



## THE INFLUENCE OF INNOVATION AND TECHNOLOGY ON ART AND DESIGN

Seyi-Gbangbayau, Paul Sonayon & Adeleye Adekunle Jeremiah

Department of Art and Design, The Federal Polytechnic, Ilaro, Ogun State, Nigeria

E-mails: paul.seyi-gbangbayau@federalpolyilaro.edu.ng, Adeleye.adekunle@federalpolyilaro.edu.ng

### Abstract

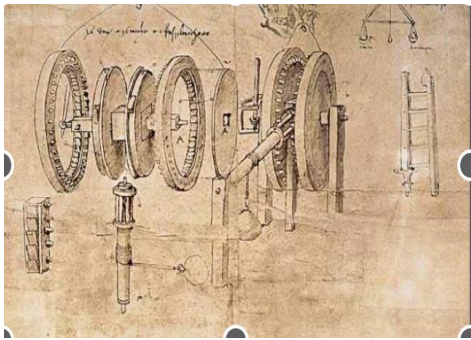
This qualitative review study examined the impact of technology on the practice of art and design. Every academic discipline has been impacted by the development and spread of technology. The same is true for art and design. The relationship between art, science, and technology has always existed, but it is clear from Leonardo da Vinci's high Renaissance drawings and works through the early and middle of the nineteenth century, when kinetic art was introduced, to the current digital age that art has been completely influenced by technology. This study examines how many forms of art have benefited from technology, particularly in Nigeria. However, a small number of artists, especially sculptors, have embraced technology to create, polish, and present their works. There is no academic documentation of the work of even these few painters. The focus of this inquiry into the role technology plays in art was on kinetic sculpture and the possibility for Nigerian artists to produce functional sculptures as opposed to the usual static and art produced only for aesthetic reasons. Paul Seyi-Gbangbayau and John Sunday, two Nigerian artists who worked in the field of art-technology, created a couple of the sculptures that were the subject of this study. The research's methodology included a survey of the literature, a studio experiment, photographs, and these artists' sculptures. The article suggests that Nigeria's art curriculum and syllabus be revised to take into account the most current advancements in technology and the digital age.

**Keywords:** Rebirth, Technology, kinetics, Art

### Introduction

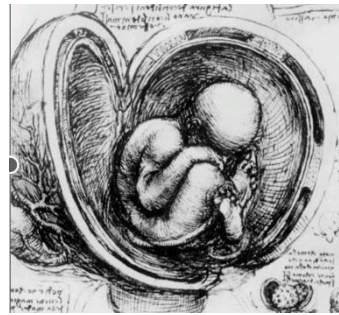
Every aspect of human life is impacted by globalization, which shrinks the world to a tiny village where science and technology drive all forms of progress, including visual art. The vanishing point is where two parallel lines do overlap, hence the adage "two parallel lines don't meet" does not apply to works of art. Due to the frequent interactions and interferences between the two areas of study, this claim is equally valid for the relationship between art and technology. It is important to keep in mind that science and technology have always had some form of relationship with art, albeit to varied degrees. Almeida (2012) asserts that artists have traditionally embraced scientific developments and discoveries. Axes and chisels, paint, lead, dye, and metal are only a few of the materials used in art throughout history that are produced or have their roots in science and technology. In many respects, science and art are related and mutually beneficial. (2010) Strasberg. Leonardo Da Vinci, the most creative genius of the European High Renaissance, is most known for his writings and artwork, which serve as examples of how art has had a significant influence on science and technology. The Renaissance was a period of rebirth or renewal in the disciplines of the arts, science, music, literature, and architecture. In a wide range of professional fields, new ideas and innovations are always emerging.

Leonardo Da Vinci was well-known at the time and his works went beyond the boundaries of art. Seyi-Gbangbayau and Omony (2019) note that he had a wide range of interests besides painting, including those in architecture, botany, astronomy, engineering, writing, photography, literature, medicine, history, and mapping. These activities all set the path for modern developments in the arts, sciences, and technologies. The parachute, helicopter, armored tank, and exact anatomical drawings are all attributed to Leonardo Da Vinci. He was considered as the first engineer of the modern period despite being a well-known artist (Birkett, 2016). Unfortunately, due to a lack of technological advancement, Leonardo's inventions were never fully realized.



**Plate 1**

Leonardo da Vinci: Engineering Drawing



**Plate 2**

Leonardo da Vinci: Biological Drawing

**Images Courtesy:** [www.hammercodex.com](http://www.hammercodex.com)

However, in the form of kinetic art, which is frequently sculptural works intended to set in motion by an internal mechanism or an external stimulation like water or wind, art of the nineteenth and twentieth centuries began to encounter a new type of connection with technology. This device can sometimes move the full piece of art, and it can also move just some of it. With Wes Foote's "The Kinetic Art of the Nineteenth and Twentieth Centuries," kinetic art is supposed to have begun between 1913 and 1929.



**Plate 3**

Mobile sculpture that is moved by wind

By Alexander Calder



**Plate 4**

Bicycle Wheel with rotating wheel

By Marcel Duchamp

**Images Courtesy:** [www.intlkineticartevent.org](http://www.intlkineticartevent.org)

Since its inception in the middle of the 20<sup>th</sup> century, contemporary Nigerian art, frequently referred to as visual art, has gradually developed in practically all sectors. Visual art is divided into two subcategories: fine art and applied art. Drawing, painting, and sculpture are examples of fine art, while ceramics, graphic design, photography, crafts, fashion design, and apparel production are examples of applied art, often known as commercial or utilitarian art. As will be shown in this article, technology has benefited all of these types of art in some way. Nigerian sculptors, in contrast to their peers throughout the world, have not yet fully embraced the concepts of kinetics and functional art. This is true even if there have also been advancements in sculpture-related materials and methods. Few Nigerian artists make kinetic art or practical sculptures, despite the fact that some of them work with metal and construct welded sculptures, which are obviously influenced by technology. Sculptures are referred to as useful when they



serve purposes other than aesthetic or decorative ones. Even these few painters' works have not yet been formally documented by scholars.

This essay not only highlights the works and biographies of numerous Nigerian sculptures who are experts in producing kinetic and mechnomorphic sculptures, but it also evaluates two of their works in order to provide academic documentation and demonstrate how technology has affected many different types of art. Taking images of the artwork, experimenting in the studio, and evaluating relevant information from printed and online sources are some of the techniques employed in this study.

### **Literature Review**

The literature review for this topic includes works on the history of Nigerian art as well as works on modern and contemporary art. In their articles from 1994, 1976, and 1973, Price, Eyo, and Bascom, respectively, claim that Nok terracotta, Ife, Benin, Igbo Ukwu, and Tsoede bronze statues are examples of antiquated technology in art. While Benin bronze art, which dates from 1400AD to 1897, and Igbo-Ukwu bronze art are exceedingly beautiful, Ife bronze art, which dates from the 12th to the early 15th century, is quite realistic. The Igbo Ukwu vessels in Nigeria displayed what was likely the most sophisticated technical expertise in casting copper alloy. Eyo (1976) cites the Esie soapstone sculptures and the Owo terracotta items as two examples of Nigeria's colorful culture. Historical analyses of contemporary Nigerian art were done by Oloidi in 1998, Akande in 2005, and Ajiboye in 2003. They assert that Aina Onabolu, who lived in Nigeria at the turn of the 20th century, was a pioneer of contemporary art.

All three authors—Coadreanu (2015), Marios (2016), and Almaida (2012)—examined the connections between art, science, and technology. They investigated how information and communication technology have impacted the evolution of art. 2019 sees kinetic art being examined by art history.about.com as a movement in sculptures and other works of art. The sculptures of a few prominent Western artists from the first and second halves of the 20th century, including Marcel Duchamp and Alexander Calder, are included. It also described how the kinetic art's technical elements show how technology influences art.

### **The influence of Technology on Visual Arts**

Technology started to have an impact on the existence of a variety of arts in the latter half of the 20th century, as the mechanical age gave way to the digital age, including fashion, textile design, photography, drawing, painting, and three-dimensional ceramics and sculpture. With Niculet (2007) and Codreanu (2015), the phrase "tech-art" was first used to describe the obvious and inevitable marriage of technology and art. The use of computers and their related technology allies supports the development of new artistic forms in the digital age.

### **Graphic art**

Graphic art, which deals with information and communication, is directly and immediately impacted by the advancement of computer and information technologies. Printing, publishing, publicity, and advertising are all parts of graphic art. From the concept stage through to the finishing stage, production processes have gone beyond the standard procedures for all of the aforementioned graphic art categories. The creation of a signboard or a billboard required artists to manually cut foam stencils using knives. That era has long since passed. Artists do not need to use physical effort to create numerous textile banners. Flex and SAV have made it simpler for graphic designers to create banners, sign boards, and billboards. Now, hand bills, posters, business cards, and other such objects can be produced without the use of lithographic processes. Direct image printing, commonly known as DI, is now possible when printing directly from a computer. Big format printing, commonly referred to as direct printing from the computer, is used to print larger goods like extra-large banners or billboards.

Information and communication technology (ICT) has made it simpler and quicker to produce books, journals, periodicals, and other significant materials (Marros, 2016). With the use of programs like CorelDraw, Adobe Photoshop, In Design, Adobe Illustrator, PowerPoint, Microsoft Word, and Mac paint, which Apple debuted under Steve Jobs in 1984, many visual and artistic tasks may be carried out on a computer (Art 212, All about art & design, 2015). Computers make it simple and accurate to draw people and other things, edit photos, and produce two- and three-dimensional artwork.

By using complex patterns and better resolutions, designers can incorporate more colors into their creations. A skilled designer can make advantage of the many tools accessible without ever running out of ways to come up with better

ideas thanks to the most recent advancements in information and communication technologies. The way images are utilized to generate logos, distinctive designs, packaging, and website designs has been significantly influenced by the use of the internet. The possibilities for graphic design and art in general have risen naturally as a result of technology, and vice versa.



**Figure 5**

Digital painting of Dr Akinde Mukail.



**Figure 6**

The picture from which the digital painting was made

**Images Courtesy:** Paul Seyi-Gbangbayau, 2023

### **Clothing and textile manufacturing**

Textile design, or the creation of materials and clothing, is closely tied to fashion design and garment manufacturing. These two also gain from technology in a positive and straightforward way. Textile art has long used science, especially in the area of dyeing. Designers can use computers to create motifs and patterns for the textile and fashion sectors. Thanks to contemporary technology, hand weaving and other traditional methods of producing textiles can now be replaced by new machinery. These include knitting and pleating tools that let designers create prints without using laborers like in the past. Other machinery creates images of garments including tops, shirts, slacks, gowns, and blouses, among others. A 3D printer is a high-tech tool used in the design of modern shoes (Study.com, 2019).

### **Painting and Drawing**

Drawing and painting are unquestionably the oldest kind of art, as evidenced by the drawings done on cave walls by prehistoric men between 30,000 and 10,000 B.C. Over the years, these two have enjoyed using the manual technique of painting or drawing. Even when the materials evolved over time—from charcoal, chalk, lead, pencil, crayons, and pastels to pen and ink; from water, poster, gouache, and oil color to tempera and acrylic—the talents persisted. However, since the development of the computer, the atmosphere for drawing and painting has altered. Digital tools include Corel Painter, Adobe Photoshop, Art Rage, GIMP, Krita, and open canvas (Wikipedia, 2018).

### **How technology has impacted sculpture**

One of the oldest forms of art, sculpture, has long benefited from technological advancement, particularly in the fields of materials, tools, and techniques. Clay, wood, stone, and cast metals like bronze and brass have all been used in sculpting in the past. Most of the tools and pieces of machinery, including foundries, crucibles, tools for foundries, carving tools, etc., are also technological creations. Technology is used in the production of traditional metalworks. However, technology and art co-evolve, giving rise to fresh mediums, fashions, and sculpting methods. Some of these

modern techniques include constructivism, mixed-media assemblage, welded sculpture, installation, and kinetics. In the construction of welded sculpture, installations, and kinetic art, modern technology is used similarly to that of these three art forms. These three frequently contain iron rods, scrap metal, waste metals, and machine parts. The majority of metal works—also referred to as welded sculpture—have a mechanomorphic appearance. They consist of some machine parts, in other words. As a result of global technological advancement, Nigeria is currently seeing a big influx of metal sculptors. Their artwork is primarily composed of machine parts, rubbish, and other relevant found objects (Seyi-Gbangbayau, 2019). Among these sculptors are Olu Amuda, Dotun Popoola, Moses Tuki, Bunmi Olatoye, and Akeem Muriana.

### **Kinetic sculptures**

The majority of sculptures are kinetic art, as was already noted, because they have a three-dimensional form. They can either move in their entirety or in pieces. Any kinetic work includes motion of some kind. Although most sculptures are static in the conventional sense, others may seem to move due to the artist's choice of style. Examples include the Michelangelo David monument and Discobolus (the "Discuss Thrower"). But because of technological advancement, sculptures may now be made in motion.

Mobile art and mechanized sculpture are the two broad categories into which kinetic art can be divided. Sculptures that can be moved by natural forces like wind, solar energy, gravity, or magnetism are referred to as "mobile" by Alexander Calder.

In mechanical sculptures, real movement is created using an electric motor or another mechanical or electrical component. Kinetic art can be displayed indoors or outdoors. While many contemporary kinetic sculptures have many purposes, many early kinetic sculptures, including those by Calder, only serve aesthetic and beautifying purposes. In addition to their original aesthetic purpose, they are made to fulfill various purposes. One illustration is Paul Seyi-Gbangbayau's *Ogboju Ode*.



**Figure 7.**

Mixed Media: Cement with Wall clock

Kinetics Sculpture by Otuwekong Udoebom.

**Image courtesy:** Omoniyi Oluwaseun, 2019



**Figure 8**

Bike Scrabs

Mechanomorphic Sculpture

**Image courtesy:** Pinterest, 2020

In contrast to the western world, Nigeria has a dearth of kinetic art. Nigerian contemporary artists are not used to producing works of this size. There are a few kinetic sculptors, though, and some of their creations are both practical and energetic. This group of musicians includes Seyi-Gbangbayau Paul, John Sunday, and Sokari Douglas Camp.

For the sake of this investigation, only Seyi-Gbangbayau and John Sunday's works will be investigated.

**Ogboju Ode:**

Ogboju Ode serves as a sculpture for the environment as well as a security measure. It is a large sculpture depicting a realistic male figure that moves mechanically. The head makes a 180-degree spin away from the neck. It has the ability to turn its head from left to right and vice versa. Ogboju Ode has modified conventional hunters by donning a lantern. The rotor from a standing fan is used in the mechanism. As soon as the electrical switch is flipped on, the neck will move, turning on the light. Ogboju Ode is located in front of the former ceramics workshop and faces the sculpture garden at the University of Technology, Ogbomosho.

It serves as a security guard, patrolling the sculpture garden and its surrounds with the strong halogen light affixed on its head. The sculpture resembles a typical African warrior because it is equipped with a native gun in addition to a torch and is dressed in traditional hunting attire. The pedestal's low relief features add to the piece's visual charm.



**Figure 9.**

B Ogboju Ode, (Completed)  
Mixed Media



**Figure 10**

Ogboju Ode almost completed  
The hunter's light is on

*Images courtesy: Seyi-Gbangbayau P. 2012*



**Figure 11.**



**Figure 12**



Part of the mechanism that  
operates in Ogboju Ode' s

The mechanical part of Ogboju Ode

*Images courtesy: Seyi-Gbangbayau P. 2012*

### “Tomorrow”

John Sunday produced a dynamic sculpture that is mechanical. It amply displays the impact of technology on contemporary sculpture. Tomorrow departs from traditional sculpture in terms of both media and technique. Realism and stylization are combined in the aesthetic. The kinetic element is on the left. The mechanism allows the left hand to swivel up and down. In a symbolic sense, it demonstrates how art is progressing technology and will do so in the future by raising the huge spanner higher. Another technological aspect of the sculpture is its eyes, which shine light directly onto the ball in its right hand. much like how it was during the Renaissance. The light also illumines the local area around the sculpture.

John Sunday received his degree from University Uyo in Nigeria's Akwa Ibom state in 2012. He is currently leaving Uyo.



**Plate 13**

"Tomorrow", Metal and Fibre glass, 12ft, Oyu, Nigeria

By John Sunday 2012

**Image courtesy:** *Omoniyi Oluwaseun, 2012*

### Conclusion

There is no denying the relationship between the development of technology and artistic creativity. Globally, art has changed tremendously for the better since the development of technology, particularly the computer and the internet. Almost all fields of art have been touched by the advancement of science and technology, directly increasing the sector's income. In fact, the growth of the internet has benefited artists and the arts in general. There aren't many experts in kinetic and mechnomorphic arts because of how closely they are tied to technology. However, if Nigerian artists give this some more thought, they would raise art above the typical level and make it serve uses other than aesthetic or artistic ones. In general, goals different than those that were traditionally identified with art can be achieved.

### Recommendation



To encourage the mutual understandings between art and technology and so increase the growth of art in the country, the government should assess the art curriculum at all levels and update it to reflect the global trend of technological progress. To facilitate the general populace's access to computer and science-based education, government and non-governmental groups should be prepared to spend more money. Everyone should be compelled to take computer education classes starting at a young age. Artists must investigate modern art more and venture outside of their comfort zones in order to advance their skills and creations. They should use all available technological resources to accomplish this.

### **Suggestion For Further Research**

Future research in the fields of art generally should look into the possibilities of applying contemporary technology to further enhance artistic practice and products. In addition, the processes and materials utilized to create utilitarian art generally could also be potential subject of research.

### **Reference**

- 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)
- Akintonde, M. A. (2004). " Twentieth Century Brass Casting in Ile-Ife" , Africa Journal of Contemporary Issues Vol. 2, No. 2
- 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
- Azeez, W. A. (2006). Visual Artist and the Challenges of New Media in Art, in Filani E.O et al, (ed), A potentials of Visual Arts and Creative Industry in African, Nigeria: Cultural and Creative Art Forum
- Bascom, W. (1973). African Art in Cultural Perspective, New York: W.W and Company Inc.
- Birkett, D. (2016). Leonardo Da Vinci; Artist and Engineer. Instruction of Engineering and Technology, 2019. [www.iet.com](http://www.iet.com)
- 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.
- Eyo, E. (1976). Highlights from 2,000 years of Nigeria Art: Federal Department of Antiquities, Lagos Nigeria
- Frobenious, L. (1913). Voice of Africa Vol. 1, New York and London: Benjamin Blom Inc. Bronx
- 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. Retrieved: May 15th ,2019, Researcher Gate.
- Oloidi, O. (1998). " Onabolu, Pioneer of Modern Art" Uche N. Abalogu, (ed), Nigerian Journal of Art Vol 2, No 2
- Price, C. (1994). Made in West African, London: Studio Vista
- Seyi-Gbangbayau, P. S. (2012). Technique And Style Of A Contemporary Sculptor: Adewuyi Kenny, M.Tech thesis, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria
- 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
- Wolkoff, J (2018) 6 Things you don' t know about Leonardo Da Vinci, retrieved, May 20,2019 [www.artisy.com](http://www.artisy.com)





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