



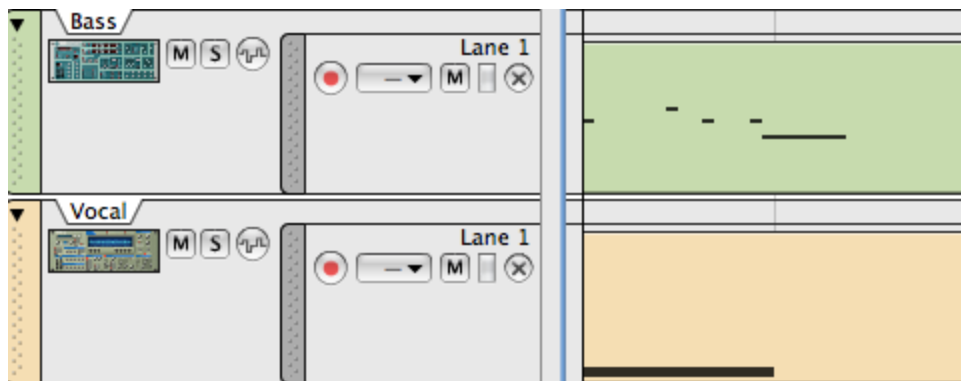
PRIME LOOPS

EQ'ing in the Mix

When you're mixing your track, sometimes merely changing relative levels and pan settings of your individual instruments isn't quite effective enough in giving the sounds enough space and definition. If this has ever happened to you (and it happens to all of us at some point), it might be time to take a look at EQ'ing your sounds. EQ can be a daunting topic for many producers, and with this tutorial I want to take some of the mystery out of that process. Let's take a look at some of the fundamentals of practical equalization using a real world application for this powerful tool!

On a general level, you should think about the instruments in your mix as taking up a certain amount of energy. Any mix has a limited amount of energy that it can put out at once. If you add more sounds energy into the mix than what it can handle, the master output will clip and digital distortion will occur. More often than not, digital distortion sounds nasty and will quickly overshadow an otherwise great arrangement with a mushy, indistinguishable collection of sounds. Therefore, you should make sure that each instrument in your mix is not taking up energy in the mix that it doesn't actually need. For instance, a woodwind instrument playing in the higher octaves is not likely to require much presence in the low frequencies. Sometimes, a sound can be taking up valuable energy in a certain frequency range in a way that is hard to perceive with the ear. The solution is to EQ out unnecessary frequencies from each of your sounds so that other sounds that DO have audible effect in the same frequency range won't have to compete. In addition to wasted energy being present in certain sounds, sometimes those sounds need a little boost to bring out frequencies that are slightly lacking. As a general principal, you should start with subtractive EQ, meaning reducing frequencies of one sound that are clashing with the same frequencies in another sound. If that doesn't quite get you to where you want to be, you can try a gentle, broad boost on the sound that is lacking in definition.

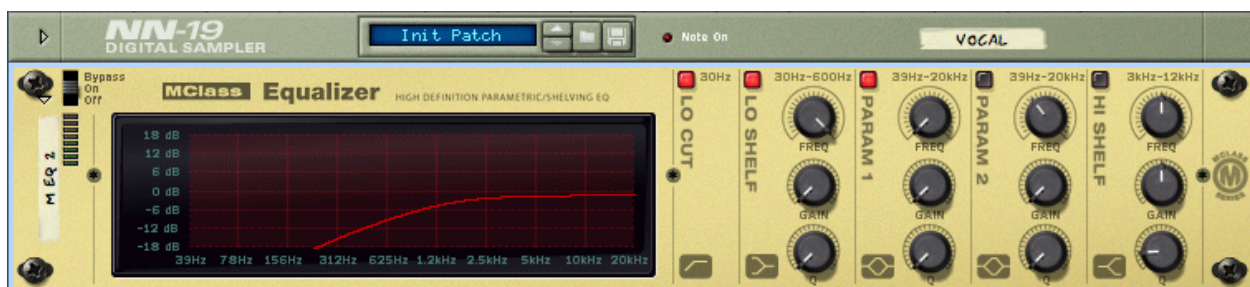
The example we're going to look at is a combination of two sounds that often show up at the same time in an arrangement: Vocals and bass:



As you can see in this short section of the arrangement, the vocal is triggering at the same time as part of the bassline. Additionally, both of these sounds overlap with one another a bit in terms of frequency content.

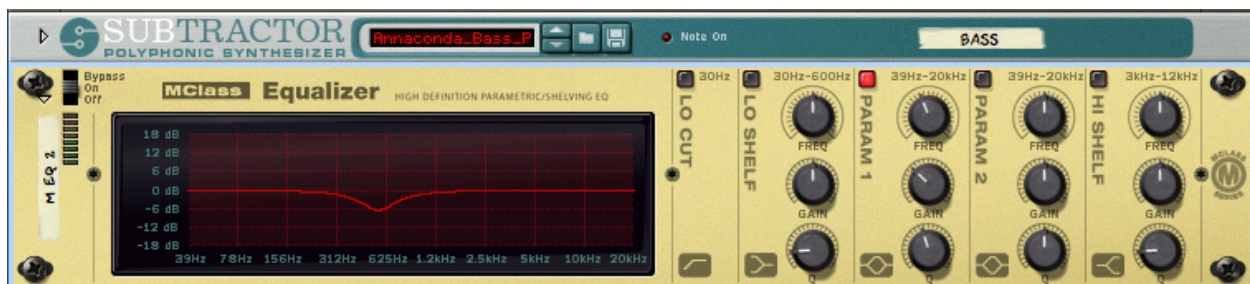
The result is that the sounds clashed unnaturally instead of standing out from one another. At this point, I had a decision to make. I could choose to distinguish the sounds from one another by simply changing the relative volume levels of the two instruments. Sometimes this is all you have to do, but I found that when I tried to do this with the arrangement above, the vocal sounded unnaturally loud and the two sounds still clashed in an unpleasant way. Enter our good friend, the EQ!

Again, I had a choice to make. Since vocals tend to be defined in the mid and high frequencies, I first tried to cut out some of the low frequencies of the vocal and made more room for the two instruments to play nicely next to one another:



I turned on the lo cut, lo shelf, and param 1 sections of the MClass EQ and set them as pictured above. This cut allowed the most prominent frequencies of the bass sound to play without any competition from the vocal. However, this caused a new problem: The vocal I wanted to use in this arrangement had an unusually full bottom end that ended up being quite important to why it sounded good in the track, but I didn't realize this until I cut those important frequencies out. By removing these frequencies, I was left with a neutered vocal that lost many of the aspects that attracted me to it in the first place.

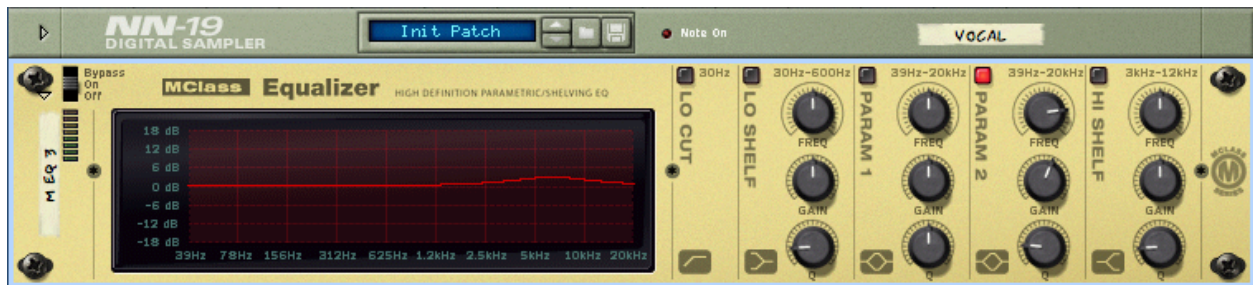
The nature of mixing is such that you often have to make compromises between the sounds so that they can comfortably sit with one another in the mix. Since my experiment with cutting the lows out of the vocal didn't work so well, I decided to remove the EQ from the vocal and put one on the bass sound instead. I dropped the gain by a few decibels and played with the frequency param 1 section of this new EQ until I found the particular frequency range of the bass sound that matched up with the important low frequencies of the vocal, around 540hz. I dropped the gain 6 decibels and set a medium Q, ending up with this EQ curve:



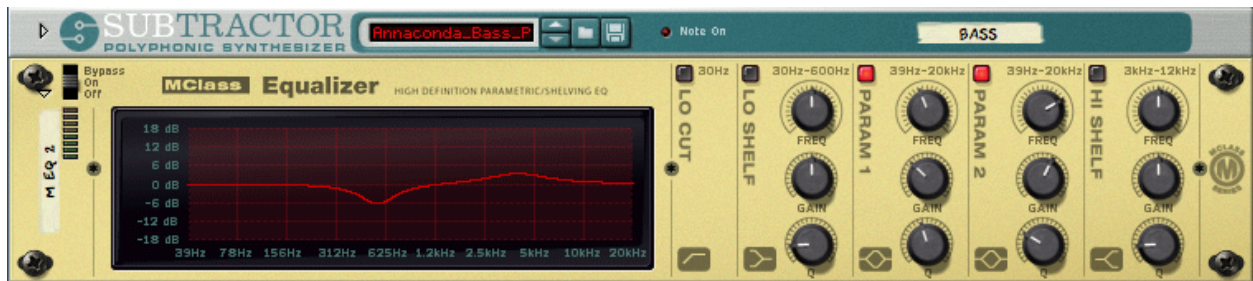
Now the lower frequencies of the sounds started sounding quite a bit better. The culprit ended up being wasted energy in the bass sound that was competing with similar frequencies in the vocal.

After my success with subtracting out these lower frequencies, I felt that both the bass sound and vocal sound could use a bit more intensity toward the upper mid and high frequencies:

Vocal EQ (boost of 3 db at 6.2khz):



Bass EQ (boost of 3.4 db at 3.8 khz):



As you can see, I was very sparing with these EQ boosts. A good rule of thumb for EQ is that if you are doing a boost, keep it within 3 or 4 decibels at first, and use a broad Q value. If you're not getting the desired effect, first try to cut competing frequencies from other sounds and change relative gains between your sounds. When you do a boost, you are taking more energy away from what you have available for the entire mix, so it's best to be sparing. There are times when you can get away with more extreme boosts, but always make sure you try to achieve the same effect with a cut first. Conversely, if you are doing a cut you can be more extreme with the gain reduction, even cutting out some frequency ranges all together when the situation merits it.

At this point in the mix, these sounds are working nicely with with one another. That doesn't mean that further adjustments won't have to be made as I work on the EQ of the additional sounds. The important point to take away from this is that mixing is an iterative process where continual

adjustments need to be made all the way until the end. Further, if your sound just won't cooperate with your gentle boosts and extreme cuts, this might be a clue that you should use a different sound or play the same sound in a different octave. Don't use extreme EQ settings as a replacement for having a good arrangement and voicing for your sounds in the first place! Finally, many sounds won't need EQ at all, so don't just automatically put an EQ on every sound when you're mixing. The most important rule is this: Your ear is the most important tool in deciding whether a sound needs to be altered.

Keep practicing, have fun, and stay creative!

- Nick Maxwell

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