



# Getting Started With Electronic Percussion

## Part One—Input Devices

BY NORMAN WEINBERG

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 further 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 inherently difficult 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 master 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 emissions 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.

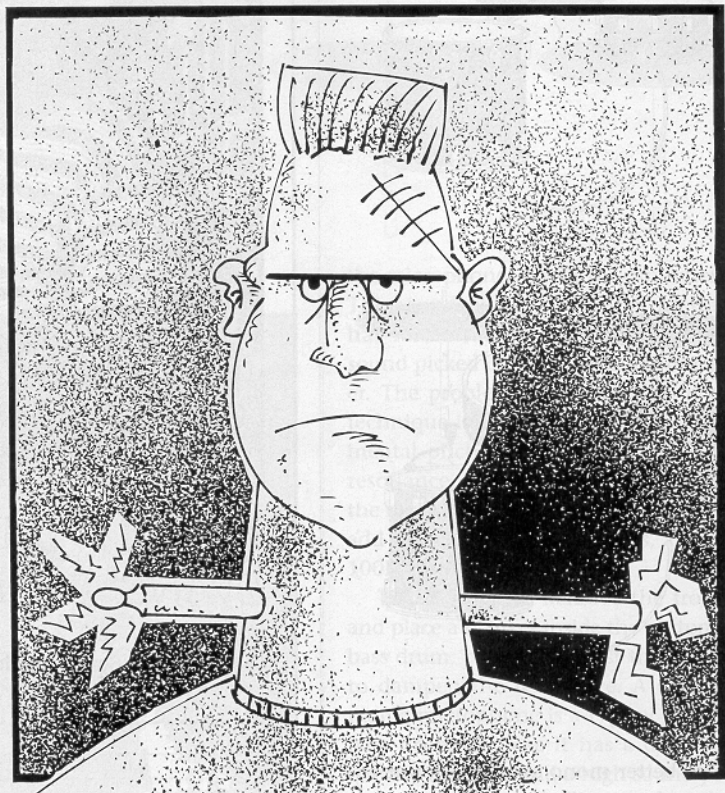
Since we're just beginning with electronic percussion, we're going to play a little game called "divide and conquer." Any electronic setup, no matter how basic or how complicated, consists of several components. This issue, we take a look at the element which starts everything rolling.

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 the equipment which reads 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 wide assortment of styles. There are single-surface pads that can replace all of the different instruments in a standard drum kit: snare drum, toms, 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 (the Simmons *Silicon Mallet* 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' *PortaKit*, KAT's *DrumKAT*, and Roland's *Pad 80*, are groupings of individual surfaces mounted inside single housings.



Even though these input devices perform the same basic function (sensing movement and translating that movement into electrical energy), there are two methods for doing this. The first uses something called **piezo transducers**. Without getting into the gory details of how it is done, piezos react to vibration. When a pad or an acoustic drum with a bug 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 is chock full of acronyms) 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, as 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 triggering** (sending 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 the particular task at hand, 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 bugs. If you'd feel more comfortable adding a few electronic goodies around your existing drum kit, you may opt for single-surface pads or one of the multi-pads that is being produced.

Before you invest, get your hands on the December 1989/January 1990 issue of *Drums & Drumming*. The article entitled "Electronic Percussion Buyers' Guide Part 2" includes descriptions and retail prices of several pads.

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 parts from a vibraphone-style input device for up to 60 surfaces!

You might even consider placing bugs on unsuspecting household objects. Since these little 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 fantastic).

Once the input device creates the trigger, the signal is sent through a cable to another box. This unit can be a **trigger-to-MIDI converter** which reads the voltage and creates MIDI messages, or a **sound generator** designed to read trigger spikes 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. •

## A Few Words About Electronic Drums

**Bug**—A piezo transducer designed for acoustic instruments.

**False Triggers**—An unintended electrical signal sent as the result of sympathetic vibration.

**Force Sensing Resistor (FSR)**—A pressure-sensitive input device.

**Input Device**—Any unit which translates physical action into electrical signals.

**Multi-pad**—A single housing which contains several independent playing surfaces.

**Pad**—An input device usually struck that looks and feels a little like a drum.

**Piezo Transducer**—An input device that is sensitive to vibration.

**Trigger**—The electrical signal created by an input device. Or, the act of sending electronic signals through a system.

## Quick Electronic Tips

### Humanizing Your Alesis HR-16 Drum Machine Patterns

**B**Y NOW, MOST DRUM-MACHINE programmers have learned that the ultimate way to record patterns is by entering them from a MIDI drum controller with drumsticks. Having a drumKAT, Octapad, (or equivalent) MIDled to your HR-16 drum machine is the first prerequisite. But a few extra steps are required to capture the nuance of your live performance properly.

**Tip 1:** When recording, always make sure you've selected "soft-medium-or-loud" pad response in the HR-16's MIDI menu. If you inadvertently select one of the "Fixed Dynamic" choices, no velocity information will be recorded. This is one of the most commonly overlooked features in the HR-16.

**Tip 2:** Anytime you record a "two-handed" hi-hat groove, map out "Closed Hi-Hat A" to one button, and "Closed Hi-Hat B" to another on the HR-16. Next, map out two pads on your MIDI controller to match the note numbers of Hi-Hat A and B in the machine. In other words, your left hand will trigger Hi-Hat A, and your right hand will trigger Hi-Hat B. By alternating between these two samples, you'll create a much more realistic sounding groove.

**Tip 3:** The next time you're working with a bass player, try tuning a couple of kick drums in the HR-16 to match the bass line. Be careful not to go overboard with the tunings—two or three slight variations can really liven up the groove. This trick works particularly well in a funk context.

—Greg Rule

Send your favorite drum machine programming ideas to "Quick Electronic Tips" care of *Drums & Drumming*, 20085 Stevens Creek, Cupertino, CA 95014.