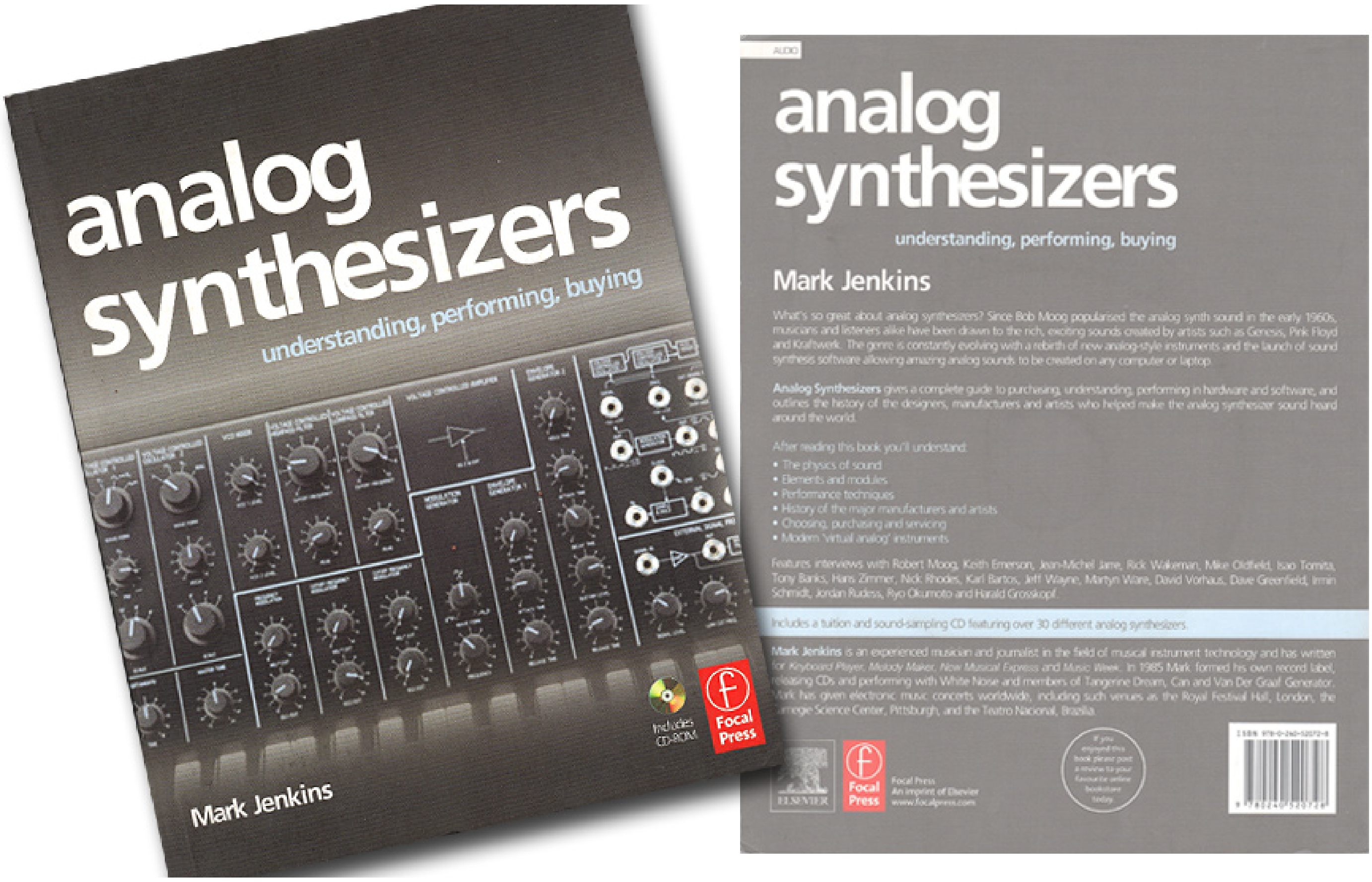
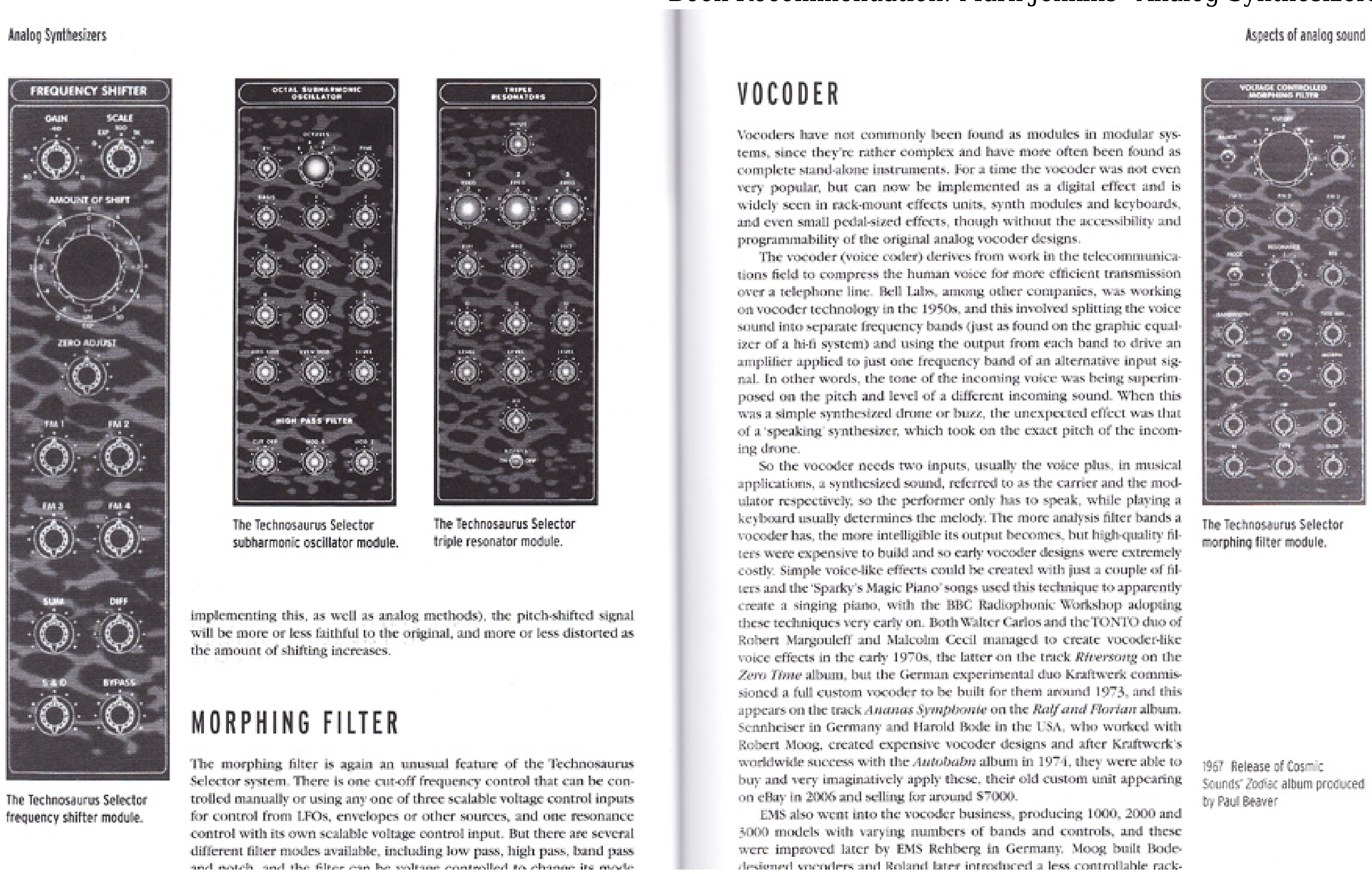
Highly recommendable: “Analog Synthesizers” by Mark Jenkins. The book presents the synthesizer history from 1960 up to 2007. It’s a wonderful addition to Mark Vail’s “Vintage Synthesizers” – we’d call it the British equivalent of the American book.



Mark Jenkins - Analog Synthesizers

Interesting detail: the cover picture (no, it’s not Cindy Crawford!) shows the Korg MS-20 software synthesizer controller (and not the “real” thing from 1978). But perhaps this is part of Jenkin’s philosophy. He discusses all analog synthesizers – the Minimoog as well as virtual analog keyboards such as the Access Virus … and pure software synthesizers, too.

Book Recommendation: Mark Jenkins “Analog Synthesizers”



The Technosaurus Selector frequency shifter module.

The Technosaurus Selector subharmonic oscillator module.

The Technosaurus Selector triple resonator module.

implementing this, as well as analog methods), the pitch-shifted signal will be more or less faithful to the original, and more or less distorted as the amount of shifting increases.

MORPHING FILTER

The morphing filter is again an unusual feature of the Technosaurus Selector system. There is one cut-off frequency control that can be controlled manually or using any one of three scalable voltage control inputs for control from LFOs, envelopes or other sources, and one resonance control with its own scalable voltage control input. But there are several different filter modes available, including low pass, high pass, band pass

VOCODER

Vocoders have not commonly been found as modules in modular systems, since they're rather complex and have more often been found as complete stand-alone instruments. For a time the vocoder was not even very popular, but can now be implemented as a digital effect and is widely seen in rack-mount effects units, synth modules and keyboards, and even small pedal-sized effects, though without the accessibility and programmability of the original analog vocoder designs.

The vocoder (voice coder) derives from work in the telecommunications field to compress the human voice for more efficient transmission over a telephone line. Bell Labs, among other companies, was working on vocoder technology in the 1950s, and this involved splitting the voice sound into separate frequency bands (just as found on the graphic equalizer of a hi-fi system) and using the output from each band to drive an amplifier applied to just one frequency band of an alternative input signal. In other words, the tone of the incoming voice was being superimposed on the pitch and level of a different incoming sound. When this was a simple synthesized drone or buzz, the unexpected effect was that of a 'speaking' synthesizer, which took on the exact pitch of the incoming drone.

So the vocoder needs two inputs, usually the voice plus, in musical applications, a synthesized sound, referred to as the carrier and the modulator respectively, so the performer only has to speak, while playing a keyboard usually determines the melody. The more analysis filter bands a vocoder has, the more intelligible its output becomes, but high-quality filters were expensive to build and so early vocoder designs were extremely costly. Simple voice-like effects could be created with just a couple of filters and the 'Sparky's Magic Piano' songs used this technique to apparently create a singing piano, with the BBC Radiophonic Workshop adopting these techniques very early on. Both Walter Carlos and the TONTO duo of Robert Margouleff and Malcolm Cecil managed to create vocoder-like voice effects in the early 1970s, the latter on the track *Riversong* on the *Zero Time* album, but the German experimental duo Kraftwerk commissioned a full custom vocoder to be built for them around 1973, and this appears on the track *Ananas Symphonie* on the *Ralf and Florian* album. Sennheiser in Germany and Harold Bode in the USA, who worked with Robert Moog, created expensive vocoder designs and after Kraftwerk's worldwide success with the *Autobahn* album in 1974, they were able to buy and very imaginatively apply these, their old custom unit appearing on eBay in 2006 and selling for around $7000.

EMS also went into the vocoder business, producing 1000, 2000 and 3000 models with varying numbers of bands and controls, and these were improved later by EMS Rehberg in Germany. Moog built Bode-

The Technosaurus Selector morphing filter module.

1967 Release of Cosmic Sounds' Zodiac album produced by Paul Beaver

All modules of the Technosaurus Selector system are listed. (c) Mark Jenkins, Elsevier Ltd.

Also fascinating is the fact that this book shows all the modules of the Technosaurus Selector system (with exception of the sequencer prototype), even those which never went into production: Frequency Shifter and Morphing Filter never saw the light of day.

The A6 Andromeda from Alesis is a genuine analog synth and likely to set new standards in the field.

displays the current wave shape, but it's not clear if this reached the market at all, while US valve effects specialists Metasonix showed the PT1 Phattytron, a rack-mount MIDI module using an unconventional selection of valves in both its oscillator and filter circuits. With a minimum of front-panel controls and highly unusual filter response, the

1999 E-Mu launch the Audity 2000 module inspired by their never-released Audity design

Modcan B series modular system.

- **Oakley Sound Systems (www.oakleysound.co.uk)**. Based in Edinburgh, apparently independent of Oakley Sound Systems from August 2006. Ten different PCBs (or currently just circuit diagrams for them) normally built MOTM compatible, but users have to source panels (usually using the Schaeffer panel design and manufacture service from Germany), and components that are standard and widely available.

A rare example of the Oakley modular system.

- **PAIA (www.paia.com)**. 9700 series modular system still in production, with elements combined so that four modules can provide two each of VCOs, VCFs, VCAs, EGs plus noise and MIDI In. Kit $450. Frac Rac format. 9730 dual filter kit alone $107. Theremin, vocoder, Fatman synth, fuzz and other kits also available.
- **Sound Transform Systems (Serge) (www.serge-fans.com)**.

Alesis Andromeda, Modcan B and Oakley modulars. (c) Mark Jenkins, Elsevier Ltd.

Mark Jenkins “Analog Synthesizers”
Published 2007 by **Elsevier Ltd.**

322 pages, with audio-CD (containing samples of more than 30 instruments).
ISBN: 978-0-240-52072-8

“Analog Synthesizers” is available on Amazon.