Programming The Roland JX-8P & JX-10

By Eric Persing

Today, THE TENDENCY FOR MANY keyboardists, especially those just getting involved in MIDI and electronic music, is not to explore much of the sonic potential of their instruments. One reason for this is the wide variety of pre-fabricated sounds available from the manufacturers and independent sources. Unfortunately, people who don't create their own sounds sacrifice one dimension of individuality. Factory patches can only unlock a portion of an instrument's capabilities. The time you invest in learning the functions of your synthesizer will be more than repaid in the ability to personalize your performances and compositions.

More and more synthesizers available today utilize digital processes for sound synthesis, and there are a growing number of players who never had the opportunity to learn to program an analog synth. Some of the basic building blocks of synthesis, such as control voltages, modulation routing, and filtering, no longer exist on some new instruments. This is not to say that digital synthesis is superior or inferior to analog—it just has different capabilities and requires a somewhat different set of

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Roland has always specialized in analog synthesizer technology, and in the past few years they've made tremendous strides in merging some of the best features of analog and digital methods. The JX-8P, introduced in 1985, is a six-voice, velocity- and pressure-sensitive analog synthesizer. Its big brother, the JX-10 (just released), is basically two JX-8Ps with the ability to layer, cross-fade, switch between sounds via velocity, and much more. In creating the factory presets for both of these instruments, I've had the opportunity to try almost every combination of parameters available on the instruments. In this article we will be taking a look at some of the more elusive features of Roland's JX synthesizers, and I'll let you in on some of my favorite sound-making techniques. In this article we don't have space to talk about the basics of analog programming (strings, brass, and so on). For more on this topic, see *Keyboard's* June '85 Special Issue on programming.

Let's start with a detailed look at the basic synth parameters on the JX-8P. We'll be following the signal path of the sound-generating circuitry (See Fig. 1). If you have a PG-800 programmer, you can disregard the parameter numbers.

The heart of the JX system is the dual digitally controlled oscillators (DCOs). The difference between a DCO and a VCO (voltage-controlled oscillator) lies in the method used to control the pitch of the oscillator circuit. The DCO puts out a raw square wave into an analog wave shaper circuit, which in turn converts the square

wave into sawtooth and pulse waveforms. Even though it is digitally controlled, a DCO creates sound through analog means. Other types of digital synthesis rely on software manipulation of sine waves, such as on the Yamaha DX7, or permanently stored wavetables, such as on the PPG and the Korg DW-8000.

The JX-8P's DCOs generate various waveforms: a bright and brassy sawtooth, also called a ramp wave, a bright and hollow-sounding square wave, a reed-like fixed pulse wave, and noise. The basic waveforms on a single oscillator can be regarded as the primary sound-making elements. By combining two oscillators you can create complex multi-layer or lush composite sounds. Experiment with different detuning and level settings for the two oscillators. You can create a beating effect by detuning one oscillator one or two cents (one cent equals 1/100 half-step or one degree of the JX fine-tune function) up or down. The farther you detune, the faster the beating. If you detune both oscillators in opposite directions by about 10 cents, you can create a chorusing effect. By detuning the two oscillators an octave or two octaves apart, you can create pipe organ-like timbres.

Those of you who are familiar with analog synthesis will find nothing new in this two-oscillator arrangement; however, a feature unique to the JX is its multi-level cross-modulation function. Cross-mod position 1 is equivalent to sync on other instruments. When this function is selected, the slave oscillator (DCO 2) is forced to restart its cycle whenever the master oscillator begins its cycle. Not only does this eliminate beating and phase cancellation in similarly tuned oscillators, it also allows you to create new waveforms. For instance, the JX has no pulse width control or modulation *per se*, but you can set the pulse width by using sync. Set both oscillators to produce square waves at the same range and tuning. With cross-mod 1 on, you can set the pulse width of DCO 2 anywhere between a straight square wave and an inaudible spike using DCO 2's tuning controls. This will be easiest to hear if you turn the amplitude of DCO 1 down to zero in the mixer section. Since the pulse width is controlled by the pitch of DCO 2, you can alter the pulse width over time by applying the envelope or the LFO to DCO 2 pitch. Try the patch called "PW Mania" on page 58. This patch uses both a slow envelope and a delayed fast LFO to modulate the pitch of DCO 2.

Cross-modulation 3 is a form of frequency modulation in which DCO 2 is the carrier and DCO 1 is the modulator. JX synthesizers start with two complex waveforms, one from each DCO, rather than a multiple sine wave algorithmic arrange-

Fig. 1. The basic layout of the JX voice.
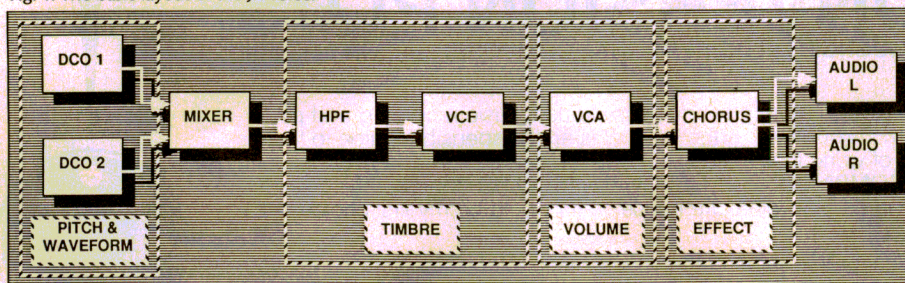
ment, as found on the Yamaha DX synthesizers. This allows them to generate overtone structures with only two oscillators that would require three or more sine waves.

VCO-based instruments such as the Prophet-5 and the Roland Jupiter series have cross-modulation capabilities, with which they can make complex, bell-like tones. Most VCO instruments use exponential modulation circuitry, with which the bell tones will not track the keyboard in a uniform scalar manner. Cross-mod 3 on the JX will track the keyboard, allowing bell tones to be layered with other kinds of sounds. Cross-mod 2 (called sync 2 on the JX-10) combines cross-modulation with sync; this gives different waveforms than sync by itself.

One of the most useful techniques available with cross-mod 3 is to set both oscillators to the same frequency and detune one with the fine-tune control. You'll find that the detuning here is quite different than normal detuning. The beating that is created is more obvious and jagged, and the waveform changes in tandem with the beating. The result is of a distinctly analog character, somewhat similar to pulse width modulation. For "digital" cross-mod timbres, it's best to set the oscillators at intervals less than an octave apart, in the 2' range.

The next component in the signal chain is the mixer. It's a basic mixer except for its ability to use the envelopes to control the level of DCO 2. This can be used for things like electric piano sounds, as in the factory patch "Piano 1." DCO 1 produces the fundamental filtered sawtooth wave, while DCO 2 produces a high-frequency tine sound via cross-modulation. The tine sound is shortened considerably by lowering the DCO 2 mix level and increasing the envelope amount at the mixer. "Metal Pad" is a good example of envelope control of the mixer (see page 58). The metallic chiff sound is heard only at the beginnings of notes that are played fairly hard. Notice that ENV 1's settings for attack, decay, and sustain are all zero; this creates the shortest possible event time.

After the signal travels through the highpass filter (HPF), which suppresses or boosts the low-frequency components of the sound, it is routed to the voltage-controlled lowpass filter (VCF). If you are unfamiliar with the basics of voltage-controlled filtering, please refer to Dominic Milano's Synthesizer Basics column in the May and Jun. '84 issues of *Keyboard*. The JX synthesizers employ a four-pole lowpass filter, which rolls high frequencies off at a rate of 24dB per octave. There is a slight difference between the maximum resonance amount setting in the JX-8P and that in the JX-10. When pushed to its upper limit, the filter in the JX-10 will oscillate, producing a sine wave, but this effect is not possible on the JX-8P.

Following the filters, the sound passes into the voltage-controlled amplifier (VCA) and out through the chorus circuit. Rather than rely on the chorus to fill out all your patches, a rule of thumb for patch-making is to get a pleasingly plump sound by using detuning and cross-modulation and then add the chorus effect if needed. Sounds with chorus generally blend well with other sounds, but may occupy too much space.

Modulation, Envelopes, & Dynamics

ROLAND APPROACHES MODULA-tion somewhat differently than other manufacturers. On older analog synthesizers, you could modulate both an oscillator and the filter from the same LFO, but they would both have the same amount of modulation. The JX allows you to select a different modulation amount for each destination, even if all the destinations are being modulated from the same source. For example, the LFO can modulate both DCO 1 and the VCF, and each can have its own control over the amount of modulation it receives.

A great way to create movement in a patch is to tune both oscillators to the same pitch and modulate one oscillator with a delayed sine wave vibrato from the LFO. Or, as in "Small Strings" (see page 59), modulate both oscillators, but with different amounts. Try this patch without chorus for more of a string quartet or solo violin sound.

Both the LFO and the envelope modulation sources cause changes over time. The LFO is cyclical and repeats for as long as the sound is audible. Besides the sine wave we used in "Small Strings," the LFO

P W MANIA

DCO 1		
11	RANGE	2'
12	WAVEFORM	SQAR
13	TUNE	00
14	LFO	00
15	ENV	00
DCO 2		
21	RANGE	16'
22	WAVEFORM	SQAR
23	CROSS MOD	SNC 1
24	TUNE	00
25	FINE TUNE	00
26	LFO	70
27	ENVELOPE	99
DCO-MOD		
31	DYNAMICS	OFF
32	ENV MODE	⊓-2
MIXER		
41	DCO 1	00
42	DCO 2	36
43	ENVELOPE	37
44	DYNAMICS	OFF
45	ENV MODE	⊓-1
VCF		
51	HPF	0
52	FREQUENCY	99
53	RESONANCE	00
54	LFO	00
55	ENVELOPE	00
56	KEY FOLLOW	46
57	DYNAMICS	OFF
58	ENV MODE	⊓-1
VCA/CHORUS		
61	LEVEL	99
62	ENV MODE	ENV2
63	DYNAMICS	OFF
64	CHORUS	OFF
LFO		
71	WAVEFORM	SINE
72	DELAY	99
73	RATE	99
74	BEND DEPTH	XX
ENVELOPE 1		
81	ATTACK	00
82	DECAY	00
83	SUSTAIN	00
84	RELEASE	00
85	KEY FOLLOW	OFF
ENVELOPE 2		
91	ATTACK	57
92	DECAY	99
93	SUSTAIN	74
94	RELEASE	99
95	KEY FOLLOW	2

Fig. 2. Modulation routings in the JX voice. Either of the two sources shown may be selected for each destination.

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can also create square and random waves. If you would like to create a modulation that occurs only once per key press then you should use the envelope generator (EG).

Before we go on, let's quickly review the JX envelope generators. The JXs use standard ADSR (attack-decay-sustain-release) envelopes. This means that you can determine the amount of time it will take for the sound to reach its highest level (volume, pitch, timbral brilliance, etc.), the time it takes to fall to a sustain point, the level of that sustain point, and finally, the time it takes for the effect to completely die away after you release the key you were playing. Depending on how you set up the EG, it could be anywhere from .1 second to 2½ minutes before the envelope runs its course. For more information
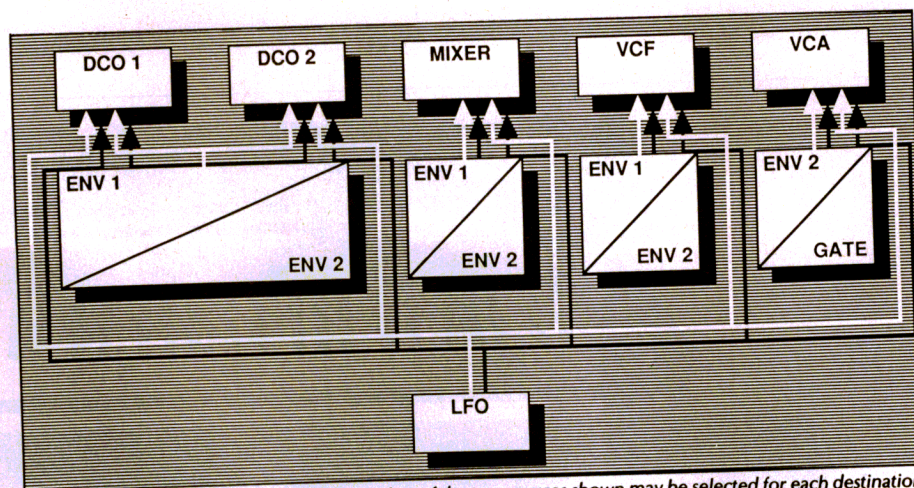
on envelopes see the Synthesizer Basics column in the Nov. and Dec. '84 issues of *Keyboard*.

The envelopes control the shape of events over time, and can be set to affect pitch, tone, waveform, oscillator mix, and volume simultaneously. There is also an organ-type on/off gate envelope available for the volume, allowing you to use ENV 2 for some other purpose, without giving the same shape to the loudness of the note. For an illustration of modulation routings on the JX, refer to the modulation diagram in Fig. 2. The envelope mode control is a feature which allows you to select between the two envelopes and whether the envelope will have a positive or negative effect on the modulation destination (see Fig. 3). "Submatic" is an
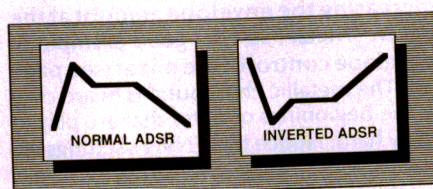

Fig. 3. Normal and inverted envelope shapes.

example of pitch modulation by an envelope (see page 59). The pitch of DCO 1 is being controlled by ENV 1, but we have inverted the envelope. The pitch falls at a rate determined by the attack rate of ENV 1 to the pitch determined by ENV 1's sustain level and DCO 1's envelope amount. By keeping the sustain level at 99, we have effectively eliminated the decay portion of the envelope, so the pitch falls into the lowest pitch instead of settling at some pitch slightly higher. The envelope amount control allows you to set the amplitude of the envelope and hence the destination pitch of DCO 1. Inverted envelopes can be very useful, because one envelope can be used at two or three different locations with a different effect on each one.

The dynamics function available on many of the "modules" allows you to

adjust the dynamic range of the envelope in relation to how hard a particular note is played. When dynamic response is set to zero, keyboard velocity will have no effect on the output of the envelope or how it affects its destination. If, for example, the destination is the VCF cutoff frequency, and the dynamic value is 1, there will be a slight change in tone between hard and soft playing. With a dynamic value of 3, the difference becomes more significant. You may also need to readjust the envelope amount and cutoff frequency.

One of the best ways to enliven an analog synthesizer patch is to control one oscillator's pitch with the envelope, bending it up or down slightly against the static pitch of the second oscillator. This can create more movement in a patch, as in the factory pad sounds, a more realistic attack, as in the factory brass sounds, or a more lush sound, as in many of the choir or string sounds. Dynamics adds a further dimension to this detuning effect. By applying dynamics to the envelope which is detuning one of the oscillators, you can make the amount of detuning touch-sensitive.

Another useful envelope pitch modulation scheme simulates percussive attack. Sometimes, filter modulation with a quick (A=0, D=0, S=0, R=0) envelope isn't enough to convey the type of percussive attack you're trying to achieve. Try taking this same envelope and modulating one or both DCOs. Varying the DCO envelope amount will produce attack sounds ranging from heavy thumps to short ticks.

JX-10 Programming Techniques

NOW THAT WE'VE COVERED THE basic parameters and routing of the JX-8P and JX-10 sounds, let's examine the functions unique to the JX-10. Remember, when an oscillator is added to a synthesizer, the synthesizer's power increases exponentially. When you're programming patches on the JX-10 it's helpful to think of

METALPAD

DCO 1		
11	RANGE	8'
12	WAVEFORM	SQAR
13	TUNE	00
14	LFO	00
15	ENV	00
DCO 2		
21	RANGE	2'
22	WAVEFORM	SQAR
23	CROSS MOD	SNC 2
24	TUNE	+10
25	FINE TUNE	+29
26	LFO	31
27	ENVELOPE	74
DCO-MOD		
31	DYNAMICS	OFF
32	ENV MODE	⊓-1
MIXER		
41	DCO 1	63
42	DCO 2	42
43	ENVELOPE	99
44	DYNAMICS	3
45	ENV MODE	⊓-2
VCF		
51	HPF	1
52	FREQUENCY	48
53	RESONANCE	00
54	LFO	05
55	ENVELOPE	28
56	KEY FOLLOW	99
57	DYNAMICS	3
58	ENV MODE	⊓-1
VCA/CHORUS		
61	LEVEL	99
62	ENV MODE	ENV2
63	DYNAMICS	OFF
64	CHORUS	1
LFO		
71	WAVEFORM	SINE
72	DELAY	00
73	RATE	00
74	BEND DEPTH	XX
ENVELOPE 1		
81	ATTACK	00
82	DECAY	00
83	SUSTAIN	00
84	RELEASE	66
85	KEY FOLLOW	OFF
ENVELOPE 2		
91	ATTACK	00
92	DECAY	44
93	SUSTAIN	14
94	RELEASE	63
95	KEY FOLLOW	2

the second tone as two additional oscillators; layering, detuning, delaying, and other effects all contribute to the composite sound.

The simplest type of layering is found in dual mode, which allows you to combine components into a composite sound. This technique is similar to FM programming. The components can be balanced as part of the patch or controlled in real time via the assignable controller sliders. To illustrate, call up the patch called "African Mallets" (factory patch A-4). Now press the C1 button and assign its value to upper/lower balance. The mallet sound is synthesized on the upper tone and the wooden resonance is on the lower tone. Varying the balance with the C1 slider produces a range of attacks similar to those of different mallet materials, such as cloth, felt, wood, and rubber.

Often, balancing sounds can produce unexpected results. "Breathing Brass" (A-6) is a combination of the JX-8P patches called "Poly Brass" and "Soft Brass." When the combined patch was originally created, the brighter poly brass was to be shaded and supported by the soft brass in the background. Through experimentation, it was discovered that placing the bright sound in the background gave the darker sound more definition and made a better combination. Try rebalancing "Breathing Brass" and you'll be surprised.

Another technique is to combine a highly detailed sound with a sonic wash, as in "Cello Orchestra" (E-7). The cello tone has nice bowing detail, but it doesn't have much body. The low strings lack detail, but are very warm-sounding. The two sounds are very complementary. It is helpful to examine each tone individually; determine its strengths and weaknesses, capitalize on the strong points, and use another tone to provide the elements missing from the original tone. In other words, the total is greater than the sum of its parts. You can use this technique with multiple synthesizers MIDIed together, but with the JX-10, once you've got the combination of sounds you want, you can store them as a unit.

The factory patch "Digitalmetalvocal" comprises two tones with dissimilar envelopes. You can also bring out different octave or harmonic registers using the balance control. Try this with "Huge String Pad" as well. You can program a different dynamic range for each tone. This way you can favor one sound over another, depending on your playing technique. It's a matter of adjusting the dynamics switches in the VCF and VCA sections of the individual tones. You might also try varying the upper/lower balance with a Roland EV-5 footpedal while you play. [Ed. Note: The EV-5 is not a standard voltage pedal; we're told that no other pedal will work properly

with the JX-10.] Depending on the patch being used, this can produce startling results.

The JX-10 holds 50 programmable and 50 preset tones. The preset tones, many of which come from the JX-8P library, can all be used by themselves. [Ed. Note: Roland uses the term "patch" to refer to a combination of two sounds and their performance functions, while "tone" is used to refer to what most people would refer to as a patch or a voice.] An important thing to remember is that many of the preset tones are not used in the factory patches. To hear "Syn Dulcimer" and "SEQ*1," for instance, call them via the ten-key pad. Call up tones and combine them with other tones in the instrument. The fastest and easiest way to get new sounds for the JX-10 is to combine different existing tones. You need not be a master programmer, and there are literally thousands of original combinations available to you.

Another way to modify patches is through transposition and detuning. You can detune the upper and lower tones, as well as the oscillators. Doubling and detuning two of the same tone can make a winner of an otherwise ordinary sound. Use the upper and lower chromatic shift functions in the patch memory to tune dual sounds to different intervals to store a basic polysynth sound. By combining two of the same tone in dual mode, you can use detuning to create a chorusing effect, which will give you more brilliance and punch than the built-in chorus. If you set the upper chromatic shift patch memory function to +12 or +24, you will get an even bigger sound. At a value of +7, you can get Keyboard columnist Dave Stewart's signature Prophet-5 fifths sound.

In order to create percussive- or metallic-sounding harmonics, you can combine a sustained tone with a "percussive element" tone. These sounds include ticks, thumps, clicks, and other sounds which, by themselves, have few musical applications, but when combined with other patches, lend detail and clarity to the composite sound.

Key mode is integral to the programmable patch memory. You can program split points independently for the lower and upper tones, or if you want a regular left/right keyboard split, press the split button and select a split point from the keyboard. By setting the lower split point higher than the upper split point, an overlap zone will be created that will play both sounds. This is useful to strengthen sounds or to create a smooth transition from one sound to another. The factory patch called "Synth Bass/Clav" (H-2) uses this type of scheme. The clav sound runs the entire length of the keyboard, while the synth bass sound is confined to the lower half.

You can enable effects independently

for each tone in a patch and at different rates. Portamento can be turned on or off for each module—you might try doubling a sound and applying portamento to only one tone in the patch. The hold pedal can also be enabled or disabled per tone. You can program different vibrato amounts for each tone using the LFO modulation depth controls. For the ultimate fat sound, the best method is to double two similar sounds, detune them using dual detune, and put both sounds in unison mode. This effectively stacks eight oscillators on each key. Now, you can only play three notes at a time, but what big notes! If this still isn't obese enough for you, you can broaden the sound further with unison mode and unison detune functions. Set the upper sound to +20 and the lower to -20. The function detunes the new stacked voices against one another for added thickness.

Two of the JX-10's more interesting

SMALL STRINGS

DCO 1		
11	RANGE	4'
12	WAVEFORM	SAWT
13	TUNE	00
14	LFO	02
15	ENV	00
DCO 2		
21	RANGE	4'
22	WAVEFORM	SAWT
23	CROSS MOD	OFF
24	TUNE	00
25	FINE TUNE	00
26	LFO	03
27	ENVELOPE	00
DCO-MOD		
31	DYNAMICS	OFF
32	ENV MODE	⊓-1
MIXER		
41	DCO 1	99
42	DCO 2	99
43	ENVELOPE	00
44	DYNAMICS	OFF
45	ENV MODE	⊔-1
VCF		
51	HPF	0
52	FREQUENCY	61
53	RESONANCE	00
54	LFO	00

55	ENVELOPE	10
56	KEY FOLLOW	69
57	DYNAMICS	1
58	ENV MODE	⊓-1
VCA/CHORUS		
61	LEVEL	70
62	ENV MODE	ENV2
63	DYNAMICS	2
64	CHORUS	1
LFO		
71	WAVEFORM	SINE
72	DELAY	71
73	RATE	79
74	BEND DEPTH	XX
ENVELOPE 1		
81	ATTACK	74
82	DECAY	40
83	SUSTAIN	46
84	RELEASE	01
85	KEY FOLLOW	1
ENVELOPE 2		
91	ATTACK	46
92	DECAY	60
93	SUSTAIN	98
94	RELEASE	38
95	KEY FOLLOW	OFF

SUBMATIC

DCO 1		
11	RANGE	4'
12	WAVEFORM	SAWT
13	TUNE	00
14	LFO	02
15	ENV	92
DCO 2		
21	RANGE	8'
22	WAVEFORM	SAWT
23	CROSS MOD	OFF
24	TUNE	00
25	FINE TUNE	+08
26	LFO	03
27	ENVELOPE	00
DCO-MOD		
31	DYNAMICS	OFF
32	ENV MODE	⊔-1
MIXER		
41	DCO 1	84
42	DCO 2	99
43	ENVELOPE	99
44	DYNAMICS	3
45	ENV MODE	⊔-2
VCF		
51	HPF	0
52	FREQUENCY	61
53	RESONANCE	00
54	LFO	01

55	ENVELOPE	06
56	KEY FOLLOW	60
57	DYNAMICS	1
58	ENV MODE	⊔-1
VCA/CHORUS		
61	LEVEL	61
62	ENV MODE	ENV2
63	DYNAMICS	2
64	CHORUS	1
LFO		
71	WAVEFORM	SINE
72	DELAY	69
73	RATE	80
74	BEND DEPTH	XX
ENVELOPE 1		
81	ATTACK	50
82	DECAY	00
83	SUSTAIN	99
84	RELEASE	99
85	KEY FOLLOW	OFF
ENVELOPE 2		
91	ATTACK	00
92	DECAY	00
93	SUSTAIN	93
94	RELEASE	46
95	KEY FOLLOW	OFF

		UPPER	LOWER				UPPER	LOWER
DCO 1					**55**	ENVELOPE	28	25
11	RANGE	16'	8'		**56**	KEY FOLLOW	31	63
12	WAVEFORM	SAWT	SAWT		**57**	DYNAMICS	2	1
13	TUNE	00	-12		**58**	ENV MODE	Π -2	Π -2
14	LFO	00	00					
15	ENV	00	00		**VCA/CHORUS**			
					61	LEVEL	92	95
DCO 2					**62**	ENV MODE	ENV2	ENV2
21	RANGE	16'	16'		**63**	DYNAMICS	2	1
22	WAVEFORM	SAWT	SAWT		**64**	CHORUS	OFF	OFF
23	CROSS MOD	OFF	X-MOD					
24	TUNE	00	00		**LFO**			
25	FINE TUNE	+11	+11		**71**	WAVEFORM	SINE	SINE
26	LFO	00	00		**72**	DELAY	61	61
27	ENVELOPE	11	00		**73**	RATE	81	77
					74	BEND DEPTH	XX	XX
DCO-MOD								
31	DYNAMICS	3	OFF		**ENVELOPE 1**			
32	ENV MODE	Π -1	Π -1		**81**	ATTACK	00	00
					82	DECAY	20	10
MIXER					**83**	SUSTAIN	00	09
41	DCO 1	99	99		**84**	RELEASE	21	47
42	DCO 2	99	49		**85**	KEY FOLLOW	1	OFF
43	ENVELOPE	00	00					
44	DYNAMICS	3	2		**ENVELOPE 2**			
45	ENV MODE	Π -1	Π -1		**91**	ATTACK	11	28
					92	DECAY	53	47
VCF					**93**	SUSTAIN	53	84
51	HPF	0	2		**94**	RELEASE	21	25
52	FREQUENCY	43	28		**95**	KEY FOLLOW	OFF	OFF
53	RESONANCE	00	00					
54	LFO	00	00					

Set the following patch parameters: Balance = 50. Dual Detune = +6. After-touch Brt. = 75. Upper Unison Detune = +2. Lower Unison Detune = +9.

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features are its touch-voice and cross-fade keyboard modes. Touch-voice enables you to alternate two tones using velocity: at a user-determined preset threshold level, the tone changes from one to the other. The velocity-sensitive cross-fade function allows you to play the lower tone by playing softly, and the upper tone by playing hard. You can even mix both tones by playing *mezzo forte*. With touch-voice, you can, for example, switch between two similar sounds at different octaves and retain the dynamic range in both tones. Cross-fade inverts the lower tone's dynamic response. Touch-voice is perfect for adding inflection, since the accented sounds can be altered slightly in comparison to the original. Cross-fade can be used to control two different playing styles on the same sound. For example, you could set up a patch which produces a muted rhythm guitar comping sound when played softly and a full guitar sound when you play hard. The same type of thing could be done for lush vs. *agitato* strings. Yet another use is to always have two sounds at your fingertips by cross-fading or touch-voicing two completely different sounds, as in the "Strings/Horns X-Fade" patch. You can even simulate a floating split point anywhere on the keyboard, since you can choose the sound by varying your playing dynamics. In "Horns X-Fade," two tones with slightly different horn envelopes are cross-faded to produce a sound that can be used for either lead or ensemble. An excellent effect when you're using cross-fade or touch-voice is to pan the left mono and right mono outputs hard left and right. Cross-fade or touch-voice two of the same tone, and you'll get velocity-sensitive stereo pan-

ning.

Chase play delays one tone's performance in relation to the other. Unlike a digital delay, chase play allows you to trigger a different sound than the original for the delay sound. Also unlike a digital delay, however, chase play does use synthesizer voices to create the echo effect. Try combining a delayed bell tone and low string sound. The slow string attack should be heard first, followed by the percussive bell tone. When the right and left mono outputs are used, the delays pan in stereo. Delaying and repeating (U-L-L mode) a pad sound creates a quasi-reverb effect.

If you're using the JX-10 as part of a larger MIDI setup, you'll be able to get a lot of use out of the keyboard controller features of the instrument. You may not have been aware that two different MIDI channels, each with its own preset number and volume level, can be stored along with each patch in the JX-10. Also, the two definable control sliders can be programmed to control the volume on your outboard synthesizers. The rack-mount version of the JX-10, the MKS-70, has the added ability to permit programming MIDI controller numbers to any of its programming parameters. This means that the mod wheel on your synthesizer could be used to alter the frequency of a DCO, or the release segment of an envelope. A com-

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plete listing of the JX-10's MIDI implementation is included at the back of the owner's manual.

Those of you who own computers will be able to use one of the software voicing programs available. Passport offers a JX librarian package for the Apple II series, the Commodore 64/128, and the IBM PC. The IBM version includes a voicing module. Beam Team has just released a voicing/librarian package for the new Atari 520/1040 ST computers. With or without a computer, both JX-8P and JX-10 owners will be able to program faster and easier with Roland's PG-800, which provides analog sliders, knobs, and switches to program with instead of entering numbers.

We hope this article has sparked a few new programming ideas. Above all, don't be afraid to dive in and change parameters—there aren't any illegal programming techniques. For those of you who still haven't gotten up the nerve to program yourself, there are alternate factory patches available. Roland offers three sets of JX-8P and two sets of JX-10 sounds. And, there are more independent companies offering alternate sounds libraries springing up all the time. Watch *Keyboard's* classified ads. Keep experimenting, and happy programming!