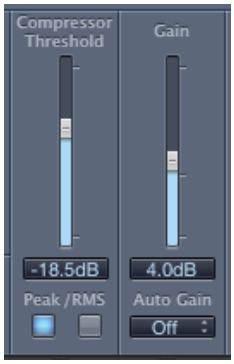
Compression

A compressor, in effect, can be thought of as an automatic fader. It is volume control. It is used to proportionally reduce the dynamics of a signal that rises above your desired threshold.

By turning down the louder signal levels you are reducing the overall Dynamic Range, which is the purpose. The only drawback can be the overuse of compression, which will lead to the "pumping" of audio, this is not desirable on the whole, although some dance producers can use this to their advantage, as I will demonstrate.

So, in simple terms we are aiming to attenuate (turn down) the louder signals so they don't "jump out" of the mix, and in turn we are reducing the dynamic range. When we use output gain to increase any overall level lost we are effectively boosting the lower signals. So, we actually end up with a signal that is louder and tighter but with a smaller dynamic range.

The most important two functions on a compressor are:



Threshold: This determines the level at which the compressor will begin to proportionally reduce the input signal. When the threshold is set to -20dB, all signal that falls below this is unaffected, while above the signal is attenuated. From this, I hope you will see that the overall dynamic range will be reduced at the output.

Ratio: This determines the "slope" (the graphic you see in Logic's compressor). It determines the increase of input signal (in dB's) that's needed to cause a 1–dB increase at the compressors output. So, a ratio of 4:1 will produce a 1–dB increase in output for every 4-dB increase at the input, an 8-dB increase will raise the output by 2-dB, etc. A ration of 2:1 will produce a 1-dB increase in output for every 2 dB increase at the input.

I use compression on a vocal, bass or guitar take, a whole mix, or any recording that is a little up and down in levels…. Although, music is supposed to have crescendos (quiet to loud) and decrescendos (loud to quiet) and over compression can cause these to be less effective. From this you should realise that compression is a useful tool, but over compression can destroy a signals "natural dynamic" if you are not careful or aware of what you are doing!

Compression should not be confused with limiting; limiting has a much higher attack and is used to prevent a mix from clipping or peaking at the mix-down stage. It is usually placed after the compressor (or multipressor) in the signal flow. If you set a ratio of around 30:1 you are practically "limiting" a signal.

Research Task:

1, Use the solo bass guitar track within the mixing task and increase the threshold until the compressor begins to reduce the level

2, Set the ratio to around 4:1 and then set a fast release, can you hear the bass "pumping"? Now set a fast attack, is this any better or worse?
3, Set a slower release and attack time, you should notice the bass become far more natural in its sound. **Simply: aim for a natural, dynamic, sound!**