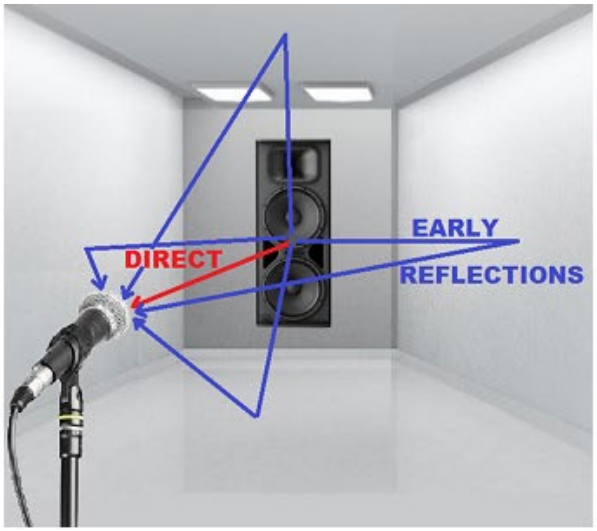
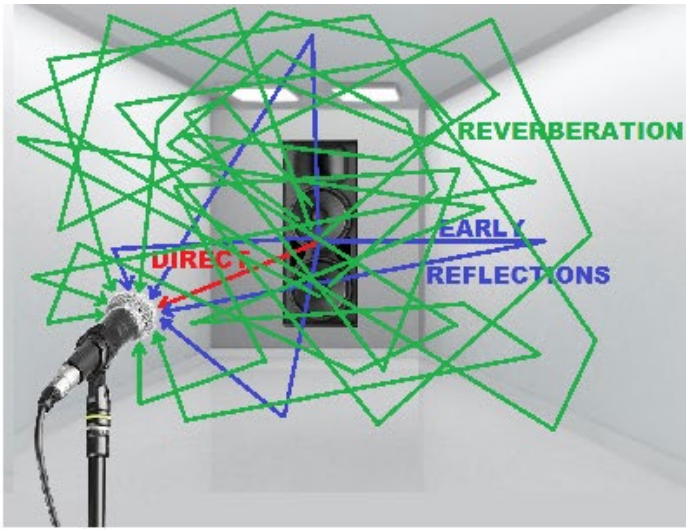

small/large 74
pre-delay 0.0020 sec
delay 0.0113 sec
density 0.45
delay 0.32
hi/freq absorpt 0.999
dry/wet mix 100
DELAYS EXPECTED
Delay
Feedback
Low Cut
High Cut
Mix
0.01 ms
50.00 %
200 Hz
5000 Hz
50.0 %
ALESIS
NanoVerb
INPUT
Ambient Effect Units
✝ Church Audio ✝
OUTPUT
INPUT
DIRECT OUT
Digital Delay
DD-3
TRIGGER DEPTH
LFO DEPTH
Direct Sound
Early Reflections
Late Reflections

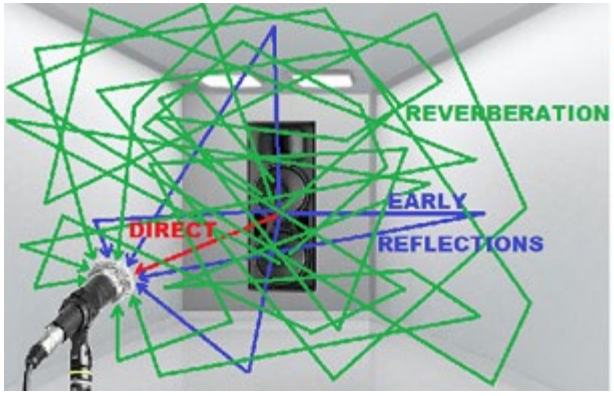
The REVERB Effect Unit

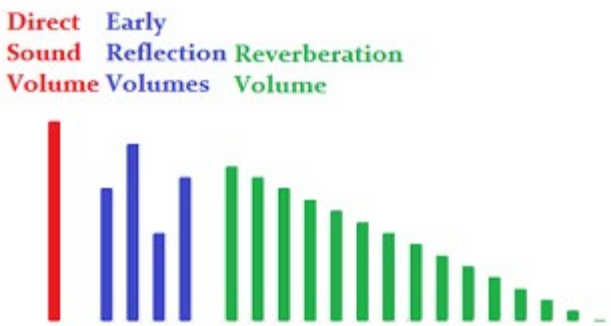
If you stand in the middle of a large room and clap your hands, you will hear many echoes bouncing back at you from the walls, ceiling and floor. There will be an infinity of echoes. Because it all happens so fast, you can't actually recognise the individual echoes. What you hear is a complex ringing effect (ambience) which we call reverberation (or reverb for short). The human ear is accustomed to hearing reverb. If a sound lacks this, the ear will consider the sound dry.





If you stand in front of a Loudspeaker cabinet (indoors) the first sound that you hear will be the **direct sound** coming from the source. A moment later you will hear the first reflections of any nearby surfaces (**early reflections**). A moment later all the surrounding surfaces will start resonating back and forth, causing the classic **reverb** sound. This will continue for a while, as the reflections fall away (**decay**). The whole process is over in a few seconds.

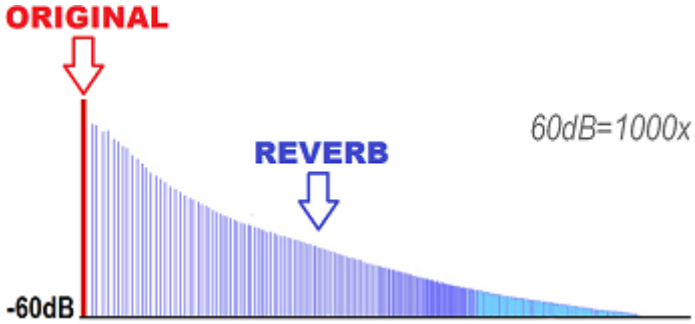




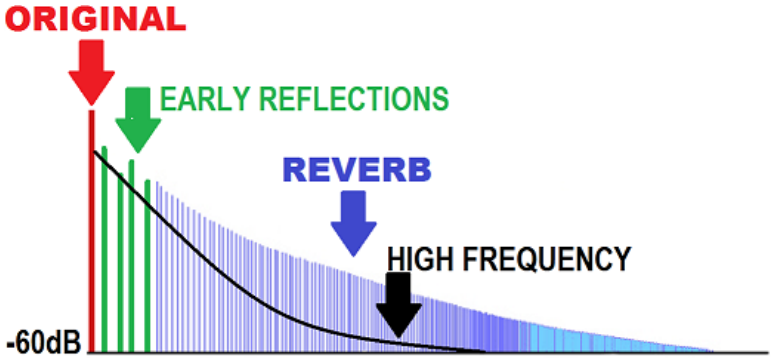
The loudest volume will normally be the direct sound.

The volumes of the early reflections will vary considerably, depending on the reflective surfaces. These influence the actual “sound” of the reverb.

The volumes of the reverberation that follows will be very uniform, and fall away (decay) smoothly.



We measure reverberation by the length of time it takes for the reverb to fall 60dB below its' loudest volume. 60dB means 1000 times quieter.
We call this the **Decay Time**. We measure it in seconds.
It is technically referred to as the RT60 (Reverberation Time 60dB).



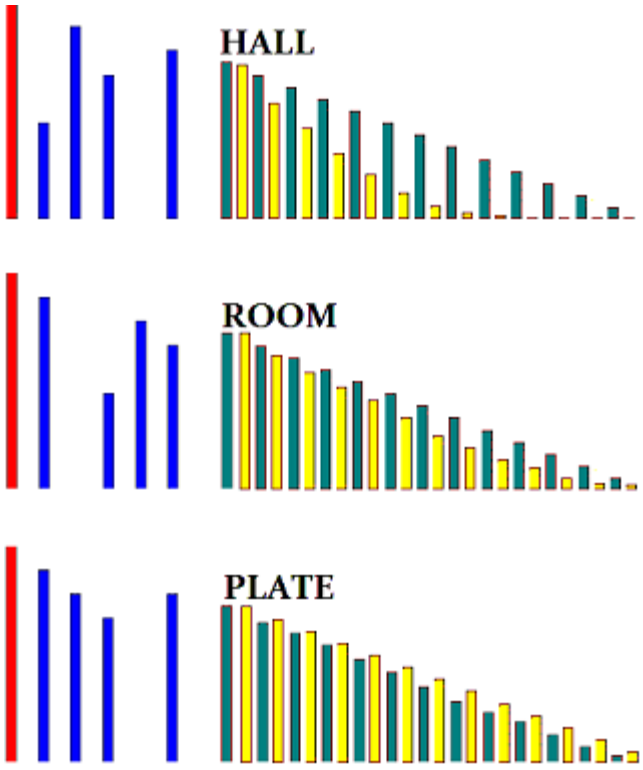
The ***RT60*** should more correctly be called *RTM60* meaning 'Reverb Time Midrange' because RT60 is calculated using the time it takes the midrange frequency of 1kHz to fall.
In real rooms the various frequencies don't die out evenly.
Low (Bass) frequencies may last 1½ times longer than the mid-range frequencies.
High frequencies may die out 2 to 4 times faster than the mid-range frequency energy.
This all depends on the various absorbent and reflective materials in the room.

The High Frequency Reverb Time (*RTH60*) is sometimes not expressed in seconds but rather as a percentage of the Midrange (RT60). It may range from 25% to 100%. The High Frequency content is often called **Liveliness**, **Brightness**, **High-frequency Absorption** or **Dampening.**

How the high frequencies are falling in a reverb is most important because they are often the only part that you hear falling (the mid and bass frequencies all mix together into a wall of sound, and it isn't so easy to get a sense of falling). If you can't hear the fall of a reverb, then it is just adding mud to your mix.

*One of the Reverb "types" you can usually dial up is called "**Plate Reverb**". It has the same reverb time for all frequencies. This gives quite a unique clean but full sound which works well on vocals and musical instruments including drums.*

Reverb Effect Units come with **Pre-set Reverbs**, ready to use, to help give you a quick start.
They all have different values of Early Reflections, and different High and Low frequency Decay times.



HALL / ROOM REVERB:
This setting simulates a live room sound. Some offer you quite advanced parameters such as how long, wide and high the room should be, and if surfaces are lined in carpet, tiles, wood etc.

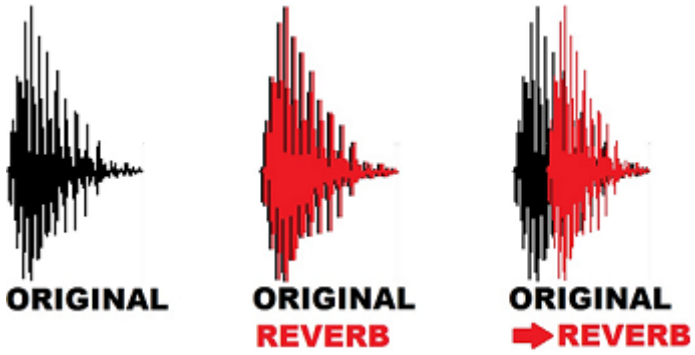
PLATE REVERB:
This simulates a vintage mechanical reverb, which consisted of a large thin metal foil (plate) suspended by springs. The sound stimulated the foil which vibrated, and the vibrations mixed with the original sound. It is a clean, yet full sounding, reverb and a safe choice for most things.

VOCAL REVERB:
These are reverb settings that are already close to what a good vocal reverb would resemble. If you are inexperienced then you should consider putting your singers into this to play it safe.

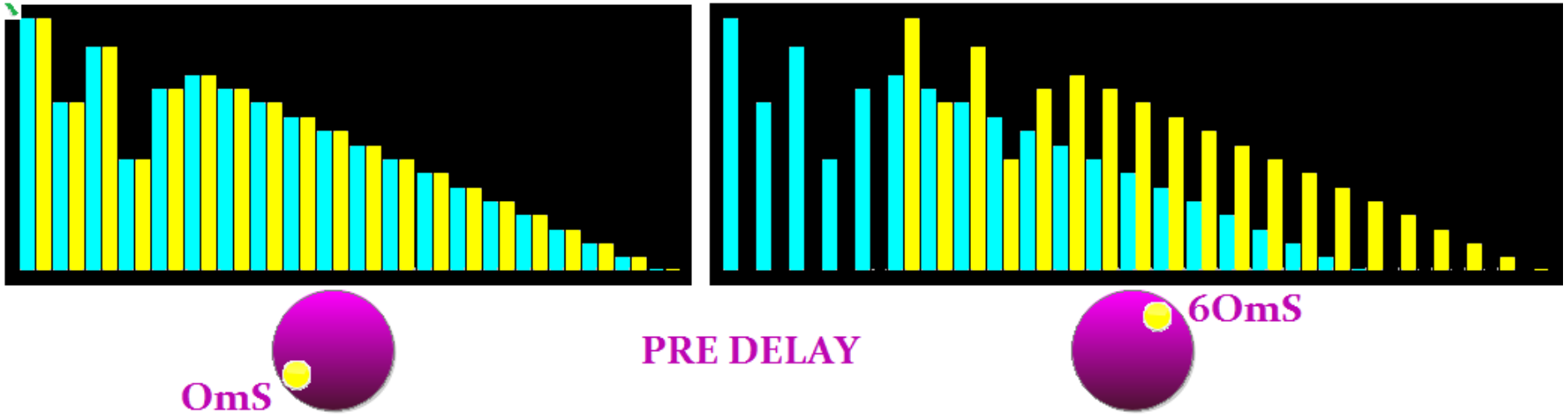
INSTRUMENT REVERB:
A manufacturer may offer 'instrument specific' reverbs such as the Snare drum (which is often heavily reverberated).

All Pre-set Reverbs are 'starting points' and it is not obligatory that you use them as they are. It just gives you 90% immediately and then you tweak knobs until you make the reverb fit the moment, and your ear.

You really can't know which reverb will suit best until you hear it.... experiment!



Reverb begins almost in the same instant as the original sound and so the original gets muddied and confused by the reverb on top of it. By using a **Pre-Delay** the effect unit waits for a fraction of a second before adding the reverb tail.



In the 0mS example we see the reverb mixed into the original, making the original hard to hear properly. In the 60mS example we delayed the time before the reverb tail begins working. This gives a slight breathing space to the sound, preserving the clarity of the original, while still adding depth. The tail (reverb time) will always be much shorter when using pre-delay, yet the result seems strangely more reverberated, cleaner and clearer sound.

APPLYING REVERB TO A VOICE OR INSTRUMENT

A small amount of artificial reverb will make most sounds seem fuller and more complete. As always, when using Effect Units, use the effect "lightly".

Reverb Length

Typically, we use a short decay time. Two seconds is a place to start. You **must** be able to hear the reverb falling away during the pauses in the sound. If you have a reverb decaying too slowly so that it fills in the pauses, it will create a solid wall of sound. The result will be a confused, boomy and muddy sound.

Even if you want a "Big Cathedral" sounding reverb turning the decay around to 5 seconds will just flood everything. The best way to get a giant, but clean, reverb is to start with a 2 second decay and turn up the "send" on the mixer so a particularly large amount of input signal arrives at the Effect Unit. This will cause the Effect Unit to create an enormous reverb. Now add some Pre-delay (*somewhere around 30 mS to 60 mS perhaps*) to make the reverb arrive a moment after the original sound. You will immediately hear a bigger, yet cleaner, reverb. Now you can extend the decay time out from 2 seconds (you probably won't want to turn far).

A long reverb time (5 seconds) can work ok on musical instruments playing soloes, but 5 seconds on accompanying instruments or singers will flood everything.

CREDITS

This material is offered freely to the Christian Churches; downloadable at Pietango.com

Text: *Original, by the Author, a Christian Recording Engineer.*
Images: *Designed by the Author. Some photographs were sourced from the Internet, then re-worked.*

Ever since the creation of the world, God's invisible attributes and divine nature have been evident. They are clearly understood through his workmanship, and all the wonderful things that he has made. Therefore, those who fail to believe and trust in him are without excuse, or defence. **Romans 1:20**

All of us have sinned and fallen short of God's glory, but God treats us much better than we deserve.
Because of Christ Jesus, he freely accepts us and sets us free from our sins. God sent Christ to be our sacrifice. Christ offered his life's blood, so that by faith in him we could come to God. **Romans 3:23**

If you declare with your mouth, "Jesus is lord," and believe in your heart that God raised him from the dead, you will be saved. For it is with your heart that you believe and are justified, and it is with your mouth that you profess your faith and are saved. **Romans 10:9**

For the Scripture (*Isaiah 28:16*) says, "Whoever believes in Him will not be disappointed." **Romans 10:11**

These things have been written so that you may believe that Jesus is the Christ, the son of God; and that by believing, and relying on him, you may have new life in his name. **John 20:31**