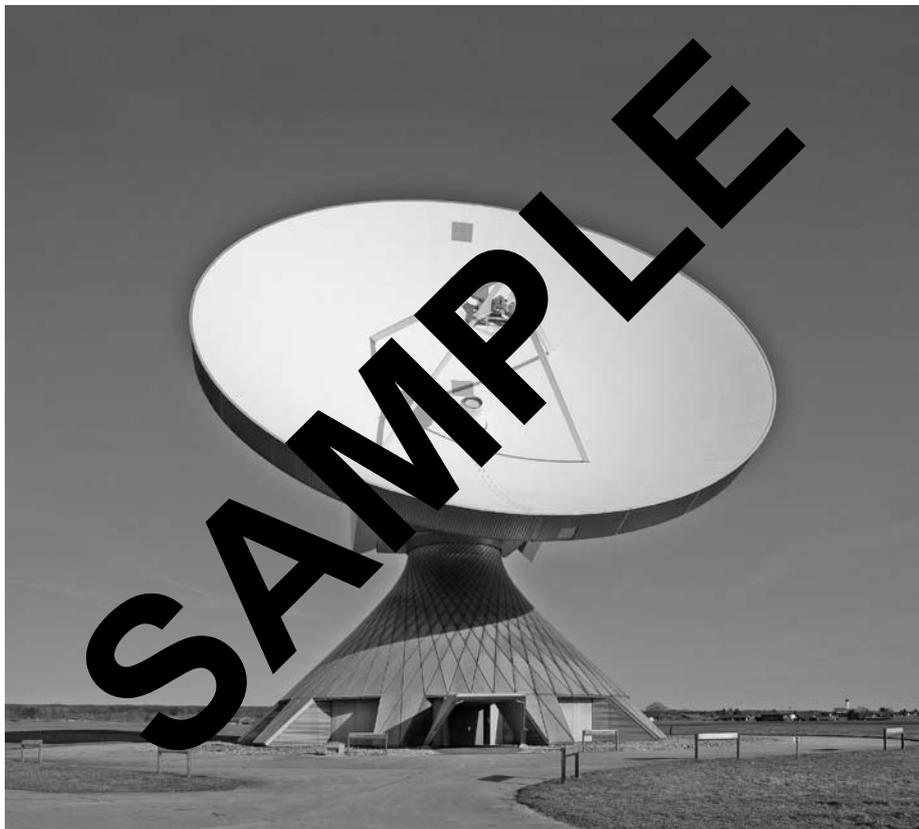


Communication & Technology

by Jane Bourke



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SAMPLE

Communication Timeline 1

Take a step back through time to relive some of the major advances in the field of communication.

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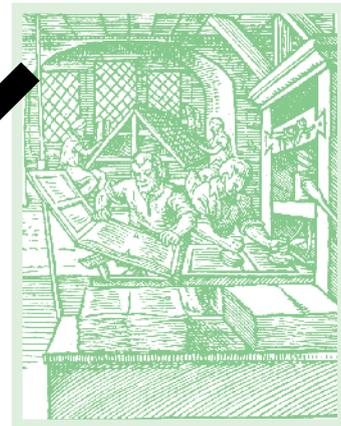
- 3500 ← ● Phoenicians develop the first alphabet, the Egyptians develop hieroglyphics and the Sumerians develop cuneiform writing.
- 1270 ← ● The first encyclopedia is written in Syria.
- 900 ← ● The very first postal service is established in China.
- 776 ← ● Homing pigeons are used as a means of communicating news about the winners of the Ancient Olympic Games.
- 500-170 ← ● The first use of papyrus rolls as a writing surface is recorded.



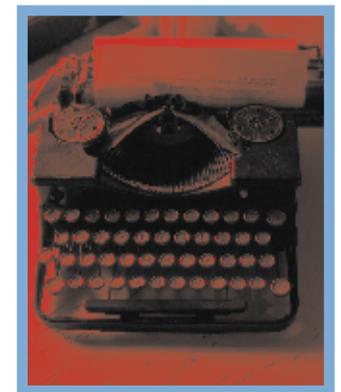
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AD

- 100 ← ● The first bound books start to appear.
- 305 ← ● The first wooden printing press is used in China.
- 1049 ← ● Movable type is invented in China.
- 1450 ← ● Newspapers start circulating around Europe.
- 1455 ← ● A printing press with a movable metal type is invented by Johannes Gutenberg.
- 1560 ← ● The Camera Obscura is used to create primitive images.
- 1650 ← ● The first daily newspapers start appearing in Europe.
- 1740 ← ● Henry Mill invents the typewriter in England.
- 1826 ← ● The first photograph is produced by Joseph Nicéphore Niépce in France.
- 1831 ← ● Joseph Henry invents the first electric telegraph in America.
- 1835 ← ● Morse code is invented by Samuel Morse. Soon after he invents the first long distance electric telegraph line.
- 1843 ← ● The first fax machine is used and Alexander Bain takes out a patent for his invention.
- 1867 ← ● The first modern typewriter is used in America.
- 1876 ← ● Thomas Edison invents the mimeograph - a primitive office copying machine.
- 1877 ← ● Edison then patents the first phonograph (for recording sound) and Alexander Graham Bell invents the first electric telephone. In the same year, high speed photography is developed by Eadward Muybridge showing motion images.
- 1887 ← ● Emile Berliner invents the gramophone which allows recording.
- 1888 ← ● The Kodak roll film camera is patented by George Eastman in America.
- 1894 ← ● Guglielmo Marconi modifies the wireless telegraphy system to transmit radio signals.
- 1898 ← ● The first telephone answering machines are used when Valdemar Poulsen invents and patents the telegraphone, which is the first machine to use magnetic sound recording and reproduction. Around this time, the first use of loud speakers is recorded.



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1896 Swedish Telephone. Wikimedia Commons

Communication Timeline 2

- 1902** ← ● Guglielmo Marconi is the first to transmit radio signals across the Atlantic Ocean.
- 1906** ← ● The first talking motion picture is presented by Thomas Edison.
- 1914** ← ● The first international telephone call is made.
- 1916** ← ● The first radio tuner is invented, providing a range of different stations to choose from.
- 1923** ← ● The first form of television is invented by Vladimir Kosma Zworykin in Russia. It is known as an iconoscope with a cathode-ray tube. Two years later John Logie Baird transmits the first television signal.
- 1927** ← ● The first talking motion picture is released by Warner Brothers in America.
- 1930** ← ● The "Golden Age of Radio" begins.
- 1944** ← ● The first computers are used in government departments. The "Age of Information" begins.
- 1948** ← ● The long playing record (vinyl) is popular, playing at 33 rpm. The transistor radio is invented.
- 1949** ← ● Network television begins in America. It is introduced in New South Wales and Victoria in Australia in 1950. Other Australian states and New Zealand soon followed.
- 1958** ← ● The first photocopier is invented (the Xerox) which leads to the invention of the first working fax machine.
- 1969** ← ● The first version of the Internet (ARPANET) is developed.
- 1971** ← ● Floppy disks arrive on the scene along with microprocessors.
- 1972** ← ● Cable television begins in America. It begins in Australia and New Zealand in 1990.
- 1976** ← ● The Apple home computer is invented. National and international television programming using artificial satellites begins.
- 1979** ← ● The first mobile phone network is developed in Japan.
- 1980** ← ● Also in Japan, the SONY walkman is invented.
- 1981** ← ● The first IBM Personal Computer (PC) is sold.
- 1984** ← ● The Apple Macintosh is released as a personal computer for home use.
- 1985** ← ● Compact discs and CD-ROMs become popular. Compact discs start to replace vinyl records and cassette tapes for music albums.
- 1994** ← ● The United States government opens up the Internet for world use and the World Wide Web (WWW) is born. It allows computers all over the world to talk to each other. The Information Superhighway is opened up across the globe.
- 1999** ← ● E-mail, SMS (text messages) and Internet Relay Chat (IRC) become very popular as a means of instant communication all around the world.
- 21st century** ← ● Video technology is incorporated in chatlines on the WWW as well as mobile Century phones. Camera mobile phones become popular.
- ← ● Face to face mobile calls are offered by network carriers.



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Electrifying Electronics

In the early 1800s the basic telegraph was developed by Samuel Morse. By 1840, news was able to travel as fast as the speed at which electricity could travel down a wire cable. The invention of the telegraph lay the foundation for electronic communication and in 1876, a patent was taken out by a Scottish born inventor by the name of Alexander Graham Bell. The patent was for one of the most significant inventions to date, and it had a huge impact on the future of communication.

Bell is the man credited with the invention of the first ever telephone. Soon after, the first telephone network was established in America, and using Bell's design it quickly spread to most cities.

Suddenly, businesses were able to have instant communication with other businesses in other cities and states. This invention can be compared to the way e-mail communication has allowed people to send letters and information to people thousands of kilometres away, all in the blink of an eye. Technology had certainly improved since the days of the visual telegraph and carrier pigeons.

Electronics was not invented by any one person. Several great scientists and physicists contributed to this field which resulted in the development of the television, radio, record player and tape recorder. One of the most important discoveries was that electromagnetic waves could travel through space at the speed of light. This theory was proved in the 1880s by another German physicist, Heinrich Hertz. Hertz's ideas allowed other inventors to develop machines that used these sound waves as a means of communication.



Samuel Morse, circa 1900 - 1920. Image courtesy of the Detroit Publishing Company at the Library of Congress, USA.

The Visual Telegraph - An Ancient Form of Chinese Whispers?

A primitive telegraph was devised that allowed messages to be relayed between cities using a series of towers and crossbars which would be moved to spell out a message. Each tower had an observer who viewed the person in the tower before using a telescope. The observer would carefully interpret the message that they received and would then pass on the message to the next tower's observer until the message reached its final destination. This visual or optical telegraph was like a giant game of Chinese Whispers. This system had been developed by the Ancient Greeks hundreds of years before.



Electromagnetic Waves

One of the most important achievements in the field of electronic communication was the proof that electromagnetic waves existed. This concept was first put forward by British physicist James Clark Maxwell, who in 1864 first suggested that electric and magnetic fields act together to produce energy in the form of electromagnetic waves. He believed that light was an electromagnetic wave that was visible and that there were other "invisible" waves. It wasn't until the late 1880s that Maxwell's theories were proved to be true. Heinrich Hertz, a German physicist, proved that these waves existed and that they were longer than light waves.

The electromagnetic waves are the result of the movement of electric charges in space. These sound waves travel faster than the speed of light and move in straight lines. Scientists continue to make new discoveries about electromagnetic waves. In the 1960s short waves were developed using a laser which allowed ultraviolet and infrared rays to transmit voices and images.



James Clark Maxwell



Heinrich Hertz

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Universal Communication



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In this modern age, it is possible to use artificial satellites as a means of global communication, and trips to the Moon and Mars have demonstrated that radio communication is possible in space. However, at this point there has been no communication with any life forms within our solar system or indeed the Milky Way Galaxy.

There are billions of stars in the universe that are similar to our Sun. There is a strong chance that one of the stars will have planets orbiting it, just as Earth orbits the Sun in our solar system.

Scientists and astronomers believe that the best way to find out about other life forms is to search for technology that they may have developed. They believe that if an intelligent extraterrestrial life form exists, it must be in a very, very distant galaxy which is too distant for us to travel to using today's spacecraft technology. Such a life form could be a billion light years away, yet they may have more advanced technology than we have on Earth.

The quest to find life is known as the Search for Extraterrestrial Intelligence (SETI) and the SETI Institute is the organisation concerned with



all research of this nature. This organisation is a non-profit, self-funded, educational and scientific body. Originally NASA was responsible for its administration, however its funding was cut in 1993 and it is now funded by private organisations.

Research Technology

SETI is constantly searching for a signal from outside of the solar system using advanced technology and huge research laboratories. It is widely thought that the only way other life forms could be detected would be through radio wave signals. Researchers, through the use of large radio telescopes, have concentrated their efforts on stars that are similar to our Sun.

One of the first SETI projects took place in 1960 when two stars were examined at a single radio frequency. Several more projects soon followed and the entire sky was scanned for weak radio signals. A recent project involves the Allen Telescope Array. This is basically a field with at least 350 Gregorian dishes reaching up to six metres tall, lined up at the Hat Creek Radio Observatory site in the United States.

Project Phoenix is another extensive research project and aims to detect signals that are either deliberately beamed our way or are merely being transmitted from another planet. Sometimes radio interference disrupts scientific searches. This interference can come from natural sources of radio waves such as exploding stars (supernova) or from Earth's artificial satellite communication system.



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