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"Welcome to the Machine" - Pop Songs out of the Computer: The Era of PC-Musicians.

(Abstract)

Nowadays, many sound devices are available as virtual computer programmes: Moog sounds, drum machines, sequencers, even a Hammond B3 software is on the market.

The complete accompaniment comes from the PC. Programs like *Cubase* record and combine Midi and Wave files with sophisticated effect plug-ins.

A great deal of modern pop music uses these electronic sounds and recording techniques. As a rule, the only remaining live recordings being the vocals and guitars.

Copying and editing of tracks, mastering of sounds and dynamics becomes a main task of the PC musician: No expensive string orchestra has to be booked, no setting of microphones be planned: Drums, strings, everything is on sound cards or external devices.

The paper will demonstrate the PC musician, show examples of modern popular music, and will put the PC musician as a new kind of "instrument player" beside the traditionally working musician. This kind of recording process has just begun; the paper will venture a look into the future and present possibilities.

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Besides the classical musician, the jazz musician, the studio musician, the one who sings in a choir, the music teacher, the blues guitar player and many others, the nineties constituted the PC-musician (Wehnhardt 1999: 3), who combined all these special types as he prepares and prints out scores for his orchestra, choir, rock band or theory class; he arranges, records and produces his ideas and saves them to hard disks.

Earlier (10 or more years ago), musicians who wanted to make recordings of their music had to have at least a microphone and a cassette recorder. The result was often disappointing. For more professional recordings, they had to invest in expensive technology such as tape recorders, mixing consoles and effect devices.

A tape machine capable of recording eight, sixteen, or more tracks was an expensive piece of hardware. In addition, the multitrack-tapes that ran at fast speed were expensive as well. Once recorded, no further editing to individual tracks was possible. A mixing console that could handle many tracks, provide at least three band equalisation and routing opportunities was the second important device for recording. For professional results, effect devices such as reverb, delay and compression units were absolutely necessary.

A good reverberation unit as a stand-alone device will cost at least several hundred Pounds. Besides, innumerable numbers of cables, microphones, patch-bays, and other things had to be taken into account. Adding all costs, the equipment is usually far beyond reach for many musicians. A professional studio, therefore, had to be booked for hours, days, or weeks.

Nowadays a personal computer offers exciting – and much cheaper – opportunities. For about 300 Pounds a programme like *Cubase* includes a virtual tape machine with up to 64 tracks. No extra tapes are needed; all recorded material goes directly to hard disk. Also there is full parametric equalisation, a number of built-in effects in amazingly good quality, and the opportunity to expand the range of effects by simply applying other plug-ins. Sophisticated plug-ins as a valve-sound EQ, analogue tape delay, imitations of overdriven magnetic tape characteristics and many others are available.

Furthermore, all virtual devices are already connected; just choose reverb, for example, for one track and delay for another; the modules are ready to work properly.

The PC musician can choose whether to make wave recordings or use midi sounds, in addition, a great number of sound libraries on CD-ROMs offer further sounds for keyboards, such as natural piano or organ sounds, if needed. Also there are sounds of all thinkable instruments and natural effects.

By non-destructive editing and undo opportunities, a PC musician is free to experiment. With the looping, copying and shifting of parts, the work is much more comfortable than with magnetic tapes.

Whitney Houston's: "My love is your love" is a good example of this modern composing and production technique in popular music: Simple

looping of a Cabasa groove and an also simple synthetic bass line

The song "Alles Goethe zum Geburtstag" (Drum n' Bass Version) by Uli E. was recorded using the *Rebirth*: Here the *Rebirth*-sounds of two TB 303-Sequencers and the TR 808 and 909 drum machines are combined. Parts of the bass sounds are slightly delayed with the built-in effect. No further programmes were used for this phase of production. This mix, however, was transferred as a basic background into *Cubase* to add vocals and guitars for alternate takes.

Bands like *Kraftwerk* used synthesizers as their main instruments instead of traditional ones. Along with other bands of the Art & Electronic Genre such as *Pink Floyd* they helped to popularise the synthesizer. Usually, musicians want to create their own sounds. In *Cubase*, a software synthesizer is included. Whereas synthesizers are usually an area for keyboarders, most software synthesizers do not have a manual at

not with all the opportunities that *Cubase* offers. On the other hand, many of these wave-sequencing programmes are remarkably low-priced and therefore offer a good start for experimenting. Lately, the market has been expanded by programmes that do not only include pre-recorded wave files for dance, hip-hop, or techno; even wave sequencers for classical music, like *My Symphony*, invite to try out loops of classical instruments that will be combined to sequences that remind of Beethoven or Bach.

With the use of a large number of CD-ROMs that are available with recorded instrument grooves and loops for all styles, wave-sequencing programmes will be capable of producing any possible musical style.

This kind of musical work might seem to be uncreative, as no original recorded material will be taken. On the other hand, the sounds might be shaped by equalization or effects to add an individual touch. What is more, even the sounds produced by diverse keyboards or sound cards are in many cases not programmed by the musicians who make recordings with them. Every musician who feels inspired will try to create original sounds or shape them with the use of sound editing software to their individual needs. Here we might also think of the electric guitar players who are nearly always looking for an individual sound.

Wave sequencers might imply a certain danger: As instrument loops of good quality are available and their number is increasing rapidly, no one will be able to say if, for example, the guitar pattern in a new number one hit is an original idea and recorded by the musician, or if it has just been taken from a pre-recorded sampling pack. Similarly, the complete song or at least its instrumental background might be the result of simple clicking and combining of pre-recorded grooves.

What will be the next steps of the described technology? At first, we realized a kind of miniaturization due to computers: The big audio studio has become a small, but even more efficient computer studio. In addition, the recording and editing process became less and less expensive. This technology will run on even smaller, modern laptop computers as well. Then, musicians are more flexible where to use it, even recordings in rehearsing rooms and live takes of performances will be easier to accomplish.

It will not take long until even a mobile phone will be capable of recording at least two stereo tracks in CD quality, up to half an hour or longer. Then there will be even more versatility for quick recordings and snapshots of musical ideas. As the small displays will not be a good place for editing, the connection of mobile phone and PC will transfer the recording to the PC for further editing.

Programmes will become less expensive as well; there are even smaller versions of the *Cubase* programme, like *Cubasis* or *Cubasis Go!* These versions are excellent for recording as well, but the number of effects and options is limited.

The plug-in technique will be developed further so that all thinkable devices can be applied. Sophisticated distortion for electric guitar players is already available and will be enhanced in quality. All kinds of so-called stomp-boxes will all be soon at hand as plug-ins, unless not already included in the main programme: Leslie for organ sounds, more echo, reverb types and double effects for vocals, octave shifters and so on.

material. On an audio DVD, there would be enough space to save all the original tracks of a recording, including some preset mixes, as the radio edit, the drum 'n bass version, and so on. With a simple menu on the display of special CD-players of even mobile phones, the listener could

CD's:

Whitney Houston: "My love is your love", on: *Kuschelrock 14*, 2000, Sony 498316.

R. Kelly: "When a woman's fed up", on: *R.,* 1998, Jive 41625.

Uli E. "Alles Goethe zum Geburtstag" (Drum 'n Bass Version) on: *Alles Goethe zum Geburtstag.* 1999 (Unreleased Demo CD).