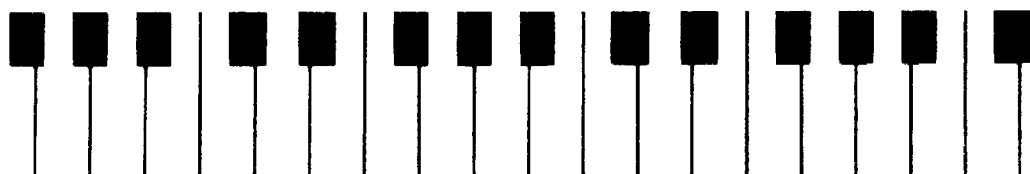




# SIX TO A DOZEN



In the wake of a company takeover, Oberheim have switched their manufacturing base to Japan and come up with a poor man's state-of-the-art analogue polysynth, the Matrix 6. If you need proof that analogue isn't dead, this is it. *Simon Trask*



Contradictions being what they are, it seems odd to be able to say, at the tail-end of 1985, that an analogue synthesiser is truly state-of-the-art. That phrase generally implies application of the very latest technology to give what are currently unequalled results, but that isn't true of Oberheim's recent polyphonic synthesisers, the Xpander and Matrix 12. Sure, the results they produced were difficult to match, but those results were created using tried and tested technology, not some new wonder-formula that threw the synth world off its orbital axis.

Yet the fact remains that, in an increasingly digital world, the big Oberheims became state-of-the-art musical instruments almost overnight, such was the thoroughness, and originality, with which their slightly quaint design principles had been applied. Trouble is, they were more or less destined for state-of-the-art studios, session players and pop stars: not exactly an unlimited ocean full of potential customers. What happened? Oberheim got themselves into trouble, that's what happened, and six months ago, they became 'a division of the ECC Development Corporation', which is a polite way of saying they were forced to sell out.

Fortunately, the changeover has left the company substantially unchanged. Even more fortunately, it's allowed them to shift their manufacturing base to Japan, and away from the land of high labour costs and unreliable

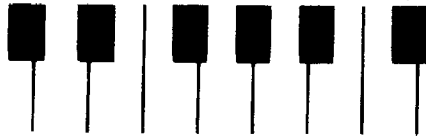
quality control.

Thus the company's latest synth, the Matrix 6, has appeared at a more affordable price, yet at a seemingly equal level of build quality.

But even allowing for production economies, it's still quite a feat that the 6



**'The voice structure of the Matrix 6's predecessors has been retained, but you don't have to look very far to find economies.'**



should be half the price of the Xpander, and yet offer the same number of voices (ie. six) plus a five-octave keyboard which is touch-sensitive on all three counts, namely attack velocity, channel aftertouch and release velocity.

Retained from the Matrix 12 is the facility for defining different keyboard velocity scales and sensitivities (governing attack and release) to suit your own playing style – a nice feature that should be more commonplace than it is now. Thus you get a choice of three well-conceived options: Linear (striking the keys twice as hard produces twice the output), Expo 1 (an exponential response: striking the keys twice as hard produces ten times the output), and Expo 2 (also exponential, but with a compressed range). Not quite as flexible as the 12, but still a useful addition.

There have been economies made. Most obviously, the size of the 6 has been scaled down to more normal synth proportions (both the Xpander and the Matrix 12 were easily distinguishable by their bulk), though it's still no lightweight. And together with this scaling down comes a re-organised front panel – another obvious area of economy. Gone are the three 40-character fluorescent LED windows which formed such an essential part of the previous instruments' interaction with the outside world. Gone too are the plentiful supplies of knobs and buttons, the things that made programming such a joy next to the wilderness of digital parameter access. Taking their place are a more modest, single 16-character LED window, a membrane-switch numeric keypad, and membrane-switch selectors which operate a matrix-organised Mode Select panel situated underneath the LED window. Nope, not even Oberheim ▷



▷ could escape the digital control disease forever.

But as we all know, these external economies matter little if an instrument still sounds as good as it did in its more expensive form. The Oberheim's sonic capabilities exist on two levels: individual voices and combinations of them. Now, it's in the latter area that the biggest compromises have been made on the Matrix 6, so that's where I'll begin the journey.

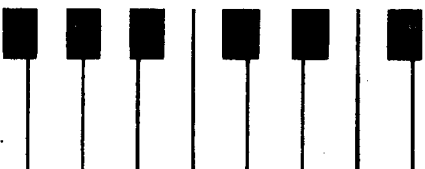
The 6's immediate predecessors are capable of assigning a different sound to each of their voices. These voices can then be allocated in any combination and number to what Oberheim term 'zones', which are essentially ranges on the keyboard whose length and position can be defined by the user.

The Matrix 6 allows a maximum of two patches to be assigned to its voices (in any of four fixed-voice assignments), and these are playable as two zones, left and right. This equates roughly with the familiar split-keyboard facility, but there's a bit more to it than that. The Matrix 6 allows you to set an upper note limit for the left zone and a lower note limit for the right one, so you can have zones overlapping across any extent of the keyboard. If you put the old grey matter into gear for a moment, you'll realise that you can create the familiar 'dual' (overlaid) mode by overlapping the two zones over the entire keyboard. But you can also have any degree of overlap in between dual and split, and place this overlap at any position on the keyboard, which is a refreshingly flexible arrangement (though oddly, SIEL have managed something similar at a much lower price level, with the DK80). For transmission and reception over MIDI, the left and right zones are automatically assigned to adjacent MIDI channels.

Oberheim being Oberheim (nobody else would take the job), the Matrix 6 has a few more tricks up its sleeve in the split/dual department – and they're all programmable. Aside from the rather useful ability to name a split, you can determine the volume balance between the two zones, transpose each zone,



**'With patch names like 'Sexafoam', 'Hotbodom' and 'Good bed', you do begin to wonder what these Oberheim people get up to down in sunny California.'**



set MIDI transmit and receive on/off for each zone, and determine voice allocation for each zone. The latter facility allows you to assign

the synth's six voices to the left and right zones in 2+4, 4+2, 6+0 and 0+6 configurations. Why assign no voices to a zone? Well, the idea is that the Matrix 6 becomes something of a controller keyboard, transmitting pitches over MIDI for other instruments to play but not actually making any noise itself. It works better than you might think: you can play, say, a DX7 bass on the left side of a split and Matrix strings on the right side – all from the Oberheim's keyboard. What does seem a rather unfortunate (and unnecessary) omission is that there's no 3+3 option; surely that's the best allocation for dual-mode playing?

The baby Matrix allows you to store 50 split patches onboard, with all of the above parameters except MIDI channel assignment programmable for each one. That's a fairly healthy number, though it's worth pointing out that these memories only hold patch numbers, not the actual patch data – make any change to a patch and that's what you'll get in the split patch as well.

There's no Chain facility, as provided on the other two instruments, whereby you can chain together single- and multi-patches – a tremendously valuable performance feature, especially on a synth which is prime candidate for playing the role of master keyboard.

Well, I can't put it off any longer. I have to admit that at first glance, the Matrix 6's front panel looks *daunting*. But, when you sit down with the instrument and take a closer look, you realise that the heavy dose of printed verbiage is a list of all the parameters available on the synth, and that it's both logically organised and clearly laid out. The Xpander and the 12 both featured huge, sprawling networks of diagrams that looked like preliminary drawings for underground nuclear waste plants. They served a similar purpose, but the new machine's lists work better for being simpler. Now you can *quickly* make sense of all the Oberheim's parameters and how they interrelate. Which is just as well, because there are a awful lot of them: 99 voice parameters, 54 matrix modulation parameters, 56 master edit parameters, and a modest eight split edit parameters. After working my way through that little lot, I can't overemphasise the value of the front-panel list in smoothing the passage through troubled editing waters.

Things get even easier when you realise that Oberheim have fitted something akin to the six-parameters-per-window feature of the 6's predecessors. Here there's a maximum of four parameters, and ordinarily, you can access only one at a time. Essentially, selecting a Page determines what appears in the window display, and selecting a column determines which parameter is altered by the numeric keypad and increment/decrement pads. The system is easier to operate than it sounds, though having to keep swapping to and fro between selecting a parameter and altering its value is a real nuisance. Still, on the patch and split edit pages, you can select a special Quick mode whereby 0-9 on the keypad alter values while the increment/decrement pads step through the parameters; much, much easier.

The voice structure of the Matrix 6's predecessors has been retained, but you don't have to look very far to find economies. The traditional VCOs have been replaced by DCOs (presumably because they're cheaper) and there's been a reduction in the number of

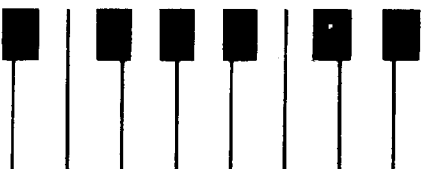
some voice components: three Envelope Generators instead of five, two LFOs instead of five, two Ramp Generators instead of four. You get the picture. Mind you, there's still plenty in there to keep most programming people occupied for a long time.

Each voice consists of two DCOs, a VCF, two VCAs, three Envelope Generators (five-stage – including initial delay), two LFOs, one FM Modulator and one Tracking Generator, two Ramp Generators and a Portamento controller. Most of these components should be familiar to you; only the Tracking Generator and Ramp Generator evade immediate understanding. The former allows you to re-shape a control source, taking one of the 6's modulation sources and using it in a different way. The reshaping function has five 'points' (each with a 0-63 value range) which go to make up the Generator's curve and thus its output. According to the manual, each of the 20 modulation sources (see later) can be tailored in 1,073,744,824 ways. Is this a printing error? Search me. I didn't even start trying to find out.

The Ramp Generators each produce a type of modulation best described as a smooth, linear transition resembling the attack portion of an envelope. A rate can be set for each of



**'There are some lovely, rich string sounds on which the Oberheim's touch-sensitivity really comes to the fore.'**



the two ramps, and the trigger signal can be defined as single, multiple, external single or gated external single trigger.

A common use for the Ramp Generators is to delay a vibrato effect by modulating the LFOs, but they can also be used to modulate almost any sound component on the synth.

The above should give you some idea of the power and flexibility that lie behind the new Oberheim's voices. And in keeping with that flexibility, the new synth also features Oberheim's Matrix Modulation system. On the 6's version of this, there are 20 sources and 32 destinations. These are clearly listed on the front panel, so there's no excuse for not creating the weirdest and most wonderful modulations you can think of, not to mention quite a few you can't.

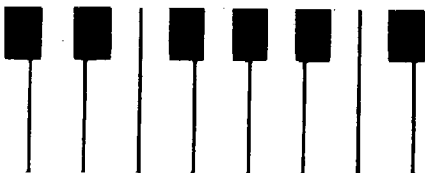
Here are some examples of what can be done with Matrix Modulation, just to give you an idea: you can have envelope 2 modulating DCO2 pulse width, LFO1 modulating VCF resonance, pressure (aftertouch) modulating VCA1 volume, portamento modulating LFO2 amplitude, lever 1 modulating the DCO1-DCO2 mix, and so on up to a total of 640

individual possibilities. Oberheim have themselves selected 18 mods from the source/destination list and included them in the Patch Edit page as 'hard-wired' parameters; thus you get, for instance, LFO1 modulating DCO1 frequency as an instantly selectable parameter.

There are 10 locations provided for storing your own source/destination combinations, a



**'Matrix Modulation mimics in software what used to be achieved by mounds of Spaghetti Junction wiring on older patchable synths.'**



capacity I found a bit limiting after a while, even though it's not a drastic problem.

Altogether, then, you have a total of 28 possible modulations for each patch. Of course you can have one source (say, attack velocity or lever 2) modulating several destinations, or several sources modulating one destination. This is where the effects allotted to the keyboard, pedals and levers are set up, and the possibilities are plentiful.

In essence, Matrix Modulation mimics in software what used to be achieved by mounds of Spaghetti Junction wiring on older patchable synths. And that really is quite a feat for Oberheim's software writers, bearing in mind the complexities involved. In fact, the manual takes great delight in the number of possibilities the system affords. And well it might. The actual number of possibilities is apparently  $2.96 \times 10^{21}$ , which Oberheim have worked out to be just under three billion trillion combinations – and that's not taking into account the different value amounts. Including all possible values works out at  $1.2 \times 10^{42}$ , the resultant value of which the manual declines to give. I'd let you know but I've got a review to write.

Pondering on how many of these combinations would actually throw up something musically useful, it's about time to look at the 100 sounds Oberheim provide the Matrix 6 user with. Sadly, many of these presets just don't do the instrument justice, either because the basic sound just isn't that good or because the chosen modulation options and values don't come across as being very musical.

There are some lovely, rich string sounds on which the Oberheim's touch-sensitivity, complete with release velocity, really comes to the fore. The sounds are warm and vibrant, and have none of the brittleness so characteristic of digital versions. Also blissfully

E&MM JANUARY 1986

free of digital grit are the excellent, ethereal choral sounds, some gentle 'acoustic' and electric piano impressions, and a bright, snappy bass, together with some typically American-sounding brass patches. Mind you, with patch names like 'Xtasy', 'Sexafoam', 'Hotbodom' and 'Good bed', you do begin to wonder what these Oberheim people get up to down in sunny California.

On the whole, though, the presets' alright-but-nothing-special nature means that if you want to have a whole set of killer Oberheim voices, you're going to have to get in there and do some of your own programming. Yes, it's daunting, but the manual does take you through constructing a strings patch to get you started, and the manual as a whole is clearly laid-out and well written. That, together with the helpful front panel, ensure that creating your own sounds from scratch isn't really that bad after all.

It's only through spending some time editing the existing sounds that you can appreciate the sheer flexibility of the Matrix 6. Now, that's alright if you've got the opportunity and the time to do these things, but it doesn't do anything to increase the chances of the Matrix being shown to its best advantage in a store demo.

Once you've done some careful setting-up of modulations with attack velocity, pressure and release velocity, the touch-responsiveness is very impressive. Which makes it all the sadder that the keyboard Oberheim have fitted simply doesn't match up in terms of feel. It's certainly not the most pleasant keyboard I've ever played.

External storage of sounds (aside from MIDI) is strictly cassette-only, which does seem just a touch ridiculous on a synth of this stature. In the absence of anything better (which ought to be disk rather than cartridge, considering the amount of data involved), all you can do is make sure you've got all the sounds you need already in the Matrix before embarking on a gig or a session.

Having moved surreptitiously to the rear of the Matrix 6, we might as well stay there for a bit. You may remember that when they released the Xpander just under two years ago, Oberheim had one foot firmly planted in the CV/gate camp and the other in the MIDI camp. This was hardly surprising, given the number of their products that was non-MIDI; but it was also expensive. The Matrix 6 takes big leaps in the exclusively-MIDI direction by removing not only the CV/gate connections (something the Matrix 12 also did) but also the dedicated Trigger In jack for Oberheim's non-MIDI sequencers and drum machines. Now the second pedal jack can act as a Trigger In instead. I guess most people will want to use pedal 2 in its MIDI controller role, but the option's there.

The Xpander also included six individual audio outs, allowing each of its voices (which, remember, could each play a different patch) to be treated separately – a real boon for recording work. The Matrix 6 has only stereo outs (or stereo and mono), but with reasonable justification – as we've seen, it can play only a maximum of two patches at once.

I've been concentrating on what the Matrix 6 doesn't have. What it does have are the inevitable MIDI In, Out and Thru trio, a memory protect on/off switch (not recessed – just watch it snap off) and two pedal sockets. The first of these can accept a continuous pedal, while the second connects to a

footswitch. The assignability of these pedals, both internally and over MIDI, follows the Xpander and Matrix 12, but it's rare outside the world of Oberheim.

As far as performance controls go, Oberheim are still using their two-lever system instead of the more familiar wheels – to good effect, too. They're just as easy for people to become fluent in using.

The 6's flexible MIDI implementation follows on from that of its predecessors. For MIDI purposes, the Matrix 6 is considered to have eight controllers: two pedals, three levers, attack velocity, aftertouch and release velocity, and the range of assignment options you're given for these is unrivalled this side of a Yamaha KX88, which costs a little less than the Oberheim but doesn't make any sound at all.

The Matrix 6 really scores in having MIDI control features normally associated with – you guessed it – controller keyboards like the KX88. It even has facilities for complete disabling of MIDI reception and some degree of patch-change data selectability.

Some people might be sold on the idea of owning an Oberheim per se; just think of the pandemonium Aston Martin would create by bringing out a cheap car. But what of the alternatives to owning a Matrix 6, apart from being able to pay the rent/mortgage/alimony? The new Oberheim occupies a price territory currently dominated by keyboard samplers (like the Prophet 2000 and Mirage, with a whole load more to come from the Japanese in a couple of months). Synths, on the other hand, now come either more expensive (Yamaha's DX5, the PPG Wave 2.3 and Oberheim's own Matrix 12) or cheaper (DX7, JX8P and DW8000 on down).

So the Matrix 6 is in something of a class of its own. Despite the economies that have been made by comparison with the Xpander and Matrix 12, the extent of its circuitry and the splendid detail of its control software make it more versatile than any other analogue poly currently available under three grand. Its range of keyboard response (though not the keyboard itself) is way ahead of anything else in this price bracket. The factory sounds are disappointing, though, so what with its lack of cartridge or disk storage, the Matrix is never going to be a preset-lover's synth.

But if you get the chance, try a spot of basic sound-editing before you buy. Then you'll see what state-of-the-art really means. ■

## D A T A F I L E

### *Oberheim Matrix 6 Polysynth*

**Keyboard 61-note C-to-C, touch-sensitive (attack velocity, aftertouch & release velocity)**

**Sound source 2×DCO per voice**

**Voicing Single, 6-voice; split/dual, 2+4, 4+2, 6+0, 0+6**

**Memory 100 single patches, 50 split patches**

**Display 16-character LED**

**Interfacing stereo outputs (left/mono & right), pedals 1 & 2, cassette In/Out, MIDI In, Out & Thru**

**Price RRP £1750 including VAT**

**More from Sound Technology, 6 Letchworth Business Centre, Avenue 1, Letchworth, Herts SG6 2HR. ☎ (0462) 675675**