

# A Cinema Sound Glossary

**Analog vs. digital sound** — The difference between analog and digital sound is explained best in terms of the analog and digital soundtracks on the Dolby Stereo SR•D print shown in Figure 1.

The width of the analog soundtrack varies in a way that is directly *analogous* to the varying sound waves of the original sound. All analog formats have an equivalent varying parameter, such as the strength of the magnetic field on recording tape, or the side-to-side swings of the groove on a phonograph record.

The digital soundtrack, on the other hand, consists of tiny dots that are optical representations of the "1's" and "0's," or *digits*, of the computer language to which the original sound is converted. These digits also can be recorded as magnetic pulses on tape, or as microscopic pits on CDs.

Digital sound can be of very high quality, and resistant to wear and tear. Without sophisticated techniques such as the Dolby AC-3 process used on SR•D prints, however, it takes a lot more space to record or transmit digital sound than analog.

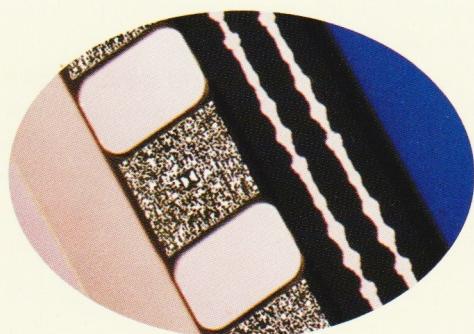


Figure 1: A Dolby Stereo SR•D print has both analog and digital optical soundtracks.

**Atmospherics** — Low level background sounds, such as wind or traffic noise, which add to the reality of a scene. These sounds are sometimes recorded separately at a shooting location, creating what is called a "wild track" for mixing into the soundtrack later.

**Dolby noise reduction** — Complementary (record-play) signal processing systems developed by Dolby Laboratories to reduce the noise inherent in recording media without affecting the sound being recorded.

Dolby A-type noise reduction, the original professional Dolby system, is used on Dolby Stereo 35 mm optical soundtracks. The Dolby B-type, C-type, and new S-type systems are for consumer formats such as the audio cassette.

**Dolby SR (spectral recording)** — The newest and most powerful professional Dolby signal processing system, used for the analog soundtracks on Dolby Stereo SR and SR•D prints. As well as

providing greater noise reduction than the original Dolby A-type system, Dolby SR also permits recording a wider frequency range, particularly at high signal levels.

**Dolby Stereo** — Dolby Laboratories' umbrella term for its film sound technology. It involves the recording of a film's soundtrack, the soundtrack itself on the release print, and its playback in the theatre. With the advent of the new digital soundtrack there are now four Dolby Stereo formats (see Figure 2).

"Dolby Stereo" also is used in advertising and on the marquee to identify the presentation of a Dolby Stereo release print in a theatre equipped with a cinema sound processor manufactured by Dolby Laboratories (see **Stereo**).

PRINT SIZE	SOUNDTRACK TYPE	SIGNAL PROCESS	CHANNEL CONFIGURATION
35mm	Optical	Dolby A-type (analog)	Left, Center, Right, Surround
35mm	Optical	Dolby SR (analog)	Left, Center, Right, Surround
70mm	Magnetic	Dolby A-type (analog)	Left, Center, Right, Surround, Two Subwoofers (Stereo surround optional)
35mm	Optical	Dolby AC-3 (digital)	Left, Center, Right, Left Surround, Right Surround, Subwoofer

Figure 2: There are now four Dolby Stereo formats.

**Dolby Surround** — The home surround sound format derived from Dolby Stereo film sound.

**Dubbing theatre** — A special theatre equipped expressly for mixing film soundtracks. The sound systems in dubbing theatres where Dolby Stereo films are mixed and in Dolby Stereo cinemas are calibrated to the same standards. This makes it possible to achieve in the cinema the sound the director heard—and intended audiences to hear—when the soundtrack was mixed.

**Dynamic range** — The range between the loudest and softest sounds a sound format or system can reproduce properly.

**Effects** — Sound effects, i.e., the non-musical elements on a soundtrack other than dialogue.

**Foley** — A special soundstage used exclusively for recording sound effects (footsteps, doors closing, etc.).

**Magnetic soundtrack** — Narrow stripes of oxide material (similar to the coating on recording tape) that are added to a developed release print, then recorded in real time with the film's sound. For playback in the theatre, projectors are equipped with magnetic heads like those on a tape recorder.

This technology was introduced in the 1950s to provide stereo sound in the cinema, and its sound quality can be very high. Both prints and theatre maintenance are costly, however, so today there is just one remaining magnetic format, Dolby Stereo 70 mm six-track.



**Mix** —As a noun, the blend of dialogue, music, and effects which comprises a film's soundtrack. As a verb, to assemble and balance these elements electronically, thereby creating the final soundtrack.

**Optical recorder** — The machine that transforms a completed mix on magnetic tape into an optical soundtrack. It creates a photographic negative of the optical track, which is combined ("married") with a negative of the picture to create a release print (see **Printer**).

**Optical soundtrack** — Photographic stripes adjacent to the picture on a 35 mm movie print, varying in some way with the variations in sound (see Figure 1). Analog optical soundtracks vary in width, while digital optical soundtracks are recorded with patterns of dots (see **Analog vs. digital sound** and **Variable area**). Because optical soundtracks are printed at high speed at the same time as the picture, the release prints are economical, as opposed to magnetic prints whose soundtracks are recorded in real time as a separate step.

As the film is pulled through the projector's soundhead, a narrow light beam passes through the moving soundtrack, causing the intensity of the beam to vary. The varying light falls on a solar cell, which creates electrical signals that ultimately are converted back to sound by the theatre's loud-speakers.

**Printer** — A machine that exposes raw film stock to negatives of the movie's soundtrack and picture, at speeds up to twenty times faster than film is projected, to create a release print. The rapid, simultaneous printing of sound and picture contributes significantly to the relatively low cost of 35 mm optical release prints (see **Optical soundtrack**).

**Release print** — The actual film played in the theatre. A release print consists of reels approximately 20 minutes long which are played consecutively without interruption either by alternating between two projectors, or by splicing the individual reels together into one large reel called a platter.

**Stereo** — Sound recording and reproduction by more than one (mono) channel. In home music reproduction, "stereo" means two channels (left and right). In the film industry, however, "stereo" is often understood to include a surround channel (see **Surround sound**). Movie stereo also should have a center channel to keep on-screen dialogue centered for viewers seated off to the sides.

Film presentations specifically identified as being in Dolby Stereo will include at least four channels, with left, center, and right speakers behind the screen, and surround speakers at the rear and sides of the auditorium (see "Dolby Stereo"). Other "stereo" presentations, however, may consist of no more than a single mono speaker behind the screen with some surround speakers at the back.

**Subwoofer** — A loudspeaker dedicated to reproducing the very low bass. Dolby Stereo 70 mm magnetic soundtracks and the digital soundtrack on Dolby Stereo SR•D provide separate channels specifically recorded with low bass for subwoofer reproduction.

**Surround sound** — The reproduction of ambience, atmospherics, and occasional special effects recorded on one or more dedicated channels, and played through speakers placed along the sides and rear of the auditorium to surround the audience.

**Variable area** — The technical term for an analog optical soundtrack whose width varies with the sound. A Dolby Stereo analog optical soundtrack sometimes is referred to as an SVA track, for "stereo variable area."

While the variable area track has been the standard for decades, another type, variable density, was tried at an earlier time. This track varied in photographic shading with the sound, rather than in width.



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