



Music Makers

Music is one of the Internet's big application areas, with many bands, record labels and music retailers to be found dabbling in the Web. Sean Clark takes a look...

We've all seen how the Internet is being used by major bands and record labels to promote and distribute music. Indeed, the most popular music bands now have associated Web sites, newsgroups, emailing lists and the like, and record labels such as Sony and even Creation and Go! Discs have established their own corporate Internet presence. But while it's exciting to see the music industry embrace the Internet in this way, this 'glamorous' side to the

This interest has made the Internet an extremely interesting place to be if you're a music maker. After just a quick trawl around an Internet search engine you'll find a whole host of online music materials: music tutorials, free music software, musical compositions for you to download and dissect, places to publish your work, as well as opportunities for you to meet other musicians and form collaborations. At first sight, non-musos might find the sheer amount of music and music information to be found on the Net rather surprising – after all, they might say, audio files are very bandwidth intensive and even low sample rates can lead to huge sound files.

What's more, they might add, isn't real music about guitars, drums, violins and pianos – all very 'un-computery' things?



intersection of music and the Net is really only a small part of a much broader picture. As is the case in many other fields, if you have a detailed look at what's happening to music in the Internet age you'll find that much of the really innovative work is taking place at the 'grass-roots' level – with the many Net-aware non-professional and less well-known musicians exploring how the Internet can be used to help make, distribute and even perform music.

Technology

Well, to answer these issues we need to briefly look at the history of music and technology. As most of us know, musicians have always attempted to make the best possible use of new sound-making technologies. In the case of the classical composers this led to the production of compositions intended to be played on some rather weird and wonderful instruments – instruments that have long since left our musical repertoire. So 'real' music need not be restricted to conventional instruments. With popular music, it was the 1960s and 1970s that revolutionised the production of musical compositions with the introduction of the synthesiser – an instrument that led to a whole generation of musicians who saw non-acoustic instruments as perfectly valid tools for music making. As well as changing the way people made music, the



synthesiser also lead to the rise of the 'techie' musician – the person who by necessity had to know electronics as well as music. In fact, there are many tales of musicians of the time who made their first synthesiser by hand or adapted some existing kit to produce a unique sound – a practice still endorsed by some people.

While it may have been the synthesiser that turned many modern musicians on to new technologies, it was an even more fundamental innovation, 'MIDI', that introduced them to computers – and ultimately lead to their interest in the Internet. Musical Instrument Digital Interface is a music communication standard that was introduced in the 1980s and allows instruments and computers to pass musical information between them. Using a MIDI interface a keyboard can pass information about which keys are being pressed to, say, a synthesiser. Or a computer can send a previously defined drum pattern to a dedicated drum machine. In fact, given a suitable interface, almost any instrument can

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be configured to 'talk MIDI' to another instrument – indeed, many of the old analogue synthesisers that started modern music's flirtation with electronic technology have now been adapted to work with MIDI systems.

The real key to MIDI's usefulness – especially in the context of computers and the Internet – is that the information being passed between instruments is not the actual sound, but



information about the sounds. MIDI, if you like, allows the creation of an electronic musical score – with the notes described as digital 1s and 0s rather than being drawn on paper. This digital nature of MIDI, together with the rise of low-cost personal computers in the mid- and late-1980s, meant that following the introduction of MIDI the computer was destined to soon become an integral part of the home or professional recording studio. Just as the synthesiser had become an essential musical instrument of the 1970s and 1980s, when musicians entered the 1990s they found that computers, with their suitability for handling large amounts of digital data, had become the heart of many music systems – allowing them to compose and record via 'sequencer' computer programs as well as control a large number of synthesisers or 'sound modules'.

With the adoption of synthesisers, MIDI and computers, musicians were ideally placed to join the Internet when

this new technology arrived. Many musicians already had the computers they needed, they had the basic technical skills required (MIDI communications and modem communications are not really that different), and they had something worth talking about to other Net users – music making.

It's also worth noting that the use of MIDI also gets around one of the main restrictions of the Internet – limited bandwidth. While it's not always possible to distribute music as MIDI data (especially if it uses sound samples or non-standard musical sounds), if you do, the bandwidth savings are huge. Whole symphonies can be defined as MIDI files no bigger than a few tens or hundreds of kilobytes, and three minute tracks such as singles are definable in just a few kilobytes, allowing them to be attached to email postings or even sent to newsgroups – watch out for a Shamen release in the new year that will utilise this fact...

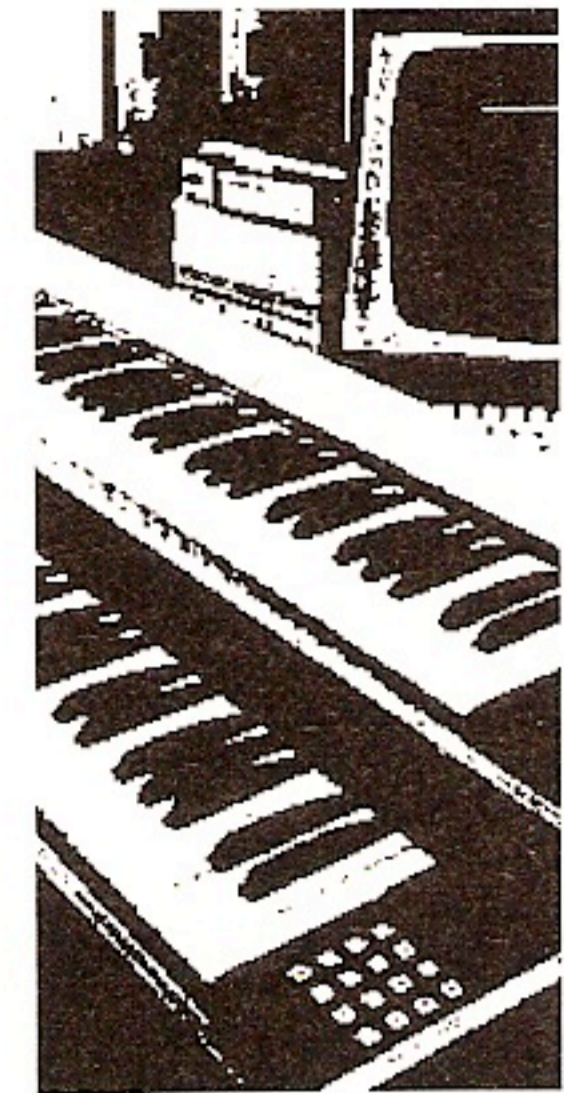
Net Surfing on Sine Waves

Given the roundabout way in which musicians arrived on the Net, what are they actually doing now they are here? Well, firstly, musicians have found that Internet is an ideal way of distributing the software that they need to compose MIDI music. If you look at sites such as the Musicians' Web at <http://valley.interact.nl/AV/MUSWEB/home.html> or Harmony Central MIDI Resources at <http://harmony-central.mit.edu/MIDI/> or even the 'sound' or 'midi' sections of your favourite FTP software archive (I use the Mac and PC areas at <ftp://ftp.doc.ic.ac.uk/>) you will find MIDI software for most computer platforms. You'll even find circuit diagrams showing you how to build a low-cost MIDI interface for your computer if it doesn't already have one – saving you the £30 or so needed to connect your MIDI keyboard to your PC or Mac.

The software available ranges from the – slightly annoying – 'demos' of commercial MIDI packages (most of them take ages to download and are heavily restricted in what they can do), through utilities, 'patching' systems, and right up to fully functioning shareware or even freeware sequencer packages. You name it, if you are after a MIDI package to do a particular task you will probably find it somewhere on the Internet.

As well as being a source for software, you can also download a large number of MIDI music files from the Net. As mentioned earlier, MIDI files are small so you will find that you can obtain files of a length that would be simply unthinkable in a sampled sound format. Of course, you'll need a MIDI system – either a MIDI sound card or MIDI interface plus sound module – to play the files (unless, that is, you are using a Macintosh – see box out at end), but the quality of the sound reproduction can be amazing. Good places to look for free MIDI files are the Classical MIDI Archives at <http://www.prs.net/midi.html>, the wonderful MIDI Farm at <http://www.midifarm.com/> and the MIDI Resources page mentioned earlier. You'll also find that a Net-search for '.mid' or 'midi' will reveal quite a variety of MIDI files.

Given that the Net can help you find the software you need to compose music and supply you with MIDI files to explore and dissect, you'd expect that it would also be able to help you with the next phase in music production – the distribution of the work. And,



Oberheim Matrix-12, synthesiser





Resource Guide

Most Internet search engines contain large numbers of music related sites. Many of which – but not all – deal primarily with MIDI or the alternative sound format 'MOD'. The sites listed here make excellent starting points for a music-related Net-search:

- The MIDI Farm:**
<http://www.midifarm.com/>.
- Harmony Central:**
<http://harmony-central.mit.edu/>.
- Music Machines:**
<http://hyperreal.com/music/machines/>.
- World of Audio:**
<http://www.openmusic.com/omn/globalwoa.html>.
- MIDI Music Pages:**
<http://www.dataphone.se/~doodles/midi.html>.
- Newsgroups:**
rec.audio.* and alt.binaries.sounds.*



Jam across the globe, via the Internet.

indeed, this is the case with many Internet sites allowing you to 'upload' your work for public view. Sites such as the MIDI Composers' Exchange at <http://www.mindspring.com/~s-allen/picks.html> allow you to upload MIDI files for free, whereas others such as the (yee-ha) country-music site Nashville Online at http://www.nol.com/nol/NOL_Home.html charge a fee for the privilege of hosting your music on the Internet.

This final link in the chain – the ability to upload music to the Net – means that if someone is willing to distribute their compositions for free, it's now possible for a musician to compose a piece of music in their 'bedroom studio' and submit it to an international audience without even a whiff of a piece of vinyl, cassette tape, or CD. From bedroom to Global Village without a middleman or a binding contract. For many non-professionals this is a musician's dream. In fact, I can just imagine the next Aphex Twin sitting in his bedroom at age 13 when Mum shouts up "Time for dinner". A whining voice replies "Muum can't it wait until I've uploaded my new single?"

Net Jams and Virtual Bands

As well as providing a space in which people can distribute their music, the Net is also becoming a system through which people can perform – either as individuals or part of distributed 'virtual bands'. While mainstream bands such as Orbital have been using expensive ISDN lines to feed music direct from their studios to radio stations for transmission, on a much more accessible level less well-known musicians have been using the Net to do even more exciting things via computer networks – and again, the key to much of this activity has been MIDI.

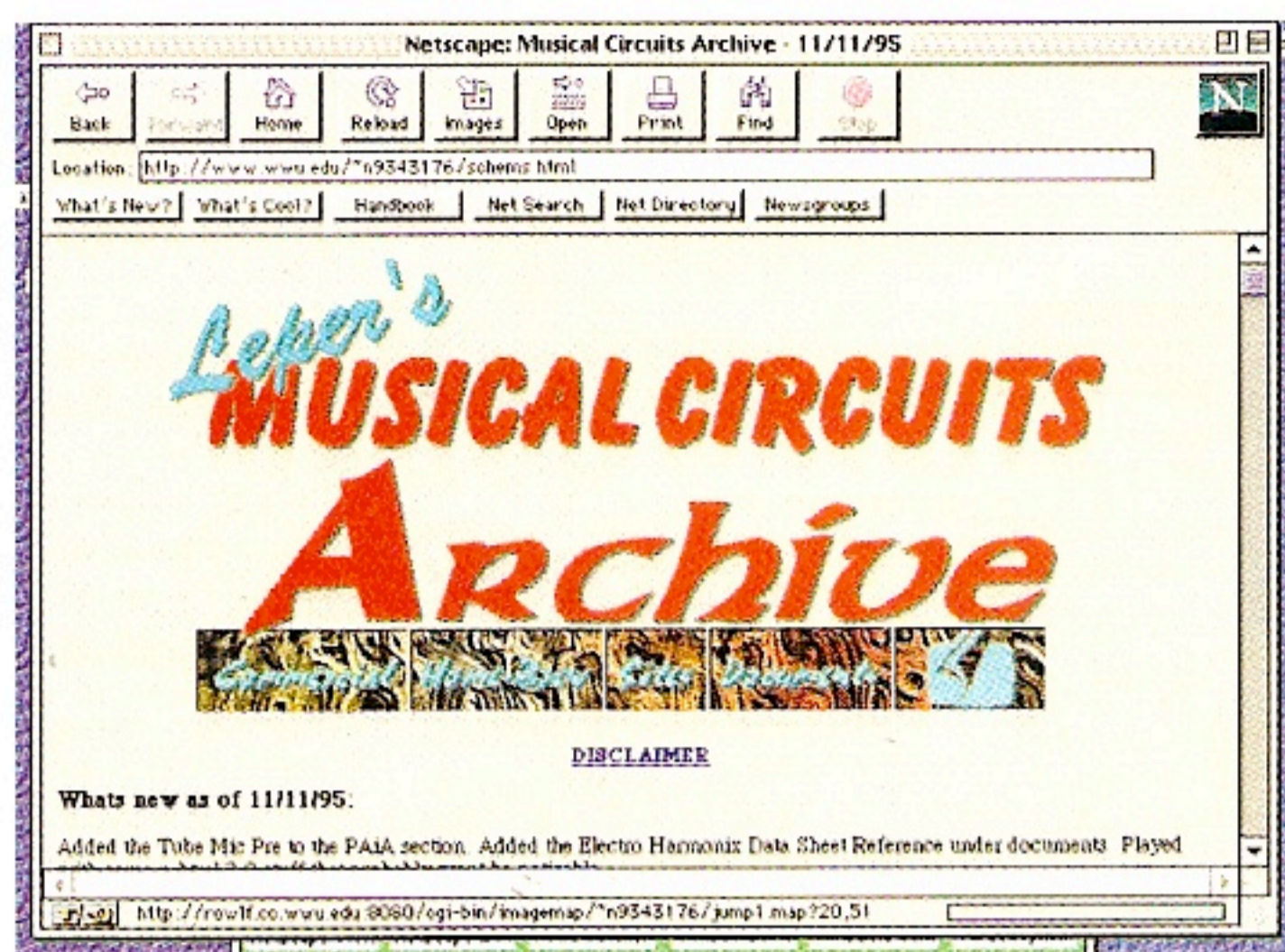
For example, the Communal Groove Machine at <http://ctdnet.acns.nwu.edu/cmbecker/techno/techno.html> uses a software agent that can be accessed via a MOO to allow people to jointly compose MIDI-based techno music. I must admit to having used the system, but have yet to listen to my results! Even more interesting is the 'next-generation' system the Distributed Real-time Groove Network (or 'DRGN') at <http://ctdnet.acns.nwu.edu/hugo/drgn.html>. This project aims to allow people from around the world to jam



MIDI on a Mac

On the whole it's PC users not Mac owners who have the most choice when it comes to MIDI hardware and software – PC MIDI interfaces and sound cards are cheaper than their Macintosh counterparts and a wider variety of software packages are available on the PC platform. However, with the new release of QuickTime many Mac users will find that the world of MIDI is now open to them without the need for extra hardware or expensive commercial software. The new version of QuickTime – Apple's propriety multimedia architecture – actually comes with a MIDI-compatible 'sound module' built into the software. This allows you to download MIDI (.mid) files from the Net and simply double-click on them to have them converted to QuickTime 'movies' that can be played in glorious 16-bit sound on your Macintosh.

To do this you will need the latest version of QuickTime 2.0 (which comes with System 7.5 and is widely available from around the Net, including from Apple's home page at <http://www.apple.com/>) together with the QuickTime Musical Instruments extension (from the same sources) and the latest version of Apple's standard QuickTime application, 'MoviePlayer'. Then simply double-click on the .mid file, choose the 'MoviePlayer with QuickTime Translation' option when the dialogue box appears and then, as if by magic, a QuickTime movie will appear that will play the MIDI file. Plug your Mac into some external speakers and you'll be amazed at the sound quality! Alternatively, if you have problems getting MoviePlayer to recognise the MIDI file you can use the application 'All MIDI' to convert a .mid file to a QuickTime movie and then use a specialist QuickTime movie player such as 'QuickMovie' to play the file. Again, these applications are available from the Internet.



For any type of music, get on to the Internet.

together in real-time via the Internet. Again, a MOO is used to co-ordinate the session but unlike the Communal Groove Machine special software application is used to send and receive the music (in the form of MIDI data, of course). Although in its early stages of development, the DRGN is one of the most potentially exciting music projects to be seen on the Net. As the organisers suggest, imagine "jamming rooms with virtual instruments. A user from Germany can play the bass with someone in Canada playing the drums and a person in the US playing the melody". What's more, this suggestion is becoming reality, with the DRGN already having its own band, Res Rocket Surfer (home page at <http://iuma.southern.com:80/RRS/buttons.html>), and having hosted a number of international 'Net Jams'.

With the ability to perform 'live' over the Net, we now see computer networks offering the potential for a complete band to exist almost wholly in cyberspace. Band members will be able to work on tracks using their own individual MIDI systems (albeit MIDI systems that also allow the use of sampled sounds), then upload and collaborate on compositions in environments such as the Communal Groove Machine and finally perform their music via a system such as the Distributed Real-time Groove Network. While this may seem fanciful, I for one know of musicians who would be more than happy to work in this way!