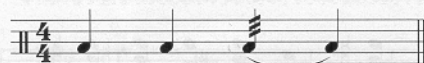# DRUM MACHINE PROGRAMMING

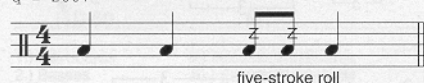## NORMAN WEINBERG

IN SEARCH OF LENGTH, PART 2: ROLLS

DRUM ROLL, PLEASE! DURING OUR last exciting adventure in drumland, we explored the use of flams and ruffs for creating the image of a thicker and longer sound. Flams and ruffs work great for single notes, but if you're trying to give the impression of a truly long drum sound, you've got to use a roll.

Drum rolls and movies are somewhat similar. When you're watching a film, individual still pictures flash onto the screen at a rate fast enough to fool your brain into seeing continuous movement. Rolls create the aural illusion of continuous sound by placing individual strokes very close together.

Types of Rolls. There are three basic types of rolls: the single-stroke roll, the double-stroke roll, and the multiple-stroke roll. Single-stroke rolls are played by quickly alternating strokes between the right and left hands. They take their name from the fact that each hand only plays one stroke at a time.

When performing double-stroke rolls, drummers let their sticks bounce against the head so that each stick hits the drum twice for each hand movement. Double-stroke rolls are best used when a military or march-like feeling is desired. When you listen to a marching band's drumline at a football game, you're hearing double-stroke rolls.

Multiple-stroke rolls are a little different. The sticks bounce three, four, or even five times for each hand movement. Since there are more bounces, the individual notes are closer together than in double-stroke rolls. Orchestral players use multiple-stroke rolls for a smoother and more fluid sound. Listen to the snare drum in most of the symphonic literature and you'll hear multiple-stroke rolls.

Creating a smooth roll on an acoustic drum takes a lifetime of practice. Drummers constantly strive to control two aspects: dynamics and timing. Each note must be at the same volume, or the listener's ear will impose a rhythm on the notes that stand out dynamically. Also, each note must be rhythmically identical to every other note. Any deviation in rhythm will make the roll sound choppy and rough. The "perfect" roll would be similar to the sound of a heavy steel ball bearing rolling along a smooth wooden table.

Roll Phrasing. When drummers play rolls (either double or multiple) they most often play "metered" rolls. This means that each hand is going to move in rhythm with the music. For example, at tempi between 100 and 140 bpm, a drummer might phrase hand movements in the rhythm of sixteenth-notes. With hand movements of sixteenths, a double-stroke roll would create the sound of 32nd-notes. A multiple-stroke roll would create the sound of 32nd-note triplets (with three bounces) or 64th-notes (with four bounces).

As the tempo increases, drummers may have to phrase their hands in eighth-note triplets. At tempi slower than 100 bpm, they may have to move their hands faster—to a rate of quintuplets or sixteenth-note triplets. Example 1 shows a few common roll phrasings based upon tempo.

Roll Voicings. Multiple-stroke rolls work best with snare drum sounds. You can use double or multiple rolls with drum sounds that have a high pitch, such as bongos, or metal sounds such as cymbals, cowbells, and steel plates. Rolls on toms are usually played with single-strokes. Since the heads on toms are quite loose, they tend to distort when played with super-fast strokes. Other instruments that traditionally use single-stroke rolls are timpani, conga, timbales, steel drum, temple blocks, marimba, and vibraphone.

Programming Tips. Drum machines and software sequencers make programming the "perfect" roll child's play. But human drummers have a much harder time reaching that

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Ex. 1. In drum notation, slashes are used to indicate a roll. Quarter-notes use three slashes, eighths use two, and sixteenths have one slash. Unlike traditional notation, ties show the placement of the last note in a roll. In measures two through six, the "z" marking indicates which notes are bounced. Rolls get their names from the number of notes that are sounded when double-stroke rolls are used. The nine-stroke roll consists of eight 32nds (doubling each of the sixteenth-notes) plus the ending note.
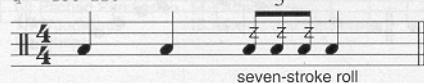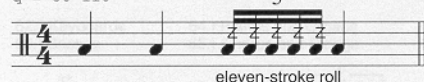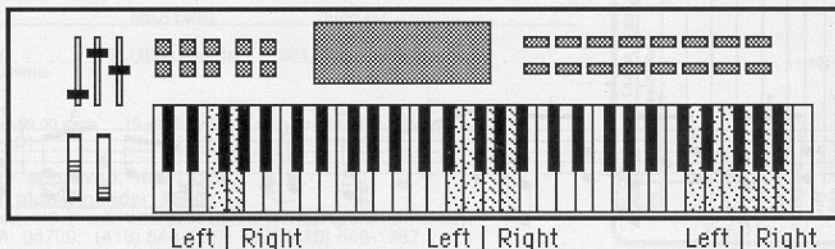
q = 200+

five-stroke roll

q = 130–220

seven-stroke roll

q = 100–140

nine-stroke roll

q = 80–110

eleven-stroke roll

q = 70–80

thirteen-stroke roll

Ex. 2. Possible layout for playing single-, double-, and multiple-stroke rolls using a keyboard controller.

Left | Right   Left | Right   Left | Right

DRUM MACHINE PROGRAMMING

level of precision. So avoid your drum machine's repeat button! The repeat button creates rolls that are so good, they just scream, "This is a drum machine!"

Instead, program rolls into your sequencer or drum machine by imagining that you're drumming on a tabletop, and playing them with your fingers. Use just your index fingers for programming single-stroke rolls, your middle and index fingers for double-stroke rolls, and add your ring finger for multiple-stroke rolls. Let's try a couple.

Set your drum machine's auto-correct setting to 32nd-notes. Assign the same sound to four adjacent buttons on your drum machine, and set the tempo to 110 beats per minute. Now, start recording and play alternating hand movements in the rhythm of sixteenth-notes. During each hand movement, create two sounds by staggering the middle and index fingers. Violá, you've just created a double-stroke roll! Now try the same technique with the auto-correct turned off. Not only will there be subtle differences in dynamics, but in timing as well.

If you use a sequencer, try single-stroke rolls by assigning the same sound to two different keys on your keyboard controller and using your index fingers. To create a multiple-stroke