Tape Op Reviews

Dangerous Music *S&M*

In a world where *1073* is not only a model number, but also the number of clones said model has inspired, the Dangerous Music *S&M* is a standout for its originality. While Chris Muth (the *S&M*'s designer) did not invent mid/side encoding and decoding, he did add some new ideas that make for a very cool, one-of-a-kind box that has applications not just for mastering, but for any stereo processing.

The Dangerous Music *S&M* is a mid/side matrix with inserts. This allows you to take a stereo signal and then control and process "center" information separately from information panned to the "sides." There are two ways to do this. First is the *width* knob, which changes the balance between the center and sides, making the stereo image wider or narrower. The second, which is what makes the box original and very powerful, is that it has separate inserts for the center and sides (or more properly sum and minus), allowing you to process them differently. For instance, during mastering you could use the *S&M* to brighten just the guitars by adding some high end to the sides, while cutting the low mids from the center to make the bass more defined, or boost the vocal.

M/S recording techniques were discovered by Alan Blumlein in the 1930s. Originally, stereo recording involved three speakers. Blumlein figured out that the center speaker is unnecessary, because your brain puts together a phantom center image based on time delay cues picked up from the sides. He also figured out that if you combine a figure-8 microphone pointing sideways with a cardioid microphone pointing forward, and you send them to a sum and difference matrix, you can derive the left and right signals. The *S&M* box uses those same sum and difference concepts.

The first version of the *S&M* box came about in the mid '90s when Chris was working at Absolute Audio in New York. Leon Zervos mentioned that he missed the "width" control on his EMI mastering console back in Australia, which allowed him to turn up the sides and make the whole mix sound wider. When Chris built him a box to allow him to do this, he decided to add the inserts. Very quickly after that, Leon won even more mastering shootouts because he had the tool to do things, like changing guitar or vocal levels, which are much harder to do without it (the fact that he's a great engineer should not be overlooked either).

How does the *S&M* sound? In this case, that's the wrong question to ask—because it doesn't. It's very well built and has no obvious sonic signature, which is what is supposed to happen. The important question is, what can you do with it?

My first experiment was to run a finished mix through it, and remove the low end information from the sides. The theory being, if the bass and the kick are centered in the mix, the low end information on the sides is extraneous, making the speakers less efficient as they work to put out that information. According to Muth, that emulates the elliptical EQ or the lateral and vertical controls on the Fairchild 670 that were used when cutting vinyl. Vinyl cutter heads can't take too much vertical motion, which can happen if there is too much low end on the sides. Turning the lows down with EQ or using a limiter to catch any peaks solves this problem.

The ability to independently EQ center and sides is great. Suppose you're happy with the guitar sounds but you want more definition on the mix and you can't hear the lyrics clearly enough. You can scoop a little low midrange out of the bass in the center and add a little high end and maybe even boost the level of the center making the vocal clearer and louder. In the experiment where I cut the low on the sides, I also boosted it in the center. In that particular case, it made the low end both bigger and tighter.

After a bit of experimentation, I found that for me, the magic mastering combination is a pair of Pendulum Audio Quartet IIs on the inserts of the *S&M*. This came after Chris explained how the "heavy hitters" of mastering make their tracks so loud. When working with standard L/R stereo, you can only get a certain amount of level with a peak limiter before you start to hear the distortion-like sound of peak limiting. A digital limiter looks for a peak, and when it finds one, drops the volume of the *entire* stereo signal to remove that peak. A good mastering engineer will listen to the signal and figure out what's going on within the mix that prevents it from simply being turned up louder. So if the peaks are coming from a spikey, clicky snare that's in the center, he can limit just the center (or EQ it if that's more appropriate) to get rid of that peak, and now the whole thing can be turned up with gain. The gain change is the same, removing a 4 or 5 dB peak, but you've done less damage to your whole mix. Now you don't have that millisecond where your guitar sounds are dropped in volume by 5 dB unnecessarily, so overall, the mix sounds less distorted. It's been very cool to use the Quartet's analog peak limiter as the only limiter and doing 100% of the mastering processing in the analog domain. I wasn't able to do this before the *S&M*.

In my studio, I've created the "The Caffrey Mastering Matrix" by putting a Drawmer Three-Sum (*Tape Op* # 51) on the *S&M*'s inserts (yes, yes—"Three-Sum" and "S&M" together—ha ha, very funny). The Three-Sum is a crossover and summing box that allows you to divide your signal into three bands (low, mid, and high—with two sweepable crossover points) and individually process each band with your favorite outboard gear. My matrix sends the mid (center) to one channel of the Three-Sum and the side to the second channel. Since you can put anything on the Three-Sum's bands, you don't have to use it solely for multiband compression. The possibilities of what you can do are pretty infinite. Imagine an SPL Transient Designer on the center low frequencies to bring out the bass and kick, a Culture Vulture on the midrange of the sides to give the electric guitars a little extra something, a delay on the center midrange for a vocal effect, and a Filter Factory set to random at a fast tempo on the side high frequencies to create shimmery movement on the top end of the acoustic guitar.

To think of the *S&M* as being solely a mastering tool would be a mistake. During tracking, I found it very cool to brutally limit the center of a pair of drum room mics to make the kick and snare explosive, while only moderately compressing the sides. This cut down on the cymbal chaos that comes with heavy limiting. And, the slower release time of the compressor (relative to the limiter) creates some cool stereo widening effects on each snare hit as you hear the room reflections amplified slower on the sides than in the center. You could use it on a pair of piano mics, or a close and room mic on a guitar and get some very unique sounds.

During mixing, I liked having it on my main instrument compression buss (guitars, keys etc.). Again, I found myself limiting the center and compressing the sides, almost always making the sides a little louder. I found that it was much easier to get the vocal to sit in the mix with a bit of a hole created by the limiter in the center. Limiting the center kept the instruments more tame behind the vocals, but they could be left alone on the sides. As I write this, I realize you could really let the vocals control the center if you sent them to the guitar/key center-compressor's sidechain and ducked the instruments with the vocals just a little bit. Your drums and bass would stay solid, the side information would stay solid, but anytime the vocals are in, they'll take priority in the center. There are so many things like this that can't be done any other way, which is why the *S&M* is an important piece of gear if you want to completely control your stereo spectrum.

A skeptic might wonder, why spend the $1749 on a box that seems like it could be a DIY project. Of course the answer is, if you can build something just as good cheaper, you should. Realistically, by the time you spend the money on the same quality parts, like the precision summing and difference amplifiers or the $400 attenuator on the front panel, and have the metalwork done (without the price breaks for buying in bulk), and then add even the smallest value to your labor, you're probably going to be at the same price, if not higher. Plus, it is very difficult to build any piece of gear that specs out as well as the *S&M*, especially when it comes to crosstalk rejection.

The *S&M* is very easy to use, especially with just a single knob and a bypass switch on the front panel. One detail you will need to remember when using it is that you must patch either cables or gear on its inserts in order to use it (this is explained in the manual). The insert is designed to remain active so that you can listen through the inserted gear even when you are not in M/S mode. It's very tempting to crank the width knob all the way up. I've found that some boost of the sides almost always sounds good, but it is easy to overdo. I think it also has applications for surround mixing, and I'd be very curious to hear what it sounds like with one across the rear speakers, or a pair on each side going front to back (and then I'd probably put a third across the rear of those two just to see how far I could push it!). Because it's got a unique function, it's well designed and well built, and it has applications for tracking, mixing and mastering, I think the *S&M* is very quickly going to become a staple in studios of all types.

($1749 street; www.dangerousmusic.com)

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