on technology and sciences immensely.

The Renaissance was a period of reawakening or rebirth in arts, science, music, architecture and literature. New ideas and innovations were noticeable in various fields of endeavor. Leonardo Da Vinci happened to be an outstanding figure during this era whose works go beyond the boundaries of art. His interest aside art include so many other disciplines like architecture, botany, astronomy, engineering, writing, photography, literature, medicine, history and cartography which paved way for new ideas in art, science and technology. He actually began the romance between art and technology even in an age when technology has not advanced adequately to allow his inventions to fully materialized. Da Vinci was credited with the inventions of the parachute, helicopter, armor tank and accurate anatomical drawings. (Wolkoff, 2018). Albeit, Leonardo Da Vinci was an artist of unparallel repute, he was also tagged the first engineer of the modern era (Birkett, 2016). Unfortunately, Leonardo was unable to translate most of these drawings, sketches and writings into reality because of the level of technology of his age,

**Plate 1**
Leonardo da Vinci: Anatomical study of the womb

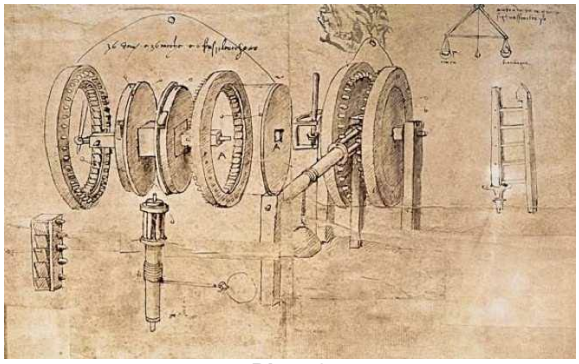


**Plate 2**
Leonardo da Vinci: Machine tooth of hygrometer

Courtesy: www.hammercodex.com

However, art of the nineteen to the twentieth centuries began to experience a new form of affinity with technology in form of kinetic art. Kinetic means motion or movement. Kinetic art is often sculptural works designed to set in motion by an internal mechanism or an external stimulus like water or wind. In some cases the whole work is moved by this mechanism and in some others, only parts of the art work are moved. Kinetic art may have began around 1913 to 1929 with western artist like Jean calder, Tinguely and Alexander Calder who invented the Mobile art, the movement was popularized and became an international trend in 20th century by Marcel Duchamp, George Rickey, Nicholas Schoffer, Soto, Naum Gabo and Laszlo. The objective of the kinetic includes exploring the element of time, the possibilities of movement, the importance of the machine and technology in the modern art. Materials used for kinetic are mostly unconventional media like plastics, machine parts, scraps, wheels. Bicycle horns, steel, metal, electric motor and electric wire and accessories.

Plate 3
Alexander Calder: Mobile sculpture moved by wind

Plate 4
Marcel Duchamp: Bicycle Wheel, the wheel rotates

Courtesy: www.intlkineticartevevt.org

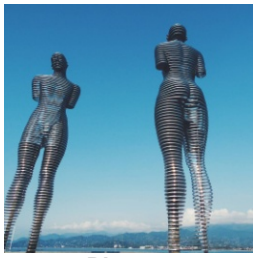


**Plate 5**

**Plate 7**

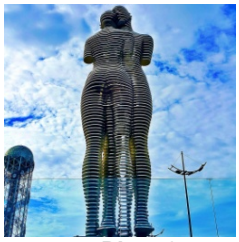


**Plate 8**

Tamara Kvesitadze: Moving steel sculptures, man and woman, 26 ft Coutesy: www.boredpanda.com

Since its inception in the mid of the 20th century, contemporary Nigerian art has steadily been developing in virtually all aspects of Art and Design otherwise known as Visual Art. Visual Art is sub divided into Fine art and Applied art. Fine art is divided into Drawing, Painting and Sculpture while applied art also known as commercial or Functional art comprises of Ceramics, Graphic design, Photography, Crafts, Fashion design and Garment making. All these branches of art have enjoyed the impact of technology to some degrees as will be discussed in this paper. Although, sculpture in Nigeria too has also developed in materials and techniques, its practioners are yet to fully embrace the idea of kinetics and functional art as observed in their counterparts across the world.

Although some Nigerian artists work with metals and welded sculptures which is no doubt an influence of technology, few of them produce kinetic works and functional sculptures. Functional sculptures are sculptures that perform functions other than aesthetic or decorative purposes. Even these few artists and their works are not yet scholarly documented. Apart from highlighting the influence of technology on the branches of art, this paper also intends to bring to light works and names of some Nigerian sculptors who produce kinetics and mechnomorphics sculptures and analyze two of such works for the purpose of academic record. The methods used in this research include literature review of both hard and internet materials on the topic, studio experiments and taking of photographs of these works.

## 2. LITERATURE REVIEW

Literature review for this paper includes literatures on history of Nigerian art, contemporary and modern art and also on art and technology. Price, 1994, Eyo, 1976 and Bascom, 1973 wrote on Nigerian art culture like Nok terracotta, Ife, Benin, Igbo Ukwu and Tsoede bronze sculptures which are examples of technology in art during the ancient times. Ife bronze works (12th – early 15th century) are highly realistic while Benin (1400AD–1897) and the Igbo-Ukwu bronze

works are highly decorative. The vessels of Igbo Ukwu revealed a probable most advanced technical knowledge of casting copper alloy in Nigerian. Eyo, 1976 stated that Owo terracotta works and Esie soap stone figures are also vibrant culture in Nigeria. Oloidi, 1998, Akande, 2005 and Ajiboye, 2003 researched on the history of contemporary Nigerian art. According to them early 20th century marked the beginning of contemporary art in Nigeria with Aina Onabolu as the pioneer.

Adepegba, 1995, Azeez, 2006 and Oloidi, 1995 traced the history and development of art institutions in Nigeria and gave a list of the pioneering contemporary artists. These artists cover various specializations in the field of Art and Design. Williams, 1974 and Akintonde, 2004 prove the existence of rich extant bronze casting in Ile-Ife. Frobenius, 1913 revealed the richness of traditional bronze works in Nigeria and the intricacies of the cire-perdue method. Seyi-Gbangbayau, 2012 wrote on multiple bronze casting technique of Kenny Adewuyi, a contemporary Nigerian sculptor who specializes in bronze casting.

On art and technology, Almaida, 2012, Coadreanu, 2015 and Marios, 2016 studied the relationship between art, science and technology. They looked into the influence of information and communication technologies on the development of art. Art history.about.com, 2019 examines kinetic art as a modern development in the field of art especially sculptures. It analyses the works of Marcel Duchamp, Alexander Calder and few other western sculptors of the early and mid-20th century. The technicalities involve in kinetic art which reveal the influence of technology on art was also presented.

## 3. THE INFLUENCE OF TECHNOLOGY ON VISUAL ARTS

However, as the mechanic age in the later part of the 20th century gave way to the digital age, technology began to affect the existence of various arts; from drawing, painting, photography, textile design, fashion to three dimensional arts of ceramics and sculpture. The term Tech-Art emerged as a nickname for the obvious and unavoidable marriage of technology and art. (codreanu, 2015; Niculet, 2007). The digital world uses computer and its related allies as media of technology to support the development of new form art works.

### Graphic art

The development of computer and information technologies has direct and instant impact on graphic art which deals with information and communication. Component of graphic art include, advertisement, publicity, printing and publishing. The production of items in all the segments of graphic art listed above have gone beyond the conventional processes to advanced digital methods from design stage to the finishing stage. Gone are the days when artists have to use hands to construct stencils, cut with blade and dab with foam to produce a signboard or a bill board. Artists don't have to stress themselves sweating to produce multiple banners on fabrics. With the advent of modern technology, the graphic artist can now conveniently produce banners, sign boards, bill boards through flex, and SAV. Production of hand bills, posters, business cards and similar items don't have to go through lithographic processes any longer. Direct image printing otherwise called DI is now available to print straight from computer. For larger items like extra big banners or bill-boards there is large format printing, which is also direct printing from the computer.

Production of books, journals, magazines, and relevant materials have become easier and faster with the aid of Information and Communication Technologies (ICT) (Marros, 2016). A lot of graphic and artistic work can be done using the computer with the aid of software like CorellDraw, Adobe Photoshop, In Design, Adobe Illustrator, PowerPoint, Microsoft Word and Macpaint released by Apple under Steve Jobs in 1984 (Art 212, All about art & design, 2015) Drawing of human figures objects, manipulation of images, two and three dimensional paintings can be done with ease and accuracy using computer.

Designers can also implement more colours in their works using intricate designs and higher resolutions. With the current advancement of information and communication technology, there is no limit to which a skillful designer can use the various tools get better designs. The use of the internet has also influenced graphic art tremendously in the use of images to create logos, unique designs, packaging and web designs. It is needless to say that technology has broadened the horizon of not only graphic design but art generally and vise visa.

**Textile and fashion designs**

Textile design which is the production of fabrics and cloth generally has close affinity with Fashion design and garment making. These two also have positive and direct impact from technology. Textile art has elements of science in it from the beginning especially in areas of dyeing. Designers can use the computer to create motifs and patterns textile design and fashion industry. Modern Technology has made it possible for new machines to replace hand woven and traditional methods of textile productions. Such machines include knitting machines, pleating machines which help designers to make printing without the use of laborers as it used to be. Other machines include Laser Printing produce images of cloth such as tops, shirts, trousers, gown, and blouse e.t.c. 3D printer which is high tech equipment in designing of innovative shoes (Study.com, 2019)

**Drawing and Painting**

Drawing and painting are no doubt the oldest form of art as revealed by the drawings on caves by the prehistoric men from 30,000 to 10,000 B. C. Over the years these two have enjoyed the traditional technique of using hand to draw or paints. Though various media evolved from charcoal, chalk, led, pencil, crayons, and pastels to pen and ink in drawing, in painting from water, poster, gouache, oil colour to tempera and acrylic, the techniques remain the same. But with the emergence of the computer, the landscape of drawing and painting has changed. With digital tools Corel Painter, adobe Photoshop, Art Rage, GIMP, Krita, open canvas (Wikipedia, 2018)

Plate 9

Plate10

Plate 11

Two different digital painting effects from a digital photograph (plate 9). Plate 10 is water colour effect while plate 11 is the painterly application of digital colour to the photograph. Courtesy: G.Y. Annum, Kumasi, Ghana, 2014

## 4. THE INFLUENCE OF TECHNOLOGY ON SCULPTURE

Sculpture being one of the oldest forms of art has been enjoying the influence of technology from a long time especially in the areas of materials, tools and techniques. Conventionally, media for sculpture are clay, wood, stone, and cast metal which include bronze and brass. Although the production of the traditional metal works is technological in method, most of the tools and equipments like foundry, crucible, foundry tools, carving tools e.t.c are also products of technology. However, as technology advances, art also advance and this give birth to new media, styles and techniques in sculpture. These new techniques include constructivism, assemblage mixed media, welded sculpture, installation and kinetics. Welded sculpture, installation and kinetics have similarities in that modern technology is employed in their production. Use of metal, iron rods, scraps, discarded metals, machine parts are common objects in these three. Most welded sculpture commonly called metal works are mechnomorphic in style.

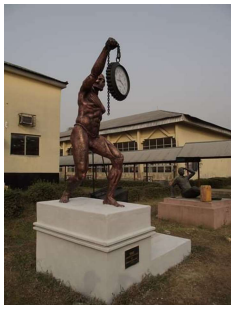
That is, they contain some machine parts. Currently, many metal sculptors are emerging in Nigeria due to technological advancement globally. Their works contain mostly machine parts, junks and other relevant found objects (Seyi-Gbangbayau, 2019). Some of these sculptors include: Olu Amuda, Dotun Popoola, Moses Tuki, Bunmi Olatoye and Akeem Muriana

**Kinetic Sculptures**

As stated earlier, kinetic art are most sculptures since they are three dimension in form. They are designed to move as a whole figure or part of it moving. Motion is involved in any kinetic work. Traditionally most sculptures are static though there may be virtually movement in them,that is an apparent movement due to the style used by the artist. Example is Discobolus (Discuss Thrower) and the statue of David by Michelangelo. But with the introduction of technology, sculptures can be designed to have motion.

Kinetic is divided mainly into two divisions; one is Mobile art and the second one is the mechanized sculpture. Mobile as they are called was invented by Alexander Calder as sculpture that can be moved by forces of nature e.g. wind, solar power, gravity or magnetism.

Mechanized sculptures have real movement generated by an electric motor or any other mechanical or electrical devise. Kinetic sculptures could be indoor or environmental works. Though most early kinetic sculptures serve aesthetic and beautification purpose alone, like the works of Calder, the some modern kinetics serve dual purposes. They are made to perform other functions than the original one which is beautification. Example is Paul Seyi-Gbangbanyau's Ogboju Ode.



**12**

Otuekong Udoebom: Time, concrete and wall clock, 2018

Type: kinetics

Courtesy: Omoniyi Oluwaseun, 2019

**Plate 13**

Bike, Scraps

Type: Mechnomophics

Courtesy: Pininterst, 2019

**Plate 14**

Akeem Murina: Olofofo Year, steel

found pipes and junks, 2012

Type: Mechnomophics

**Plate 15**

Dotun Popoola: Painted scraps

Type: Mechnomophics

Courtesy: www. Art 635.gallery. com

Kinetic art abounds in the western world, but few are seen in Nigeria. The contemporary Nigeria arts are not given to producing works in this dimension. However, there are a few sculptors whose work can be identified as kinetics and some are kinetics as well as functional. Artists in this group include:

Seyi-Gbangbayau Paul, John Sunday and Sokari Douglas comp.

For the purpose of this research, only Seyi-Gbangbayau and John Sunday's works shall be analyzed

**Ogboju Ode**

Seyi-Gbangbayau's Ogboju Ode is a kinetic and functional sculpture.

**Plate 16**
Seyi-Gbangbayau Paul: Ogboju Ode, (Finished work)
Reinforced Concrete, fiber glass and metal,
Stainless steel, electric motor, wires and led

**Plate 17**
Ogboju Ode near completion
The hunter's light is on

*Photographs courtesy: Seyi-Gbangbayau P. 2012*

Ogboju Ode serves dual purposes as an environmental sculpture and security device. It is a realistic monumental male figure sculpture with mechanized kinetic devise. The head moves 180 degree from the neck. It can move its head from right to left and vise versa. As a traditional hunter, Ogboju Ode has modified traditional hunters light on its head. The mechanism uses the rotor of a standing fan. The moment the electric switch is on, the neck will move and the light will be on. Ogboju Ode is located at the University of Technology, Ogbomosho, in front of the old ceramic studio facing the sculpture garden.

It serves as a security personnel scanning the sculpture garden and its environ with the bright halogen light on its head. The sculpture, apart from the light, it also carries the local gun and it wears traditional hunter's dress which makes it look like a typical African warrior. The pedestal contains low relief forms to add to the aesthetic value of the work.

**Plate 18**
Part of the mechanism that operates in Ogboju Ode's

**Plate 19**
During installation

*Photographs courtesy: Seyi-Gbangbayau P. 2012*

**Plate 18**
The mechanical part of Ogboju Ode

**Plate 19**
The led-light and stainless plate used as the hunter's torch

*Photographs courtesy: Seyi-Gbangbayau P. 2012*

**"Tomorrow"**

John Sunday's sculpture is a mechnomophic kinetic sculpture. It really shows the influence of technology on modern sculpture. 'Tomorrow' breaks away from the traditional sculptures in media and technique. The style is a mixture of realism and stylization. The kinetic part is located on the left hand side. The mechanism allows the left hand to move up and down. Symbolically, as it raises the oversize spanner up it reveals how art is lifting technology up and will do more in supporting science and technology in future. Another technology aspect in the sculpture is its eyes which beam light directly on the ball on its right hand. The ball stands for the globe, indicating that art will throw light of creativity and innovation on the world as it did during the renaissance period. The light also serves as illumination to the immediate environment of the sculpture. John Sunday is a 2012 graduate of the University Uyo, Akwa Ibom state, Nigeria. He currently leaves in Uyo.

**Plate 20**

John sunday : Tomorrow, Metal and Fibre glass, 12ft, 2012, Oyu, Nigeria

*Photograph courtesy: Omoniyi Oluwaseun, 2012*

Sokari Douglas Camp is a female Nigerian artist who also works in metal and kinetics. Her works will not be analysed in this study, but her name is mentioned because she is the only known practicing Nigerian female sculptor who does metal works which most people regard mainly as men's work and her sculptures are also large environmental works.

**Plate 21**

Sokari Douglas Camp: Masqurade with boat headdress, steel, mirror, wood, bell cloth paint and motor

*Photograph courtesy: www.tajuniyor.com.ng, 2019*

## 5. CONCLUSION

There is no doubt that there is a mutual agreement between the creativity in art and technological development. Art globally has experienced tremendous positive changes since the emergence of technology especially the computer and the internet. Almost all branches of art has been touched by the growth of science and technology and this directly boost the economy of the art industry. The introduction of the internet actually promotes art and artists generally. Kinetic and mechnomorphic arts are closely connected to technology, hence few artists are found in this fields. But a second thought on this by Nigerian artists will take the art of sculpture in particular beyond the conventional level where art is no longer art for art or aesthetic sake alone. Art generally can serve other purposes other than what they used to be in the past.

## 5. RECOMMENDATION

In other to improve the mutual agreements between art and technology thereby enhancing the growth of art in the country the government should review the curriculum of art at all levels to reflect the global trend of technological development. Computer as a subject right from the cradle should must for all and government ant non governmental agencies should be prepared to spend more money in helping the average masses to have access to computer and science based education. Artists should go out of their shells to delve more into modern art by utilizing every available technological tools, equipment and knowledge to advance themselves.

## REFERENCE

1. Ajiboye, O. J. (2003); "Resource to Culture, trends in Contemporary Nigerian Art" in Kunle Filani et al, (ed), Perspectives on Culture and Creativity in Nigerian Art Lagos, Nigeria: Culture and Creative Art Forum (CCAF)
2. Akintonde, M. A. (2004). "Twentieth Century Brass Casting in Ile-Ife", Africa Journal of Contemporary Issues Vol. 2, No. 2
3. Almeida T.,(2012), Rethinking the relationship between Art and Science in Contemporary Art international conference on Digital Art (Artech,2012)Practice theory in the Portuguese context, Research Gate (2019). Retrieved April, 29, 2019.
4. Azeez, W. A. (2006). Visual Artist and the Challenges of New Media in Art, in Filani E.O et al, (ed),
5. A potentials of Visual Arts and Creative Industry in African, Nigeria: Cultural and Creative Art Forum
6. Bascom, W. (1973). African Art in Cultural Perspective, New York: W.W and Company Inc.
7. Birkett D (2016), Leonardo Da Vinci; artist and engineer retrieved May 18th, 2019. The instruction of Engineering and Technology, 2019. www.iet.com
8. Codreanu, F. (2015) Art and technology; The role of technological advance in Art History, conference; Communication, context, interdisciplinary, studies and articles. 3rd Ed, Romania, retrieved, May 15th , 2019, Research gate.
9. Eyo, E. (1976). Highlights from 2,000 years of Nigeria Art, Lagos Nigeria: Federal Department of Antiquities
10. Frobenious, L. (1913). Voice of Africa Vol. 1, New York and London: Benjamin Blom Inc. Bronx
11. Niculet, L.(2009), How to end up with art aesthetic experience of the early video art, Analele university, Bucurestor, Nr/Vol.56, 2007 pp165-171. Retreieved: May 15th ,2019, Researcher Gate.
12. Oloidi, O. (1998). "Onabolu, Pioneer of Modern Art" Uche N. Abalogu, (ed), Nigerian Journal of Art Vol 2, No 2
13. Price, C. (1994). Made in West African, London: Studio Vista
14. Seyi-Gbangbayau, P. S. (2012). Technique And Style Of A Contemporary Sculptor: Adewuyi Kenny, M.Tech thesis, Ladoke Akintola University of Technology
15. Seyi-Gbangbayau, P. S. (2019). Trash To Cash; The Metamorphosis Of Discarded Materials to Objects of Aesthetic Value. A paper presented at the 7th National Conference of the School of Environmental Studies, The Federal Polytechnic Ilaro , Nigeria
16. Wolkoff, J (2018) 6 Things you don't know about Leonardo Da Vinci, retrieved, May 20,2019 www.artisy.com