



PROGRAMMING THE JV SYNTHESIZERS

The Roland JV-1080 and the XP-50 (the keyboard version) are the latest in a long line of popular synthesizers from one of the most well-respected manufacturers in the business. Tracing their ancestry directly back to the venerable D-50, these synths offer 64-voice polyphony, 16-part multitimbral operation, and an expandable architecture that accommodates plug-in boards with genre-specific sounds, such as vintage synths, techno/hip hop, world (ethnic), and orchestral.

It also provides an unusual set of synthesis tools that range from the straightforward to the bizarre. Fortunately, you can make great sounds without ever venturing into the more arcane aspects of the JV-1080. In fact, most of the factory programs don't stray too far from standard synthesis techniques, and they sound great. So put on your programmer's hat, and follow me down the road less traveled.

I. Preparation

At the bottom of the JV-1080's hierarchy is the Tone, which is a complete synthesizer voice. Up to four Tones can be layered to form a Patch, the basic playable element. Patches are selected by pressing the Patch button and turning the Value dial or pressing the Inc/Dec buttons. Of course, each layered Tone cuts the polyphony in half; for example, a Patch with two layered Tones can play 32 notes at once. A Performance is a multitimbral combination of up to sixteen Patches, which are assigned to Parts within the Performance. Performances are selected by pressing the Perform button and turning the Value dial or pressing the Inc/Dec buttons.

We will use several Patches and Performances as starting points for our explorations. These sounds are all from the preset ROM banks, so the exact configuration of your unit doesn't matter. To call up a preset sound, press the Preset button and one of the Bank buttons (A, B, C, or D).

The front panel reveals how many Tones are used in a given Patch: the Tone Switch buttons (which are also the first four Part Switch/Select buttons located under the display) represent the four available Tones. If a Tone Switch button's LED is lit, the associated Tone is used in the Patch. In addition, an individual Tone can be turned on or off simply by tapping its Tone Switch button.

Interestingly, Tones that aren't used in a given Patch can contain useful data. For example, the Patch A:001, "64voice Piano," uses a single Tone (Tone 2) to produce its sound. However, the unused Tones



contain related sounds. In this Patch, turn on Tone 1 by pressing Tone Switch 1; it contains a piano sound with a Velocity-sensitive filter. (This may be easier to hear if you temporarily turn off Tone 2.)

By itself, this Tone doesn't amount to much, but it can be combined with Tone 2 to add some thickness to the Patch. In addition, Tones 3 and 4 contain different piano sounds. Either of these Tones can be used by itself or combined with the other Tones in the Patch to produce a variety of piano sounds.

Once you have selected a Patch or Performance, it's time to enter Edit mode by pressing the Parameter button. The eight buttons beneath the display serve several functions: each one accesses a related set of parameters (called a Menu) in Edit mode, as indicated by the color-coded labels beneath them. (Patch Edit labels are orange, Performance Edit labels are blue, and System Edit labels are gray.)

After selecting a menu, you see several individual parameters in the display. If the parameter you want is visible, navigate to it by pressing the right- or left-arrow buttons. In most menus, there are up and down arrows in the left portion of the display; you can press these arrow buttons to access additional pages of parameters. Once you have selected the desired parameter, you can change its value by turning the Value dial or pressing the Inc/Dec buttons.

Once you are in Patch Edit mode and have entered one of the menus, you can press the Parameter button again, which turns off its LED. At this point, you are still in Edit mode, but you can now turn Tones on and off by pressing the corresponding Tone Switch buttons and select a Tone for editing by pressing the appropriate Tone Select button. To select an edit menu, hold the Shift button and press the right- or left-arrow button until the desired menu appears.

This procedure also works in Performance Edit mode. In this case, however, all eight Part Switch/Select buttons are used to select the desired Part within the Performance. An extra button toggles these eight buttons between selecting Parts 1 through 8 and Parts 9 through 16.

II. Structure Instruction

If you spend some time turning Tones on and off, looking for gems that might be lurking within the Patches, you may run across an anomaly. There are a few Patches that change completely when you turn off one of the Tones.

For example, select Patch B:057, "Velo Tekno 2," which uses Tones 3 and 4. If you turn either of them off, the resulting sound doesn't remotely resemble the original. This is probably easiest to hear if you turn the effects off. Hit the Effects On/Off button and press the Select button directly underneath any occurrences of the word on in the display. Finally, hit the Effects On/Off button again to return to the Patch Play display.

Listen to each of the Tones individually. Tone 3 is not much more than a simple sine wave, and Tone 4 is just a higher-pitched version of the same thing, more or less. Welcome to the Bermuda Triangle of JV programming: the Structure.

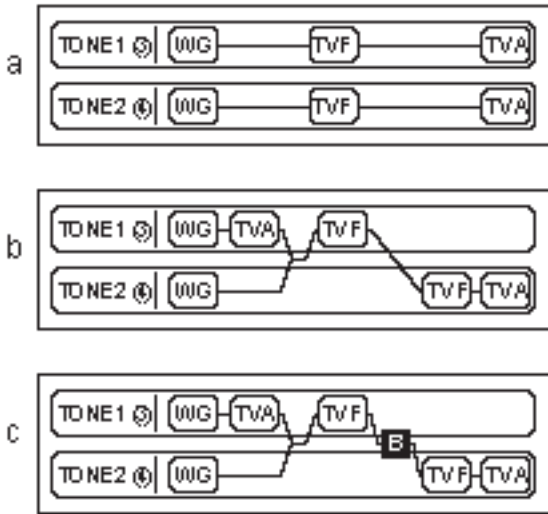


FIG. 1: Structure 1 (a) keeps both Tones completely separate, but Structure 2 (b) mixes the Waves and sends them through both filters in series. Structure 4 (c) is similar to Structure 2, but it places a Booster between the filters.

The Tones in a Patch are paired up within one of ten available Structures. Tones 1 and 2 are combined in one Structure, and Tones 3 and 4 are combined in another Structure. Of the ten Structures, only the first two actually layer the two Tones. In the other eight Structures, the Tones tend to interact in complex and sometimes unpredictable ways.

In Structure 1, the two Tones are fully independent (see Fig. 1). Each Tone consists of a Wave (sample), which is routed through a Time Variant Filter (TVF) and Time Variant Amplifier (TVA). This is the Structure to use if you want each Tone to behave as a separate synthesizer voice. In Structure 2, the Waves maintain their independence, but each Tone no longer gets its own TVF and TVA (see Fig. 1). Instead, the Waves are mixed—the balance is controlled by Tone 1’s TVA—and routed through both TVFs, which are connected in series. The resulting signal then passes through a final TVA, where the overall dynamics are controlled.

Structure 2 lets you apply two filters to the same signal. Both filters might be set to the same type, such as LPF (lowpass filter), yielding a kind of high-powered “super filter.” Alternatively, you can create filter curves with two resonant peaks or combine two different filter types (such as highpass and lowpass) to produce unusual response curves.

Although Structures 1 and 2 are fairly straightforward, the same cannot be said for Structures 3 through 10. In these Structures, the Waves in a Tone pair interact with sometimes surprising results.

The behavior of Structures 3 and 4 can be difficult to grasp, and the manual is a bit terse on the subject. However, I’ve spent some time experimenting with them, and I’ve come up with a model that may or may not be technically accurate, but it produces predictable results.

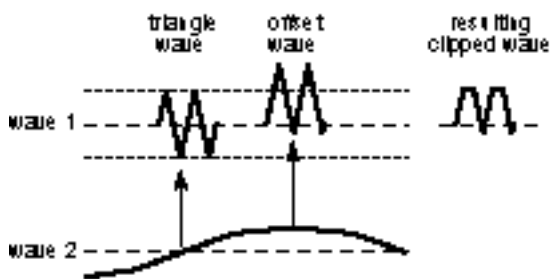


Fig 2. In Structures 3 and 4, Wave 2 is used to modulate the DC offset of Wave 1. If the peaks of Wave 1 exceed their maximum possible amplitude, they are clipped, which alters the harmonic spectrum of the Wave.

Basically, Structures 3 and 4 use Wave 2 to modulate Wave 1’s DC offset. In other words, as Wave 2’s amplitude increases, Wave 1 is offset from 0 (see Fig. 2). By itself, this might not produce spectacular effects, but the resulting signal is then routed through the Booster. The Booster amplifies a Wave and then clips the Wave’s peaks (see Fig. 3). Only Structures 3 and 4 use the Booster, and the only real difference between them is that the Booster is placed ahead of TVF 1 in Structure 3 and after TVF 1 in Structure 4.

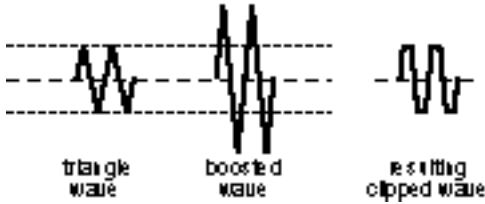


Fig. 3: The Booster increases the amplitude of a Wave and clips the peaks, which changes the harmonic spectrum.

Structures 5 through 10 use a ring modulator to produce their effects. A ring modulator accepts two input signals and produces an output signal consisting of the sum and difference frequencies that are generated from the frequencies of the input signals. Ring modulators are great for producing harmonics that seem unrelated to the original input signals. The classic applications for ring modulation are bell-like and metallic timbres.

Although the manual for the JV-1080 doesn't reveal much about the behavior of the ring modulator, a little experimentation shows it to be modeled after a DC-coupled ring modulator. In this design, some of the original input frequencies, as well as the sum and difference frequencies, are present at the output. (In AC-coupled ring modulators, the input frequencies are suppressed.) In addition, if one of the input Waves is in the subaudio range, the ring modulator can act as a TVA, with the subaudio Wave supplying the control source.

By now, you might suspect that utilizing Structures 3 through 10 can be a complicated matter. Well, it can be. But there are some structured ways to approach the Structures; let's take a look at one or two.

III. A Structured Approach

To begin, select any Patch and initialize it by pressing Utility, scrolling to Initialize with the arrow buttons, and pressing Enter twice. (Don't worry about erasing a Patch from memory; the initialized Patch isn't saved unless you say so. The original Patch can be restored simply by pressing the Exit button and reselecting the Patch.)

Press the Parameter button to enter Edit mode, and then press the Wave button to access the Wave menu. Select Wave Group Int-B with the Value dial or Inc/Dec buttons; then press the right arrow to navigate to the Number field and select Wave 046 (Sine). Next, press the TVA button and navigate to the V-Sens (Velocity-sensitivity) parameter. Set this value to 0; controlling the amplitude of each Tone is critical, so we don't want Velocity to modulate amplitude at this point.

Press the TVA button again, which jumps to the TVA envelope parameters at the bottom of the TVA menu. Set the value of T1 and T4 to 1. This eliminates the ticking sound that can occur as you play the keyboard, which is caused by exceedingly short envelope times.

Tone 2 should be identical to Tone 1 at this point. The quickest way to achieve this is to make a copy of Tone 1. Press the Utility button, navigate to Copy, and hit Enter. Move two locations to the right and hit the Inc button to select Tone 2 as the destination. Press Enter to make the copy; then hit Exit to return to Patch Parameter mode. Press the Parameter button to see there are now two active Tones as indicated by the LEDs for Tone Switches 1 and 2.

Hit the Parameter button again and press the Common button twice; this jumps to the last page of the Common menu, which is the Structure page. Press the Inc button twice to select Structure 3. Notice the dramatic change in the texture of the sound; this effect can be enhanced by increasing the Booster value.



Press the Parameter button once again; its LED should now be extinguished. (You're still in Edit mode, but it's easier to select the Tone you want to edit if you are not in Parameter mode.) Hold the Shift button and press the right-arrow button five times; this should take you to the Pitch menu. (Note: the Pitch button is five buttons to the right of the Common button.)

Now, vary the Coarse tune parameter for Tone 1 and listen to what happens. (You can vary the tuning for either Tone and get pretty much the same result; press the Tone Select 1 or 2 button to select the desired Tone.) You can create all sorts of unusual harmonics, depending on the pitch interval between the Tones. A little bit of experimentation reveals that perfect intervals (fourths, fifths, and octaves) produce the most sonorous effects, but using other intervals produces sounds with more exotic harmonic structures.

Set the Coarse tuning parameter for Tone 1 to +48; this will produce a bell-like texture. Next, hold the Shift button, press the right-arrow button twice to move to the TVA menu, and press the down-arrow button until you reach the last page, TVA Envelope. Set T2 to 70 and L2 and L3 each to 0; this will cause Wave 1 to slowly fade after each attack, which causes the sound to evolve from the metallic, bell-like timbre to a simple sine wave. This a good start for certain kinds of bell and electric-piano sounds.

Now, hold the Shift key and press the left-arrow button twice to reach the Pitch menu. With Tone 1 still selected for editing, navigate to the KeyFlw (Key Follow) parameter; the default value for this parameter is +100, which produces normal keyboard pitch tracking. Change the value to 0. Tone 1 now plays the same pitch for all of the keys.

This can produce a number of interesting textures. For example, set the Coarse parameter for Tone 1 to +28, and move back to the TVA menu (hold Shift and press the right-arrow button twice). Set T1 to 10 and T2 to 38, which produces an attack that might work to simulate an overblown-flute sound when incorporated in a larger Patch or Performance. The point is that you can use the TVA to shape the harmonic content of a Tone as well as to shape the dynamics.

We've been working with sine waves, which are the simplest waveforms. The results differ dramatically depending on the Waves you use. Things can become unpredictable in a hurry, which might be why Structures 3 through 10 are so seldom used in the average bank of JV-1080 Patches. Still, by applying these ideas in a logical manner, excellent results can be obtained.

IV. Getting Subsonic

Subsonic Waves can be used as the modulator in Structures 3 and 4 to produce some rich, harmonically dynamic sounds. Some of these sounds might remind you of pulse-width modulation effects. Modulating the amplitude of Wave 1 with the output of Wave 2 can drive Wave 1 into clipping, which produces a more square-ish waveform. In other words, as the amplitude of Wave 2 increases, Wave 1 becomes increasingly clipped. The character of the resulting sound depends on the Waves and frequencies that are selected for Waves 1 and 2.



To hear this in action, start by initializing a Patch. Activate Tone 2 by pressing the Tone Switch 2 button—Tone 1 should already be activated—and select Structure 3 in the last page of the Common menu.

Now we need a Wave in the subaudio range. Several low-frequency Waves are provided, starting with Int-B 183 (Low Saw). The smoothest modulation is produced by the Low Sine Wave (Int-B 189) or the Low Triangle Wave (Int-B 190). You can use other Waves, such as the Low Saw or Low Square, but they generally produce a pop in the sound when they snap from one extreme to the other in their cycle. For now, assign Int-B 190 (Low Triangle) to Tone 2 (in the first page of the Wave menu), which will provide the modulator. Then, assign Wave Int-B 045 (Triangle) to Tone 1, which will act as the carrier.

At this point, you should be able to hear the effect I'm after, although it probably seems a bit hyper. We can mellow it out by slowing down the rate of change, which means reducing the frequency of Wave 2.

Navigate to the first page of the Pitch menu, and set the Coarse parameter for Tone 2 to approximately -18; this should slow things down a bit. However, the effect changes speed depending on what notes you play. This is because Wave 2 is tracking the keyboard, so its frequency increases as you play higher notes. You can stop Wave 2 from tracking the keyboard by setting the value for KeyFlw to 0.

Now you have the basic effect. Further tweaking can be applied in several areas. First, you can accentuate the effect by increasing the Booster value in the Struct page of the Common menu. Additional control can be obtained using the Gain parameter in the Wave menu; this lets you adjust the level of each Wave individually, which the Booster does not permit. Also, check out how this sounds using other Waves. In particular, try changing the Wave used for Tone 1; this should provide a broad range of musically useful sounds.

V. A Plethora of LFOS

LFO effects are another area in which the JV-1080 excels. There are two LFOs available for each Tone and several ways the two LFOs can be synchronized (including MIDI Clock), which allows a number of cool rhythmic effects.

For example, the Patch B:047, "Acid Line," makes good use of this device. LFO 1 produces a square wave that plays an eighth-note, minor-third trill. Meanwhile, LFO 2 (which also produces a square wave) plays another minor-third trill but at the rate of a dotted quarter note (see Fig. 4 below).

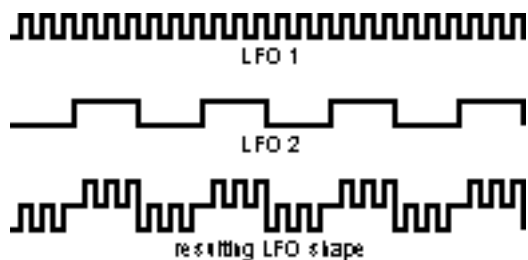


Fig. 4: The two LFOs can interact to produce some interesting effects. In this case, LFO 2 offsets LFO 1 to produce an alternating minor-third trill.

You can edit the rate of either LFO to create new rhythmic patterns. For example, set the rate of Tone 1's LFO 2 to 192 to get more frequent pitch changes. (This parameter is on the third page of the LFO menu.) You can also edit the pitch of either LFO to create new intervals. For example, set the Pitch of Tone 1's LFO 1 to -24 and LFO 2 to +24, which plays arpeggios based on a perfect fourth. The master clock for all LFOs with their External Sync parameter set to Clock is controlled with the Default Tempo parameter in the fourth page of the Common menu.

As long as you're messing around with the LFOs in "Acid Line," note that they are modulating not only pitch but the TVF, TVA, and pan position. And if you haven't checked out what you can do with MIDI-synchronized LFOs, you're in for a treat. The next time you're sequencing, set the JV-1080 to sync to MIDI Clock from your sequencer: press System and then MIDI; then navigate to the first page and set the Clock parameter to MIDI. The obvious application is to use the SQR or S&H LFO waveforms to control the pitch, TVF, and/or TVA, producing synchronized rhythmic pulses.

In addition, don't overlook the less dramatic applications of the LFO, such as vibrato. Synchronizing a sound's vibrato rate to the tempo of the music is one of those subtle effects that can kick butt under the right circumstances.

VI. Effective Effects

The JV-1080 includes lots of high-quality digital effects, along with a very flexible effects-routing scheme. Routing the effects to achieve a particular goal can be confusing, but it's not so bad once you know your way around. Note that the EFX section offers the main effects but reverb and chorus are provided separately.

Once again, start by initializing a Patch. Make sure Tone 1 is selected for editing, and then press the Parameter button, followed by the Effects button. You should find yourself at the top of the Effects menu; if not, hold the Shift button and press the up-arrow button to jump there.

The Output parameter on the first page of this menu determines whether the output of the current Tone is routed to the EFX section or directly to the Mix, Output 1, or Output 2 stereo pairs. If you want to send a Tone to a single output, set the Output parameter to Mix, Output 1, or Output 2 (depending on which output pair you want to use) and set the level with the Assign parameter. Then use the Pan parameter in the TVA menu to determine at which output—left, right, or some mixture—the Tone actually appears.

Normally, you'll probably use the Mix or EFX output, as the reverb and chorus effects can't be routed to Output 1 or 2 and thus cannot be used on any Tones routed to those outputs. (On the other hand, the EFX section can be routed to Output 1 or 2.) When using the Mix or EFX outputs, you can add reverb and chorusing by increasing the value of the appropriate parameters in the Effects Output page. In addition, the EFX section includes sends to the chorus and reverb, providing another way to route a signal to these effects.



If a Tone needs no more than a little reverb and/or chorusing, simply assign it to the Mix out, which bypasses the EFX section entirely. Use the Assign parameter to determine how much dry signal appears at the Mix outputs and the Chorus and Reverb parameters to determine how much (if any) of the Tone's signal is sent to these effects. You'll probably also need to adjust the reverb and chorus levels. These parameters, as well as several others related to these effects, are found in the last two pages of the Effects menu.

If the Tone requires more processing than mere chorusing and reverb, set the Output parameter to EFX and use the Assign control to determine how much of the signal is sent to the EFX section. The EFX section provides 40 high-quality effects, including distortion, auto-wah, and rotary-speaker simulation.

If you use the EFX section, you still have decisions to make. For example, if you're using the EFX section to produce a distortion effect for an electric-guitar sound, you probably don't want to use the chorus and reverb sends on the Effects Output page, as they process the dry Tone before it's sent to the distortion effect. Instead, send to the reverb and chorus from the output of the EFX (located on the EFX Out page). This should provide a more natural-sounding guitar Patch.

Other cases are not so clear cut. For example, suppose you are designing a solo sound, and you want to use chorus and reverb, as well as one of the delays from the EFX section. Should you send from the EFX delay to the chorus and reverb, or should you add the chorusing and reverb at the main Output page? And don't forget that you can send to the reverb from the chorus, as well. (You can select Mix, Reverb, or Mix+Rev as the output destinations from the chorus.) If you get confused, the simple block diagrams in chapter 4 of the JV-1080 manual provide an excellent starting point for effects design.

VII. Effects in Performance

The effects possibilities are even more confusing in Performance mode. Of course, each Part can't have its own effect; no synth has that much processing power (at least, not yet). However, each Part does have its own routing.

Recall that each Tone in a Patch can be assigned to Mix, EFX, Output 1, or Output 2. Each Part in a Performance can be assigned to the same destinations. For example, if a Part is assigned to the Mix output, all the Tones in the Patch assigned to that Part are sent to the Mix output. The level at which they're sent is determined by the Assign parameter (along with the Chorus and Reverb parameters) in the same way that levels are set for individual Tones when editing Patch effects.

However, Performances offer an additional routing choice: Patch. If a Part's Output parameter is set to Patch, it derives its output settings from the Patch assigned to it. In other words, each Tone in a Patch assigned to that Part sends to each of the effects buses in the same amount and combination as it does in the Patch. For example, if the Patch has Tone 1 assigned to the EFX bus, Tone 2 assigned to the Mix bus, and Tones 3 and 4 assigned to Output 1, the Part that uses that Patch will have the same assignments, as long as the Part's Output parameter is set to Patch.



This can quickly get confusing. It's quite possible that the effects in the Performance bear little or no resemblance to those used in any of the Patches assigned to the Performance Parts. Although a Part's effects routing might be identical to the routing used in its Patch, the actual effects used in the Performance might be completely different. So where do Performance effects come from?

The reverb and chorus effects are programmed as part of the Performance. However, the EFX parameters can be programmed as part of the Performance, or they can be borrowed from one of the Patches assigned to a Performance Part. For example, select Performance Preset A:20, "Heavy Metal." Press the Parameter button (its LED should be on), and then press the Effects button. Move to the Perform EFX Type page. The EFX Source is set to 5, which means that the source for the EFX parameters is Part 5, which happens to be using Patch B:003, "R&R Chunk."

If you select Patch B:003, "R&R Chunk," and check out its EFX Type page, you'll see that it's using effect 02:Overdrive. However, if you head back to the EFX setting for the Performance, the EFX Type is 10:Limiter. When the Performance is using a Part for its EFX settings, the display shows the effect assigned to the Performance, not necessarily the effect that's actually in use. In this case, the Performance uses the Overdrive effect as specified in Part 5's Patch.

You could use the Performance's EFX settings by changing the Source parameter to Perform (which stores the effects parameters with the Performance). But before you change the source parameter, check out what happens when you scroll through Source values 1 through 16 (which represent the sixteen possible Parts in a Performance) and play the Performance. Each number calls up a different EFX setting, as each of the sixteen Parts is given control of the EFX parameters.

This is particularly useful because more than one EFX setting is available within a Performance. Say you're working on a sequence that uses an organ Patch with a rotary-speaker effect during the verses and a distorted guitar during the bridge. Select your favorite organ with rotary effect and assign it to Part 1 of a Performance. Now, find the nastiest crunch guitar you can and assign it to Part 2 of the same Performance. (Make sure these Parts are set to different MIDI channels.) Save the Performance with Part 1 selected as the EFX Source (that is, the Source parameter on the Perform EFX Type page should be 1).

Record the organ and guitar parts into your sequencer as you normally would. Next, hit the System button and the MIDI button, and scroll to the second menu page, Sys-Exc MIDI. Set Tx.Edit to On. This sends any editing changes you make to the MIDI Out, which is one of the coolest features of the JV-1080.

Make sure the JV-1080's MIDI Out is connected to your sequencer's MIDI In and your organ/crunch-guitar Performance is selected. Hit the Parameter button, and then hit the Effects button. Navigate to the Perform EFX Type page and select the Source parameter; it should be set to 1, if everything has gone well.

Start your sequencer recording, and just before the guitar solo in the bridge, hit the Inc button, which sets the Source parameter to 2. This will load the distortion EFX settings from Part 2. Once the guitar



has finished playing, switch the Source parameter back to 1, restoring the rotary effect for the organ. With the Tx.Edit parameter turned on, these changes will be recorded into your sequence, assuming your sequencer can record System Exclusive messages. This is a slick way to automate effects changes.

While we're on the subject, the same type of thing can be accomplished in a slightly more roundabout way, but with a lot more flexibility. While exploring the EFX Source parameter, you might notice that you can specify Parts that aren't used in the Performance.

For example, select Performance B:19, "Gospel Set." Hit the Parameter button and then the Effects button, and navigate to the Perform EFX Type page. Set the Source parameter to 7; this selects Part 7 as the EFX control source. Press the Part button (button 4), which lets you assign Patches to Parts. Next, press the Parameter, if this is necessary to turn its LED off. Make sure the 1-8/9-16 button's LED is off, and press Part Switch/Select button 7 to select Part 7. As you select different Patches for this Part, the EFX setup changes to match the Patch you select, even though the Patch isn't actually used in the Performance! You could use this feature to remotely select EFX effects by sending Program Changes to an unused Part in a Performance, as long as that Part is the Source for the EFX setup.

VII. Navigational Shortcuts

With the JV-1080's variety of modes, menus, pages, and programming functions, moving from point A to point B isn't always quick. However, a number of shortcuts can help you get where you're going pronto.

Accelerated Scrolling

Press the Value dial while rotating to change values in larger increments. For example, parameters with a range of -100 to +100 scroll in tens. Holding the Shift button while rotating the dial has the same effect.

Hold the Shift button while pressing the Inc/ Dec buttons to scroll in larger increments.

Values automatically scroll if you hold down the Inc/Dec buttons. For hyperscrolling, hold the Inc/Dec buttons; then hold the other button.

Double-clicking on the Value dial toggles between the edited and programmed values of a parameter. The double-click rate must be pretty quick.

Express Route

Hold the Shift key while pressing the left- or right-arrow buttons to move to the next menu. For example, select a Patch and hit the Parameter button. Now press one of the menu buttons. Press the Parameter button again; it's LED should extinguish. You can now use the Shift + left- or right-button combination to move to any editing menu. This lets you easily turn Tones on and off and select different Tones for editing by pressing the appropriate Tone Switch or Tone Select button without leaving the current edit page.



Hold the Shift button and press the up-arrow button to jump to the top of the current menu. Likewise, hold the Shift button and press the down-arrow button to jump to the bottom of the menu.

Tapping on the same menu button toggles between a pair of definable pages. For example, select a Patch, press the Parameter button, and hit one of the menu buttons. If you find yourself at the top of the selected menu, pressing the button again takes you to the bottom (and vice versa). If you are located somewhere in the middle of the menu, pressing the menu button toggles between the current location and the top or bottom of the menu; the direction of the move depends on how you arrived at the current location.

In a Performance, you can select different Parts by holding the Shift button and pressing the left- or right-arrow buttons. This is handy when you want to edit a Part from within a Performance.

Group Editing

You can edit more than one Tone at a time, which is great for doing things like making a Patch brighter overall or changing the octave of a Patch. Within Edit mode (the Parameter button LED should be off), hold the Tone Select button for one of the Tones and press the Tone Select buttons for any Tones you wish to simultaneously edit. The LEDs for all selected Tones remain lit, and the JV-1080 display shows asterisks (*) to indicate selected Tones.

Any parameter changes you make in this mode will affect each selected Tone identically. For example, suppose you are simultaneously editing the Pitch Coarse parameter of two Tones, which are set to values of 0 and +12, respectively. If you increase the value by 1, one Tone will be set +1, and the other will be set to +13.

The first Tone you select becomes the primary Tone, and its number is then displayed in the various edit-menu pages. The displayed parameter values relate to this Tone only. Be cautious when editing in this way, because you'll be changing parameters you can't see.

While you're in an edit menu, press the Palette button to see a single parameter's value for all four Tones in a Patch or eight of the sixteen Patches that can be used in a Performance.

Editing Patches from within a Performance

You can edit a Patch from within a Performance. This makes it easier to tailor a Patch to a specific Performance, because you can hear the entire Performance while editing the Patch.

In Performance mode, select a Part to edit. Hold the Performance button and press the Patch button. Everything operates as if you were in Patch Edit mode, but you can hear the Patch in the context of the Performance.



VIII. The Wrap

Admittedly, our tour of the JV-1080 has left a few things out. Well, okay, it's left a lot of things out. However, I've tried to focus on some of the overlooked capabilities of this machine. Most folks don't need that much help with the more familiar programming tools available in the JV-1080. Also, it's easy to become complacent with such a compliant instrument. I hope some of these ideas might help start you down an unexplored path or two. And if you come up with any killer sounds or techniques, let me know.

IX. It's A Gift

In this original Patch, Structure 4 is used with Tones 1 and 2 to produce an effect like pulse-width modulation. This makes it possible to apply both highpass and lowpass filters to the same signal. Structure 1 is used with Tones 3 (to produce an arpeggiated figure) and Tone 4 (to produce automated panning). You will also have to hold a key down for a while to hear these effects. Also, you should note the use of the pitch envelope in Tone 4 to force the assigned bass wave to play outside its preset range.

The mod wheel can be used to control the balance between the first and second pairs of Tones. Pushing it forward decreases the level of TVA 2 , which increases the overall level of the pair due to the nature of Structure 4. In addition, the mod wheel controls both filter cutoff and resonance; in its extreme forward position, the sound takes on an analog-synth texture.

COMMON MENU

PATCHNAME

Structures

PATCH COMMON

Level	127
Pan	0
Analog Feel	I30
Octave	OFF
Priority	LAST
Velocity Range	OFF
Default Tempo	120

<u>VELOCITY</u>	<u>LOWER</u>	<u>UPPER</u>	<u>X-FADE</u>
TONE 1	1	127	0
TONE 2	1	127	0
TONE 3	1	127	0
TONE 4	1	127	0



<u>KEYRANGE</u>	<u>LOWER</u>	<u>UPPER</u>	<u>X-FADE</u>
TONE 1	C-1	G9	0
TONE 2	C-1	G9	0
TONE 3	C-1	G9	0
TONE 4	C-1	G9	0

<u>STRUCT</u>	<u>STRUCT</u>	<u>BOOSTER</u>
TONE 1 & 2	4	+18
TONE 3 & 4	1	n/a

EFFECTS MENU

<u>OUTPUT</u>	<u>OUTPUT</u>	<u>ASSIGN</u>	<u>CHORUS</u>	<u>REVERB</u>
TONE 1	n/a	n/a	n/a	n/a
TONE 2	MIX	127	94	0
TONE 3	EFX	96	50	0
TONE 4	EFX	127	40	0

PATCH EFX TYPE

Type 01:STEREO-EQ

PATCH EFX PRM

Low Freq 400
 Low Gain +10
 Hi Freq 8000
 Hi Gain +15
 P1 Freq 500
 P1 Q 0.5
 P1 Gain +15
 P2 Freq 4000
 P2 Q 9.0
 P2 Gain +6
 Level 127

PATCH EFX OUT

Output MIX
 Assign 127
 Chorus 0
 Reverb 80

PATCH EFX CTRL

Level OFF:0
 - - - - OFF:0



PATCH CHORUS

Rat 40
Dpt 22
Dly 40
Fbk 0
Level 127
Output MIX+REV

PATCH REVERB

Type HALL1
Time 85
Lev 127
Fbk 0
HF damp BYPASS

CONTROL MENU

KEY MODE AND BENDER

Assign POLY
Legato OFF
Bend Range -2:+2

PORTAMENTO

Sw Off
Tm n/a
Mode n/a
Type n/a
Start n/a

<u>RX SWITCH</u>	<u>VOLUME</u>	<u>PAN</u>	<u>BENDER</u>
TONE 1	ON	CONT	ON
TONE 2	ON	CONT	ON
TONE 3	ON	CONT	ON
TONE 4	ON	CONT	ON

<u>DAMPER</u>	<u>HOLD-1 SWITCH</u>	<u>REDAMPER</u>
TONE 1	ON	OFF
TONE 2	ON	OFF
TONE 3	ON	OFF
TONE 4	ON	OFF



PEAK & HOLD

EfxCtrl	OFF
Ctrl 1	OFF
Ctrl 2	OFF
Ctrl 3	OFF

CONTROL SOURCE

Control 2	SYS-CTRL1
Control 3	SYS-CTRL2

CONTROL1 MODULATION (Destination:Depth)

TONE 1	RES:+48	OFF:0	OFF:0	OFF:0
TONE 2	CUT:-15	RES:+24	LEV:+6	OFF:0
TONE 3	LEV:-60	OFF:0	OFF:0	OFF:0
TONE 4	LEV:-60	OFF:0	OFF:0	OFF:0

CONTROL2 SYS-CTRL1 (Destination:Depth)

TONE 1	PL2:+14	OFF:0	OFF:0	OFF:0
TONE 2	OFF:0	OFF:0	OFF:0	OFF:0
TONE 3	OFF:0	OFF:0	OFF:0	OFF:0
TONE 4	PL2:+17	OFF:0	OFF:0	OFF:0

CONTROL3 SYS-CTRL2 (Destination:Depth)

TONE 1	LEV:+20	OFF:0	OFF:0	OFF:0
TONE 2	LEV:+20	OFF:0	OFF:0	OFF:0
TONE 3	LEV:+20	OFF:0	OFF:0	OFF:0
TONE 4	LEV:+20	OFF:0	OFF:0	OFF:0

WAVE MENU

<u>WAVE</u>	<u>GROUP</u>	<u>NUMBER</u>
TONE 1	INT-B	046 (Sine)
TONE 2	INT-B	190 (Low Triangle)
TONE 3	INT-A	052 (Nylon Gtr A)
TONE 4	INT-A	130 (Fretless A)

<u>WAVE</u>	<u>GAIN</u>	<u>SWITCH</u>
TONE 1	+12	ON
TONE 2	+6	ON
TONE 3	0	ON
TONE 4	0	ON



<u>FXM</u>	<u>SWITCH</u>	<u>COLOR</u>	<u>DEPTH</u>
TONE 1	OFF	n/a	n/a
TONE 2	OFF	n/a	n/a
TONE 3	OFF	n/a	n/a
TONE 4	OFF	n/a	n/a

<u>TONE DELAY</u>	<u>MODE</u>	<u>TIME</u>
TONE 1	NORMAL	0
TONE 2	NORMAL	0
TONE 3	NORMAL	0
TONE 4	NORMAL	0

LFO MENU

<u>LFO 1</u>	<u>FORM</u>	<u>KEYTRIG</u>	<u>RATE</u>	<u>EXTSYNC</u>
TONE 1	TRI	OFF	384	CLOCK
TONE 2	TRI	OFF	100	OFF
TONE 3	SQR	ON	96	CLOCK
TONE 4	TRP	ON	64	CLOCK

<u>LFO 1</u>	<u>MODE</u>	<u>DELAY</u>	<u>FADE</u>	<u>OFFSET</u>
TONE 1	ON-IN	0	0	0
TONE 2	ON-IN	0	0	0
TONE 3	ON-IN	66	0	0
TONE 4	ON-IN	94	0	0

<u>LFO 2</u>	<u>FORM</u>	<u>KEYTRIG</u>	<u>RATE</u>	<u>EXTSYNC</u>
TONE 1	TRI	OFF	100	OFF
TONE 2	TRI	OFF	80	OFF
TONE 3	SQR	ON	32	CLOCK
TONE 4	SIN	ON	768	CLOCK

<u>LFO 2</u>	<u>MODE</u>	<u>DELAY</u>	<u>FADE</u>	<u>OFFSET</u>
TONE 1	ON-IN	0	0	0
TONE 2	ON-IN	0	0	0
TONE 3	ON-IN	66	0	0
TONE 4	ON-IN	94	0	0

<u>LFO DEPTH 1:2 PITCH</u>	<u>TVF</u>	<u>TVA</u>	<u>PAN</u>
TONE 1	0:0	0:0	+63:0
TONE 2	0:0	0:0	0:0
TONE 3	-28:+28	-52:+0	+42:0
TONE 4	0:0	0:0	0:+63



PITCH MENU

<u>PITCH</u>	<u>COARSE</u>	<u>FINE</u>	<u>RANDOM</u>	<u>KEYFLW</u>
TONE 1	-12	0	0	+100
TONE 2	-8	0	0	0
TONE 3	-7	0	0	+100
TONE 4	-12	0	0	+100

<u>PCH ENV DPT</u>	<u>ENVELOPE DEPTH</u>	<u>VELOCITY SENS</u>
TONE 1	0	n/a
TONE 2	0	n/a
TONE 3	-5	0
TONE 4	+12	0

<u>PCH TIME ENV</u>	<u>V-T1</u>	<u>V-T4</u>	<u>TIME KEYFOLLOW</u>
TONE 1	n/a	n/a	n/a
TONE 2	n/a	n/a	n/a
TONE 3	0	0	0
TONE 4	0	0	0

<u>PCH ENVELOPE</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>
TONE 1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TONE 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TONE 3	0	86	0	127	+63	+63	0	0
TONE 4	0	14	0	127	+60	+63	+63	+63

TVF MENU

<u>FILTER</u>	<u>TYP</u>	<u>CUT</u>	<u>RES</u>	<u>KEYFLW</u>	<u>ENV DPT</u>
TONE 1	LPF	83	0	+100	-40
TONE 2	HPF	40	32	0	0
TONE 3	LPF	127	60	+100	0
TONE 4	OFF	n/a	n/a	+100	0

<u>TVF VELOCITY</u>	<u>V-SENS</u>	<u>V-CURVE</u>	<u>V-RESONANCE</u>
TONE 1	-100	1	+18
TONE 2	0	1	0
TONE 3	0	1	0
TONE 4	n/a	1	0

<u>TVF TIME ENV</u>	<u>V-T1</u>	<u>V-T4</u>	<u>TIME KEYFOLLOW</u>
TONE 1	0	0	0
TONE 2	0	0	0
TONE 3	0	0	0
TONE 4	n/a	n/a	n/a



<u>TVF ENVELOPE</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>
TONE 1	45	78	70	3	75	0	35	0
TONE 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TONE 3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TONE 4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

TVA MENU

<u>TVA</u>	<u>LEVEL</u>	<u>PAN</u>	<u>V-SENS</u>	<u>V-CURVE</u>
TONE 1	127	0	0	1
TONE 2	84	0	+100	1
TONE 3	127	L20	+100	3
TONE 4	127	20R	+100	1

<u>BIAS</u>	<u>BIAS</u>	<u>POINT</u>	<u>DIRECTION</u>
TONE 1	0	n/a	n/a
TONE 2	0	n/a	n/a
TONE 3	0	n/a	n/a
TONE 4	0	n/a	n/a

<u>PAN MODULATE</u>	<u>KEYFLW</u>	<u>RANDOM</u>	<u>ALTERNATE</u>
TONE 1	n/a	n/a	n/a
TONE 2	0	40	0
TONE 3	0	0	0
TONE 4	0	0	0

<u>TVA TIME ENV</u>	<u>V-T1</u>	<u>V-T4</u>	<u>TIME KEYFOLLOW</u>
TONE 1	0	0	0
TONE 2	0	0	0
TONE 3	0	0	0
TONE 4	0	0	0

<u>TVA ENVELOPE</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>L1</u>	<u>L2</u>	<u>L3</u>
TONE 1	50	n/a	n/a	68	127	127	127
TONE 2	0	n/a	n/a	68	127	127	127
TONE 3	0	70	70	44	127	6	107
TONE 4	0	98	70	44	127	0	110

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