

Step sequencer

ByteNoise

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Programming is as simple as adding a column of figures with a calculator. — MC-8 MicroComposer Instruction Manual

A step sequencer is a part of many synthesisers and drum machines. You program in a list of notes and rests you want it to play, and it will play them one after the other at whichever speed you specify.

Step sequencers work as if monophonic, playing one note at a time. Even a step sequencer that can play several notes at once will work as if playing several separate monophonic instruments independently of each other, with you providing a separate list of notes for each of the instruments.

The earliest step sequencers simply cycled between several dials, each one dictating a different control voltage that could be used to represent pitch or anything else. These didn't have any innate sense of a tuning scale, so in order to play a simple melody on one, you'd need a good ear or a way of tuning each dial.

Ralph Dyck pioneered the digital step sequencer in the mid 1970s. Although you still had to do a lot of the work for it manually, translating a score into a series of numbers, it was far more useful than its analogue predecessors. It could remember the intervals for twelve-tone equal temperament, and represent

notes of differing lengths.

In the late 1970s, Roland took Dyck's sequencer and refined it, allowing multiple channels to be output at once, and expanding the memory to store more notes. The result, the MC-8, was still difficult to use, and exceedingly expensive, but it allowed musicians to program in the parts for multiple instruments, enabling them to play alongside each other automatically, and presumably helped pave the way for some of Roland's later products, such as the MC-4 and MC-202, and also the ever popular TB-303, TR-606, TR-808 and TR-909. While these latter machines also make sounds, the importance of their on-board sequencers shouldn't be overlooked.

These early 1980s Roland products with step sequencers were in many ways simpler, stripped down versions of the MC-8 and MC-4. They were easier to program, with the TB-303 finally having a button representing each of the twelve notes. Despite this relative simplicity, they allowed sliding from any specified notes to the next, and the TR-909 allowed alternating between two speeds to get a swing effect. The sliding in particular, which has a fixed speed regardless of the pitch range, is an important part of the characteristic sound of acidlines. Alas, this ease of use was never repeated in a step sequencer sporting multiple channels of pitched instruments.

In the early 1980s, MIDI put an end to step sequencers with analogue CV outputs. It allowed true polyphony and freehand note expression, and soon became a true standard, which the old fashioned system of analogue CV and gate signals couldn't compete with. For a while, step sequencers lived on in the Fairlight CMI's page R, and subsequently in the several free tracker applications on home computers, which were based on the CMI.

Although step sequencers themselves are no longer popular, some musicians such as myself have a tendency to draw notes onto a piano roll in software, which essentially produces pretty much the same result: rigid, mechanical sounding music.

Step sequencing is the antithesis of expressive musicianship. It's quantised, digital, robotic and precise. It's literally perfect, the logical conclusion of the geometric, Platonic ideal of electronic music.

Wendy Carlos and Vangelis probably hate step sequencers. Their music is very expressive and emotional. Despite the out-of-hand dismissal of synthesisers by more traditional musicians, these artists play tangible keyboards, and their performances are just as human as that of a musician playing the piano. They speed up and slow down their playing for emotional impact, and if the instrument permits it, they take great care to strike the keys hard or softly enough to produce an appropriately bright or dull tone.

Juan Atkins, Trevor Horn and Anne Dudley probably love step sequencers. Their music is very strict and rigid sounding. It explores soundscapes, rhythms and patterns, but does not particularly evoke emotions. Their fans are more likely to dance to their music than to sit down and listen to it.

Once different synthesisers were standardised enough to talk to each other, step sequencers were sold as products in their own right. These don't directly make any sounds, but instead play your synthesisers on your behalf, keeping them all in perfect, rigid timing with one another. A good example of this antiquated technology is the Roland MC-4 shown on the record label of AFX's EP Analord 01.

As the technology was improved, these were replaced by hardware sequencers that could record the notation of every nuance of a real musician's playing. These in turn gave way to software sequencers with the release of the Atari ST home computer with its built-in MIDI ports.

The step sequencer is not inherently good or bad. It's merely a certain style of playing that takes all human emotion out of the equation. This makes it suitable for idealistic, geometrically perfect music, and equally makes it unsuitable for emotional, expressive music. I for one am glad to live in a world which has both.

To hear some prominent examples of step sequenced music, check out Tangerine Dream's *Phaedra*, The Art of Noise's *(Who's Afraid of) The Art of Noise?*, and Model 500's *Deep Space*. Contrast these with the beautifully emotive style of playing on Vangelis's *Blade Runner* soundtrack or Wendy Carlos's soundtrack to *A Clockwork Orange*.