

GRAMAPHONE



A gramophone record, commonly known as phonograph record (in American English), vinyl record (when made of polyvinyl chloride), or simply record, is an analog sound storage medium consisting of a flat disc with an inscribed, modulated spiral groove. The groove usually starts near the periphery and ends near the centre of the disc. Phonograph records are generally described by their size ("12-inch", "10-inch", "7-inch", etc.), the rotational speed they are played at ("33", "45", "78", etc.), their time capacity ("Long Playing"), their reproductive accuracy, or "fidelity", or the number of channels of audio provided ("Mono", "Stereo", "Quadraphonic", etc.) Gramophone records were the primary medium used for commercial music reproduction for most of the 20th century, replacing the phonograph cylinder, with which they had co-existed, by the 1920s. They were largely supplanted by the late 1980s by digital media, leaving the main-

stream in 1991.[1][2] However, they continue to be manufactured and sold in the 21st century. The vinyl record regained popularity by 2008, with nearly 2.9 million units shipped that year, the most in any year since 1998. [3] They are used predominantly by young adults, as well as DJs and audiophiles for many types of music. As of 2009, vinyl records continue to be used for distribution of independent and alternative music artists. More mainstream pop releases tend to be mostly sold in compact disc or other digital formats, but have still been released in vinyl in certain instances. A device utilizing a vibrating pen to graphically represent sound on discs of paper, without the idea of playing it back in any manner, was built by Edouard-Leon Scott of France in 1857. While the mechanism, known as a phonautograph, was intended solely to depict the visual characteristics of sound, it was recently realized that this depiction could be digitally analyzed and reconstructed



as an audible recording. Just such an early phonoautogram, made in 1860 and now the earliest known audio recording, has been reproduced using computer technology.

In 1877, Thomas Edison developed the phonautograph into a machine, the phonograph, that was capable of replaying the recordings made. The recordings were made on tinfoil, and were initially intended to be used as a voice recording medium, typically for office dictation.

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Celluloid, an early plastic which was far less fragile than the earlier wax (in fact it would have been more or less indestructible had it not been for the plaster of paris core). By November 1918 the patents for the manufacture of lateral-cut disc records expired, opening the field for countless companies to produce them, causing disc records to overtake cylinders in popularity. Edison ceased production of cylinders in 1929 (reputedly the day before the Wall Street Crash). Disc records would dominate the market until they were supplanted by the Compact Disc, starting from the early 1980s

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As early as 1894, Emile Berliner's United States Gramophone Company was selling single-sided 7" discs with an advertised standard speed of "about 70 rpm". [5]

One standard audio recording handbook describes speed regulators or "governors" as being part of a wave of improvement introduced rapidly after 1897. A picture of a

hand-cranked 1898 Victrola shows a governor. It says that spring drives replaced hand drives. It notes that:

"The speed regulator was furnished with an indicator that showed the speed when the machine was running so that the records, on reproduction, could be revolved at exactly the same speed...The literature does not disclose why 78 rpm was chosen for the phonograph industry, apparently this just happened to be the speed created by one of the early machines and, for no other reason continued to be used." [6]

tubes, and using the amplified signal to drive an electromagnetic recording head. A wide frequency range could now be recorded with a big increase in playback volume limited only by the pitch of the grooves in the record.

Although the technology used vacuum tubes and today would be described as "electronic", at the time it was referred to as "electrical". A 1926 Wanamaker's ad in The New York





Times offers records "by the latest Victor process of electrical recording".[9] It was recognized as a breakthrough; in [1930], a Times music critic stated:

"...the time has come for serious musical criticism to take account of performances of great music reproduced by means of the records. To claim that the records of succeeded in exact and complete reproduction of all details of symphonic or operatic performances... would be extravagant. [But] the article of today is so far in advance of the old machines as hardly to admit classification under the same name. Electrical recording and reproduction have combined to retain vitality and color in recitals by proxy."[10]

Electrical recording preceded electrical home reproduction (much as digital recording preceded digital home reproduction), because of the initial high cost of the electronics. In 1925, the Victor company introduced the groundbreaking Victor Ortho-

phonic Victrola, an acoustical record player that was specifically designed to play electrically recorded discs, as part of a line that also included electrically-reproducing "Electrolas."

The acoustical Orthophonics ranged in price from US\$95 to \$300 (about US\$1140 to \$3600 in year 2007 dollars), depending on cabinetry; by comparison, the cheapest Electrola cost US\$650 (about US\$7500 in year 2007 dollars).

The Orthophonic had an interior folded exponential horn, a sophisticated design informed by impedance-matching and transmission-line theory, and designed to provide a relatively flat frequency response. Its first public demonstration was front-page news in the New York Times, which reported that:

"The audience broke into applause... John Philip Sousa [said]: 'Gentleman [sic], that is a band. This is the first time I have ever heard music with any soul to it produced by a mechanical talking machine.' ... The new in-

strument is a feat of mathematics and physics. It is not the result of innumerable experiments, but was worked out on paper in advance of being built in the laboratory.... The new machine has a range of from 100 to 5,000 frequencies[sic], or five and a half octaves.... The 'phonograph tone' is eliminated by the new recording and reproducing process."[11]

Gradually, electrical reproduction entered the home. The clockwork motor was replaced by an electric motor; the 'needle' and diaphragm (the 'sound box') was replaced with a 'pickup' using either a steel or sapphire stylus, and a transducer to convert the groove vibrations into an electrical signal. The exponential horn became an amplifier and loudspeaker.[citation needed]

The playing time of a phonograph record depended on the turntable speed and the groove spacing. At the beginning of the 20th century, the early discs played for two minutes,



the same as early cylinder records. [15] The 12-inch disc, introduced by Victor in 1903, increased the playing time to three and a half minutes. [16] Because a 10-inch 78 rpm record could hold about three minutes of sound per side and the 10-inch size was the standard size for popular music, almost all popular recordings were limited to around three minutes in length.

For example, when King Oliver's Creole Jazz Band, including Louis Armstrong on his first recordings, recorded 13 sides at Gennett Records in Richmond, Indiana, in 1923, one side was 2:09 and four sides were 2:52–2:59.[17] By 1938, when Milt Gabler started recording on January 17 for his new label, Commodore Records, to allow longer continuous performances, he recorded some 12" records. Eddie Condon explained: "Gabler realized that a jam session needs room for development." The first two 12" recordings did not take advantage of the extra length:

"Carnegie Drag" was 3:15; "Carnegie Jump", 2:41. But, at the second session, on April 30, the two 12" recordings were longer: "Embraceable You" was 4:05; "Serenade to a Shylock", 4:32.[18][19]

Källa: <http://www.flickr.com/search/?w=all&q=gramophone&m=text>
http://en.wikipedia.org/wiki/Gramophone_record