

by Norman Weinberg

# New Sounds For Your Old Machines

When you first brought home that new drum machine, the sounds were so good, so clean, so fresh, and so new. But now that it is several months later, those same sounds seem a little old. You just can't get that snare drum as fat as you want, or maybe the crash cymbal doesn't ring for as long as you need it to. While the 24 to 32 sounds that came burned into the memory of your machine seemed like a whole new world of choices, now there seem to be only two or three that you still like. It would be great if you could get the sound of a hot, reverse-gated snare drum the size of a small planet—but your machine just doesn't have it. If this situation sounds familiar to you, there are several solutions to your problem.

First, you could trade the old machine in and buy a new unit. But a possible problem might be that all the sequences and songs that you spent so much time programming into your old machine could go to digital heaven. And how about all that time you spent to learn your machine inside out? You're going to have to learn to work with

an entirely new machine, and that may slow down your productivity.

Second solution: If your machine is one that uses replaceable chips to make its sound, you can spend a lot of money for new chips. It might be cheaper in the long run to buy an E-PROM blower and a handful of blank chips, and burn your own sounds into the machine. But then you're going to shell out several hundred bucks and have to play around inside your machine. In a live performance situation, this would be just too much hassle. The bottom line here is: Even if you buy 100 blank chips, you are still going to be limited to 100 sounds. If your machine (like mine—the E-mu Systems *SP-12*) doesn't allow you to change chips, then this solution isn't even a viable one.

The ultimate solution, which is available to everyone who owns a MIDI drum machine, is a sampler synthesizer. Much has been written about samplers, so I won't go into them too deeply in this article, except to say that true-to-life percussion sounds can only be synthesized with a sampler. Except for a few hand drum sounds or maybe a bongo or conga drum, no current synthesis technique can create real, clean drum sounds over a broad spectrum of the different families of percussion instruments. If you want to be happy with your drum sounds, get a sampler! Now that we've gotten that out of the way, let's continue.

I bet that you're thinking that a sampler is going to cost you a whole lot of money, and you just can't see how it is going to pay its way. But consider the cost of a new drum machine, new chips, and an E-PROM blower, or even just your lost time while you learn to use a new machine. While the sampler *will* cost you more money up front, it's going to pay for itself by the time you reach your second disk of drum sounds. Disks are the main advantage of sampler units. When the machine runs out of memory, you can store those sounds on a disk and regain your sampler's memory for more sounds. By the way, depending on your type of sampler, disks cost between one and two dollars, and can store from 20 to over 100 sounds each. The other two solutions may cost less in the short run, but if you've grown tired of 20 or more sounds already, what makes you think that you won't tire of your next 20 sounds? A sampler opens up an unlimited supply of sounds—past, present, and future.

Let's assume that I've talked you into it. What should you look for in a sampler that is going to serve as a storage vault for your drum machine sounds? Three main items will determine if you're going to like your machine. These items are split points, sample rate along with resolution, and memory.

The ability to split your sampler into many different parts is the most important consideration. This means that you must be able to place a bass drum sample on C-1, a cowbell sample on C#-1, and that special snare drum sound on D-1. If your sampler only allows a few splits, then you are going to be drastically limited in the amount of sounds you can play at any one time. You should be able to split the keyboard into as many sounds as you currently have on your drum machine. If your drum machine sends 48 different notes through MIDI, then look for a machine that can make 48 splits.

The higher the resolution (8-bit, 12-bit, 14-bit, or 16-bit), the better. The faster the sample rate (from 10k to 40k or more), the better. As a reference, you can consider the compact disk. A CD is sampled at 44.1k samples per second with a resolution of 16-bit linear A/D conversion. If your sampler can work at these levels, then you will have CD-quality samples for your drum machine.

The other main consideration is memory. The amount of memory determines how many different drum sounds you are going to be able to access at one time without calling up a different disk or a different preset on your sampler. If your sampler only has 2.5 seconds of memory available at any one time, then you are not going to be able to play very many sounds along with your long cymbal crash.

Other than these three basic items, look for a machine that you can afford (many *great* samplers are available in the \$1,500.00 to \$2,500.00 range, and prices seem to be coming down all the time) and a machine that will offer you some other features as well. Flexible digital controls to make sampling easier (such as looping and truncation) and analog controls like envelopes, filters, stereo placement, etc., are becoming more common on sampler units.

Now that you've picked up your sampler and have it home next to your drum machine, connect the "MIDI Out" from the drum machine to the "MIDI In" of the sampler. Next, make sure that the drum machine is sending on the same MIDI

The 200MV Monitor Amp from Gallien-Krueger. As Rick Van Horn of *Modern Drummer* says, "...quite simply the greatest 'hearing aid' for club drummers I've ever seen." The 200MV features 100 watts of clean power, 4 inputs (1 mic level, 3 line level), 7-band graphic EQ, built-in reverb, and a host of outputs. Create your own individual monitor mix. Hear one at your Gallien-Krueger dealer or write GK at 1355 Dell Avenue, Dept D, Campbell, CA 95008 for info.



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channel that the sampler is set to receive. If your drum machine does not support a "local on/off" switch (a feature that will send the MIDI information out of the machine without playing the internal sounds), all you have to do is turn the volume of the drum machine down as far as it will go. When you start playing your buttons or a song or sequence that you have already programmed, you will hear the new sampler playing those pitches. But wait, you still might have a problem.

Drum machines usually send a very short note-on command through MIDI. If your sampler sounds have a slow attack envelope, you may not hear anything. It is important to have the envelope for your sampler set so that the attack is as quick as possible and the release is as long as possible. Your sampler owner's manual will show you how to set the envelope controls to achieve this. These settings will allow the sound to play through completely, even though it is receiving a very short note. Your next step is to get the sounds that you want into the sampler and to "map" them to the proper location. Try starting with the sounds that are already in your drum machine.

The drum machine owner's manual should have a chart showing which pitches are actually being triggered when you play a certain drum sound. As an example, most drum machines have the bass drum sound sent as a C-1 (MIDI note number 36). Sample this bass drum sound, and place it on the sampler at note 36. After you do this with all of your sounds, you will have a "map" of your drum machine on the sampler.

Most samplers will come with a few disks of factory sounds that show off some of what the machine can do. Next, try making a new map of drum sounds by using some of the factory drum sounds. After you have made this new map of your drum machine, it's a good idea to make some sort of overlay (cardboard works well) that can be set on top of your drum machine to show which buttons now will trigger which sounds. (Your bass drum button might now be a timbale rimshot.)

There are a few things to keep in mind at this point. The first is that your drum machine brain is really a very sophisticated sequencer. All of your drum machine features, such as auto-correct, dynamic buttons, step-time programming, chaining segments into songs, etc., will all be retained when driving the sampler. Also, remember that our sampler's special features will still operate. You can use the pitch-bend wheel on your tom-tom sounds, pan your mono drum machine snare from left to right stereo channels, or even try the arpeggiator!

You might even want to try recording the drum machine sequences from the keyboard of the sampler. If your drum machine supports real-time programming,

simply reverse the MIDI cables, set up the drum machine to record, and drive the drum machine with the keys on the sampler. There may be some occasions when recording segments will go faster this way. By the way, as a helpful hint, did you know that many drum machines that support real-time programming can record from any MIDI device? For those drummers who really feel more at home with sticks in their hands, try recording your sequences from a Roland *Octapad* or from a MIDI drumset. It is a whole lot faster, and you will get the dynamics right the *first time*!

Here is another helpful hint: If your drum machine sends a variety of MIDI note-on velocities (two at least—like the Roland drum machine accent buttons) and your sampler allows you to "layer" two sounds on one key with a velocity cross-fade (example: low agogo bell on D-3 with a velocity of 1-64, along with a high agogo bell on D-3 with a velocity of 65-127), you should have flashbulbs going off inside your head. Yes, you can have two different sounds for each button on your drum machine. This turns a 32-button drum machine into a 64-button unit. There is a limit to all of this: At some point, you are going to run out of memory. I am using the E-mu Systems *E-Max*, and even with a memory storage time of about 19 seconds, if you try to map 64 sounds on the keyboard, each sound averages out to only about 0.3 seconds. It can be done, but you need to use your memory in a very efficient manner. Even if you do run out of memory, remember that you can just load it off to your disk and start over again.

Depending on the features of the sampler that you choose, you can even make one sample sound like five different instruments, either by spreading the pitches to different keys, or by using some sort of filtering to cut out some of the highs or lows. If you really want to get fancy, you can buy a computer and a visual editor for your sampler. A visual editor allows you to actually see the waveform of your sound and redraw it to your liking. It is the equivalent of a word processor for sounds: cut, copy, paste, merge, splice, loop, or even print out a picture of your sound.

As you can see, the possibilities are astounding. By getting a sampler, you not only turn your drum machine into a virtually unlimited "memory unit," but you can open up a new world of sounds that have never been heard before. Sample the bells at the church across town, your own acoustic drums and cymbals, or the click you make on the bottom of that plastic cup from Burger World. You can design your own snare drum based upon a merger between a Sonor piccolo snare and a Yamaha field drum. The sampler will cost you more money in the short term, but if you get one that sounds clean and has the features you want, you will never outgrow it.

