

# Moog Source Moog Rogue

Two rather interesting products this month, both from Moog Music Inc, the company that really started it all in the late Sixties and early Seventies. Technology has moved on quite a bit since those early days, but if you look closely at these two synthesisers, they still have a great deal of similarity with the Minimoog, the first real performance synthesiser, that appeared in 1971.

The Source is Moog's top line monophonic, and its design is unlike that of any other synthesiser (with the possible exception of New England Digital's Synclavier systems). Instead of having banks of control knobs and switches, Moog have utilised a device known as an Incrementor. This is the large control knob located just above the performance control wheels, and is attached to a flywheel as can be seen from the internal shot. Also mounted on the same spindle is a spectroscopic disc — a clear plastic film, with a hundred or so 'spokes' drawn on it. A sensor is positioned alongside this disc, so that every time the Incrementor control knob is moved, the sensor generates a number of pulses corresponding to the number of spokes that have passed through its 'beam', and hence the amount the control has been rotated has been accurately translated to a digital signal from which the Source's microcomputer can set to work.

Okay, so you have this very pleasing control medium, which will rotate as many times as you wish, and that has a pleasing, substantial feel to it, thanks to the inertia of the heavy flywheel, but how do you use it to control all the various parameters of a synthesiser? Moog use an interesting system, that relies heavily on almost 70 membrane switches. The Source's control panel looks quite amazing, it is arranged in a fairly standard configuration with oscillator, modulation, mixer, filter, envelope, and VCA sections; but there are no control knobs — just a graphics set in an attractive and colourful "easy-wipe-clean" plastic film. To control a sound, you first select a program from the instruments' memory banks, and then proceed to tailor it to your own particular requirements, by selecting a parameter using the touch panel, and then modifying or editing it using the Incrementor. A positive benefit from using this system has been capitalised by Moog; just above the Incrementor control knob is a dual seven segment LED display which reads out the value (from 0-99) of the parameter being varied, so the Source is a very precise instrument in terms of control. Not all the parameters are fully variable, for example the footage selection is done simply by touching the appropriate part of the control panel — the footage of an oscillator is either 16', 8' or 4' — there's nothing to increment.

## The Source's Voice Circuitry

The Source is a monophonic dual oscillator synth, each oscillator generating three waveshapes — ramp, sawtooth, and pulse, the latter is width variable using the



The Moog Source synthesiser.

Incrementor, but without a modulation Source. Incidentally, all parameters that can be varied using the Incrementor are set in yellow, and those just switchable in light blue (a bit silly as the background to these graphics is also blue, though a little darker), and of course in a black and white photo it is almost impossible to distinguish between light blue and yellow! As previously mentioned, the oscillators can be set at 16', 8', or 4', and there is of course an Interval control that enables you to set Oscillator 2 at any pitch with respect to Oscillator 1. Moog have used their skill here, as the Incrementor control can be set to give an accurate setting of the Interval. When the display reads 0, the two oscillators are in tune, and by the time the figures read 49, Oscillator 2 is one octave up, and at 98 it is exactly two octaves above its start position, but to get it there, we've had to turn the Incrementor control round a full 28 times! So in effect we are using a 28 turn pot for tuning Oscillator 2. Finally, with respect to the oscillators, there is a syncing facility, whereby Oscillator 2 is synced to Oscillator 1, and the pitchbend performance wheel bends just Oscillator 2, making it more of a high powered tone control. Each oscillator has a separate output level control facility and there is also provision to mix in at this stage the desired amounts of white noise.

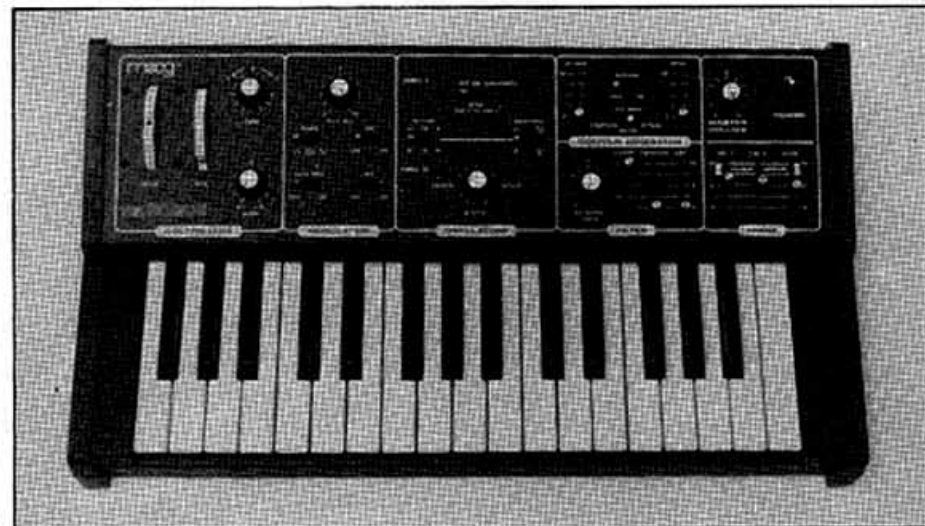
The filter is almost identical to that found in the Minimoog — using the dual ladder system, and this imparts that typical warm

colour to the overall sound of the instrument. Cut-off, Emphasis, and Contour (envelope) Amount are the variables here, and OFF/HALF/FULL are the switchable selection for determining how the filter tracks the keyboard. The tuning of the filter is remarkably good — even when putting it into oscillation and modulating it with the filter ADSR envelope — a practice that generally destroys any semblance of tuning.

There is a second ADSR envelope for use with the VCA, and both sets of envelopes are, of course, fully variable using the Incrementor.

The modulation section is fairly basic — a single LFO provides either a sawtooth or a square waveform which can be routed via the performance modulation wheel to either the VCOs, the filter, or both. The only variable in this section is the modulation rate, and I'm glad to see that Moog have inserted an LED above the modulation wheel to relay the speed at which the LFO is running.

The final section that relates directly to the voice circuitry is the keyboard controller and portamento facilities. The keyboard can either be operated in single or multiple trigger mode which is surprisingly handy, but even more useful is glide facility, which relies on the Incrementor to determine its rate, so you get a digital readout of the slew rate which enables the player to accurately determine exactly when the note is going to reach its destination — it takes a bit of practice to get right, but once mastered it is a



The Moog Rogue synthesiser.

worthy bonus of the Incrementation system.

The performance control wheels sit to the left of the keyboard, and operate in the usual proficient manner — but above them are two key-push buttons, like those found on alphanumeric keyboards, which are used to transpose the Source up an octave. These are really great to use as it makes it extremely easy to transpose up an octave in a fraction of a second, and as Moog have stuck them so close to the performance wheels, one's left hand is generally hovering over them, so this really is a case when the transpose button does effectively add another octave to the keyboard.

There are 16 touch pads situated just above the keyboard; these operate in two levels — first, there are the selectors for the 16 program memories, and in Level 2 they operate the sequencer, arpeggiator, automatic triggering, sample and hold and cassette interface. The sequencer will record two 88-note real time sequences with transpose facilities, with the rate controlled by the LFO. A nice feature about this sequencer is that you can load program changes during the course of the pattern. The arpeggiator is also rather interesting in the way it is programmed and it can store up to 24 notes. To load it, you simply play the desired pattern and end it with the first note you played. The Source then instantly replays the programmed line at the LFO's clock rate. You'd be amazed how useful this facility is — especially if you are as cack-handed as yours truly.

On the rear panel there isn't too much: CV and Trigs in and out, a cassette DIN link, audio out, a Europlug mains socket, and a fine tune control. It would have been nice to have had a foot release switch and portamento switch facilities, but most people will survive without them.

I think that the Source looks great, and it is remarkably small and light, but I think it certainly looks the part with the 'colourful', though not gaudy control panel, and smart brushed aluminium casework, complete with wooden facings. The keyboard, three octaves C to C, is a pleasure to play, and incidentally it uses metal strips instead of the old J-wire system of contacts. Inside the instrument things are much tidier than the photograph would suggest. Everything is socketed and most of the wiring utilises ribbon cables. There are three main control boards — the power supply which at over 2 amps is surprisingly hefty, the microprocessor board, and the voice board. No circuitry is directly mounted on to the switch panel, which forms a sealed unit with two ribbons leading off from it. All in all it's a very nice piece of design work, and with next to no moving parts the servicing required by the Source should be minimal.

## Playing the Source

Again, I've spoken to several people with respect to using the Source, and the opinions I've received have been mixed. The touch panel and the LED readout is generally great to use, however, one main drawback is that you cannot tell at a glance the relative settings of all the parameters, and what is worse, the settings of the switchable pads can only be determined by listening to the sound being produced. This is fine if you are in a studio, but live! I suppose that you will have loaded up the sounds you want in the programmer, but even so... My major criticism with the Source lies with the doubling up of the control switches to two levels. It is a nightmare to operate the Source in level 2 as it keeps reverting to level 1 and you don't know where you are. For goodness

sake next time don't try and save those extra few pennies you guys at Moog, and put in separate control switches.

I can't really fault the sound quality of the Source, save that the tuning is out for the first five to ten minutes of operation — then it's fine. At £895 it is an expensive synthesiser, but it certainly is a brave attempt by Moog to do something new, and they've got three-quarters of the way there to producing a really revolutionary product.

The Rogue is quite a different kettle of fish — basically because it is cheap, i.e. £318, but I'm sure that if you pop down to your local Moog stockist clutching crisp brown £20 notes (are they brown? it's been so long since I've seen one) that they'll let you have one somewhat cheaper.

For some reason Moog have stopped making the Prodigy, which was great, and sold in its thousands. The Rogue (to rhyme with Moog) is a budget version of the Prodigy, though because of fluctuations in the value of the pound it looks like it is going to be more expensive, or at least the same price as the Prodigy.



Internal view of the Source.

The first thing to realise about the Rogue is that it doesn't have a complete built-in power supply. Moog present you with a little white box that houses an AC adaptor which feeds 24 volts AC to the instrument via a rather flimsy and suspect looking mini-jack socket. So rather cleverly, Moog can sell exactly the same product in both the US and Europe by just including a different adaptor. However, this kind of adaptor is really messy to have kicking around on stage, and I would have much preferred to have seen a Europlug mains socket on the Rogue's back panel.

The Rogue has a 2½ octave F to C keyboard which feels okay, but obviously is of comparable quality to that found on the Source. One aspect of the Rogue's design is that nearly all the circuitry is mounted on a board behind the front panel, and to make the instrument both simpler to construct and physically smaller the two performance control wheels have been shifted up above the keyboard, rather like the Opus 3's wheel. When I first saw photos of the Rogue I thought that this was too much of a compromise — but after having played the Rogue for a short while I found this positioning quite acceptable, and in fact one's left hand is closer to the rest of the controls for those quick changes.

There are, however, one or two aspects of the Rogue's design that I am less happy about. The Rogue is a dual oscillator synth with two free running VCOs, but both oscillators share the same octave and waveform switches — if you set VCO 1 at 32', then VCO 2 is set at 32'; if you want VCO 1 to produce a sawtooth wave, then VCO 2 must also produce a sawtooth wave. Would it have cost that much extra to have had separate toggle switches for each oscillator? I should

mention though, that VCO 2 does have an Interval control which does allow for independent frequency shift of up to an octave, but this system is still restrictive. There are two positions to the waveform switch — sawtooth and rectangular; in the latter position VCO 1 produces a square wave, and VCO 2 a pulse wave.

Three sliders are used to mix the signals from the oscillators and a noise source. On the control panel there is a section of these sliders marked overdrive, which, I venture, is supposed to introduce some form of inter-modulation or harmonic distortion to that particular signal — I tried three different machines, and I could only just detect, aurally, a tiny amount of distortion. With an oscilloscope it was possible to find about 10% of the sawtooth waveforms being clipped on the output of the mixer summer, so I would suggest to Moog that they beef up this stage if they are going to put overdrive markings on the front panel. It is a good idea, though.

The Rogue may be a low-cost synth, but it does have oscillator synchronisation, which can't be bad. Oscillator 2 can be synced to Oscillator 1, and it can either be a contoured synchronisation, whence Oscillator 2 is swept by the envelope generator; or continuous, when the pitchbend wheel is used to vary just Oscillator 2 as with the Source. This is an important facility to have on a synthesiser, and one that isn't too common on the lower priced machines.

The voltage controlled filter is, of course, a 24dB/octave low pass type. However, it hasn't the characteristics that produce the typical Moog sound. Instead, the tonal colouration is much harsher and abrasive, but this isn't a bad thing as it does give the Rogue a powerful brassy sound. Cut-off frequency, Emphasis (resonance) and Contour Amount controls are all sliders, whereas the keyboard track facility is a rotary pot — strange. The envelope generator is of the AD type, though a toggle switch will transform this into an AR envelope by switching the sustain level from zero to maximum. This envelope is used to modulate the VCF, whilst for the VCA there are three options: Hold — which simply turns the VCA on; Keyed, which takes the gate pulse from the keyboard and uses that to modulate the VCA; and Contoured, which uses the AD/AR envelope. Simple but effective.

The LFO puts out triangle, square and random waveforms at frequencies varying from 0.3 to 30 Hz via the modulation wheel, and can be used to modulate the oscillators and/or the filters as necessary. An Auto Trigger function also enables the envelope generator to be fired by the LFO.

On the rear panel Moog have fitted CV (1 volt per octave) and Trigger Ins and Outs, using stereo jack sockets, which is unusual, and offer both V-triggering (using a voltage pulse between 3 and 10 volts) and S-triggering (the system used on Moog's earlier machines whereby the terminal is, shorted to earth potential). An audio Out socket is present (just as well) and an audio In feeds any line level signal into the VCF for limited processing.

Overall I like the Moog Rogue, in fact the name is rather appropriate — it has got its faults and weaknesses, which on a lesser machine would be quite damning, but because it is simple and easy to play, and it really is easy, and because it has a good pokey sound characteristic, that is widely variable, I can recommend this synthesiser to the non-pro player.