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G722: An international telecommunications standard for data reduction used for limited-bandwidth speech over digital telephone networks; used only in basic ISDN applications.

gaffer: (1) On a film set, the head electrician, now more commonly called the “Chief Lighting Technician.” (2) In film, the head of a crew, e.g., the “gaffing mixer” would be the re-recording mixer-in-charge, formerly known as the *gunner*.

gain: The output voltage of a device divided by its input voltage. Most *passive* devices have a negative voltage gain, and most *active* devices, especially amplifiers, have a positive voltage gain. Usually expressed in dB, this is correct only if the input and output *impedances* are the same, a condition not usually met. The square of a voltage ratio is a *power ratio* if the condition of matched impedances is met. See *amplifier gain, impedance-matching*.

gain-before-threshold: In a *compressor* or *limiter*, the decibel gain applied to signals below the threshold level, i.e., before the compression circuit.

gain control: The fader that controls the strength of the output signal of an amplifier. This term is misused on many amplifiers, since the gain remains constant, while the gain control actually adjusts the signal input level. Also erroneously called *volume control* on consumer equipment.

gain riding: Manual, real-time volume control during recording to prevent overload and distortion at loud levels, and to avoid noise problems at low levels.

gain stages: Electronic components (or sets of components) whose purpose is to provide signal amplification in an *active* device.

gallows arm: A type of mic stand which consists of a vertical section, to the top of which is fitted an adjustable rod which carries the microphone.

galvanic isolation: In transformer, galvanic isolation means that no electrical current can flow directly from one winding to the other as they have no direct electrical contact. However, a signal can flow between the windings via electromagnetic coupling.

gang: To mechanically or electrically couple two or more controls, such as post-effects processors, faders, etc. The combined assembly is then called a *ganged* fader, etc. See *grouping*.

gap: The distance between the pole pieces of a magnetic *tape head*. The *gap width* is the dimension of head gap measured along the tape path, typically 90 mils for a professional playback head, 150 mils for a record head, and 400 mils for an erase head. Sometimes specified in *microns*.

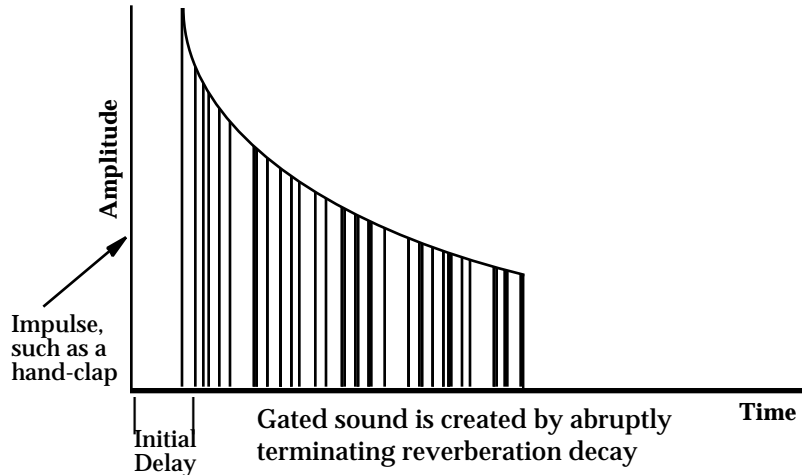
gap scatter: Any deviation from perfect *head gap-track* alignment on a multitrack tape recording.

gap width: See *gap*.

gate: (1) See *noise gate*. (2) A *control voltage* generated by any key on a synthesizer keyboard that instructs signal generators and other devices to begin operating. (3) The part of a movie camera that has an opening to allow light from the lens to expose the film, and that holds the film steady during that exposure. In a projector, the light source illuminates the frame held steady in the gate. The lens then projects the image onto a screen.

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gated reverb: The use of a *noise gate* to cause a sudden termination of a reverberation effect, without allowing the normal *decay* segment to complete. This gives the sound an unnatural, industrial timbre.



Gated Reverb from a Percussive Sound

gauge: The width of a particular film stock, e.g., 8mm, 16mm, 35mm, 65mm, or 70mm. See *format*.

gauss: (1) The unit of magnetic field strength, reflecting maximum *flux density*. (2) The unit of measurement for *remanent magnetization* on recording tape.

General MIDI (GM): A subset of the MIDI specification which is a minimum set of requirements for MIDI devices aimed at ensuring consistent playback performance on all instruments bearing the GM logo. Some of the requirements include 24-voice *polyphony*, a standardized group (and location) of 128 sounds, that the synthesizer be 16-part *multitimbral*, and provides for a standard *pitch* encoding. Some manufacturers have proposed supersets to GM, e.g., Roland's GS and Yamaha's XG.

generation: A term for the number of successive times a sound has been copied on analog magnetic tape. The original recording is the first generation, a copy from that is a second generation, etc. Thought to be less relevant in digital recording, but that's thoughtless.

generator module: A synthesizer module that generates sound, usually through an *oscillator*.

ghost: The slight *pre-echo* heard on a record one revolution before the beginning of a loud band, or just after the loud band stops. The waveform carved by the cutting stylus in the modulated groove deforms the adjacent blank groove, resulting in a faint repeat of whatever the modulated groove contains. Analogous to *print-through* on magnetic recording tape.

gink: In film, to screw up.

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glass master: A glass disc with a light-sensitive coating, whose surface can be etched with pits by a laser beam as modulated by an audio signal. This surface is then sealed with a coating of silver. Used as a master for the dies from which CDs are eventually pressed. The laser device that burns the pits in the coating on the glass surface of a CD is called a *glass master lathe*.

glide: A function, also called *portamento*, in which the *pitch* moves continuously from one note to the next, such as is possible on a violin or trombone, instead of jumping over the intervening pitches, such as is necessary on a keyboard instrument or woodwind.

glissando: A direction for piano or harp by sliding the fingers over the keys or strings. Only the *C_{maj}* and *pentatonic scales* can thus be played (on the white and black keys, respectively). Compare with *arpeggio*, *portamento*.

global: Pertaining to or governing all of the operations of a digital synthesizer, module, or other instrument.

GM: See *General MIDI*.

gnat's nut: See *RCH*.

gobo: Any kind of moveable sound-absorbing surface or panel used in recording sessions to acoustically separate sound sources. See *baffle*.

grabbing: The process of importing digital audio from an audio CD directly onto a computer's hard disk. Also called, by the verbose, *digital audio extraction*.

grain: (1) A subtle type of distortion found in some audio devices, mostly digital devices but sometimes also power amplifiers, possibly due to *crossover distortion*. (2) The ferrous particles on a tape which determine the amount of distortion caused by the *Barkhausen effect*. Digital media have grain only if the *reconstruction filters* are badly designed. See *granulation*.

granular synthesis: A sophisticated form of additive synthesis, combining sound elements called *grains*, which have a specific duration (typically 1-50ms), waveform, peak amplitude, and bell-curve amplitude envelopes. Hundreds or thousands of grains are combined per second to form an *event*. An event has such attributes as start time, duration, initial waveform, waveform slope, initial center frequency, frequency slope, bandwidth, bandwidth slope, initial grain density (number of grains per second), slope, initial amplitude, and amplitude slope. Essentially, a sound event is sliced into time *screens* that contain the amplitude and frequency dimensions of hundreds of events. These screens are assembled into *books* that define a complete sound object.

granulation: An *aliasing* type of distortion in digital audio systems due to the uncertainty in the level of the samples is known as granulation, also called *quantization distortion*. If the sampling rate is an exact multiple of the input tone frequency, granulation results in *harmonic distortion*, i.e., the distortion components are at multiples of the input frequency. If not, the granulation resembles random noise, in which case it may properly be called *quantization noise*. See *modulation noise*.

graphic editing: A method of editing parameter values using graphic representation (for example, of envelope shapes) displayed on a computer screen.

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graphic equalizer: A graphic equalizer can be recognized by the row of faders across the front panel, each fader controlling its own narrow section of the audio spectrum. Other than the highest and lowest faders, which control *shelving filters*, each of the filters in a graphic equalizer is a fixed-frequency *bandpass filter*, where the range of each fader is fixed, and the width of each individual band of a third-octave equalizer is actually wider than a third-octave. See *equalizer*, *parametric equalizer*.

ground: Refers to a point of, usually, 0V, and can pertain to a power circuit or a signal circuit.

ground lift/lifter: The practice of or a device for disconnecting the shield on one end of a *balanced cable* to eliminate a *ground loop*. Sometimes in the form of a switch found on some audio adapter boxes or *DI boxes*, this switch or cable modification disconnects the chassis ground of a device.

ground loop: The situation which arises when two pieces of equipment, each having an established chassis ground internally connected to signal ground, are then connected via a *shielded cable*. This forms a relatively large loop from chassis ground to signal ground (shield), shield ground to signal ground, and chassis ground back to chassis ground. Because the electrical pathway formed in this manner has a finite impedance, a difference in potential may occur from one end of the loop to the other, allowing an AC-frequency signal to form in the circuit. This signal will manifest itself as a *hum* which can, in extreme cases, be louder than the audio signal. The solution is to break the screen connection between the two devices, ideally at the end of the cable that is plugged into a receiver, such as a mixer or amplifier with a *ground lifter*.

group delay: The rate of change of *phase* of the response of a device or a system as a function of frequency. A pure time delay, equal at all frequencies, gives a constant slope of *phase* versus frequency. If, in an audio component (frequently a *passive network*), this slope is not constant but varies with frequency, the component is said to produce *group delay distortion*. This is equivalent to a time delay that varies with frequency, called a group delay because the distortion occurs within a group of adjacent frequencies, but not over the entire spectrum. The audible result is a loss of precision in musical transients; they are spread out or smeared in time and a more diffuse stereo *image* results.

group fader: A control which sums and adjusts the output of several other faders which have been routed to that group. See *gang*, *grouping*.

grouping: A feature of some sequencing programs or mixers which allows for the assignment of several faders to a *group master fader* that controls the overall level for the group. The software analog of a hardware *gang*.

group master: See *submaster*.

grunge: See *mid-range smear*.

guard band: A narrow, unrecorded area between the recorded tracks of a magnetic tape in order to reduce crosstalk between the channels of the tape recorder, resulting in each track of the tape using slightly less than $\frac{1}{n}$ tracks-width of the tape.

guide vocal: In multitrack recording, a preparatory vocal track to serve as a template for the later recording of instrumental tracks, eventually replaced by a final version.

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Guillotine splicer: A type of splicer for motion picture film and magnetic film that is generally used to assemble the workprint and edited soundtracks. For picture cutting, it slices along the frame line between images. A second blade can slice magnetic film diagonally to avoid pops on playback. While holding the two ends of picture or mag film to be joined in a sprocketed channel, non-stretching tape is applied, completing the splice. The editor can undo the splice if the result is not satisfactory, and may also reassemble the pieces in their original, or any other, order. Also called a *tape splicer*.

gun microphone: A highly directional type of microphone used for long-distance recording, e.g., for wildlife or surveillance. Also called a *rifle microphone*, *shotgun microphone*, or *interference microphone*.