Alternative, Alternative Controllers

THE FUTURE OF FABRICATION

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In the world of popular music, musicians and bands are constantly creating new means of musical expression. It's not just a matter of being different – it's all about pushing the boundaries of the creative process. The term "alternative" was once bestowed on any music that didn't fit into one of the then-current mainstream musical styles (until it became, itself, a mainstream musical style). In the world of electronic music, the phrase "alternative controllers" is used to describe instrument interfaces/controllers that don't have an acoustic instrument counterpart.

The purpose of this article is to expose you to some of the newest advances in controllers that just might change the way you think about playing drums and creating music. If any of these devices spark your creative impulse, dive in, do some additional research, and see if one of these tools is a good match for you and your muse.

Before going completely off the deep end, however, let's take a look at some of the more popular alternative controllers that have been adopted by drummers and percussionists during the electronic revolution.

PLAYING WITH SURFACES

The very first electronic drums were simple surfaces that looked pretty much like actual drums (and disco music wouldn't have been the same without them). True, they may have been hexagonally shaped, or made only one disturbing, descending-pitch-bend tom sound, but they were still comprised of a single surface with a "head" that was struck by a stick to create sound. The first new development of a man/machine interface was Roland's **Octapad**, which debuted in 1987. Instead of having a single striking surface, this multi-pad had a face divided into eight zones. By making multiple sounds available on one surface, it was unlike any

previous percussion controller on the market. In a very real sense, this was the first alternative percussion controller because it didn't look, feel, or act like a traditional drum or drum set.

The next big advance in alternative controllers came out one year later when a company called KAT brought the **drumKAT** to the market. It came with ten rubber surfaces, a super-advanced set of MIDI instructions, and FSR pads rather than piezos. With the release of the drumKAT, it was possible to control drum, percussion, and synth sounds using sticks or fingers, and even have applied pressure affect the way the sounds moved through time. This was a radical departure from an analog drum kit. As a testament to the strength of their designs, both of these instruments are still available – of course with several generations of software improvements and updated features.

For those who wanted to play with their hands rather than sticks or fingers, the Korg **Wavedrum** set the pace. This instrument was the first to take the conga/hand-drumming interface and use it to control electronic sounds. Roland's **HandSonic** is a newer and more feature-rich approach to this particular alternate controller idea.

PLAYING WITH BUTTONS

Today's alternative controllers continue to offer the drummer new and evolving ways to approach the music-making process. In fact, they often break the mold of playing on a surface with either sticks or hands. The move to playing buttons with fingers (like an accordion) has been surprisingly popular and effective.

If you haven't seen the **Zendrum** stable of percussion controllers, you should make the pilgrimage to the company's web site. Zendrum makes three versions of this unique alternative controller: the Zendrum ZX, the Zendrum LT, and the new Zendrum Zap, each with a slightly different trigger button layout. Since you play these controllers with your fingers, and you can put any MIDI note under any trigger button, you're free to either take the more traditional approach to your drumming or find an entirely new direction.

Your perfect controller may just be one that you design and build yourself

Some players – most notably Kenny Aronoff – change the customary position of their rack toms in order to come up with more unique drum fills. Well, imagine the creative ideas you can generate when you can put any sound in any position. While it's easy to do this with just about any electronic drum kit, you won't have the large number of available triggers that the Zendrums offer. Having a new performance paradigm such as the Zendrum at your fingertips takes creativity to a much higher level.

Speaking of finger-style controllers, don't write off the new wave of USB controllers that have sprung up during the last couple of years. The M-Audio **Trigger Finger**, Korg's **PadControl**, and the Akai **MPD24** are three killer controllers that can be just as comfortable at home in the project studio as they can be on stage replacing a traditional kit. If you don't think that a finger-based pad controller can really cook on stage, just catch some of the YouTube videos of David "Fingers" Haynes doing his thing. N'uff said!

PLAYING WITH GRIDS

C-Thru Music's **AXiS-64 Pro** takes the finger drummer concept to yet another level. This baby's got 192 buttons, pitch bend and mod wheels, two rotary controllers, and for the kit emulation folks, two pedal inputs. Sounds like this thing was designed and built specifically for us drummers, doesn't it? Well, it wasn't – not exactly.

The AXiS's buttons are laid out in a "harmonic axis," where any adjacent key is a perfect fifth, or a major or minor third away. For this reason, any three adjacent keys will result in some sort of a triad. It's easy to play major, minor, augmented, or diminished chords, as well as complex arpeggio patterns. These are not typically concepts familiar to drummers. But while the rest of

Wavedrum

Axis

Trigger Finger

Zendrum

Octopad

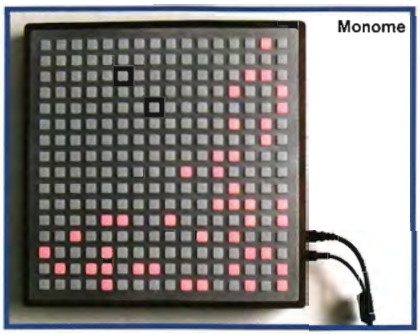
the world is worried about white and black notes, harmonic progression, and cadence formulas, we've got better ideas. With this many buttons, we can be playing drums, percussion, loops, pads, special effects, and just about any sound under these MIDI note numbers to create some killer moods, textures, grooves, and so on. The close proximity and small size of the buttons makes the unit very agile and responsive for fast patterns.

To make this system even more versatile, The AXiS can operate in one of three different modes: single (a single MIDI channel with three instances of each note), split (three zones of 64 keys each), or layer (up to three channels simultaneously). If you're starting to drool over what you might be able to do with a controller like this and a program like Abelton Live, you're beginning to get the picture. This is truly thinking outside the box.

But what if you don't want to think outside the box? What if you want to rebuild the box into a cylinder, a Mobius strip, or even a black hole? Then the **Monome** might be your percussion chameleon of choice. If you're interested in buying a Monome controller, you'll need to act fast. One hundred of the company's "128"-model units went on sale in December of 2007. They sold out in five hours. In January of 2008, the company put 100 "64" units up for sale and these sold out in two minutes. Monome is actually the brainchild of Brian Crabtree and Kelli Cain, who design and build what they call "adaptable, minimalist interfaces" – a combination of open-source hardware and software. This idea of a piece of hardware that is both open source and totally reconfigurable has made quite a splash.

In addition to the 128 and 64, Monome also makes a third model called the "256." All three take their names from the number of keys on the grid. A 64 is an 8 x 8 grid, the 128 is 16 x 8, and the 256 is a massive 16 x 16 grid. Each model's backlit keypad connects directly to your computer. The exact function of each key is determined entirely by the particular application running

TENORI-ON



Monome

on the computer; there are no hard-wired functions on the box. Because of this, the Monome can serve as a controller for a soft synth, sequencer, mixing program, DAW, light board, or any other device.

While you're certainly able to do your own programming for the machines, consumers who buy into the Monome community share the software they write with other users without cost – a sort of legal software Napster. Most users create their patches in Max/MSP, a graphic programming language for music, audio, and multimedia. Max/MSP is a very sophisticated program, but it's pretty easy to download the free runtime version and work with other folks' patches.

Since the Monome it totally configurable, you can go way beyond playing individual sounds or samples with the buttons. Yes, it's a finger-style interface, but the buttons can be used for cutting beats, creating loops on the fly, adjusting faders or knobs, editing values, or anything else you might be able to think of. You're not just interacting with sounds – you're interacting with the software itself.

You're not just interacting with sounds – you're interacting with the software

If you live in the U.K., you might want to see if you can get your hands on Yamaha's **Tenori-On** device. It's not available in the U.S., but it might be soon. It's a music controller with a 16 x 16 grid that is totally self-contained. With its built-in sounds and battery operation, this might be the ultimate portable music-making machine. At first glance, this device might seem like a toy. After checking out all of the available features, it clearly is not.

Going deeper inside the machine reveals six different modes of operation: Score, Random, Draw, Bounce, Push, and Solo, which comprise 16 different layers that can all be played simultaneously. A MIDI interface means that the patterns created on the Tenori-On can be played by any MIDI device or recorded into a sequencer. If you want to go further, you can even synchronize two machines together.

BEYOND BUTTONS

"Tangible user interface" is the new buzzword for musical systems that require a number of different parts manipulated by the performer. Once you totally cut the bonds of playing surfaces, pads, or buttons, you enter a new dimension.

You might have seen some of the Percussa **AudioCube** videos floating around the Net. The Belgium-based Percussa offers a unique and clever interface for audio software programs. According to Bert Schiettecatte, founder and director of Percussa, the cubes were born "out of my frustration with going through menus to actually use the hardware and software." Here's a brief explanation of how these cubes interact with each other and how they can control sound.

Each cube uses an infrared system to communicate with other cubes. Cubes can operate in one of three different modes: Sender, Receiver, or Sensor. In Sender mode, the cube sends information wirelessly to other nearby cubes. In Receiver mode, the cube will read information from other cubes. In Sensor mode, the cube senses distance to another object such as your hand or another cube.

Let's say you have one cube connected by USB to your computer. Other nearby cubes will be recognized by both an identification number and by the number of the face pointed at the host cube. The top and bottom of the cube aren't used, so each cube has four different sides that can be programmed to react in unique ways. For any two cubes, there are 16 possible relationships. The company sells two-cube sets and four-cube sets, but there is no limit to the number of cubes you can have interacting with each other.

A software program called MIDI Bridge takes this information from the cubes and turns it into MIDI data. It's easy to program the cubes to send MIDI note number information for firing sounds, loops, sequences, and so on. It's also common to see cubes used to send continuous controller information that can affect filter, reverb levels, delay times, or any other aspect of

the sound. As an added bonus, the cubes can also receive MIDI data from the computer and change colors based on their function. For example, with CC 14, 15, and 16 controlling red, green, and blue, you can mix those three fundamental colors to create any other color.

While MIDI Bridge is the first software designed for the cubes, Schiettecatte says that as the company learns that "different people want to use the cubes for different things, we'll be developing additional software for the cube platform. We have all these new ideas about how we can use the cubes." Since MIDI Bridge is open source, users with Max/MSP can edit the front panel on MIDI Bridge to create even more functions.

Another tangible user interface system is the **Reactable**. If you've spent some time on YouTube searching for new electronic instruments, or if you've seen a recent Björk performance, you've likely encountered the Reactable. While it's not yet on the market, plans are in the works to bring a consumer version of this creative new device to the general public.

The Reactable is an extremely complex system, but it's an entirely new way to work with sounds. A video camera constantly monitors a multi-touch translucent surface. The camera and associated software recognize the player's fingertips and a variety of objects that can be moved around the surface. Each object is somewhat related to the parts of a modular synthesizer. As an added bonus, a projector mounted under the table also throws dynamic images onto the table to represent what each of the objects is doing and how it affects other objects. If you feel up to the challenge, you


AudioCubes


Reactable


Lemur

can build a Reactable of your own. The company's web site has the basic instructions necessary to build a simple table.

While not exactly a tangible user interface, JazzMutant's **Lemur** and **Dexter** interfaces are built around a 12", fully multi-touch display. On Lemur, instead of finding a MIDI jack, you'll see an Ethernet port that connects directly to your computer. Once connected, it communicates with your software by either MIDI or OpenSound Control (OSC). Instead of interacting with physical materials, all of Lemur's controls are virtual.

Lemur doesn't have any physical objects on the box such as pads, faders, knobs, or keys. In place of these, Lemur lets you create your own virtual objects right on the touch screen. Objects can be buttons, faders, LEDs, knobs, pads, multi-balls, multi-sliders, switches, text, and more. Each object can send or

receive a number of different MIDI or OSC messages to and from different applications. In addition, each of these objects can be customized in terms of their size, color, and brightness. Since you add the features you want, as well as design the actual layout of how a particular object appears on the screen, Lemur functions exactly the way you want it to.

WAY BEYOND

The next step in controllers is almost no controller at all. Human/machine interaction is easiest with the fewest possible steps between action and result. For this reason, your perfect controller may just be one that you design and build yourself.

The French company, Eowave, produces the **Eobody2 USB SensorBox**. This box allows you to connect up to eight of the company's sensors directly to your computer. If you need more than eight sensors at a time, you can add additional SensorBox systems to your computer until you use up all your USB inputs. If you want to bypass the computer and use sensors to directly play hardware MIDI devices, Eowave makes an 8M model of the SensorBox that contains a MIDI output right on the case.

So, what types of sensors can be used with the SensorBox? Here are just a few: two-direction accelerometer, distance sensors, motion sensor, flexion sensor that can be integrated into a glove, footswitch, joystick, light sensors, pressure sensors, shock sensors, temperature sensors, breath sensors, pressure-ribbon sensors, and many more. If these aren't quite enough for you, the manual includes instructions to make your own sensor switches, potentiometers, and other kinds of sensors.

The Eobody2 can send five different types of MIDI messages: continuous controller, note-on trigger, program change, pitch bend, and monophonic aftertouch. Along with playing with sticks or fingers or moving physical objects, you can use your own body movements to control additional sounds or processing.

If you're looking for more ways to interact with your art, Eowave isn't the only game in town. **I-Cube X** is another sensor system made by Infusion Systems. The controller is called the **Digitizer**, and is capable of encoding up to 32 sensors into MIDI data. The Digitizer can create note-on messages, pitch bend, key pressure, control change, program change, or aftertouch messages.

Infusion sells a wide variety of sensors (nearly 50) that react to just about anything: temperature, humidity, light, volume, magnetism, and even one that senses by "triple-axis earth's magnetic field intensity" to obtain the pitch, yaw, and roll of any object. Check out the company's web site to see some demo videos of how the sensors can be used to control sound in a number of ways.

WHAT'S NEXT?

As you can see in this overview, the world of alternative controllers is constantly evolving. It's no longer necessary to approach drumming in the same old way. You might find that some of these tools are attractive to you. You might also decide that you're more at home hitting real skins with real sticks. But, if you're looking for a new way to move your playing into the future, give some of these devices your serious consideration. You will not be disappointed. ■

SPECIAL THANKS TO JACK STIERBIS FOR HIS HELP WITH THIS ARTICLE.

MORE INFORMATION

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