

# From Evolution to Revolution: Exploring the Technological Advances in Mass Communication.

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## Abstract

This paper traces the evolution of mass communication technologies from their earliest times to the current epoch. It begins with the earliest primitive writing technologies of papyrus to the development of advanced printing press before focusing on electronic communication. The technologies of electronic communication are found to have evolved from the early telegraphy with radio, and subsequently television, developing from this technology. While satellite technology became another important landmark in the development of modern mass communication, computer and the Internet brought the ultimate revolution introducing hitherto undreamt-about possibilities in mass communication. The writer concluded that mass communication, throughout its history, has remained technologically driven, lending some credence to the postulation of the technological determinism theory that human communication is continuously determined and shape by technology – “the medium is the message.”

**Keywords:** Evolution to revolution, Mass communication technologies, Electronic communication.

## 1. Introduction

Mass communication is technology-driven in that the various media of mass communication operate based on technological principles ranging from the print technology to the most advanced electronic cum digital technologies. This paper traces the evolution of these technologies from the earliest days of writing communication to the current digital era.

### 1.1. Printing Technology

Printing technology refers to the science of physically reproducing writings, pictures and illustrations on paper or other surfaces (Daramola, 2003, p.117). This section focuses on the development of this technology which was the earliest technology that drove mass communication.

#### 1.1.1. Early Developments: From Papyrus to Paper

The oldest of the mass media are the print media which have been in existence for a very long time. The evolution of mass communication and the mass media could be traced to the development of pictographs in prehistoric times, which in a sense marked the beginning of written communication (Merrill and Lowenstein, 1979, p.41). From 3000 to 2000 B.C., the first symbols evolved from pictographs which at that time had become increasingly stylized. These symbols developed into primitive alphabets which marked the beginning of recorded history. This was how the Sumerians developed the first known pictographic writing called cuneiform, in 3500 B.C., and how the Egyptians developed hieroglyphics in 3100 B.C. However, the first real alphabet was developed in the Mideast in the period 1800 to 1600 B.C. Thereafter, the stage was set for the emergence of the fore-runner of the modern print media, the first of which was book. Writing on books, Okunna (1999, p.6) says:

Books have a very long history. Although nobody knows for sure how long books have been in existence, the earliest records show that there were ‘books’ in the form of clay tablets in Babylonia more than 4,500 years ago. Books in their present form originated with the invention of paper in China in the first century A.D., though the earliest inexpensive writing materials were made by the Egyptians from the papyrus plant which grew along the River Nile.

The first known book, *The Book of the Dead*, was written in Egypt sometime between 1580 and 1350 B.C. (Sandman et al. 1976:30), but for a long time books did not actually become a ‘mass’ medium. The reason for this was that books at that time were hand-copied; they were therefore in very short supply and very expensive. The few available books became the monopoly of the elite who bought them mainly for use as decorations and status symbols. Thus, while a tiny elite read (or rather admired) the meager supply of books, the mass of the people could only communicate through the oral or story form of language.

Merrill and Lowenstein (1979:41) notes that “Starting from ancient times, the print media have proliferated all over the world. They have also remained popular channels of mass communication, in spite of the phenomenal development of the electronic media in the modern world media.”

#### 1.1.2. Printing Press

However, the print medium received a radical boost with the emergence of printing. This technology evolved in China in the ninth century and in Europe in the fifteenth century. With this development, it “became possible to produce numerous copies of the same book without resorting to the laborious process of hand-copying”

(MacBride et al., 1981, p.6).

This situation was to change even more drastically when Johann Gutenberg of Mainz, Germany, invented metal movable type in about the year 1450. Prior to this invention, movable type was either made of wood or copper - both kinds were developed by the Chinese in 1221 and 1445 respectively (Sandman et al., 1976:30). Gutenberg's breakthrough in technology revolutionized the art of printing and ushered in the modern European age of printing when, six years later, he printed the famous Gutenberg Bible. So rapid was book development that by the year 1500, there were more than 35,000 different titles (books) in existence, and more than 15 million copies of these books altogether were in circulation throughout Europe; nearly all of them were printed by the Gutenberg method (Okunna, 1999, p.8).

## 2.1. ELECTRONIC COMMUNICATION

Electronic communication "occurs when the exchange of information between two entities (communication) includes the use of technology" (*Wikipedia*, 2015). Communication technology uses channels to transmit information (as electrical signals), either over a physical medium (such as signal cables), or in the form of electromagnetic waves. Communication technology is also known as telecommunication, a word often used in its plural form, telecommunications, because it involves many different technologies (Agba, 2001, p.2). This section discusses this form of technology starting from its earliest development in the wireless telegraph down to the digital age.

### 2.1.1. Wireless Telegraph

The development of the telegraph marked the beginning of a new epoch in international communication. This era saw the evolution of more complex equipment that facilitated point-to-point communication (Agba, 2002, p.247). The wired telegraph had arrived in Europe for the first time. The invention was made possible through the contributions of certain scientists. Among them are the Frenchman Claude Chappe, the Englishman Robert Hooke and the German Samuel Thomas Von Soemmering. Bittner (1989: 330) notes, "Chappe developed a series of semaphore an arrangement of mechanical flags -that relayed messages in France in the 1790s. The first expansion of the telegraph in America was the link between the East and West Coasts." Through several other additions the wired telegraph, the latter's perfection stage strode up to the wireless telegraph in 18% through Guglielmo Marconi's inventions.

### 2.1.2. Radio

The development of radio was part of man's quest to send and receive information over space faster than "wired telegraph" This idea led to the development of radio in 1895 when Guglielmo Marconi (1874-1937) an Italian in his early 20s, carried out the first experiment transmission of wireless signals, and later sent the first wireless (radio) communication signals using Morse Code over a 3km distance (Daramola, 2003, p.79).

Early in 1873 James Clerk-Maxwell, a physicist put forward the theory of electromagnetic energy, supported by mathematical proofs based on observation of visible light. This was the kernel of a *Treatise on Electricity and Magnetism* in 1873 by Clerk-Maxwell. Following the work of Heinrich Hertz in the 1880's he found that radio waves existed and had the same properties as light waves. In 1888, Heinrich Hertz published a paper "*Electro Magnetic Waves and their Reflection*" in which he reported laboratory demonstrations, which confirmed James Clerk-Maxwell's concept (Daramola, 2003, p.79).

James Clerk-Maxwell used theory to generate predictions about the way hypothetical radio waves should behave, basing his predictions on the known behaviour of light, Hertz devised experiments which bore out Clerk-Maxwell's predictions. "He generated radio energy, transmitted it, detected it, and measured it. As a result of his efforts, Radio waves are till today being called Hertzian waves and "Hertz" (abbreviated "hz or Hz") has been adopted internationally as a short way of expressing the frequency of waves "cycle per second" (Head, 1972).

If James Clerk-Maxwell and Heinrich Hertz were good theoretical physicists and researchers, Guglielmo Marconi was a practical man who merged theory with practical application. In 1896, he applied for patent in England. By 1899, he sent messages across the English Channel. In 1901 he succeeded in sending a signal across the Atlantic.

In fact, the French date its invention from 1891, when Edouard Branly first demonstrated his "coherer", a radio-wave detection device. The Russians celebrate "Radio Day" on May 7, commemorating a demonstration made by Aleksandr Popov in 1895. Even Marconi English patent of 1896, often regarded' as the practical beginning of radio communication depended essentially on prior discoveries by French, British, Russian and German scientists. Guglielmo Marconi was in 1909 awarded Nobel Prize of physics (Head, 1972). Having got a patent in England in 1896, Marconi established a company a year after to exploit his invention. In 1900, he formed a second company, Marconi International Marine Communications. Earlier in 1899 he had extended the British Marconi to the U.S as America Marconi. American Marconi became Radio Corporation of America on Nov. 20, 1919. In 1920 A.N. Goldsmith developed the first uncontrolled radio receiver, a set with a single knob for tuning, another for volume and a built in speaker. It was better than all the receivers previously developed.

The social utility of radio was instantly felt as stated by Daramola (2003, p.81):

For a long time, Marconi's invention was of assistance to ships on the sea. Sometime in January 1909, for instance, hundreds of passengers were saved on the high sea in a collision involving two ships, White Star Republic and Florida, an Italian ship. The Star Republic sank. But before then, its operators radioed for help. The message brought rescuers who saved all but six out of the 556 passengers on board. The 1,500 passengers in the Florida were also moved into the waiting rescue ship. The same thing happened to the famous Superliner Titanic ship, which on its maiden voyage from England with over 2,000 passengers on board in April 1912, struck an iceberg and sank. But due to the courageous wireless operator, a rescue ship, Carpathia, came to pick up the over 700 survivors of the accident.

### 2.1.3. Television

The idea of matching radio signals with pictures to be transmitted on the air and received at home began shortly after success was recorded in radio communication. The efforts of a number of scientists and inventors from Germany, USSR, United State of America, Britain and France finally led to the emergence of telecasting in the early 1900 but the experiments had started in the 1800's when still and moving pictures were sent by wire and this led to development of the wire photo service. But practical television proved difficult (Bitnner, 1989).

The discovery, in 1873 by James Clerk-Maxwell of the theory of electrical conductivity, which says variation in the electrical conductivity of selenium when exposed to light, would aid the sending of pictures through electromagnetic wave, led to experiments in television. Studies into this theory continued and 11 years after, Paul Gottlieb Nipkow a German developed mechanical disc-scanning device which could break down pictures to short distances but it could not provide sharpness of detail. Two American inventors, Charles Francis Jenkins and Ernest F. W. Alexanderson, in cooperation with John Logie Baird of Britain, showed interest in Nipkow's work and experimented with the mechanical disc to broadcast television. Francis Jenkins (1867-1934) demonstrated a crude but workable system in 1925 and in 1930 established a company to exploit his invention.

In 1928, John Baird recorded success with his experiment when he publicly demonstrated television broadcasting. But he had obtained an experimental television license in 1926 and persuaded BBC to start experimental telecasting in 1929. The experiment continued through 1935 with gradual improvements. In 1936, the BBC started regular public telecasting using both Baird and Electrical and musical industries Ltd (EMI) rival electronic system.

In America H.E. Ives pioneered work on a complete electronic television system in the 1920's. He publicly demonstrated his invention (closed-circuit TV picture) in 1927 (Head, 1972). But all these efforts could not last because of the mechanical disc scanning being used, which among other inherent problems could not provide sharpness of detail. Almost at the same time, Karl F. Braun (1926), introduced a cathode-ray tube as a good device in telecasting. A giant step had been recorded in television in 1922 when an American scientist Philo T. Farnsworth, developed an electronic scanning system that made television- broadcasting possible. It was in 1929, however, that Vladimir K. Zworykin, a Russian-born U.S. resident, demonstrated a practical television system. Zworykin had, in 1923, employed the principles of iconoscope and kinescope to produce the first television camera tube suitable for broadcasting and the picture tube used in television receivers. He got patent for the pickup tube the same year. His works were demonstrated at the New York World's Fair in 1939. Another inventor, Allen B. Du. Mont also improved on the cathode ray picture tube and by 1939, he had produced the first television set and marketed it in the year's Fair. Earlier, in 1935, Edwin H. Armstrong developed the Frequency Modulation (FM) broadcasting which was adopted for the transmission of television sound in 1941 In 1930, more than 40 engineers and TV inventors were brought together in Camden, New Jersey including Zworykin when the General Electric, RCA and Westinghouse merged their television research programmes together. During the 1930's the team tackled and solved all the outstanding problems relating to television system. American television indeed emerged as a mass medium in 1948. Thus the golden age of radio was drawing to a close.

Experimental telecast began in the 1920s and particularly in the 1930s when television fever mounted. In 1932, the National Broadcasting Company, a child of Radio Corporation of America (RCA), began experimental telecast from the Empire State building and, in 1936, RCA began field test of all electronic system from the Building. By 1939, the NBC started regular television service, with President Roosevelt of America broadcast, the first president to make such broadcast at the year's New York World Fair. By February 1, 1940, the first official network television programme was broadcast in the United States of America.

In Britain, the British Broadcasting Corporation began a regular television service from New Alexander Palace Station in 1936. Japan, too, was busy with its research but this was halted by World War II (1939-1945) and the economic problems that followed the war. After the war, Britain could not continue its effort in television production because of the economic problems. As a result the United States moved far ahead of the rest of the world. In 1946, a year after the Second World War, the age of television boom began in the U.S.,

resulting in making television part of most American homes by 1960. On December 7, 1941, the Columbia Broadcasting Service presented the first television newscast. It would therefore be safe to say that television was not “invented” but rather scores of individuals contributed to its development. Television as a commercial medium is essentially the result of teamwork.

There has, however, been a technological advance in television. The early days television screen, which was as large as a family box or portmanteau has been improved upon. Small and portable television sets have been produced to replace the old sets. In the 1970’s projection television system, which could beam programmes unto a screen as large as 7ft, was developed. The live broadcast of early days had also been reduced with the production of videotapes, which came into being in 1956, but its use started in 1959. The videotape makes instant replay of programmes possible.

In 1965, the first commercial communication satellite called Early Bird was launched. With the satellite, worldwide telecast was made possible. Remote broadcast of programmes covering sports; political events and so can be rebroadcast from a TV station, equipped with outside broadcasting van (OB Van). The van is basically a small TV station, equipped with studio equipment to put a programme on the air.

### **2.2.3. Satellite Technology**

A very transforming development in electronic communications is the emergence of the satellite technology. This is following the dream of the science fiction writer, Arthur C. Clarke, in 1945, about the possibility of a space-craft in orbit 36,000 kilometres (22,000 miles) above the equator – a dream fired by the war-time rockets used by the Germans (Agba, 2001).

In August 1960, the first communication satellite in the form of a giant reflective balloon known as ECHO was launched. Two years later, that is, in 1962, another satellite called the Teistar was put into orbit. The Teistar made history by being the first satellite to relay black and white TV signals across the Atlantic Ocean.

In 1964, the International Telecommunications Satellite Organisation (INTELSAT) was formed. The INTELSAT devised a system, which linked continents to ensure same-day news coverage from virtually anywhere in the world. The first satellite in the INTELSAT series was known as Early Bird and “birding” has become the accepted term for the entire process of transmitting news by satellites. INTELSAT with its headquarters in Washington D.C. has a membership in excess of one hundred countries, most of which are represented by their national telecommunications organizations (Agba, 2001).

There are many satellite organisations like the INTELSAT in the world. Some of them are the International Marine Satellite Organisation (INMRSAT), British Telecommunications (BT), and Hughes Communications Incorporated. Also, among the various manufacturers of satellites are Aerospatial, Alcate Espace, Marconi GEC and Hughes Space and Communications.

Today, there are several international, news-gathering agencies. The new generation of broadcasters which has appeared is brought about by developments in portable KU Band earth stations coupled with the developments in portable news-gathering equipment of which the most important is the ENG camera.

According to Agba (2001, p.77) “Of the various news organizations like the BBC, ABC, NBC, CBS, ITN, WTN, Visnews and CNN, it is the CNN that, no doubt, hold the ace. It has pioneered the way.”

Satellites are very useful in newspapering. They make it possible to beam the facsimile of a newspaper page anywhere in the world where the receiving station and printing facility are located. The satellite system supports telephone but does not serve in any way as telephone (McCarthy, 2007).

McCarthy (2007, p.33) observes that the following possibilities have also been credited to the satellite system:

- i. live global transmission of pictures and sound from both fixed and mobile transmitters;
- ii. easy creation of new radio and television networks and super stations;
- iii. much more programming available to cable television systems,
- iv. many of which have had unused cable capacity;
- v. creation of a direct-to-home network;
- vi. assembling of an audience on a national or regional basis for a programme or programmes which might not attract a viable audience in a smaller geographical area and
- vii. a cheaper way for business to communicate over long from roof-top to roof-top if desired (Defleur and Dennis, 1988:255-6).

### **3.1. COMPUTER/INTERNET AGE**

The computer/Internet age (also known as the Computer Age, Digital Age, or New Media Age) “is a period in human history characterized by the shift from traditional industry that the industrial revolution brought through industrialization, to an economy based on information computerization. The onset of the Information Age is associated with the Digital Revolution, just as the Industrial Revolution marked the onset of the Industrial Age” (Wikipedia, 2015). Writing on this phase of evolution of mass communication, Leonard (2008, p.13) notes as follows:

During the information age, the phenomenon is that the digital industry creates a knowledge-based society surrounded by a high-tech global economy that spans over its influence on how the manufacturing throughput and the service sector operate in an efficient and convenient way. In a commercialized society, the information industry is able to allow individuals to explore their personalized needs, therefore simplifying the procedure of making decisions for transactions and significantly lowering costs for both the producers and buyers. This is accepted overwhelmingly by participants throughout the entire economic activities for efficiency purposes, and new economic incentives would then be indigenously encouraged, such as the knowledge economy.

This section discusses this phase in the evolution of mass communication technologies beginning with the computer and ending with the internet and its multiple platforms.

### **3.1.1. Computer**

The nucleus of the modern communication technology is the computer (Agba, 2001, p.67). The capacity of the computer to keep signals in its memory and provide visual and even audio interpretations to such signals makes it an invaluable hardware for information dissemination. Obviously, the computer offers faster, cheaper, more efficient and effective means of achieving quality in newsgathering, processing and dissemination. The merging of computer communications and telecommunication is called TELEMATICS (McCarthy, 2007).

Because of the “solid state” technology and integrated circuits, the contemporary computer is a thousand times lighter, smaller, of greater speed and less power-consuming than the first electric computer, ENIAC, invented in 1946 (McCarthy, 2007).

Initially, the principal input into computers was numbers essentially for arithmetical computation. Today, it has gone beyond that. It can now process non-numerical inputs like spoken and written languages. It can translate languages, retrieve information and process pictures. Programming the computer to perform a desired task (software) has also advanced; it permits the use of communication lines to tie in a whole series of terminals to a single computer or a set of computers and so, can be shared by many users with individual terminals or consoles. This is referred to as on-line, time-sharing computing system (Agba, 2001, p.67).

It is clear from this, that the speedy information abilities of the computer make electronic reporting a lot easier. The role of the computer in news gathering and processing on the Internet is fantastic. So is the part it plays in electronic publishing, which we shall examine in chapter eight (Leonard, 2008).

### **3.1.2. The Internet**

Internet is the diminutive of International Computer Networks (Agba, 2001, p. 74), and it “is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide” (“Internet”, n.d.). The Internet simply comprises computers that are globally connected with each other such that messages are shared in the form of text, pictures, sound, graphics and in a wide range of other forms. It is a system that holds together millions of computers in a single global network to enable exchange of data. While access to the Internet was originally via a computer set, technological growth has ensured that Internet is now accessed via other multimedia facilities such as mobile phones and iPads which have made the Internet a lot more mobile.

The history of the internet is tied to the combat-readiness of God’s own country. At the height of the cold war, interest was generated in a bombproof network. The Advanced Research Project Agency (ARPA) of the United States Department of Defence, had, in the 1960s, specifically in 1968, says a report, carried out an experiment in computer networking. A small group of experts was assigned to design a special link between a number of essential government computers spread across North America. The machines were to be connected in such a way that should a part of the network be damaged, say in a nuclear strike, the surviving parts would still remain linked so that data would continue travelling toward the intended destination.

The idea, according to Hughes and Len McGrane (1996), “caught the attention of university professors who needed to communicate with colleagues in other universities, and software was developed that made it possible for different types of computer systems and small networks to connect with each other.” The Internet had begun.

Academics were able to send electronic messages with greater speed than letter or fax. An academic, say a professor, could also type his research findings into his office computer, hook it up to his telephone with an inexpensive connection-in-a box called modem, and invite anyone anywhere with a computer and a modem to link up to his office and read the research report. It was, as Hughes and McGrane said, “a simple, powerful concept. Suddenly, virtually anyone with a computer, a modem and a telephone line could arrange to make available to the world any document or picture or opinion they wanted to promote.” It can be deduced from the quoted point that the interconnection of the computers was graduating in scope.

Furthermore, by the 1980s, it was found out that large government department and universities had begun using the Internet as it developed further. What’s more, commerce powered it up even more. With the availability of the World Wide Web, the Net has become a familiar territory to millions of ordinary computer

owners. And this growing popularity of the Internet is attributed to the use of browsers (to be explained later).

The power and social impact of the Internet is indeed enormous and revolutionary. “Its influence in the contemporary world has been so monumental that hardly is there any who has not experienced its impact in one way or the other, directly or indirectly, actively or passively” (Duru, 2011). This phenomenal impact of the Internet is aptly summarized in these words of Agba (2002):

The Internet today is the most technologically advanced medium of communication.

It is a multimedia information superhighway that facilitates business, sports, politics, entertainment and other endeavours across international boundaries. It is a technological revolution of monumental capabilities. In fact, it is the information revolution that has turned the world into a “global village”. It is man’s most ambitious attempt yet to miniaturise the physical planet earth. It is a system which, using basic telephony and broadcasting principles, allows messages, sounds, film pictures and text to be transmitted simultaneously or simply from one computer anywhere in the world to another.

The accounts of the earliest origin of the Internet have been given in somewhat conflicting terms. However, it has been popularly noted that the origin of the Internet is linked with the Cold War era (Agba, 2001, p. 56; Baran, 2009, p.300). The research that produced the technology began as a quest to protect military information even if a given information storage facility was destroyed in an enemy attack. Thus began the effort to develop a “bomb proof” information storage system spearheaded by the Advanced Research Project Agency (ARPA) of the US Department of Defence. It was this effort that eventually culminated in what is today known as the Internet (Agba, 2001, p.56).

From this beginning, the Internet “has grown like an octopus to affect different spheres of human endeavour” particularly with the invention of the World Wide Web (WWW) by Tim Beners-Lee in 1992 (Severin and Tankard, 2001, p.366). The net provides superfluous information via networking globally to affirm what McLuhan tagged as information superhighway. Reddick and King (2001, p.27) aptly capture this thus:

Clearly, there is a lot of information out there – too much to catalogue. In fact, nobody knows exactly what is available online and where it is. The growth represents both an opportunity and a hazard...The opportunity is that, sitting at your desk, you can access information that you may not have been known existed. The hazard is that you waste a lot of time looking at information that is not relevant to the projects on which you are working.

The Internet has significantly been integrated as a major communication system globally, particularly in the developed countries. Estimates indicate that about 2, 405, 518, 376 representing 34.3% of the world’s population use the Internet (Internet World Stats, 2012). According to Kim (2004) cited in Baran (2009, p.308-309), the younger a person is, the greater the likelihood he or she has access to the Net.

The Internet offers a wide range of services that include electronic mail (e-mail), Internet relay chat, Usenet, search engine, Internet broadcasting, e-library, Internet telephony and video conferencing, among numerous others. We highlight a number of them below.

- **Electronic Mail (E-Mail)**

First, and perhaps of greatest importance for many subscribers to online services, is e-mail. Computer connectivity between nations has allowed a new form of correspondence to evolve and this, though seldom noticed, has changed people's daily lives the world over. People now send more words to others, more often, than ever before (Goessl, 2010).

E-mail has conferred some wonderful advantages. It is now possible to communicate easily and rapidly with people thousands of miles away. E-mail has become a seemingly indispensable part of people's lives, and correspondence by post seems tedious and slow by comparison. Yet, perhaps because e-mail, in removing previous barriers of geography and distance, reduces some of the perceived burdens of the old paper and post systems, it is used almost incessantly!

The flood of words generated by e-mail is matched by a similar drowning in discourse through the myriad discussion groups and “chat rooms” of all kinds now available on the Internet. Some of these are outgrowths from, or affiliated with, formal publications or professional societies. In such cases participants usually take considerable care in their submissions to discussions. As with e-mail, however, the ease with which contributions to a discussion group can be made sometimes encourages those who might otherwise not be bothered to get involved — even if this is in a less than productive manner (Goessl, 2010).

- **Usenet**

Usenet is a service of the Internet which enables newsgroups to have access to group discussions on specific topics. In many ways, the Usenet is the kitchen table of the Internet – the common ground where no subject is taboo. According to Agba (2001, p.61), there are “thousands of newsgroups and, depending on the area of interest, an internet user can belong to any. Once such a user has had access to Usenet, subscription to any of the

groups is at no cost.”

It is observed that a variation of the Usenet idea is the Bulletin Board System (BBS). The difference between the BBS lies in the fact that with BBS, all files are located on a single computer, usually maintained by one person or group. However, files are representative of the varied interests, viewpoints, and moral values of users of the system. For this reason, discretion is needed in using them.

- **Internet Relay Chat**

Chat is another service of the Internet. This service enables a group of people using aliases to exchange messages among themselves at the same time. The chat is most popular among young people. Once connected, the user is brought into contact with a myriad of other users around the world. *Wikipedia* (2013) defines it as follows:

Internet Relay Chat (IRC) is a system that facilitates transfer of messages in the form of text. The chat process works on a client/server model of networking. IRC clients are computer programs that a user can install on their system. These clients are able to communicate with chat servers to transfer messages to other clients. It is mainly designed for group communication in discussion forums, called channels, but also allows one-to-one communication via private message as well as chat and data transfer, including file sharing.

Chat rooms, or chat channels feature a particular theme such as science fiction, movies, sports or romance. All messages typed within a chat room appear almost simultaneously on the computer screens of all participants for that chat room.

A chat room is compared to a party of people mingling and talking at the same place and at the same time. The interaction is done by typing short messages.

- **Publishing**

The internet also serves as a platform for publishing books, newspapers, magazines, journals and all sorts of reading materials. Such online publishing saves a lot of cost for the publisher and affords the reader greater convenience of storage and mobility given that large quantities of data are stored up electronically without involving large and heavy volumes of paper (Goessl, 2010).

There are lots of exclusively online newspapers and magazines in existence today while, at the same time, most hardcopy newspapers and magazines have got online editions (Okoye, 2008). Similarly, many online publishing companies operate today, offering thousands of online (soft copy) titles for readers, while many “traditional” publishers have got online presence, offering readers online versions of their hardcopy titles.

- **Internet Broadcasting**

Internet broadcasting simply implies relaying broadcast signals (audio or audio-visual) via the Internet. This time, rather than the conventional radio and television sets, the Internet becomes the platform for receiving broadcast signals. According to Okoye (2008), over 21,000 Internet radio and over 11,000 Internet television stations operate across the world. Similarly, many radio and television stations that transmit via the conventional broadcast platform now relay their signals via the Internet as well. For instance, the BBC, VOA and many other reputed international broadcasters now stream their audios and videos on the Internet.

- **Social Networking**

The Internet helps people to connect and network with each other across unlimited geographical and cultural spread. This Internet service is accessed by logging on to any of the social networking sites such as Facebook, YouTube, Twitter, etc. These sites offer people the opportunity to stay connected and share a wide range of information with other people. Such information could come in various forms such as text, photo, video and audio.

This service is popularly referred to as the social media. It has so much permeated today’s world such that its penetration has risen monumentally in the developed world with developing countries like Nigeria fast becoming integrated in the new trend. Quoting report by Nielson, *Wikipedia* (2011), writes that, “In the U.S. alone, total minutes spent on social networking sites have increased to 83 percent year-over-year, with similar increases experienced in other parts of the developed world and of course with the Third World making steady significant progress.”

#### 4.1. CONCLUSION

Our discussions so far has traced the origins of the mass communication technologies from the earliest period of human communication to the age of advanced electronic communication. While the print communication was the first to evolve, the tremendous advancements in the electronic technologies have ensured an increasing merger or convergence of the two technologies; a phenomenon that has made mass communication more dynamic and efficient than ever before. From the paper, it is evident that mass communication has throughout its history remains technologically driven – beginning with the more primitive to the more advanced technologies. All this would tend to lend some credence to the postulation of the technological determinism theory that human communication is continuously determined and shape by technology – the medium is the message.

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