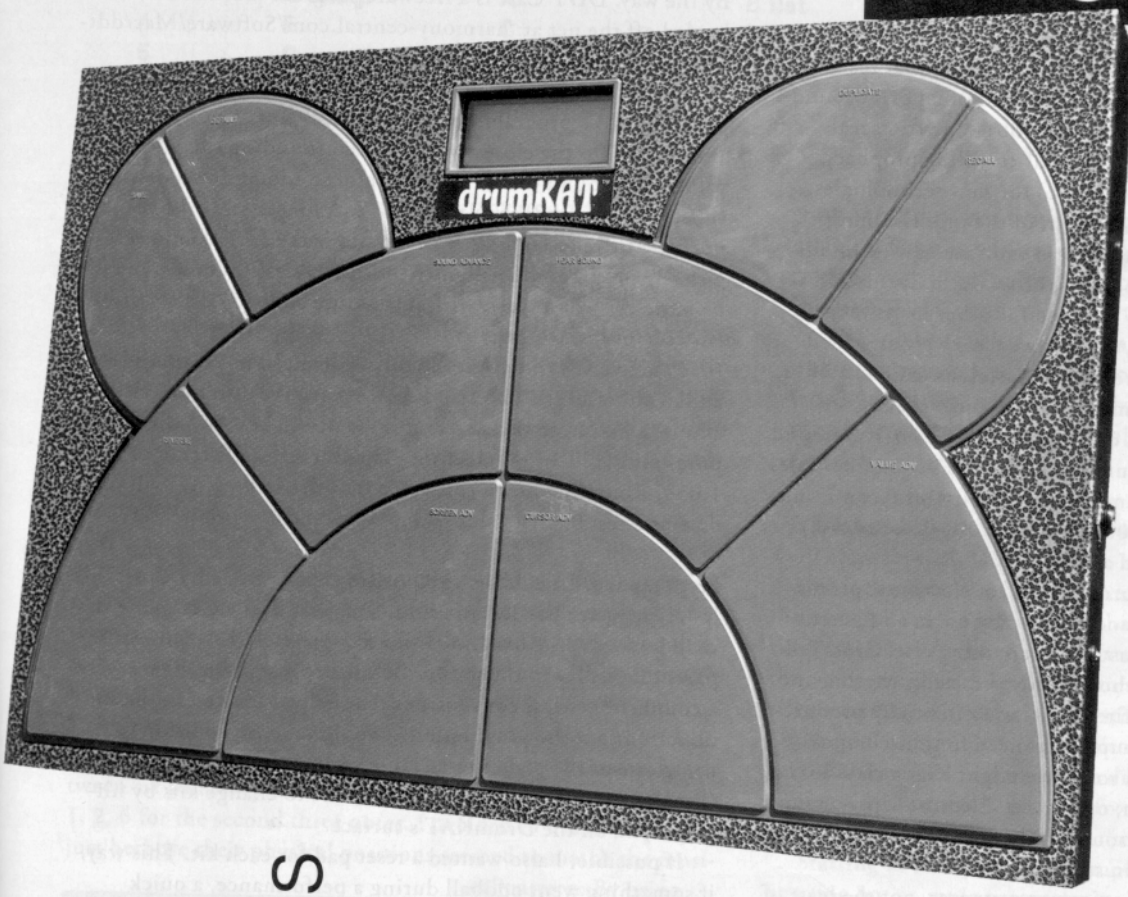
plugged in

by Norman Weinberg



Way Beyond Beats

Advanced DrumKAT Programming

Okay, here's the scenario. You open your city's monthly club-scene paper and your eyes skim through the classifieds: "Bass Player Needed! Gigs out the wazoo." You call the number, find out a few of the tunes the band plays, and schedule an audition.

Two days later, you walk into the band's rehearsal space, set up a DrumKAT and a sampler, and start to smoke. The band is totally gassed! They've never seen a drummer lay down bass lines. And today, they're not only seeing it, they're hearing it!

LET'S LOOK AT THE ADVANTAGES:

1) It looks pretty cool to have a drummer playing bass lines on stage.
2) Technique? Chops? How fast can you move your hands?
3) Talk about the bass player locking in with the drummer!
4) Thousands of different bass sounds (or any other sound, for that matter) at the touch of a button — slaps, pops, fretless, synth, you name it.
5) The bass player can double on percussion during breakdowns.
6) Potentially, this means more work for drummers!

Now, let's run through the disadvantages:

1) Uh ... none!

In the early days of MIDI, drummers were somewhat fearful of the new digital technology. Many were afraid that great sounding drum machines were going to take jobs away from real players, and to some extent it was a self-fulfilling prophecy. Since drummers were slow to adapt to the new technologies, keyboard players wound up with a lot of the programming gigs. While drummers have learned to embrace new technologies, now it's time to take it beyond the world of drums and enter the world that was only reserved for other instruments!

Here at the University of Arizona, we have a group called CrossTalk. It's a totally electronic percussion ensemble. CrossTalk's controller instrumentation includes three DrumKATs, two MalletKats, one TrapKat, two ZenDrums, and a Yamaha DTX electronic drum set. CrossTalk's sound modules include four E-mu e-6400 samplers, an E-mu Audity, an E-mu Extreme Lead, a Korg MS2000R, a Roland R8-R, a Roland JV-1010, a Roland JP-8080, and a Yamaha EX5-R.

In CrossTalk, students learn to program electronic percussion controllers and sound modules to play drum and percussion sounds — and to play just about anything else! CrossTalk members play bass lines, keyboard pads and leads, rhythm and lead guitars, special effects, fire loops, and essentially produce just about any sound the group might need for our compositions. During an improvised solo, you might hear a clay flute, a powerful lead guitar, a synth, or a piano. Electronic percussion controllers control all these sounds. There are no keyboards, wind, or guitar controllers on stage.

CrossTalk serves several important purposes, not the least of which is to show everyone (the group members and the audience) that percussionists now have the ability to handle any position in any musical group. Drummers need to expand their perspective far beyond the traditional ideas of laying down drum and percussion grooves on their electronic rigs. It's now perfectly possible to play any sound you want in any musical environment. While CrossTalk plays melodic sounds with all of our different controllers, this article will focus on programming ideas for the DrumKAT.

Dealing with Duration. Just as in every successful situation, it's a good idea to do some serious planning before you begin programming. One of the first things you want to do is to create a duration chart.

By nature, drum controllers sense the player's attacks, but can't read the player's mind to know how long to hold a note. This isn't critical when firing drum sounds, as most drum-specific sound modules are set to fire the entire sample no matter how short the actual MIDI command. But this isn't the case when playing melodic passages. There is a real difference between sixteenths, eighths, and quarter-notes, and you'll need to program the DrumKAT to hold notes for the proper length.

Setting a note's duration (also called the "gate time") can be a little confusing. But using a program such as DDT Calc v1.3.5, you can make your life much easier! All you'll need to do to determine the exact millisecond value for each note is to enter the performance tempo. Fig. 1 shows the software's readout when the tempo of 128 is entered into the BPM window. By the way, DDT Calc is a freeware program that can be downloaded off the net at: harmony-central.com/Software/Mac/ddt-calc.html

A millisecond is 1/1,000 of a second, and if you can't get the DrumKAT programmed to the exact value, you need to "round off" to the closest value. When rounding the duration values, I've found that it's more useful to round down to a shorter value rather than round up to a longer value. If the values are a little too long, it will tend to make parts sound sluggish. By programming slightly shorter values, rhythms tend to be more crisp and clear, with just a little additional separation between events.

To arrive at values that the software might not display, just add or subtract the notes and their respective duration. For example, a half note tied to a sixteenth would be .937 (the half note) plus .117 (the sixteenth). The result is a duration of 1.054. Rounding down to a value that the DrumKAT will understand results in a value of 1.050 seconds.

Hyperspace. One of the compositions performed by CrossTalk is "Hyperspace" by Robin Horn. The first musical example that we'll look at is the bass line from this piece. This is one of the parts that I play in the group. Before programming, there were a couple of general conventions that helped me determine the direction that the programming would take. In addition to using one of the pedals to advance to the next kit in the chain (usually pedal two), I wanted to be able to change kits by hitting a pad on the DrumKAT's surface.

If possible, I also wanted a reset pad for each kit. This way, if something went oddball during a performance, a quick stroke to the reset pad would bring everything back under control. In addition, using a reset pad would give me the opportunity for a little more improvisation. Pad 10 would serve as the kit advance pad, and pad 9 would be used for reset. By keeping this consistent for each and every kit in the composition, it becomes easy to remember which function was under which pad.

It might be logical to program certain drum sounds in specific locations on a DrumKAT, such as the snare drum on pads 1 and 2, hi-hat on pad 3, toms on pads 4, 5, 6. But all logic falls through the floor when you figure out where to place certain pitches within a melodic passage. The only requirement is that the programming must be logical to the performer. Let's take a look at a few examples and see how this bass line was

FIGURE ONE

PAD	FIRST NOTE	SECOND NOTE
3	F	E flat
4	C	B flat
5	F	E flat
1	C	B flat
2	F	E flat
6	D	E

FIGURE TWO

PAD	FIRST NOTE	SECOND NOTE	THIRD NOTE	FOURTH NOTE
1	D	OFF	OFF	OFF
2	B	C	D flat	OFF
6	C	C	C	OFF
3	G sharp	A	B flat	OFF
4	F	C	F	F
5	C	E flat	OFF	OFF
7	E flat	B flat	OFF	OFF
8	E flat	C	E flat	OFF

Notice that pads 7 and 8 are not used for this passage. In order to have a little interaction with the soloists, I programmed a few pitches that would work well within the ostinato. Pad 7 was programmed with seven notes of an eight-note alternate (B flat, C, E flat, A flat, E flat, G, E) and pad eight with a four-note alternate (G, F, C, B flat). Each note is programmed with a sixteenth-note duration. With a little experimentation, there are several very hip patterns that can be played by changing the order of pads — striking for sixteenths or pressing for longer values. No matter what happens during the improvisation, striking pad 9 will reset all pads to their original pitches.

This should give you the flavor of how you can use electronic percussion controllers to play electronic sounds other than drums. Next time, we'll take a look at performing all the parts to an entire composition at once.

programmed for the DrumKAT.

Take a look at Ex. 1. on page 90. Bars 23 and 24 illustrate a two-bar groove that makes up a good portion of the first phrase of the tune's head. While there could be literally hundreds of ways to program this passage, I decided that rhythm was going to be the primary factor and would determine the layout of the notes.

While the notes change between the two bars, the rhythm remains the same. This two-bar pattern was programmed between six pads — pads 3, 4, 5 for the first three notes and pads 1, 2, 6 for the second three notes. I decided to use these pads just because their physical positions seemed to match the musical pattern. By using the alternate mode, the physical performance of each measure remains the same even though the pitches change. "Figure One" shows how these six pads were programmed.

Notice at the end of bar 30, there is a sustain indication on the *ah* of beat *3*. This F needs to have a longer duration than the other notes in the repeated pattern. Longer notes can played by programming a pedal to serve as a sustain pedal (usually pedal #3) or by pressing the stick against the pad. Since the DrumKAT uses force sensing resistors rather than piezo triggers, the controller can sense the difference between a single stroke and a sustain. While pad five is being held with my stick, I strike pad 10 to advance the DrumKAT to the next kit.

Starting in bar 31, a more complex passage is programmed by using both simple programming and the four-note alternate feature of the DrumKAT. One of the features that make this passage possible is the DrumKAT's ability to determine a unique duration for each one of the four notes. Remember too, if you're only using two or three notes of this feature you'll

This is a screen shot of DDT Calc showing the millisecond values for various note durations. The following chart shows how to round off the values to conform to the DrumKAT's settings.

FIGURE THREE

NOTE VALUE	REAL DURATION	PROGRAMMED VALUE
whole	1.875	1.875
dotted half	1.406	1.400
half	.937	.925
dotted quarter	.703	.700
quarter	.468	.450
dotted eighth	.351	.350
eighth	.234	.230
sixteenth	.117	.115

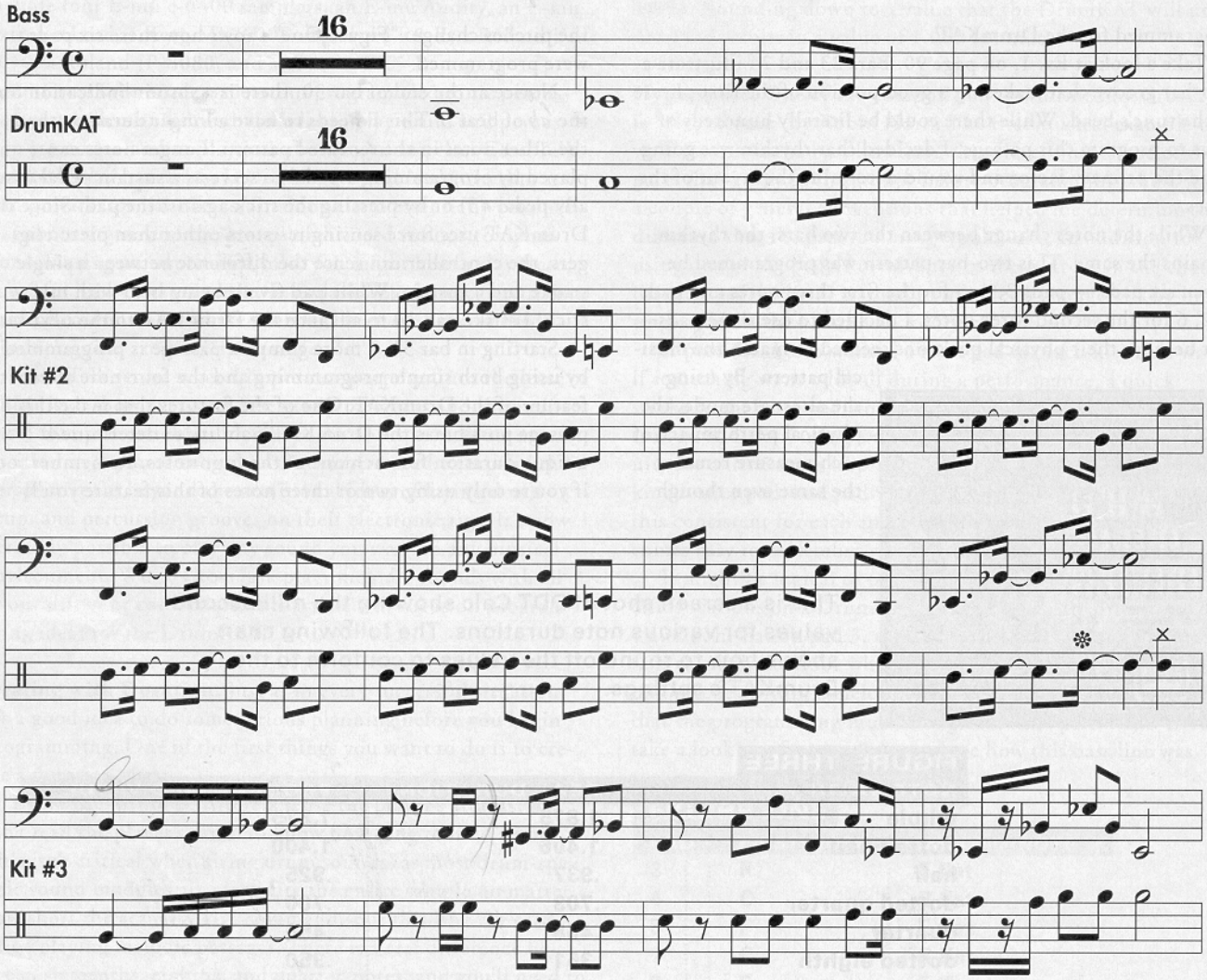
need to program the other notes to "off." This way, after the second or third note of the alternate, the pad will recycle itself back to the beginning of the pattern. See Figure 2.

The second musical example includes measures 41 through 48. Take a look at the original bass line and the way it was programmed on the DrumKAT. You should be able to figure out the methods used to perform the part. One hint — the stroke on pad 10 on the downbeat of bar 46 is a kit change message. I try to make strokes that control program changes an integral part of the rhythmic performance. This way, practicing the kit changes becomes just as important — often more important — than simply playing the proper pitches.

The third example from "Hyperspace" shows measures 61 through 62. This two-bar ostinato provides the underpinning for open solos from the lead voice and timbales. There are two interesting concepts going on with this programming. The A flat that occurs on the last beat of the measure was programmed with a duration of a sixteenth-note. This way, I can play the

"Hyperspace"

Ex. 1



quarter-note by pressing the pad with the stick, or play the sixteenth in bar 62 by simply striking the pad.

Notice that pads 7 and 8 are not used for this passage. In order to have a little interaction with the soloists, I programmed a few pitches that would work well within the ostinato. Pad 7 was programmed with seven notes of an eight-note alternate (B flat, C, E flat, A flat, E flat, G, E) and pad eight with a four-note alternate (G, F, C, B flat). Each note is programmed with a sixteenth-note duration. With a little experimentation, there are several very hip patterns that can be played by changing the order of pads — striking for sixteenths or pressing for longer values. No matter what happens during the improvisation, striking pad 9 will reset all pads to their original pitches.

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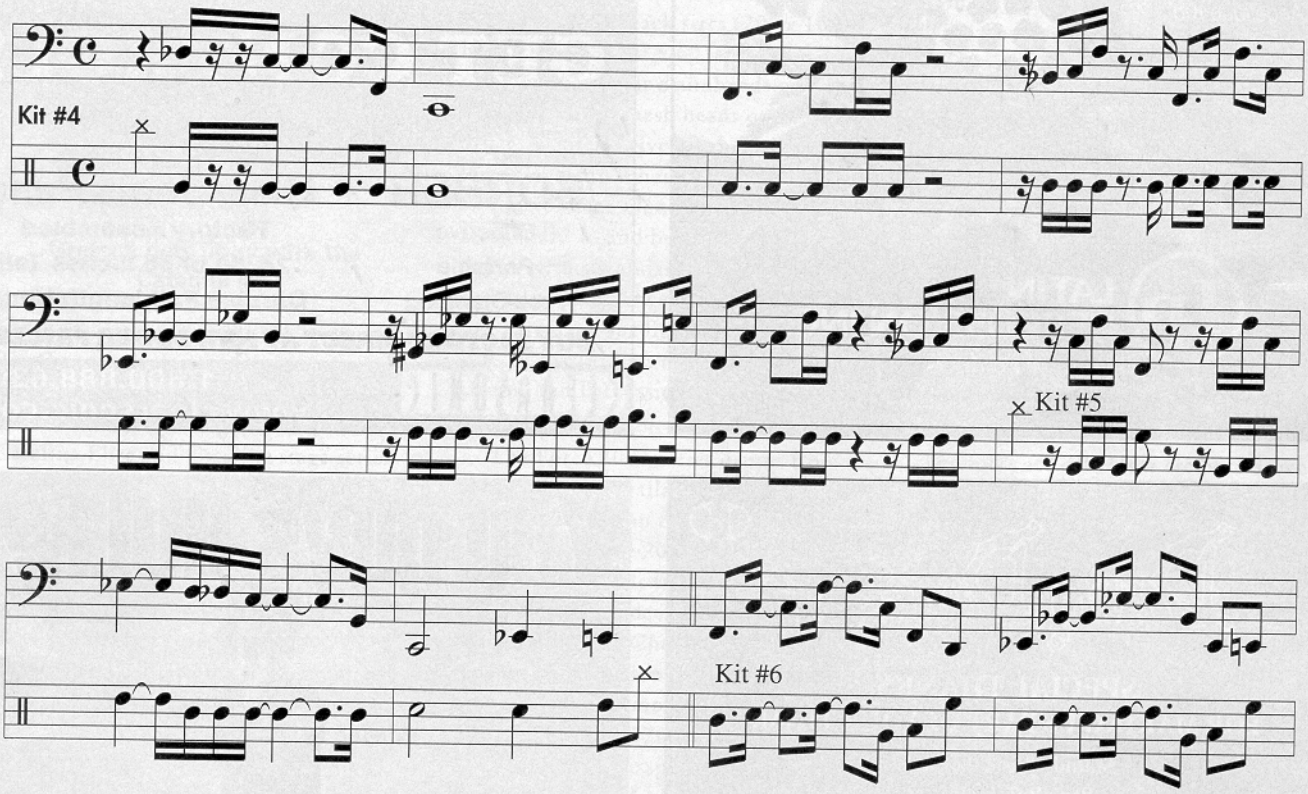
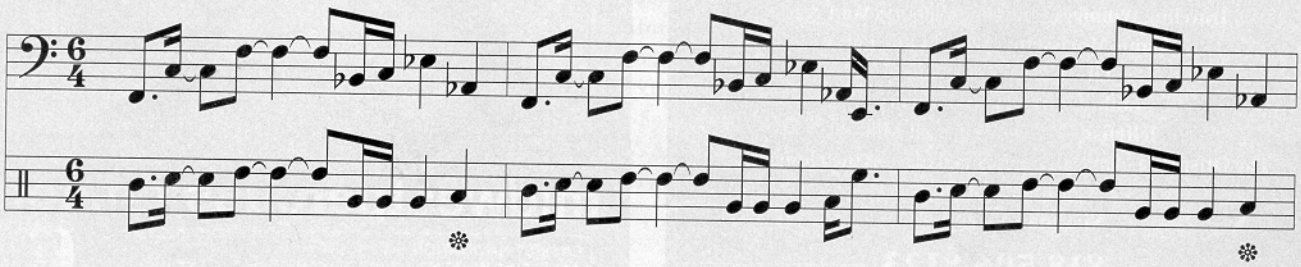
Ex. 2



Ex. 3



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