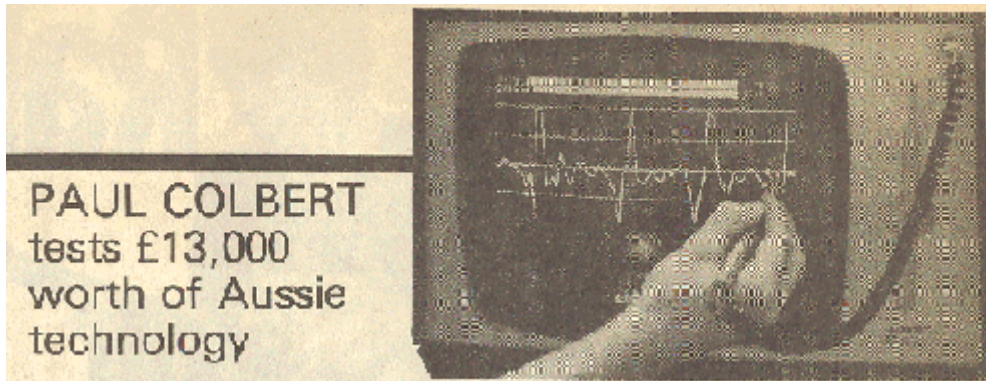


CMI Fairlight



Fairlight Computer Keyboard

source: Musicians Only, May 3, 1980 by Paul Colbert

WHO would've thought that the home of wallabies, Sydney Opera House and Fosters could turn out the most radical advance in keyboards since the Minimoog? What is it about droughts and Malcolm Fraser that made Peter Vogel, a programmer from Rushcutters Bay, sit down and devise the Fairlight CMI (Computer Musical Instrument)? And for that matter, what persuaded John Walters and Richard Burgess of landscape to buy one of the three in Britain? Will we ever know? Well, not if I burble on like this for much longer, so down to business. The CMI is one of the new breed of keyboards that has all its sounds, functions and actions controlled by computer. Most synths work on an analogue basis, that is they produce something akin to a real sound, say a sharp square wave, and alter it by filtering off certain sections and boosting others, until it approximates the noise you want. Digital keyboards work in reverse with tiny building blocks which are added in exactly the right recipe, then finally decoded as something the ear can recognise. If you listened directly to the digital blocks all you'd hear would be a rapid series of clicks when they were either there, or not. This makes them easy to handle for computers which are basically dumb, but very good at it. They can easily remember whether something is on or off, in fact the CMI can recall many hundreds of thousands of these bits of information and in two ways.

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A RAM or Random Access Memory will store details as long as power is connected; a disc, which is a sophisticated cross between a record and a tape, will hold onto it permanently, or at least until you record over the top. The CMI's two disc ports are mainly used as a bank of pre-programmed sounds and sequences, for the computer is not bound by the keyboard but can also retain entire passages of music, lasting a total of 30 minutes. And that's its strength, for once the notes are locked into the memory you are left with a free hand, or at least a free typewriter keyboard, to

decide what 'instruments' will play them. The Walters/Burgess Fairlight comes in four parts and currently squats on a small table, ironically placed next to the oldest upright piano this side of Knees Up Mother Brown. The keyboard is five octave and won't win any friends with its insubstantial plastic feel. It is touch sensitive, and that facility can be made to introduce vibrato and attack with the right programming, the last being the best as you can fade up chords by hitting the keys softly. The chips and discs are contained in one white case and the two other parts are a green screened VDU (visual display unit to you) and a QWERTY keyboard and numeric pad, used to punch in the instructions. The display was excellent. Far steadier and easier on the eye than the average home computer-cum-TV-set job and it came with a light pen, not the opposite of a heavy biro, but a sort of programmer's scalpel that can be held against the screen telling the computer that this is the bit of the display you want to alter. The CMI has been taken on the road, believe it or not, and apparently performed well. The secret is to drop the typewriter and VDU (though not physically) and instead use a selection of disc voices, calling them up via a small numeric keypad and LED readout at the left of the keyboard.

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One of its most boasted assets is the ability to capture a natural sound by microphone, analyse every minute facet, then reproduce that sound via the keyboard - almost like a digital Mellotron but without the tapes. The digitability still leaves you free to alter the smaller details, say lengthen the sustain by a second or curtail some of the upper harmonics, then when you've settled on the ultimate noise, it can be committed permanently to the computer's memory and recalled at any time. Strangely, the copying of 'real' instruments seemed the weakest of the CMI's talents, although it's difficult to tell how big a part psychology plays. It's certainly a weird sensation to hit a light plastic keyboard and hear the reverberating strings of a grand piano sound from the speakers. I and a keyboard playing buddy along for the test both noticed a build up of hiss as the notes died away, and an unnatural sharp ending to the notes when your fingers left the keys, though there is provision to vary the sustain. But how do you judge the naturalness of an eight note chord comprising kisses? Apparently Kate Bush wanted suchlike for her new album, and no, they wouldn't say who did the sampling. While on the point, the CMI is eight-note polyphonic, though there are plans to increase that to 16 when the appropriate software arrives. This 'software' of which we speak, is the term computers apply to the satellite equipment that helps the hardware electronics reach the outside world. The Fairlight rings its changes by a series of pages, screenfuls of data, dedicated to one specific function - waveform, sound analysis, harmonic content, etc. The keyboard page lets you divide the ivories how you feel - two octaves of trumpet, one of kisses, the rest of barking dogs - but there will still only be eight notes available at the end of it.

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Alternatively you could have two voices at once with a max of four notes, four with a max of two, or even an eight voice monophonic setting. Sound analysis is split into 128 lumps, each of a single cycle. Analogue synths may be able to produce complex waveforms, but other than simple changes via a sweeping filter, they can't get them to vary as the note dies away. Natural instruments go through hosts of alterations as

the notes get quieter, the best example being a piano which has dozens of strings resonating in sympathy and falling away at different rates. The CMI can work on every single cycle of that decay, changing the waveform as it goes. It's possible to merge two sounds by starting with a piano, ending with a violin and patching them together over a join so they take on each other's characteristics. It's a phenomenally complex exercise, only made possible by the Fairlight's 1,000 chips. If you feel artistic and have a reasonably steady hand, you could employ the light pen to draw your own waveshape on a display grid, or modify an existing one. There is a more mathematical method of tone construction. Page five splits the waveform into its separate harmonics from the first, through to the 32nd and you can type or lightpen in how much of each harmonic there is in the final sound. Analogue synths have one, maybe two envelope generators. The CMI essentially has a different one for every harmonic, hence its ability to tailor them separately as time goes on. Again a job that needs a mass of microprocessing. The true heart of the system is not the eight sine wave oscillators that produce the sounds, nor even the massive memory, but the elaborate computer language that Peter Vogel developed so musicians could get what they wanted from the machine. It's no good typing in any old slang and hoping the all wise overgrown calculator will understand.

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It responds only to certain words and instructions and these need to be arranged efficiently and in an easy to understand format. Hence the CMI will comprehend what an A-flat is when you type it in. The Roland Microcomposer deals with numbers only and you have to remember which figure stands for which note. As far as Walters and Burgess are concerned, the Fairlight's ability to compose is its major feature. Bass lines, rhythm chords, all parts of a song can be represented as repeated sequences, musical equations if you like, that the computer will run through as many times as you tell it, and in certain orders. And of course, once the notes are in you can assign any instrument or sound you like to them. 'Would sir prefer violin to the viola, well press this button: Actually it doesn't call you 'Master' which was a bit of a disappointment, but it could probably be arranged. If it's not enough there are also departments to affect pitch, speed, etc. While on those connected topics, it's worth pointing out that the CMI moves its sampled voices through the scales in an unusual way. It doesn't simply drop the pitch, like a harmoniser, but actually slows down the sound like running a 45rpm record at 33. All this language lark could confuse the lowly keyboard player and for that reason the awesome Aussie has included a few more usual controls to make him feel at home. There are sliders for volume and vibrato but they are naive in design compared with Moog, Oberheim and others who've been doing it for years. It has to be said that ivory tinkling ergonomics are not the strong point, perhaps not surprising since it's been designed by a programmer, not Keith Emerson. But for £13,000, more could have been done in the way of weighted keys and a pitch wheel - after all, when you've got your sound, you still need to feel comfortable playing the thing.

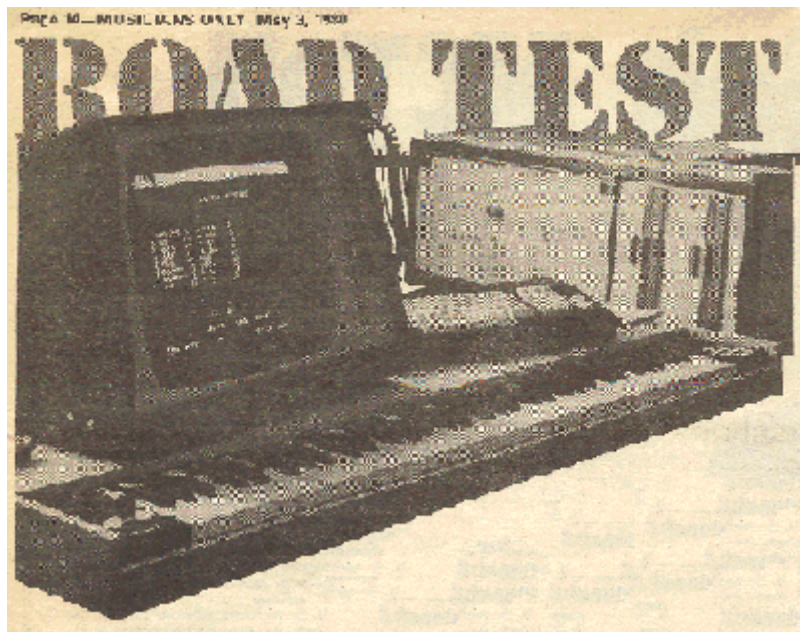
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It's said there are versions with second touch to bring in extra effects, although this one featured it not. At the end of the day? There's no denying that the Fairlight

creates noises never before heard, but that doesn't mean all of them are useful, or even good. And as its two owners have found out, there is already an aspect of 'computer craze' creeping into it. Someone contacted them asking if the machine could make the sound of a typewriter. Sure it could after a little tinkering - but so can a typewriter with a mike suspended over the top. Get used to it - computers are going to become more and more important in music. Musicians who cry out against the use of drum machines as nicking their jobs, aren't going to be happy about something which could put an orchestra out of business. But who wants to play metronomic disco drums? says Richard Burgess. Far better to let a machine do the drudgery, leaving the player free for the more imaginative stuff. To be honest, very few if any MO readers could fork out £13,000 for an instrument - though studios or whole bands might not be too far off the thought. The CMI is important in pointing the path to the future. Home composing is likely to be one of the major recreations in years to come and what the Australians do today for £13,000 will soon be copied for £9,000 then rationalised for £5,000 and could eventually squat on the TV for a few hundred. Indeed some home computer firms are already marketing music programs, which may be gibbering infants compared to the Fairlight, but they're on the way.

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SPEC: Memory: 208 kilobyts of RAM, plus 1 megabyte floppy discs, Oscillators: 8 sine wave Price: £13,000 approx. Guarantee: undetermined Makers: Fairlight Instruments Pty Ltd, 15 Boundary Street, Rushcutters Bay, Sydney, Australia. (Phone 02 335 222. Telex AA27998)



posted : 20 oktober 2002