



No 3: Dynamics

A quick review: In our first two articles we learned how music is full of opposites. Rhythm is basically long and short sounds. Melody is essentially high and low sounds. In this article we focus on dynamics — loud and soft sounds.

A simple definition: ‘Dynamics is the power of soundwaves and how strong or soft they are.’ The word ‘dynamics’ comes from the Greek *dunamis* meaning power and refers to energy level and forces which affect the movement of things — including soundwaves. It shares its root with the word ‘dynamite’. A dynamic person has power and energy and influence over others.

In music, dynamics refers to the amount of power transferred from a person’s body to the instrument, producing varying loud and soft sounds. Singers transfer power or energy of different levels as their breath passes through the vocal cords. Dynamics is also known as volume or amplitude. We turn up the volume knob for louder sounds.

Dynamics is measured in decibels. The chart below gives some examples.

Leaves rustling	20 db
Whispering	20–30db
Talking normally	60db
Busy street traffic	78db
Close thunder	100db
Pain threshold (damage is done to the ear)	85–100db
iPod or CD player at high volume	114–128db
Rock band	115–140+db
Chainsaw and loud car stereos	116db
Jet aircraft	140db
Immediate damage to unprotected ears	130–140db
Space shuttle launch	180db

Musicians and composers use their own power to stir the listener’s feelings — to excite, manipulate, calm, soothe and relax. Soft music can have a relaxing effect, e.g. in doctor’s waiting rooms or when having a massage. Louder music can be rousing, e.g. in military bands or festivals. Abusive use of dynamics occurs when the power of sound is in the extreme ranges. This is harmful because the energy of the soundwaves permanently damages the tiny hair cells in the cochlea of the ear, causing tinnitus, gradual hearing loss and deafness. Powerful dynamics may lead to addiction to loud music and a fear of silence.

Many musicians who regularly play very loud music are physically affected when they perform. In some orchestras and bands, shields are placed between the brass and string players for protection.

Some string players mark loud trumpet and trombone parts on their music so they know when to bend down to avoid the blast. Many rock musicians wear earplugs for protection. Some governments have made laws to reduce noise in workplaces, concerts and opera houses. Sadly this extreme loudness is also to be found in many churches.

Permanent hearing loss depends on the time of exposure. The recommended maximum level for eight hours of work is 90db (some think this is still too high). For each increase in three decibels, halve the time of exposure:

db	Exposure	db	Exposure
90	8 hrs	117	56s
93	4hrs	120	28s
96	2hrs	123	14s
99	1hr	126	7s
102	30 min	129	3.5s
105	15 min	131	1.75s
108	7 min 30s	134	.875s
111	3 min 45s	137	.438s
114	1 min 52s	140	.219s

We can see that physical damage occurs after only 56 seconds of exposure to 115db (the lower range of the levels at a rock concert). In the more realistic upper level of 140db, damage occurs in a fifth of a second. In night clubs disc jockeys know when to pump up the volume to excite and arouse people if the party starts getting a bit flat. One cannot imagine what is happening to young peoples’ hearing as they experience such an acoustic environment for hours.

Note we are just talking about dynamics in this article. When excessive dynamics is combined with exaggerated rhythm and beat, the heart does not know which beat to assimilate with — the main beat or the off-beat. The brain is pumping out opioids and hormones to the sex organs. The body quickly begins moving in sensual and gyrating ways, becoming exhausted because of lack of rest. Added to this is the extreme use of melody — high pitched singing, shouting and screaming damage the voice box. Amplified low bass notes on bass guitar add extra stimulation at calculated times and the breathy voices close to the microphone create extra sensuality and intimacy. Addiction kicks in as the pain threshold is raised and high after high is experienced. It just doesn’t bear thinking about.

Little did the scientists and inventors of the late Nineteenth century know how their ideas and work with electricity would develop in the twentieth century. The most noticeable difference between today’s instruments and those of the pre-1900s is the level of dynamics. Electronic amplification has radically changed the aural experience of audiences.

It is interesting that in the 1700s John Wesley and George Whitfield could preach to thousands of people at a time without the use of electronic equipment to amplify their voices. Why then do we need so much amplification in our churches today? Have you noticed it is all black — black ‘spaghetti’ wires all over the floor, black amplifiers and speaker boxes decorating the stage (yes, the altar has become a stage for performance). Black, black, black — not an uplifting colour

for a church setting. Having said that and gotten it out of my system, I will now get off my hobby-horse! But it is all relevant to our topic of dynamics.

This abuse of the power of soundwaves in the element of dynamics is happening everywhere – in the concert hall, in rock concerts and night clubs, in cars and tragically in our churches. A challenge for you – ask the audio technicians in your church what the decibel levels are. I would be most interested if you would let me know too (email me at wendy@thegiftof-music.com.au).

Music was originally designed to be for the worship of God and for our benefit and health, to be pure, sincere, uplifting and ennobling. However it has quickly become destructive noise. Do we really believe the angels in heaven worship God with this sort of loud music? Do we really believe that God wants us to damage the sensitive, perfectly and intricately designed ears He designed? Do we really believe God wants us physically moving in such carnal, sensual, irreverent ways while supposedly worshipping in His Presence?

Back in the 1800s Ellen G. White wrote:

Every uncouth thing will be demonstrated. There will be shouting, with drums, music and dancing. The senses of rational beings will become so confused that they cannot be trusted to make right decisions. And this is called the moving of the Holy Spirit. The Holy Spirit never reveals itself in such methods. A bedlam of noise shocks the senses and perverts that which, if conducted aright, might be a blessing... Those participating in supposed revival receive impressions which lead them adrift. They cannot tell what they formerly knew regarding Bible principles.

In conclusion, the essence of dynamics is power. The music element of dynamics teaches us that God is all-powerful. The ultimate power and energy source of course is God. Psalm 29:4 tells us ‘The voice of the Lord is powerful.’ Psalm 147:5 says, ‘Great is our Lord and of great power...’ He only had to speak and the universe and all that is in it came into being. When God gave man dominion over the earth and all that is in it, He also gave the responsibility that goes with it. In terms of music this means being responsible stewards of God’s sound-waves and using power and energy sensibly for His purposes to worship Him and for the benefit, not harm, of man. ■