

## Electronic Percussion **The Educational Side of Electronic Drums, Part I**

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Okay, so you have seen a lot of the recent ads about electronic percussion in this and other magazines. Maybe you've even listened to the sound track of a TV show or movie and heard drum sounds that you thought were electronic. You might feel that you should find out what all this commotion is about. If you are thinking about getting some electronic percussion instruments you might be considering the educational benefits of electronics. Even if you are not a drumset player, even if you don't play in a techno-pop band, you can still use these electronic percussion instruments to improve whatever you do now, and maybe prepare yourself for the future.

First, you should realize that these instruments now sound great! If the last drum machine that you heard was attached to an organ with color-glow keys, then you owe it to yourself to give some of the new models a closer listen. In the same manner as a compact digital disk, the new drum machines and electronic sets create their sounds by digital samples. These samples are a digital recording of the exact wave forms created by the acoustic instrument when it was recorded. In short, while these sounds may not be "real" percussion instruments, they are not "synthesized" sounds either, and thus the end result is as close to the original instrument as a compact disk.

We are well aware that a frequent topic today, in musicians' magazines and in discussions among performers, is how drum machines are affecting the pop and rock recording industry. Not long ago I read an interview with a keyboard player who had been doing a lot of drum programming because the drummers hired for the recording session didn't know how to program. While many musicians fear that something like this will put them out of work, the focus of the article was a plea to drummers to

embrace the new technology so that A) drummers would get to keep their jobs and B) the drum parts being programmed on drum machines wouldn't sound as if they were recorded by a keyboard player.

For the fact is that today's musical market is changing. If you want to enter the job market with the skills and knowledge necessary to earn your living in music, then you have to keep up with the expanding field of percussion . . . and the field now includes electronic percussion instruments. Just as you can't learn timpani without the drums, you can't learn electronic instruments without the necessary equipment. Also, if new learning techniques are available to help us become better performers, then let's give them a try. Computers have already been shown to be an aid in many aspects of academic and technical training. It might be possible to adapt some of these techniques to percussion performance. The knowledge of how to work with the different aspects and parts that make up the entire system and the improvement of your playing ability by a self-examination of your own style and skill can be educational benefits to you. How do you program the drum machine? How do you "sculpt" sounds on the electronic drum set? By answering these questions, you will gain a new perspective on your playing.

When you start to program the drum machine, the first decision is whether or not the end result is going to sound like electronics or a "real" drummer. If the style is rap or techno-pop, then just about anything is legal. If the music being programmed calls for a real drum sound, then another approach must be considered. You might ask why use a drum machine to try to imitate a real drummer? Because you may be asked to do this at some point in your career. Many keyboard players are now performing on the hotel club-circuit as a single act. A club owner can make more

money paying one musician than paying six. For this reason, some of these players are using drum machines as their rhythm section. A drummer who really knows what can be done with a drum machine could program their songs for them, and the keyboard performers will have a better sound. In other words, someone could hire a drummer once (for some sort of special fee), and use that drummer's great ideas and musical influence for every performance.

How does one begin to create that live sound? If the real drummer sound is desired, then programming a pattern on the drum machine requires pulling your playing apart, examining and analyzing what you are doing when performing. Let's look at some of the factors that come into play when using this approach.

First there is the sound of the drum set. It is possible to program each pitch along with its amount of decay (length) for all the drum sounds on the machine. Does the style of music dictate long or short decays for the tom tom sounds? Do you want the impression of a small drum set, or one with twenty mounted tom toms? Once you have the sounds that you want, then comes the actual recording of patterns.

Another aspect to think about is the groove or feel of the patterns. "Swing factor" can be added to the patterns to distort the divisions of the beat. It can be set for 50% (straight eighths), 54%, 58%, 63%, 67% (swing style divisions of the beat), or 71% (shuffle). It is even possible to change between the different swing levels during the song. Some of these differences are subtle, but really affect the groove and style of the performance.

A lack of natural dynamics is the first thing that comes to mind when listening to a drum machine which has been programmed in the "set-it-and-forget-it" mode. You can't create a live impression with the two

choices of loud and louder. Where are the stress points, pulse points, accents, the life and spirit of the patterns? How strong are the accents in relation to non-accented notes? Are all accents at the same level or do they also have a shape? With a drum machine like the E-Mu SP-12, all dynamics are memorized into the individual patterns. Where these dynamic differences occur in the patterns and at what level they are recorded determine quite a bit of the overall feel. Drum machines that record dynamics can work with 128 different levels. You must agree that 128 dynamic levels are enough to create just about any stress points you might need.

Another facet of creating a live impression is the tempo. Let's face it, it's possible with the drum machine's auto-correct feature and a good, steady supply of current, to build a song with absolutely perfect time. Unlike someone with perfect pitch, I've never met anyone who can hear something and say "It's between 110 and 111 to the quarter note, closer to 110.4." But it seems to be easy to hear when the tempo is just "too perfect" to be a live player. If the tempo never changes at all, there is a loss of feeling and mood. With the drum machine it is possible to program tempo with the accuracy of one-tenth of a beat per minute. It is also possible to program a *ritardando* or *accelerando* between any two points. With this in mind, the tempo can push a little bit going into a chorus, or drag back a little when the mood relaxes. These should be subtle changes; thinking about them and working with them will make your ear more sensitive to tempo differences and fluctuations.

Drummers don't often get the chance to work with a mixing board to listen for, and experiment with, the overall balance. When you play live, your ears tell you the balance of the entire set and your body makes a series of constant adjustments to achieve what you want to hear. Just think of the balance differences (drums versus cymbals) between a big band sound and a rock sound. Each sound on the drum machine can be mixed at different levels without losing the subtle dynamics that were originally programmed. By experimenting with different settings, you will gain the knowledge of how balance affects style. If you really think about all of these factors and do some experimentation you will improve your control on the drum set when you play live, thereby giving yourself more options and also the impetus for working toward more control.

While you can mold the color and sound of the drums with the drum machine, many more variations of color are possible with the electronic drum set. The drum machine allows pitch changes of a little more than an octave in half-step divisions, but, the drum set's pitch range spans two octaves in

quarter-tone divisions for each sound. Instead of only determining the overall length of the sound with the drum machine, digital drums such as the Roland *DDR 30* permit fairly sophisticated control of the wave's envelope. You can also control the amount of bend a sound has (pitches falling due to stronger attacks), how long that bend takes to fall, how far it falls, and the dynamic sensitivity at which the bend is activated (soft strokes don't bend, louder ones do). Other aspects that can be used to mold the sound into the desired color are two separate sound gates that are fully controllable, as well as a very modest equalizer.

When all of these parameters are present, the programmer is required to really think about what types and levels of these controls make up their sound. When you are looking for some far-out space sound, anything is possible, but there is a certain value in trying to "sculpt" pure acoustic sound. I have found myself thinking about the length of attacks on different snare drums, the volume difference between the sound of the stick hitting the snare and the short amount of decay that follows, and even the distance that the pitch falls in relation to its attack volume. What really is the difference in the attack and sustain of a single and double-headed tom-tom? These are questions that few people have ever thought about, but when you try to sculpt drum sounds from their basic ingredients, it requires a new kind of analyzation. It forces you to think just about the sound itself and hear it in a new light. I believe that this can be transferred directly to acoustic drums as well. Pitch, stroke, level of sustain and decay, can all be controlled to a high degree by the player's hands. By working with the sounds on the electronic set, you might get a better idea of the sound you want to produce and what your hands must do to achieve that sound.

Once these ideas are sculpted into your sounds, they can be combined to form different drum sets that can be stored in the electronic drum's memory and recalled at the push of a button. Using the memory cartridge in addition to the internal memory, the *DDR-30* holds 24 different sounds for each pad. Why do drummers use certain types of drums for different playing situations? Most likely the answer involves the combination of different sounds to best blend with the music. With so many drums available at the touch of a button, you can really hear the difference between a good "heavy metal set" or a "jazz quartet set." If you are working on orchestral excerpts for an audition, you can even try out 24 different snare drum sounds in order to hear which type of drum would be the best choice for that particular passage or work. If it is decided that a drum with a thick, heavy, and dark sound would work best, it will save a lot of time when you select and tune the instrument you will use for the performance.



If you want to further explore the educational side of electronics, add a computer to your system!<sup>1</sup> One program will do a particular job easier or better than the other, depending on the task. If you connect electronic percussion instruments to a computer, many other wonderful options become available. What follows is a short list of some tasks that can be performed by combining electronic instruments and computer programs.

1. Overdub, or multi-track an almost limitless number of times (how about a 400+ track tape deck?).

2. Include a metronome that performs the recorded material at any setting from a quarter note = 20-400 bpm without changing the pitch of the recorded instrument.

3. Have a rhythmic accuracy of 480 attacks per quarter note (this amounts to a mind boggling "theoretical" 3,200 notes per second).

4. Play and print out just about any polyrhythm (five against seven against nine against thirteen against seventeen, all at the same time).

5. Control 128 levels of dynamics over any time span.

By working with the computer, you can learn about recording studio techniques such as overdub and punch-in punch-out, notational problems with percussion, and working with MIDI. These, too, are valuable skills in today's musical job market.

This brief introduction to the educational side of electronic drums has suggested how an electronic system may help in the job market as well as in examining your playing from a new perspective. By taking apart a song or a sound, and then putting it back together, one gains a great deal of knowledge about what makes a particular idea good or bad. Concepts of form and structure, aesthetics, balance, and more can be explored. Just as an artist who mixes his own colors gains a certain respect (and an appreciation on a deeper level) for exactly what colors are, the drummer who can sculpt sounds and build creative grooves knows exactly what is being done to achieve the desired goal. Part II of this article will focus on several techniques possible with electronic percussion instruments that can help solve specific performance problems.

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#### Notes

<sup>1</sup> The computer programs used in my project are *Total Music* by Southworth Music Systems, *Performer*, and *Professional Composer* by Mark of the Unicorn.



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