

THE MELODY MAKERS

This is the first in a series of articles in which we will be looking in some detail at MIDI — the Musical Instrument Digital Interface. We will also discuss how digital manipulation of sound — through sequencing, modulation synthesis and the sampling of natural sounds — can produce results hardly imaginable a decade ago.

Music and the sciences of number and proportion have a relationship that has been acknowledged for many centuries. The Greek mathematician Pythagoras weighed a group of blacksmiths' hammers to find out why they seemed to be playing 'in tune' as the anvil was struck. He found that one hammer, half the weight of another, produced a sound exactly double the frequency, or one octave higher. This established the first principle governing pitch relationships in music.

In the Middle Ages, composers filled cathedrals with the sound of masses and motets (polyphonic choral compositions) that were rhythmically and numerically proportioned to the same degree of precision as the architecture of the cathedrals themselves. Their music was often so complex that it was believed that only the ears of God could appreciate the numerical relationships, whilst mere humans heard the music. And anyone who has watched a performance of live music — of almost any variety — may have noticed musicians counting, '1,2,3,4; 2,2,3,4' under their breath, before they start to play.

So it was natural that the worlds of computing and music would overlap, and at present a development causing a lot of excitement is MIDI — the Musical Instrument Digital Interface. This unit is designed to enable any one digital system, including microcomputers, to control the functions of another. As the majority of electronic musical instruments now being produced are digital, this opens up a whole new realm of exciting possibilities to home micro owners.

But MIDI is not a magic box. It will not turn a micro owner into a Vangelis or a Stevie Wonder overnight. Musical skills and imagination will always produce the best results, whether the music is being played on a bank of interfaced synthesisers or on an acoustic guitar.

In order to understand the sort of musical instruments with which MIDI is intended to interface, and how electronic music came about, we have to look back over half a century. Well before the Second World War, musicians had started to experiment with simple 'sine-tone generators'. These were electric devices that



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would cause a metal strip to vibrate, thus producing a steady tone which could vary in pitch. This sound was often used in the musical scores of 1950s science fiction thrillers to suggest an eerie or futuristic atmosphere. It is still to be heard coming from television speakers as a signal to viewers to switch off their sets when transmissions are over. The first Hammond organs marketed in the 1930s were electronic and used this type of sound.

But it was the boom in electronics during the Second World War, specifically the German development of the tape recorder, which enabled musicians to create and manipulate sound in quite a different way. This could be done by splicing up analogue recording tape on which sound, 'musical' or otherwise, had already been recorded. These minute snippets of tape were then painstakingly combined to produce a collage of sound events. This 'new music' broke every rule

Musica Obscura

New music demands a new notation. Stockhausen's scores with their pictorial representations of sounds, and graphic timing/synchronisation directions have nothing in common with classical scores, and were, indeed, intended to resemble electrical circuit diagrams