SIMMONS SDX
Electronic Percussion System

Simmons' latest state-of-the-art electronic percussion system comes closer to the dedicated music computer system of the Fairlight than the "traditional" electronic drum kit. Review by Nicholas Rowland.

DRUMMERS ARE AN awkward bunch of buggers, especially when it comes to electronic percussion. On the one hand, they're mindful of the benefits that technology can bring them – access to a greater range of sounds and the ability to change setups at the touch of a button, for example – yet they're all too willing to dismiss the demon electron with a shake of the head and a "Yes, but it just hasn't got the *feel* of my acoustic kit. I can't get the subtleties, the nuances . . ." It's what I call the "Venus de Milo Complex": people are always too busy lamenting what isn't there, to heed what is.

It's a problem that Simmons, for one, have been constantly up against; for years they've been encouraging drummers to bite off more than they can eschew. Hence, while they've been gently prodding percussionists towards more creative use of sound, they've also been spending much R&D time and money bringing the hardware closer to what the average drummer expects whenever he or she sits behind an acoustic kit.

Enter now Simmons' new baby (baby monster, that is), the SDX, a dedicated percussion system which claims to let drummers have their cake and eat it. On the face of it, the SDX represents Simmons' most sophisticated and innovatory attempt yet at mimicking the action of the acoustic drum.

Hence, it features "Zone Intelligent" pads, an apocalyptic way of saying that, as well as the strength of a

stroke, they can also detect its position on the pad's surface. This combination of "how" and "where" in turn determines which one of the nine samples which normally comprise each SDX drum sound will be triggered. Hence, by judicious programming you can imitate the way that the pitch of a real drum changes according to the way it's hit.

This same system applies to the electronic cymbal pads, which not only swivel in rough (very rough) approximation to a conventionally mounted cymbal, but can be grabbed and "damped" just like the real thing. The SDX also has an electronic hi-hat, with a pedal which can be used to "open" and "close" (albeit metaphorically) the hi-hat sounds, and which can even produce the appropriate "chip" sound when pressed smartly to the floor, as with any self-respecting piece of hi-hat hardware.

But in fact these features merely represent the icing on the cake, the skin-basher-friendly interface which accesses a sound creation setup of incredible power and complexity. The power behind the drum throne consists of a 16-bit linear sampling system with a maximum of 88 seconds sampling time at 44.1kHz, or nearly six minutes at 11kHz. Memory size is an initial 2Megabytes, though upgradable in 2K steps to 8K. If this is not enough, an optional 20Megabyte Winchester hard disk can be fitted and there's an SCSI port to connect to six more. Otherwise loading and saving information is achieved on 2Megabyte floppy disks.

The SDX internal computer system uses a multi-tasking editing system which involves one 32-bit, three 16-bit and two 8-bit processors and will be constantly improved and expanded by software upgrades. One of these will be a 32-track sequencing package, featuring 16 internal and 16 external tracks, capable of reading and generating SMPTE code and storing a quarter-of-a-million events per floppy disk.

What in effect we're talking about here, is an instrument akin to the Fairlight which happens to have a set of pads rather than a keyboard attached at the other end. Though

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that's not to say that the SDX system can't be driven by a set of ivories. In Keyboard mode, you'll be able to assign 16 overlappable splits across the keys, with each split capable of up to 16-note polyphony. And for good measure, SDX also has tracking filters, sustain looping, transpose, pitch-bend and modulation LFOs.

Naturally, this little lot doesn't come cheap, though compared to sampling systems of comparable power I reckon it's a fair old bargain. You'll need £5645 to get your hands on a five-pad/2Meg memory system, but around £9000 for a 10-pad kit with all the memory upgrades. (And

for non-drummers the SDX console alone costs around £4989). While the SDX is going to be very much beyond the average drummer in the street, I've no doubt that the ideas will eventually percolate down in budget form through future Simmons products. In the meantime, though, I've no doubt that, as it stands, the SDX is going to be of as much, if not more, interest to producers and professional studios, as the ultimate stand-alone sampling drum machine, with the ability to record all the inflections of a drummer's session performance.

Which is why, even if you're not a drummer, there's no excuse to ignore these pages and turn instead to "MIDI-Matrixing for the Instrumentless Studio". Read on, Macduff.

The Console

THE MIGHTY SDX console (brain is just too small a word for it since it takes two men to lift it comfortably) looks and feels like something out of Dr Who, all the more so because apart from the multitude of inputs and outputs at the back, there is very little to indicate what it does or how it does it. There are but few controls: 16 grey, rubber keys arranged in two rows of eight, a tracker ball and two buttons, a headphone socket and associated volume control, a slot for 3.5" floppy disks and a 9" high resolution monitor screen. There's only one criticism: all the panel

surfaces slope so where do you rest your pint of vodka?

Insert the System disk, switch on and after 45 seconds the screen comes to life with an outline picture of the SDX control panel and a brief explanation of what's what. Aha! The tracker ball controls a cursor and the buttons are used to select icons or different functions within the pull-down menus. It takes a little while to get used to this inverted mouse format, but once you do, programming the SDX becomes second nature.

At this point, if you're new to the SDX game, you're advised to load the Help disk which contains an abridged version of the instruction manual. This disk can be accessed at any time at any level and is divided into sections so you can choose which particular function you want to read up on. But as Simmons themselves point out, it's no substitute for reading the 200-page manual.

Unless you're creating drum sounds from scratch, in which case you'll smartly exit to Raw Sampling mode, you'll next need to load some existing kits or drums from floppy or hard disk into memory. (Like any computer system, this memory is the working editing area which gets lost as soon as you switch the machine off. Hence, if you don't want to lose it, anything you've worked on in this memory must be saved to disk before power down.)

At this point let me introduce the fact that there is already an extensive library of complete kit disks available which really do show off the SDX's 16-bit sampling and parameter manipulation. These have been prepared by famous name producers and session drummers. Particularly excellent are the huge ambient house-type drum sounds recorded by Steve Levine in what sounds like an aircraft hangar. Bill Bruford has also contributed kits featuring rototom and log drums which have a charm all of their own. You actually get six kit-disks with any SDX package and it's Simmons' hope that as the number of SDX users grow, sounds will be freely swapped. Hmmm, I wonder. There'll also shortly be disks available containing different examples of the same drum. Prices are not fixed as yet, but it looks as though 30 extra basses or snares will set you back around 20-30 quid.

After kits have been loaded, the Kit Select screen displays these as a series of identical icons with each kit's name underneath. To choose one, simply move the cursor to the appropriate icon and click. The current kit selected is indicated by the presence of a drummer (which looks remarkably like a caricature of Dave Simmons himself) and encompassed by a box. To change kits simply move the cursor to another kit and click, and the figure leaps to the appropriate kit. Though it takes a second or so for this to happen on-screen, the change is actually instantaneous. Incidentally, new kits can be loaded while others are being played, though Simmons don't supply the extra arm you'll need to do this without dropping a beat.

Those grey keys below the screen are in fact dynamically sensitive triggers – handy in lieu or in addition to the kit pads – though accessing the *Control Panel* screen allows you to change their function. For example, they can control all 16 drums at a fixed dynamic, one drum at 16 dynamics or they can be arranged to be kit select switches.

The second page of the Control Panel mode brings us to the Auto Trigger function, which allows you to program in a one bar/16-step rhythm pattern at any tempo between 40 and 180bpm. The display is very similar to Fairlight's Page R and is as easy to understand. I can only hope that when the SDX sequencer arrives, it will also adopt this user-friendly format.

Auto trigger can be accessed at any editing level and is particularly useful if you're trying to set up a mix and need to know how the drums are sounding in relation to one another. It also means that in live situations you can go out front and listen to just how badly the mixing engineer has cocked-up your drum sound.

This brings us to SDX's on-board 16:2 mixing facility, which again makes its appearance as an on-screen graphic, this time a representation of a conventional mixer. You're given control over the length of each drum, its tuning (+/− 12 semitones), pan position and volume – all a matter of putting the cursor over the appropriate "knob" or "slider" holding a click button down, then spinning the ball. A pull-down menu allows you to choose whether these changes are fine, medium or several degrees of coarse. And naturally once you've set up a mix, all data is saved to disk as part of that particular kit's information.

Complex Editing

IT'S NOT LONG before you get the smell of blood in your nostrils and you know it's time to experience the wild thrill of the more advanced editing procedures. On then to the Kit Configuration page, gateway to the more subtle aspects of the SDX. Here the drums in the current kit are displayed in a series of boxes (eight drums to a page) showing the drum's name and pad type (displayed as an icon) and something called Voice Assign which, put simply, determines the polyphonic capability of each drum.

Assigning one voice per pad results in all the sounds being monophonic – that is, samples will be retriggered from the start, which in turn means that fast cymbal or snare rolls will sound unrealistic. Hence you would normally assign at least two or three voices per pad, though you'd soon run out of voices since the maximum number is 16. Hence, the SDX allows you to share voices between different pads, giving all of them polyphonic capability, though once more than 16 voices are sounding at once, a complex voice-robbing process is brought to bear.

The 16 Voice numbers directly correlate to the 16 external outputs. Hence if the bass drum is assigned to Voice 1 it will come out of ouput 1. If a pad has more than one voice assigned to it, it will rotate around the corresponding voice outputs. Note though, that the snare output automatically has three voices assigned to its output. All voice outputs are monophonic, and are unaffected by the pan control of the mixer.

The upshot of all this is that, if you want several drums to be polyphonic, say a couple of crash cymbals and some long tom sounds, and you want to add EQ and effects individually then you're going to use up several voice outputs for each drum.

Meanwhile, back on the screen, whatever pad icon is assigned to a drum determines the way that the drum behaves and how many samples it contains. Pads with a snare, tom or cymbal icon assigned to them are made up of nine different samples, which as I mentioned above, are triggered according to where the stick falls within the dynamic/position matrix. (Dynamics are described as Hard, Medium or Soft: while the positional zones are Centre, Medium and Outer.)

However, both bass and rim consist only of three samples, triggered according to dynamic only. The hi-hat is also slightly different in that the samples are controlled by the position of the remote hi-hat pedal (open, closed or half-closed) as well as where the hi-hat pad is struck. Here though, there are only two positional zones.

Another variation is the Pitched Pad which is selected whenever the SDX is to be triggered over MIDI from external sources. Here a MIDI range, rather than just a single MIDI note, can be assigned, thereby giving a split keyboard facility even to those controllers which don't have them. Again though, there are only three samples here, each accessed according to dynamics, though naturally the pitch of the sound will alter according to the keyboard note played.

Though the concept of Zone Intelligence is rather difficult to explain on paper, it's graphically illustrated when you move to the Sample Assign screen, which immediately shows you which samples are assigned to what part of the pad. And just in case you can't tell which of them you've triggered, a small cross appears by the side of the appropriate one, every time you hit the pad.

Editing facilities at this stage include allowing you to increase the pitch or level of each sample, thereby enabling you to program subtle variations across the pad. The threshold level for Medium and Hard dynamics can also be
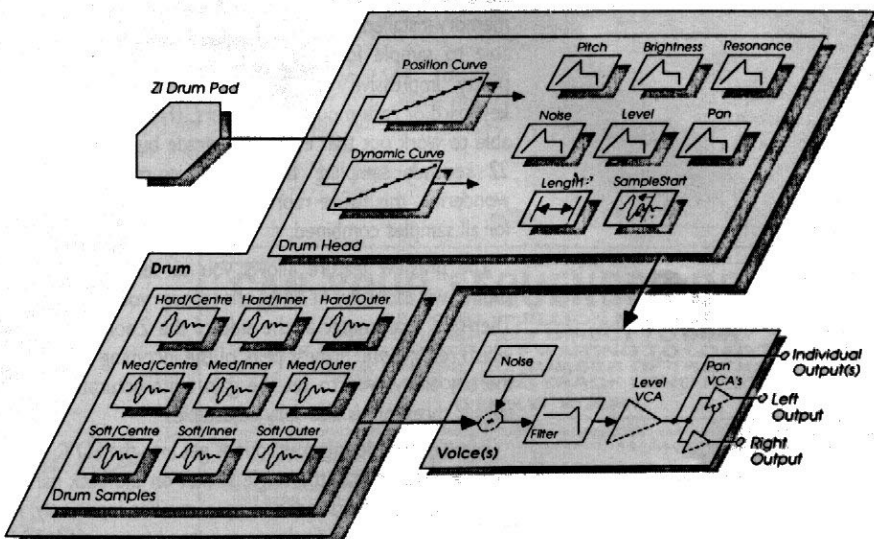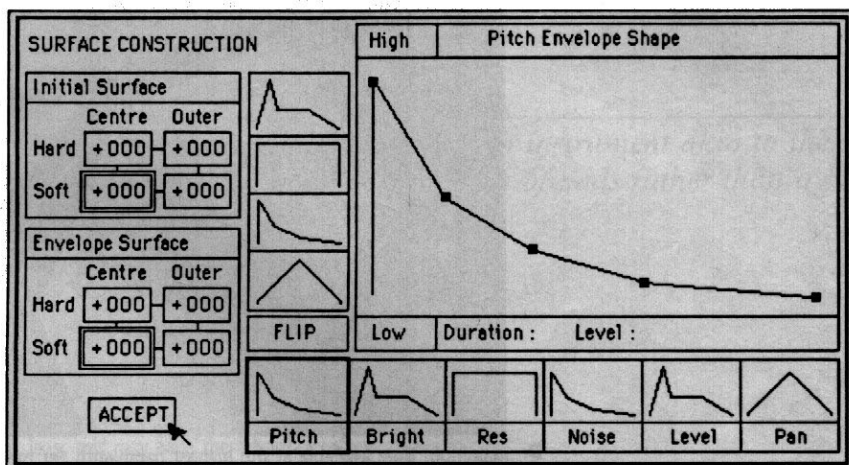
quickly set and memorised for each drum. Naturally, other samples can be called up from the memory or from disk to replace one or more of the original samples – a quick way of getting some interesting new edits. You can also create and edit new samples yourself and install them into an already existing drum. And if this weren't enough, it's also possible to take existing samples, modify them, then reinstall them into the drum configuration.

Sampling

TIME THEN TO plunge deeper into the very bowels of the SDX system and take a butcher's at the Sampling page. Here, if you're modifying a sample already in memory, you'll find two windows: one, the Sample Window, giving you a view of the waveform as a whole, the other, Zoom Window, showing a "magnified" portion of the waveform. Before any editing can take place you have to turn the sample protection off.

If you're sampling a new sound, the windows are empty and the system is ready to go. First, you are invited to specify a sample length and sample rate and the SDX obligingly tells you how many bytes you are going to use up as a consequence. While I've quoted 88 seconds as the ▶

maximum time available at the highest bandwidth, let me make it clear that this is only if you have the full 8K of memory installed. Owners of the humble 2K option will be able to sample for 22 precious seconds, which is still pretty impressive when compared to most current keyboard or rack-mounted samplers. (From this, you'll be able to work out that each 2K upgrade buys you another 22 seconds sampling time.) Just in case you were wondering, this figure represents the total time available for all samples combined.

The preview feature allows you to see whether the sound will actually fit into the space you've allowed. There's a peak meter at the side of the Zoom Window, which records the highest peak of the incoming signal and thereby allows you to set the gain quite accurately. The trigger threshold is also fully adjustable.

If you're wondering how sounds get into the SDX, then look no further than the single socket on the back panel, which I'm afraid is balanced to receive a line input only. It seems somewhat ridiculous not to have included a switchable input to allow mic signals too, but Simmons' argument is that as you'll be doing your sampling in the studio, there'll always be a mixer handy from which to derive a line input. Ours is not to reason why, but I'll just say that when Simmons' roving demonstrator, the indomitable Baz Watts, wants to show just how easy on-

the-spot sampling is, he has to resort to using a makeshift mic preamp. I rest my case.

After preview, comes the actual take and after that, sample editing. On offer are Truncate, Reverse and Looping functions, the latter function having its own dedicated screen. Precise loop/truncate points are quickly set up using arrows within the zoom screen, manoeuvred by the tracker ball; alternatively the SDX will automatically find loop points for you. Then you can go on to set up backwards and forwards loops or crossfade loops between the marked points. Loop gain adjustment is also available.

In short, if you want to sample a cymbal from a drum machine, then turn it into a reverse gong of which a small portion loops backwards and forwards for well over a minute as it fades away, you can. And because it's all displayed for you on-screen it's quite easy to do.

For those of you worried about sample quality . . . well, let's say that at the CD standard of 44.1kHz you don't need to worry about it, providing of course that the source signal has been set up properly in the first place. And even if it hasn't, if it's too weak for example, the SDX allows you to improve the signal-to-noise ratio after the event by maximising the sample amplitude.

Drum Heads

ONCE NEW SAMPLES have been created or old ones edited, they can be re-installed into the drum configuration back on the Sample Assign screen. But this is only half the story of each drum, because there is another element in the construction of drum sounds – the Drum Head page.

This page features a series of, what in SDX parlance are called Surfaces. In effect, these are parameters which can be applied to each pad to affect the character of the samples in real time, depending on how the pad is struck. These parameters consist of Pitch, Brightness, Resonance, Noise, Level, Pan, Length and Sample Start. Any combination of them can be applied, manipulated and then memorised for each drum, giving you the opportunity of creating some startling effects.

For example, a pitch envelope can be applied to a drum, so that if hit harder on the edge the pitch bends dramatically down. Or if hit softly in the centre the sound pans first left then right across the stereo image. Cymbals can be given very gradual attack according to dynamic. A

DRUM SAMPLE ASSIGN	MEMORY	DISK	SPECIAL	NEXT		
Pad: 2 Drum Name : AMB Snare						
					Offset	
ff		Hard Dynamics			Pitch	Level
			brasssn1		+00	+00
			brasssn1		+00	+00
			brasssn1		+00	+00
		Medium Dynamics			Pitch	Level
			brasssn1		+00	+00
			brasssn1		+00	+00
			brasssn1		+00	+00
		Soft Dynamics			Pitch	Level
			brasssn1		+00	+00
			brasssn1		+00	+00
pp			brasssn1		+00	+00

sample retrigger time can be set part way through the sample, and as the dynamic of a stroke increases, the trigger point moves further back towards the beginning.

What's particularly exciting is the Surface Construction window, which allows you to draw your own waveforms for these parameters as well as choose them from a menu of presets. While the action of different surfaces can be immediate, they can also be individually delayed in reference to the initial strike and hence a combination of effects is possible. Spending time at this level bears some particularly tasty fruit on cymbal or gong voices, or more exotic percussion like bell trees and finger cymbals.

Again, this is difficult to explain on paper and even the SDX manual makes heavy work of passing on the necessary information. But once you actually start fiddling around in a fairly random way, then the mist clears and the meaning of the on-screen graphics becomes clear.

Verdict

IT'S IMPOSSIBLE TO describe in detail the many features of the SDX in a review of this length. But let me impress upon you two important things. The first is that the SDX is an extremely rewarding instrument to use. It's logical, it's friendly: you can leap from screen to screen, from function to function with great ease. Reading and storing important information, be it a request for help or for a list of what's available from a particular disk, is accessible at all times. Hence there's a feeling that for once you're controlling the machine.

More importantly though, is that excellent as it is now, you can be sure that it's going to get a lot better given Simmons' commitment to software upgrades and the future availability of extra sound and kit disks.

I do have criticisms, but these are mainly to do with the hardware – the playability and durability of the pads and hi-hat pedal, the rather rickety construction of stands, the fact that Simmons still haven't managed to eliminate that ugly proliferation of leads. There's also the (unavoidable) vulnerability of the console to consider, in particular that of the models containing hard disk drives. I can't really see a way around this but be warned: Simmons have installed mercury sensors within the case that will tell them if the console has suffered any severe impact – even if the case bears no signs of it.

But quite frankly, I don't think these points are all that important because at the risk of having multiple paradiddles played across my temples with jackboots, I'd say that the SDX is almost too good to let drummers loose

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on anyway. And even Simmons themselves have noticed that it's the eyes of studio engineers and producers which light up when its lengthy spec' sheet is unrolled at their feet.

Besides, drummers are an awkward bunch of buggers when it comes to shelling out a few thousand quid too. But at least this may have the advantage of eventually forcing Simmons to introduce the £600 SDX. In which case, we may all want to be drummers. ∎