

# The evolution of radio



## **Introduction**

Radio is a broadcasting electronic medium which involves the transmission of audio signals by the modulation of specially produced electromagnetic waves via frequencies that travel with a speed just below that of light (Garratt, 1994). They are called specially produced waves since the normal properties of radiated waves are systematically altered (modulated) in terms of phase, amplitude, pulse width and frequency as they pass through an electrical conductor (Garratt, 1994). In radio, the broadcasted audio information is carried through air and vacuums by oscillating electromagnetic waves. The oscillating electromagnetic fields can then be received and decoded back to the original audio information by a simple radio receiver (Garratt, 1994).

The radio phenomenon was among the greatest inventions of the early 20th Century, one that would forever change the way people communicated, interacted and lived. This brief essay will focus on documenting the Radio as a technological advancement of the 20th century and primarily on its effects on the humanities. The essay readily identifies the time period that saw the emergence of radio, the environment that precipitated this extremely innovative technology and the circumstances that triggered an invention that would forever change communication.

The object of the paper is to discuss how radio affected the arts within the time frame that it was invented. Towards the end of the essay, a discussion on how radio has evolved over time until today and the effects it has had

during the later time periods of its evolution path, will be covered. The essay will then terminate on a validation of the thesis.

### Thesis Statement

The emergence of radio during the early years of the 20th century had a lasting impact on creative arts and humanities in general since it gave them a wider audience and imposed high standards of quality, thereby triggering an advancement of the arts while at the same time improving social participation and debate on ranging socio-economic issues highlighted via the regular broadcasts.

### Background to the Evolution of Radio

Several events led to the invention of the radio. This section of the essay will discuss the background and climate existing at time that radio was invented. Once radio hit the airwaves, its impact was forever indelible, especially in the humanities (Briggs, 1961). It affected the world in a way that no other form of mass communication had ever done before and one that would later form the foundation for the Television and the internet at the close of the 20th Century (Fisher, 2007). The invention of radio followed three key phase that begun with the discovery and experimentation with electromagnetic waves (Garratt, 1994). Once the scientist from Europe and America had learnt enough about electronic waves, some went further to successfully experiment with wireless communication from using the electromagnetic waves (Fisher, 2007).

Within no time, scientist had assimilated wireless communication enabled over long distance by using decoding and encoding systems of electromagnetic waves (wireless telegraph). This set the stage for the third stage in which radio broadcasting was initiated and ultimately commercialization (Garratt, 1994). This process leading to the invention of radio was a hybrid effort of numerous inventors, developers, engineers and businessmen (Garratt, 1994).

The modern concept of radio has a controversial origin with multiple inventions accredited with pioneering the technology that saw the birth of the so called wireless telegraph, the modern radio (Garratt, 1994). Before man could transmit speech and sound over distance without the use of wires, numerous scientists and practitioners had experimented with the idea over many decades and individually contributed to the culmination of the radio invention (Garratt, 1994).

Ever since 1878 when David E. Hughes realized that sparks could be heard with a telephone receiver miles away while experimenting with the carbon microphone, progressive inventions never stopped (Garratt, 1994). Hughes developed the carbon-based detector that was able to detect signals up to several hundred yards (Garratt, 1994). This was demonstrated in 1880 to the Royal Society before he abandoned his research (Garratt, 1994). Thomas Edison came along in 1885 and patented experiments that furthered this initial realization to a coupling electrostatic system that worked with elevated terminals. The Marconi Company later purchased Edison's U. S. Patent (465, 971) on 29 December 1891 (Garratt, 1994).

It was based on this patent that Nikola Tesla experimented with wireless transmissions as he studied the potential of high frequency in 1891 (Garratt, 1994). With continued research, he was able to invent fundamentals of radio broadcasting in 1893 (Garratt, 1994). His electricity experiments as presented to the Philadelphian Franklin Institute and the then National Electric Light Association would later inspire the principles of radio's wireless technology, his work having contained all important elements incorporated in the radio systems later on (Fisher, 2007).

Oliver Lodge would then experiment with wireless telegraphy based on Tesla's insight at the then Oxford University Museum of Natural History. Professor Oliver Lodge assisted by Alexander Muirhead would in on 14 August 1894 demonstrate a transmission of radio signals from a Clarendon laboratory building to the Oxford lecture theater (Garratt, 1994). Alexander Stepanovich Popov then used this work to build the first ever radio receiver in 1895 and presented it to the Russian Physical and Chemical Society that same year. Popov's pioneer receiver was simply an improved version of Lodge's radio receiver (Garratt, 1994).

That was the stage at which radio would then be commercialized, with Marconi being awarded the first ever British patent (12039) to transmit improved electrical signals and impulses, a radio. By 1897, Marconi had established the first ever radio station at England's Isle of Wight. In 1898, he opened the first wireless factory at Hall Street, Chelmsford with an employee base of 50 people (Briggs, 1961). Mistakenly, Marconi was for long credited as the inventor of radio, the above description helps document the fact that Marconi was only the pioneer of commercial radio and not the radio

technology (Garratt, 1994). As for radio, it was invented by a series of inventors who progressively developed the technology that would later enable radio broadcasting (Garratt, 1994).

### Effects of the Radio Technology on the Arts

Once radio was commercialized, it became a prime entertainment source for most families. Music industry changed, with the first ever opportunity to broadcast it (Garratt, 1994). The radio helped individuals listen to music as a form of entertainment instead of the gramophone. Artists themselves became more popular than they had ever been for recording music.. Just like in other types of productions aired on radio, the radio imposed a standard of quality that locked out any substandard production (Fisher, 2007).

Many musicians, who had hitherto been called the best due to popularity, gained a new milestone to spread their fame (Fisher, 2007). The quality of music and art in general, started being measured for quality with the radio yardstick. If it was not on radio, it was not good enough. The radio also became a platform for social discussions and debate, informing the general populace about issues of political, social and cultural importance. Many art forms also adopted the radio by evolving hitherto localized productions to be transmitted via radio (Fisher, 2007).

Drama for instance, emerged as a broadcasted content when it had only been available in theatres. News also became available to a larger audience, even those who could not read and write. The newspaper had been an elite medium but the radio came to bridge that gap and inform even the illiterate populations (Fisher, 2007). Documentaries also emerged as a new form of

storytelling, by exploiting the advantages of a larger audience and voice quality (Fisher, 2007).

### Evolution of Radio since Its Emergence

Since the evolution of radio, those years when radio was the only available form of real-time mass communication, the radio technology has advancement enormously through a progressive process of betterment (Garratt, 1994). The advancement has had progressive impacts in the humanities encourse. There have been several generations whose way of life have been defined by the radio, a case in point the rock generation of Europe in the 1980's and the soul generation in the US in the 1970's (Fisher, 2007).

A vacuum tube detector was invented by the Westinghouse engineers to improve transmission before Reginald Fessenden conceived the amplitude modulation (AM) radio transmission (Scannell's and Cardiff, 1991). The AM broadcasting was used until the early 1930's when the single sideband and the frequency modulation transmission was invented (Briggs, 1961). Radio would eventually be used to transmit visible pictures as the pioneer medium of television in Europe and North America by 1940. It would not be until 1960, when Sony introduced the first transistorized radio small enough to fit in a shirt pocket. By 1980, transistor radios had replaced the vacuum tube radios completely (Garratt, 1994).

By 1985, Telstar had launched digital radios and a while later, the U. S. Navy had introduced satellite navigation radio (GPS radio). In 1990, radio experimenters introduced personal computer audio cards that could process

radio signals. By 1994, the U. S. Army had launched software-defined radio that could be programmed virtually to any radio. That marked the emergence of the modern digital radio transmission (Garratt, 1994).

## Conclusion

As the essay has detailed, the emergence of radio during the early years of the 20th Century had a lasting impact on creative arts and humanities in general since it gave them a wider audience and imposed high standards of quality, thereby triggering an advancement of the arts while at the same time improving social participation and debate on ranging socio-economic issues highlighted via the regular broadcasts. The continued improvement of radio has helped open up social debate circles, increase public participation in governance, advanced public knowledge and improved entertainment forms.