Getting Started With Electronic Percussion
Part One—Input Devices

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Over the course of the next five issues, we're going to show you how to get started in the world of electronic percussion. Even if your experience with electronic devices doesn't go much farther than using a Walkman with a pair of headphones, you'll feel like an expert by the end of this series. So, let's get right to it.

The first lesson of electronic percussion may be the hardest to learn. There is nothing inherent about electronic instruments. Yes, becoming comfortable with electronics is going to require that you learn a few terms, practice certain skills, and use your creative energies. But these are prerequisites for anything you do in life. To say this another way: it's not any harder to learn how to use electronic percussion instruments than it is to learn to golf, play basketball, sail, play a new song, or drive a car. All of these actions require knowledge, skill, and creativity.

The second lesson of electronic percussion (actually more of an axiom to live by) will make all the other lessons easier: The knowledge required to build any system is different from the knowledge required to build the system. To get a feel for this lesson, here's a little two-part experiment. Part One: Get in your car and drive around the block. Did you feel comfortable, relaxed, and in control of the situation? Part Two: Describe (in detail) how the carburetor and emission systems operate and interact.

Do you know the answer to the second part? Do you even care? Most people consider themselves fairly good drivers, but don't know the first thing about how a car actually works. It might be surprising to learn that the pilots who fly the big 747 airliners don't know exactly what keeps them in the air. There are many theories, but no one really knows why planes fly. I guess I'm getting off the subject, but the point of this little digression is that you don't have to get involved with the bits, bytes, and details of electronic music unless you are interested in this sort of thing.

Since we're just beginning with electronic percussion, we're going to play a little game called "divide and conquer." Any electronic setup, no matter how basic or how complicated, consists of several components. This issue, we take a look at the element which starts everything rolling.

For any electronic music system, the first stage of business is accomplished by changing a physical action into electrical energy (that's why they're called electronic instruments). Most often, this action is somewhat related to playing an acoustic instrument. Keyboard players push keys with their fingers, guitar players pluck strings, woodwind and brass players blow through horns, and drummers strike surfaces with sticks.

The term used to describe this equipment which makes a physical action and turns that movement into electrical energy is input device. The input device lets the rest of the system know that something is going on.

Input devices for percussionists come in a vast assortment of styles. There are single-surface pads that can replace all of the different instruments in a standard drum kit: snare, tom, kick drum, and even cymbals. You can purchase individual pads or buy complete electronic kits from several different manufacturers. There are input devices that are played like vibraphones (like Simmons' Vibrolite and KAT's KAT Controller). Others (often called "bugs" or "triggers," and manufactured by several companies) can be mounted on any acoustic percussion instrument, thus turning it into a hybrid mechanism. And multi-surface pads like Simmons' PadKit, KAT's DrumKit, and Roland's Pad Kit, are groupings of individual surfaces mounted inside single housings.
Even though these input devices perform the same basic function sensed movement and transmitting that movement into electric energy), there are two methods for doing this. The first uses something called piezo transducers. Without getting into the gritty details of how it is done, please react to vibration. When a pad or an acoustic drum with a bag is struck, it's going to vibrate. The harder it's struck, the greater the vibrations will be. And, as the vibrations get stronger, so does the electrical voltage.

The other method uses a newer technology called force sensing resistors. Instead of reading vibrations, an FSR (the electronic music scene in Chock full of acronym) is sensitive to pressure. A pad which uses FSR technology will sense more pressure when the stick comes down harder against its surface. Just like the piezo, the pressure increases, so does the voltage.

The signal that comes out of the input device is called the trigger. It is the electrical spike that "triggers" the rest of the system. Force sensing resistors are less susceptible to false triggers (tending an electrical signal when none is wanted) because they are immune to the sympathetic vibrations of drum kit hardware, speakers, or vibrating stages.

When first getting involved in electronic percussion, it's important to choose your input device wisely. Of course, cost is going to be a factor. But how you plan to use the input device is the most important consideration. You need to think about what you're going to use it for. And, the particular technique you want to use to accomplish that task.

If you're interested in playing a full electronic drum kit, individual pads will give you the best physical representation of an acoustic drum kit. If you want to use your acoustic drums as input devices, then you'll need to go with a bag. You'll feel more comfortable adding a few electronic goodies around your existing drum kit, you may opt for single pads or one of the multi-pad systems being produced.


You also may decide that you want to try something just a little bit different with your electronic system. Perhaps you're interested in playing electronic drums, but don't require the kit's traditional physical layout. How about linking three multi-pads to create an instrument with 24 to 36 playing surfaces in a small amount of space? Or better yet, play your drum pads from a video-phased input device for up to 60 surfaces! You might even consider placing the pads in unsuspecting household objects. Since these latter critters read vibrations, they can be attached to anything that can be made to vibrate. Your input device could resemble a metal trash can, a wooden bowl, or even a motorcycle (come to think of it, the idea of driving your instrument to the gig sounds fantast- tic).

Once the input device creates the trigger, the signal is sent through a cable to another box. This box, called a MIDI converter, reads the voltage and creates MIDI messages, or a sound generator outputs the sound triggers and produce a musical timbre. But, since this is the topic of our next installment, we'll end here. Until then, go check out a few input devices! *