

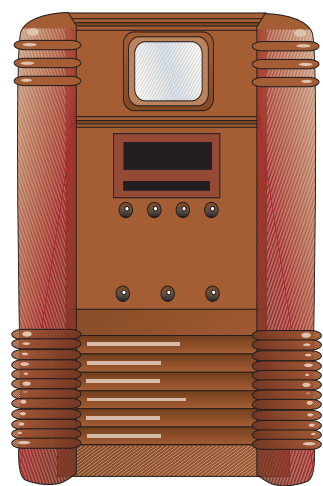
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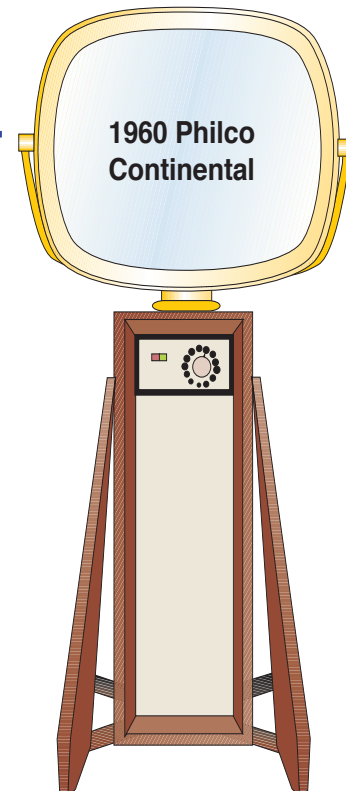
Exploring the realms of history, science, nature and technology

TELEVISION

Almost everybody has one, and most of us watch too much of it. But few of us know how a television works or how new technologies will change the television. The TV has transformed entertainment and education around the world.



1939 RCA TRK9



1960 Philco Continental

In a word

The word **television** entered the English language in 1907. It is derived from the Greek word *têle*, meaning "far," and the Latin word *visio*, which means "sight." It is based on the idea that televisions received moving pictures over distances using telegraph lines. The abbreviation **TV** was introduced in 1948.

The basics

To understand how early televisions worked, think of it as three parts that work together. A **TV camera** would turn a picture and sound into a signal, a **TV transmitter** would send the signal through the air, and the **TV receiver** would capture the signal and turn it back into pictures and sound.

Early television

The first generation of televisions used a spinning disc and a neon lamp to produce a blurry, orange-tinted picture about the size of a business card. These televisions, built between 1926 and 1935, are called **mechanical televisions**.

Meanwhile, other people were experimenting with electronic televisions using **cathode-ray tubes (CRT)**. The tubes projected electrons onto the screen, creating a much higher-quality image than the one achieved by mechanical televisions. In the early 1940s, most TV stations converted from mechanical systems to the electronic television broadcasting system.

Analog broadcasting

Early television broadcasting evolved from existing radio stations. Early stations began broadcasting both audio and video with **analog signals**.

Analog transmissions took up a lot of channel space, or bandwidth. Initially, radio relay towers were used to handle the load.

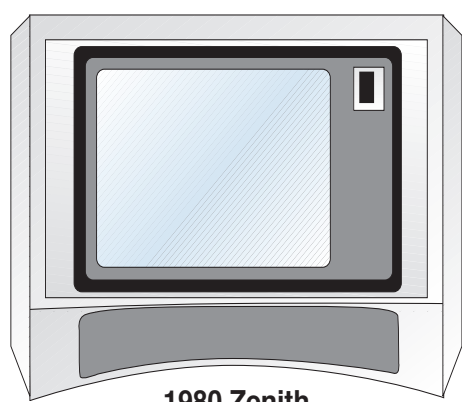
In the 1930s, telephone cables were found to work well for long-distance television transmissions.

By the 1950s, a cross-country microwave radio relay network was designed. This system was replaced by satellites in the late 20th century.

Analog television could be wireless (terrestrial television and satellite television) or distributed over a cable network.

Size matters

The first TV screens were no bigger than a business card. The demand for larger TV screens seems insatiable. Early large-screen TVs were heavy and clunky when compared with today's screens, which are becoming ever larger. Recently, the first foldable TV was unveiled; it has a whopping 165-inch screen that disappears into the floor. The downside is a \$400,000 price tag.



1980 Zenith big-screen console



2018 LED large-screen display

TV screen sizes are measured diagonally, from corner to corner.

Television technology today

Over the past 20 years, TVs have become not only bigger, but lighter, thinner and smarter. A smart TV connects to the internet, allowing users to stream music and videos, browse websites and view photos.

Some examples of more recent TV technology and how they work:

Liquid Crystal Display (LCD) TVs were first conceived in the 1960s. LCD technology uses a unique state of matter called **liquid crystals**. Once very popular, this kind of TV is getting harder to find.

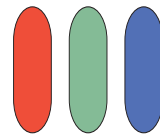
LED TVs are illuminated by **light-emitting diodes**. This TV technology has been around since 2007 and allows the TVs to be thinner.

Organic light-emitting diode (OLED) TVs have an **organic fluorescent compound** (small molecules or polymers) that emit light. They first hit the market in 2012. OLED TVs have better color quality, but over time this can degrade. Almost as flat as wall-paper, OLED TV technology is evolving quickly.

Quantum light-emitting diode (QLED) TVs have only been around for a few years. Tiny nanoparticles called **quantum dots** provide improved color and brightness. QLED screens can be larger, last longer, and are more affordable than OLED TVs.

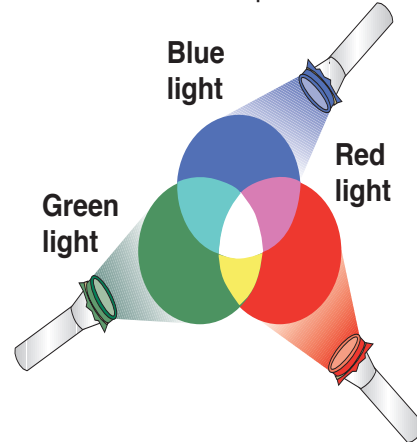
Pixels

Images you see on your television are made up of pixels (picture elements). Each pixel has three dots that glow red, green and blue. Generally, the more pixels a screen has, the higher its **resolution**. The resolution of a flat TV can be defined as the physical size of the screen, measured by the number of pixels.



Light and color

The first television pictures were in black and white. In the 1960s and '70s, color TV transmissions and TV sets were developed.



Sunlight and electric light are **white light**. There are three primary colors of light — **red, green and blue**. The combination of these three primary colors creates white light.

Going Digital

The transition from **analog** to **digital** broadcasting began around 2000. Digital technology can produce TV programming with movie-quality picture and CD-quality sound. Digital technology can also transmit large amounts of other data into the home, which may be accessible by using your computer, tablet, cellphone or TV.

High-definition television (HDTV) is a type of digital service. HDTV provides high-resolution programming in a wide-screen format.

Top TV shows in the United States

Based on Nielsen Media Research, 29 of the 30 most-watched broadcasts are Super Bowls. Super Bowl XLIX, with 114.4 million viewers, is No. 1.

The most-watched non-Super Bowl broadcasts:

- "M*A*S*H" (series finale) 1983 (106 million viewers)
- "Dallas" ("Who shot J.R.?" episode) 1980 (83.6 million)
- "Cheers" (series finale) 1993 (80.5 million)
- Winter Olympics (ladies' singles figure skating) 1994 (78.8 million)
- "The Day After" (television film) 1983 (76.7 million)

Did you know?

It is estimated that average U.S. households get a new TV every 6.9 years.

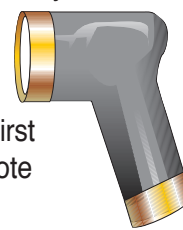
On average, people spend two to five hours a day watching television.

The first TV **remote control** was created in 1950 by Zenith and was connected to the television by a wire.

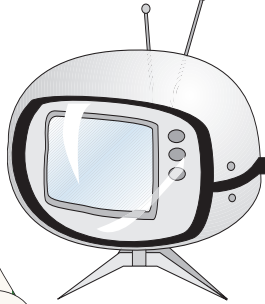
In 1955, Zenith's Flashmatic became the first wireless remote control.

The **video cassette recorder (VCR)** was launched in 1963 in the U.K. It allowed viewers to record their favorite TV shows for the first time.

Until 1987, Iceland did not receive any TV broadcasts on Thursdays.



"Howdy Doody" was a popular TV show that ran from 1947 until 1960. Howdy Doody was a wooden puppet. Each episode opened with the question, "Say, kids, what time is it?"



1971 Panasonic Flying Saucer

SOURCES: World Book Encyclopedia, World Book Inc.; <https://www.explainthatstuff.com/>; <https://www.homestratosphere.com/>; www.tvhistory.tv/; <https://www.techradar.com>

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