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A BRIEF HISTORY: FROM "ALÓ" TO CELLULAR PHONES

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Summary

This article explores the evolution of communication from Antonio Meucci's invention of the telephone to modern cell phones. It details patent disputes between Meucci and Alexander Graham Bell, the telegraph's impact on telephony, and the expansion of telephone networks. Tivadar Puskás' role in developing telephone exchanges and the origin of the term "Hello" are also highlighted.

Keywords: telephone, Alexander Graham Bell, Antonio Meucci, telegraph, telecommunications, history of technology.

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Central Telefónica manual

The president had no one to call him

It was 1877 when Rutherford Hayes, the nineteenth president of the States, inaugurated the technological revolution by receiving a call from Alexander Graham Bell, located 20 kilometers away. He was the first president with a telephone, but this honorary gesture had, for him, no practical application, since he had no one to call him, and no one to call, almost no one had one. The telephone had only been patented a year earlier.

For being a good husband he invented the telephone

In 1854 Antonio Meucci, an Italian inventor, created the "teletrofono" (not a very commercial name). An instrument never seen before that allowed, by means of electricity, to send acoustic signals over long distances. Meucci created the device to communicate from his office with his wife, who suffered from rheumatism and could not move. The distance was not really great, but it was already a telephone. Meucci did not patent his invention because he had scarce resources, and preferred to patent other inventions that he considered more economically beneficial, such as a water filter.

Six years later, in 1860, he presented the telephone to the public (it was still unpatented), in the demonstration he transmitted, over a great distance, the voice of an Italian singer, but, surprisingly, no one bid for the invention. Eleven years later, finally! in 1871 he considered the possibility of someone buying the patent for his invention, and as he could not afford the price of a definitive patent, Meucci looked for a non definitive, but less expensive way; patenting the invention on an annual basis. He registered it in 1871, and renewed it in both 1872 and 1873.

In 1876 Alexander Graham Bell filed the patent for the telephone. Meucci, as expected, asked his lawyer to file a claim with the Patent Office, since he had patented it before, even on an annual basis. Unfortunately, he discovered that all the documentation referring to his patent had been mysteriously lost (things have not changed much since then). As you can see, Bell's company was very powerful.

Many years of litigation followed, and it was even discovered that bribes had been involved. All this led to the U.S. Government charging Graham Bell with fraud, who, because of his many resources, was able to delay the trial until Meucci's death in 1889.

Although belatedly, Meucci is being given due recognition. In 2002, in an issue of the Official Bulletin of the U.S. House of Representatives, Meucci was recognized as the true inventor of the telephone.

The birth of the telephone was closely related to the evolution of the telegraph. This system, created in 1837 by the American Samuel Morse, was immensely useful and popular during the 19th century and part of the 20th century, reaching transatlantic connections in 1866.

Long before he invented the telegraph, Morse was painting (he was a painter and photographer) a portrait of General Lafayette in Washington when his wife died in Connecticut. The news reached him a week late. The delay with which the information had arrived made him think of a faster and more direct system of communication.

Based on the advances that had been made in electromagnetism, he began to develop the electric telegraph. This was completed in 1837, and consisted of transmitting electric pulses through a cable; some short and others long, which carried the alphabet coded in Morse code, also created by the inventor. At the destination, the message was decoded. An electromechanical mechanism translated the pulses into a sequence of dashes and dots, printed on a paper tape, which was read by a Morse code translator.

The telegraph and Morse code came into use 7 years after their invention. The first communication was made on May 24, 1844 between Washington and Baltimore, and the message sent was: "What God has created" (it seems that Morse was not very modest).

Improvements in the telegraph, such as the transmission of several messages simultaneously over a single wire, among others, paved the way for the birth of the telephone.

Back to the telephone. The first subscriber to telephone service, even before the White House, was an electrical manufacturer in Boston; he connected his shop to his home. These terminals were numbers: "1" and "2", which show how primitive the system was, since they were assigned in pairs, with a line that was built expressly to join both terminals. Thus, if you wanted to talk to different houses or offices, you had to contract an equal number of lines and pairs of devices. The calling process was also very primitive, you had to whistle in the earphone to alert that you were calling (nowadays there is a "ringtone" that is like this). Then, the interlocutors took turns to speak and listen, since they had a single device for sound input and output. Something like the toy telephone that children used to make, joining two plastic cups with a string.

But, in the United States, this situation began to change in 1878, with the first telephone exchange, which was manually operated. It was a great advance; subscribers, at least in the metropolis, instead of being connected on separate lines, were intertwined in networks, and connections were made by female operators (women were always employed) who plugged and unplugged plugs into huge panels full of connectors. In this way they connected the caller's telephone with that of the requested number.

He also invented the expression: ALÓ!

The manual telephone exchange was invented by Tivadar Puskás, a Hungarian belonging to the nobility of his country. Puskás was in the United States planning improvements to the telegraph system when Alexander Graham Bell patented the telephone. This led him to adopt a new approach to his work, and he decided to contact the American inventor Thomas Alva Edison, to whom he presented his idea of building a telephone exchange. According to Edison, "Tivadar Puskás was the first person to suggest the idea of a telephone exchange.

Puskás' idea materialized in 1877 in Boston. And with the birth of the telephone exchange, the expression "ALÓ" for answering calls was also born. When Puskás answered the caller, he enthusiastically shouted in Hungarian: "hallom", which means "I am listening".

During his lifetime, Tivadar Puskás did not receive the recognition his contribution deserved. However, in 2008, the National Bank of Hungary issued a commemorative coin in honor of Puskás.

With the incorporation of the exchanges, there was a significant increase in the number of users, which, in turn, brought other novelties, such as: the voluminous telephone directory, and the substitution of subscribers' names for numbers, since, although the operators in small communities knew their neighbors, this did not occur in large cities.

Several technological improvements also accelerated in the rest of the 19th century. Devices with an earphone and a transmitter were created, making it possible to talk and listen at the same time. This was made possible by the introduction of double wiring, which also reduced interference. Another advance was the use of the carbon microphone, which optimized sound quality. But, domestic telephones were still powered by a battery, and had to be recharged with a hand crank. Eventually the power supply was provided by exchanges through the network itself.

These developments also led to unforeseen problems, such as eavesdropping by operators, violating customer privacy. And the one that led to the creation automatic exchanges. This is described below.

A lawsuit between funeral homes put a lot of women out of work Almon Strowger was a businessman who owned a funeral home in Kansas City. One day, without knowing , his business began to lose customers. He pondered that the only change in the business a few months earlier had the addition of a phone line, which, in theory, should have increased the number of customers, not decreased it. He did not understand the reason for this negative effect until it was discovered that one of the local operators was the wife of a competing owner, and all calls requesting the services of a funeral home went to his competitor. Strowger took his complaint to the operator's superiors, but they did nothing. So, he decided to settle it himself.

His idea was to create an automatic switchboard to avoid self-interested call forwarding, and to dispense with the operators, who also liked to listen in on conversations.

Strowger designed and made a model of his invention, and thanks to his nephew William's knowledge of electricity, they made it work. In 1889 they applied for a patent, which was granted in 1891. Once they had the patent, they looked for a capitalist partner who could finance the manufacture and commercialization of their invention. On November 3, 1892, the first automatic telephone exchange, with capacity for 99 subscribers, was installed in La Porte (Indiana). The presentation was a great success, and some called it "the first telephone exchange without a single fault: The first telephone exchange without a single skirt.

Improvements were made that considerably increased the capacity of the plants, which produced a growth in their quantity and coverage, reaching Europe in 1898. That same year Strowger decided to leave the business: he sold the patent for $1,800 and his interest in the company for $10,000. He retired to Florida and, again, went back to setting up a funeral parlor (it seems that was his thing). He died on May 26, 1902, at the age of 62.

In 1916 Bell's company purchased Strowger's invention for $2.5 million.

The 20th century saw an acceleration in the growth of the technological prodigy of telephony. The United States opened the century with three million users and one terminal for every 60 inhabitants. Europe also showed a colossal expansion: in Sweden, there was one device for every 115 people. The interconnection of exchanges was optimized, and dial-wheel telephones appeared, which accelerated local calls. This further reduced the work of the operators, who focused on long-distance calls. These were made from special booths, with devices different from domestic ones. The connection took about 15 minutes to establish, as the operators had to link one exchange to another, and this one to another, until they reached the call recipient.

At the same time, with the arrival of radio, the "Telephone Newspaper", which had been in use since the 1890s and was a great success in Europe, became obsolete. It consisted of a news, music and novel reading service, which worked by simply lifting the handset.

In the 1920s, a new improved telephone was introduced, with the transmitter and receiver integrated into a single tube, but still connected to a box containing the electromechanical components and the ring bell. In the following decade, these components were placed inside the base of the apparatus. Other changes were: the introduction of the "tone" when picking up the , indicating that the desired number could now be dialed. And prefixes for direct connection to different regions within the same country. International calls would have this automation some time later, with the arrival of the sub-marine cable in the fifties. And in the 1960s, with the launch of the Telstar telecommunication satellites.

In the 1960s, telephones with keys instead of dials and cordless models (hybrids of telephone and radio) also appeared. Later, in the 1970s, the "fax" arrived, allowing documents (texts or images) to be sent and received by telephone.

The fax consists of a scanner, which digitizes texts and images of the original document (converts them into a series of numerical values: zeros and ones), a modem, which allows connection via telephone with another similar device; and the printer, which, upon receiving a new document, prints it on paper, producing a copy of the transmitted document.

Why is it called "cellular"?

All these advances became universal at the beginning of the 1980s, but quickly eclipsed by an even greater technological leap: mobile telephony. Its impact on society could not have been more dramatic. Cell phones are co-stars, along with computers and the Internet, of the digital revolution and, consequently, the information age. Mobile telephony has raised remote communication to unsuspected heights, with a portability and multi-functionality never before imagined. A fundamental element in this evolution, which freed the flow of information from the transmission cable, was the application of the cellular network concept, in which each signal repeater antenna constitutes a cell covering a given space. The coverage area is assembled by a huge network of cells. The signal is transmitted from one cell to another cell (hence the name "cellular"). This ensures continuity of coverage, as the signal passes from one antenna to another. In addition, it allows cell phones to operate efficiently with small batteries, because it does not require high output signal power to reach the repeater antenna. There is always one nearby.

Cell phone whistleblower!

It is worth mentioning that this cellular phone system was of great help in clearing up a crime committed in July 2008. The cell phone activity records dismantled two alibis of the psychiatrist Edmundo Chirinos, who was being investigated for the murder of one of his patients. But let's transcribe some fragments from the book Sangre En El Diván, written by journalist Ybéyise Pacheco, after a thorough investigation of this shocking case.

.... "Telephony is able to tell not only who you are talking to, but where you are, what your route is, there are even experts who can determine how fast you are moving. It goes from one an- tena to another: one leaves you unattended and you link up with the next. It was determined that the route was indeed the one she (the victim) had told her friend, as well as Chirinos' route, from the Country Club to the doctor's office". "When he was on the run, he had the order of

We were following him by telephone. And he was moving in that area, in Santa Fe, Caurimare, because even though he kept his phone turned off, he was committing the awkwardness of turning on the phone to listen to messages; the antenna was activated, and we could know

where he was going”.....

Let’s go back to the cell phone: the first cell phone was introduced by Motorola in 1973; a tiny analog device (the size of a large shoe), over a kilo, and the battery would run out after 20 minutes of use. More than a phone, it was a status symbol.

First generation, or 1G, mobiles debuted in the 1980s. They were based on cellular transmissions, but still analog. Roaming, or international coverage, appeared.

The 1990s saw the definitive generalization of cellular use with the emergence of 2G, of a completely digital nature and based on an almost universal standard: the GSM network (Global System for Mobile Communications). Cell phones became smaller, thanks to the evolution of microchips, batteries and printed circuits. The 2G devices, in addition to sending and receiving SMS messages, could act as an agenda, calculator, photo and video camera, MP3 player, and the most advanced models could access the Internet. However, multimedia content, which was becoming increasingly larger, required greater memory capacity and faster data transmission speeds. This problem gave rise to third-generation 3G mobiles, which were specially designed for surfing the Internet and downloading broadband content; “smartphones” or smartphones, based on a wide variety of platforms. The Blackberry smartphone, the touchscreen iPhone or the Android operating system are some of the representatives of this generation.

In the meantime, fixed telephony completed its digitalization and global interconnection, integrating itself into the information traffic with the so-called new technologies.

, Smartphones have put Internet browsing from a cell phone on a par with that of any conventional PC, integrating the user into the global communications network and information flow, through social networks and applications, such as: Instagram, Facebook, WhatsApp, Telegram, Periscope, etc. In addition to serving effectively as a GPS, having programs and applications, which previously could only be used on a PC, and many other features.

Today, 4G technology is ten times faster than 3G. And advances continue to develop the 5G generation.

Things have changed a lot since that president who had no one to call him.