Ducking

(For the vocalists and karaoke enthusiasts out there!)

Hello everyone. I am Michael Matson from Baltimore, MD in the USA. For Week 4 of Introduction to Music Production at Coursera.org, I will share a common usage of a compressor, but by demonstrating this concept in a more creative application.

After seeing Alloy 2 used in this week's lectures, I decided to choose a text-based presentation so that the description is easier to follow than working directly inside of a DAW. My goals for this presentation are to:

1. Introduce the concept of ducking.
2. Explain how to achieve this through the use of sidechaining.
3. Demonstrate how this functions as a tool for driving compression on one track from another track, specifically for the benefit of a situation similar to karaoke.

I hope that this information may provide insight into other possible uses of compression.

What is ducking?

Ducking is a term used for a compressor that is used to compress one signal, but the threshold is driven by a *different* signal ("*sidechaining*"). This is most commonly heard when radio announcers speak, as they use the level of their voice as the threshold for a compressor on the music signal being broadcast. What this does is compress the music signal *without* applying any makeup or compression compensation gain, thereby lowering the loudness of the music signal competing with the announcer's voice.

An interesting application of this is to "replace" the lead vocal on a pre-recorded song; essentially karaoke, but also ensuring the new vocal track gets precedence in the mix.

Preparation for use

Many programs offer the ability to "remove vocals" which is typically an algorithm that will put the left and right channels out of phase with each other. Because lead vocals tend to be center-panned in most songs, this is a fairly effective way to lower the loudness of the lead vocals in a mix; but this often leaves residual artifacts of the vocal in the song - they are still audible, just at a much lower level.

For this example, I removed the vocals from Mike & The Mechanics "The Living Years" using Adobe Audition.

Project Setup

Using SONAR X3, I made a new project with two audio tracks, and inserted the modified music file into track 1. My microphone will be used to record a "voice over" in track 2.

Inserting Alloy 2

Since Alloy 2 was used in Week 4's lesson, I inserted that into the music track (track to be compressed), and disabled everything but "Dynamics 1":
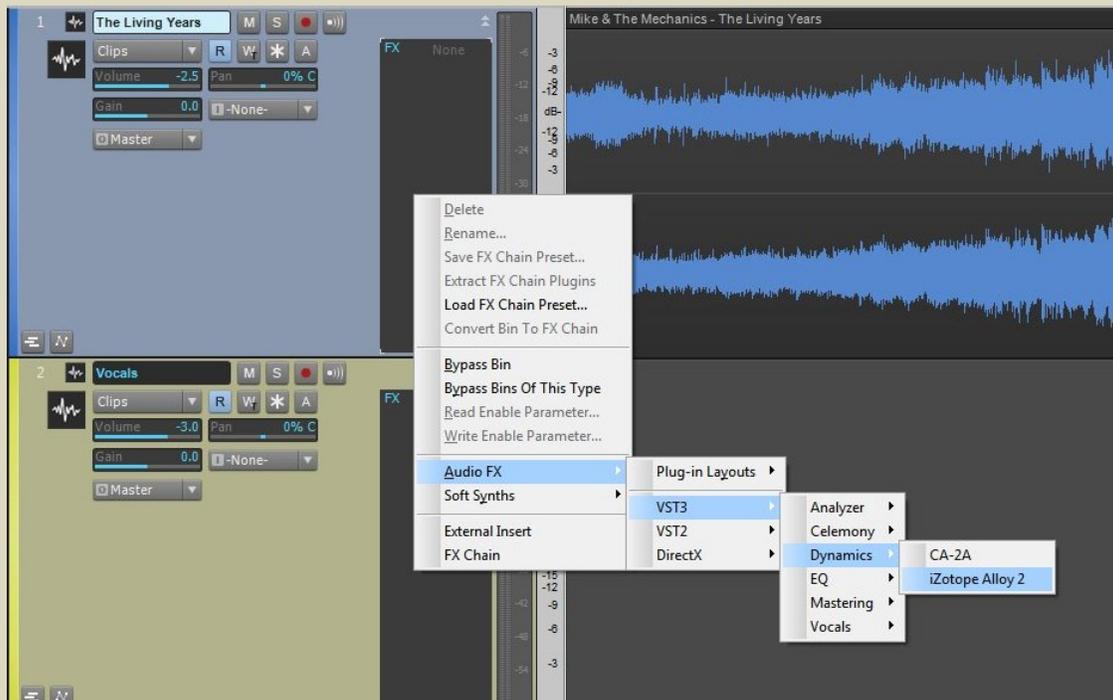
In order to enable ducking, the "Sidechain" must be enabled in the compressor, which will accept input from *another* source to drive the *compressor threshold*:

Inserting a send from the vocal track into Alloy 2

In order to enable the sidechain, a send must come from the vocal track to trigger the compressor on the music track. Most DAW's will see an effect with enabled sidechaining (i.e. an "Input 2" into the effect) as a path within a send dialog. For SONAR X3, inserting this sidechain send looks like this (this is done by right clicking on the vocal track):
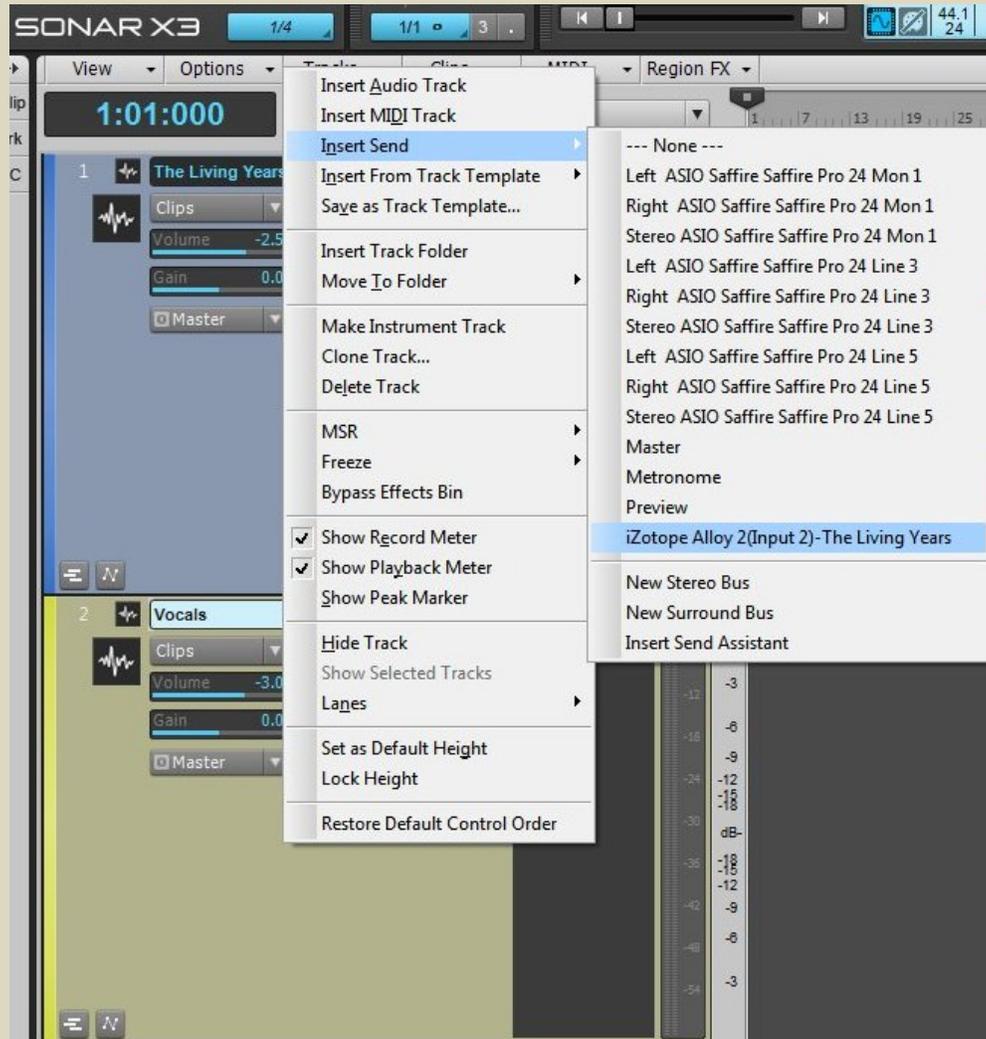
Recording the vocal track

For purposes of this demonstration, I did not worry to run ducking while performing the actual recording, because the screen captures I wanted to demonstrate could be more easily done during the mixing (post-production) phase.

Once recorded, I added a couple effects to the vocal track in addition to the sidechain send into Alloy 2, as shown below.
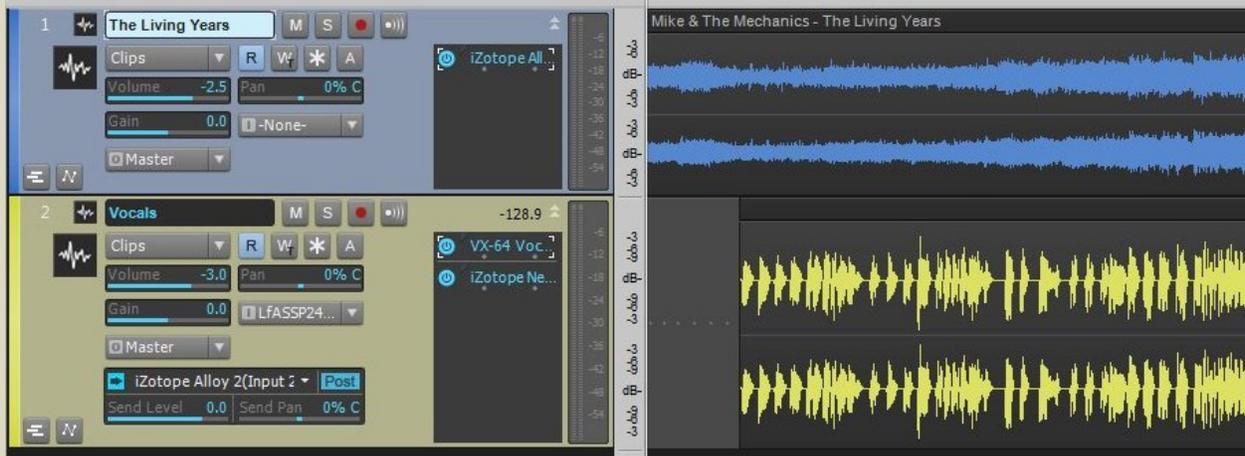
Post-production (mixing)

During mixing is when having the ducking enabled is most important, and the screen captures below demonstrate how ducking looks while functioning.

First I played back a portion of the song with sidechain *disabled*, and it can easily be seen that the song is compressing itself. The grey color in the threshold denotes the channel's own signal, and the red bar shows how much is compressed:

Next, I *enabled* the sidechain, but on a portion of the song that has no vocals. As you can see, there is "no threshold" visible, and no compression is being performed on the signal (no red bar viewable on the left):

Finally, I left the sidechain enabled, and took a screen capture of Alloy 2 functioning in a *ducking* capacity. Notice the threshold bar is yellow (denoting Input 2, which is the send from my vocal track), and also note the yellow signal in the upper window which is driving the compressor threshold. This is Alloy 2 *riding the fader* against my vocal track:

The Result

By employing a compressor capable of a sidechain input, I can further reduce the level of the residual vocal artifacts left from the initial removal of vocals. When sung in time with the original vocal track, the compressor not only suppresses the original song slightly, but also adds more presence to my voice by doing so.

From the above screen capture you can also see the settings I used on the compressor itself in this application.

In summary

I hope that this article provided some insight on an uncommon use of a compressor for recording within your DAW. Specifically,

1. Understanding the concept of ducking.
2. Understanding the value of a sidechain input into an effect (capable of using one).
3. Seeing how using these can allow a compressor to bring focus to one track, by using it to suppress another track (or even an entire bus).

Thank you for your time!