

Jazz Guitar & The Internet: Past Present Future

It's late 1970's, London, England, I'd been working as professional guitar player, doing sessions and teaching music at college, and as a "hobby" playing with computers. The studio world was changing; more synthesizers and drum machines (<http://www.synthmuseum.com/>) were being used and recording dates were becoming scarcer. I'd enjoyed building and programming Clive Sinclair's Microcomputer Kit 14 (<http://www.nvg.ntnu.no/sinclair/computers/computers.htm>) and I was fascinated by the possibilities of combining computers and music. I joined a company and began "programming" some new "microcomputers". They were very basic, just a circuit board in a case attached to one large "floppy" disk drive and ran an operating system called CP/M (<http://www.joyce.de/english/cpmstory.htm>) my job involved getting them to communicate to mainframe computers and cash registers in shops.



Anyway, so what's this got to do with music? Well, I could see that these computers could be used to make music and that it would be really cool to find a way for musicians like myself, interested in using computers, to communicate and share their ideas with one another. Through the work I was doing I learned about some pioneering work in the USA by some "computer hobbyists" in Chicago.

<p>Compuserve <i>Sysop-at-Large</i> 76703,302 frequenting IBMSYS, IBMHW, TOSHIBA, HPPPR, and other fora.</p>	<p>CBBS® The Ward Board (708) 849-1132 300-1200-2400 (Not sure why I keep running it- but what else do you do with an old S-100 CP/M system that refuses to die?)</p>	<p>Usenet <i>ward@chinet.chi.il.us</i> (chinet run by fellow CBBS- inventor and hardware hacker, <i>Randy Suess</i>)</p>
<p>Thai Food Forever! Bangkok Cafe (312) 222-1178 Chicago</p>	<p>Ward Christensen <i>"Computer Hobbyist"</i> Inventor of XMODEM Protocol; Designer/Programmer of World's first micro BBS: CBBS®/Chicago (312) 545-8086; 300-1200-2400-9600 HST; Occasional author (Byte, PCTJ (RIP)); (H) 688 E. 154th St; Dolton, IL 60419 (H) 708-849-7926 or -6279; (W) 312-245-2076 (IBM. IBM? Senior System Specialist in PC, Desktop Publishing, LANs, etc.)</p>	<p>This space barely left blank</p>

Ward Christensen and Randy Suess two Chicago friends began experimenting and launched the first Computerized Bulletin Board Systems (CBBS) in February 1978. Ward and Randy's reminisces (<http://www.chinet.com/html/cbbs.html>) and at Internet Pioneers (<http://internet-pioneers.org/>).

In 1981, Ward Christensen sent me copy of his CBBS software, which I then modified and enhanced. Using initially a very basic CP/M based computer Hitek 4500 launched one of the first on-line Bulletin Board Systems (BBS) (<http://www.fanciful.org/bbs-promotion/>) for Musicians, with Special Interest Groups (SIGS) on computer music, music theory, jazz , guitar, saxophone and African music.

The BBS provided a self-contained online community, almost like a miniaturized Internet and has a variety of things for users to do - read and write messages in discussion forums, upload and download files, make appointments and public announcements. In the discussion forums topics ranged from music theory, to guitar methods, transcriptions, chord solo arrangements and recordings. Getting hold of out of print Jazz recordings, which at that time meant either tapes or vinyl, had become extremely difficult and the BBS provided the means for people to write messages to each other and obtain these recordings.

As a BBS dedicated to music and musicians one of the one of the hottest initial topics was how were we to communicate musical ideas using only text. At that time music notation packages had not yet been developed and there was no consistent method of communicating music notation.

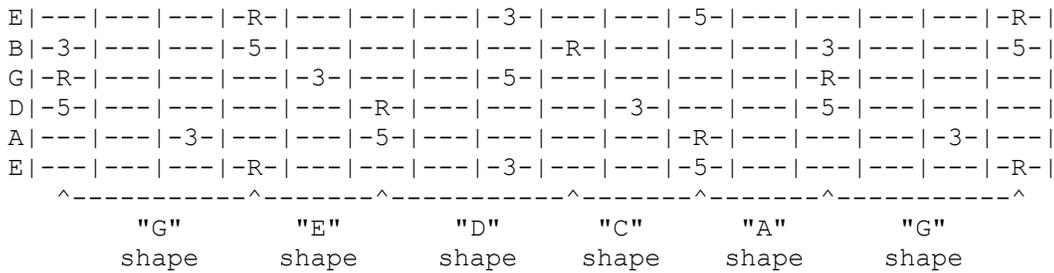
A system of using Tablature or TAB was developed, using the character "-". It started out with 6 lines (or four for bass), which correspond to the strings of the instrument. The top line is the highest pitch string, and the bottom line is the lowest pitch string. Numbers are written on the lines to show you where to fret the string with the left hand. If a zero appears, this means play the open string. Like standard musical notation, you read from left to right to find out what order to play the notes.

As an example, here are the first few notes of the American National Anthem in TAB. You should see fairly clearly that the different spacing corresponds to the different note lengths.

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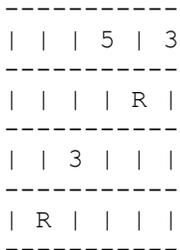
E-----0-----4--2-0-----
B--0-----0-----0-----
G-----1-----1-----1---3-----
D-----2-----
A-----
E-----
    
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Using another form of diagram the entire fingerboard could be mapped out as follows, here's an example of diagramming major triads on the fingerboard.



Or individual chords diagrammed as:

The basic 'C' form:



Armed with these ways to communicate musicians were able to discuss their musical ideas. Today's Internet sites, which have TAB files and text instructions on Guitar, are indebted to the early BBS for many of their files. Many of these original text files ended up on Internet Newsgroups, these were then archived by websites such as OLGA, the On-Line Guitar Archive (<http://www.olga.net/>)

Programs were then written to help produce these TAB diagrams, and have developed into the programs that are available today: PowerTab (<http://powertab.guitarnetwork.org/>), Guitar-Pro (<http://www.guitar-pro.com/>) and Bucket O' Tab (<http://www.antsleep.com/bucket/>)

Although they have tended to be superseded by notation programs such as Finale (<http://www.codamusic.com/>) and Sibelius (<http://www.sibelius.com/>).

The BBS Expands

One of the biggest drawbacks to the early BBS was that they required you to make a phone call. Dialing up a BBS over long distance could result in astronomical phone bills (and often did!). The result was that most of the people accessing the BBS came from the local calling area and there was little communication between larger areas or indeed countries.

Tom Jennings and John Madill in 1983 developed a program called FidoNet that allowed a BBS to communicate at fixed intervals with another BBS and send messages back and forward between each system, rather like "synching" a handheld organizer with your home computer. By the early 1990's more than 5,000 BBS were part of FidoNet (<http://riverbbs.net/fido/history/>) with locations through out the world. Today there are well over 30,000 nodes. With FidoNet in place, musicians could now communicate their ideas across longer distances.



Early Computer Music Developments – the 1980's

One of the hottest discussion topics on the BBS was using computers to compose and make music. In the early 1980's the first small computers had very limited musical capabilities, generally limited to a sound chip that was capable of making elementary beeps. Generally extending the capabilities of the computer was left to hobbyist or small manufacturers who added better sound capabilities. The first music programs were exceedingly elementary, but it was the computer gaming industry which started to drive the needs for better sound capabilities.



On 12th of August 1981 the IBM 5150 PC (Personal Computer) was launched. For most musicians it made no impact, it was expensive, and had a very primitive speaker and sound chip! It had only 16 KB RAM and no floppy disk drives and it used cassettes to load & store programs (in fact the commands to handle the cassette drives were present in the operating system all the way up to MS-DOS 5) (A year after launch IBM made available 180Kb 5.25" disk drives for what was an exorbitant price of 800 US\$.)

However three computers set the tone (pardon the pun) for what was to come musically: the Apple IIe, Commodore C64 and The Yamaha CX5M. Popularity of the machines varied by country, the Commodore C64 was popular worldwide, the Apple IIe in USA, and the Yamaha CX5M in Europe and Japan.

In 1982 following the success of the VIC20 Commodore (<http://www.c64.org/>) introduced one of the most successful computers ever, the Commodore 64 which sold at a retail price of 595 US\$. The total estimation of sales 1982 to 1993 is 17 to 22 million. The Commodore 64 was also the first computer with a sound synthesizer chip named MOS6581 or SID, Sound Interface Device, designed by Bob Yannes. After working for Commodore, he co-founded the well-known synthesizer company Ensoniq (<http://www.emu.com/>). The SID chip's underlying technology provides the basis for the future PC add-on sound cards.



The machine inspired a number of composers to begin working with computers including Rob Hubbard, Martin Galway, Tim Follin and Jeroen Tel. Ron Hubbard

(<http://www.freenetpages.co.uk/hp/tworh/index.htm>) became a legendary figure in the computer music world with his work winning many awards. You can still listen to some SID produced music by visiting the High Voltage SID Collection (<http://www.hvsc.c64.org/>). Today, there is even a product called the SidStation synthesizer that uses the SID chip in a stand-alone synthesizer device (<http://www.sidstation.com/>).



1983 saw the launch of the Apple IIe. Whilst not having great built in sound capabilities, a number of manufacturers produced add-on cards to increase its capability. Mountain Hardware Music System (MHMS) produced a two card 16-voice digital synthesizer, which combined with alphaSyntauri software. The software had full support for the attached light pen, and you could literally draw a waveform on the screen of the Apple. For most musicians, the costs were prohibitive as the MHMS card was expensive. Passport Designs designed a cheaper soundboard called the "Sound Chaser" which did not have all the features of the MHMS. Herbie Hancock's (<http://www.herbiehancock.com/>) singles "Rockit" and "Vibe Alive" used the sound capabilities of the Apple IIe as did the ground breaking 1982 album by David Byrne and Brian Eno "My Life In The Bush Of Ghosts". (<http://www.talking-heads.net/bogrs.html>) (Incidentally, they took the title from a novel by Nigerian Author Amos Tutuola (<http://www.qub.ac.uk/english/imperial/nigeria/amos.htm>)).

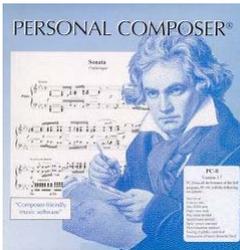
In 1984 Yamaha launched the first purpose built Music Computer the Yamaha CX5M (<http://home.online.no/~eiriklie/CX5MFAQ.html>). (<http://www.rgp.nl/cx5m/index.htm>) I worked on the prototype Yamaha CX5M and helped develop a number of the add-on products for Yamaha. It had a built-in FM synthesizer equivalent and patch-compatible with some of the studio quality synthesizers of the day such as the DX21, DX100, and FB-01 and was the one of the first computers to be midi enabled. Storage of sounds was on cassette tape and there was also an external disk drive available. Software for the CX5M came in the form of plug-in cartridges and included one of the first music sequencers for composition and orchestration. You can listen to some CX5M music produced by Norwegian musician and composer Eirik Lie (pronounced 'A-rick Lee') (<http://home.online.no/~eiriklie/welcome.html>).



MIDI

In August 1983 the Musical Instrument Digital Interface, or MIDI standard (<http://www.harmony-central.com/MIDI/>) was formally published. This defined a standard method for electronic musical equipment such as keyboards and computers to pass messages to each other, for example play middle C until I tell you to stop! With this development came an explosion in music technology.

PC manufacturers began to make add-on boards for the PC, which would enable them to connect to external midi devices and a whole new generation of software for composing music was developed.



One of the first Music Notation packages for the PC was Personal Composer (<http://www.pcomposer.com/>), written by Jim Miller, who set up business in his garage in 1983. Jim advanced the DOS-based program, through several releases, and was working on a Windows version at the time of his death in 1991.

Voyetra (<http://www.voyetra.com/>) a NY based company developed Sequencer Plus one of the first midi sequencer packages for the PC platform. With over one million copies shipped worldwide, Sequencer Plus was one of the most popular music programs of all time.



In 1985 Atari introduced the ST range of computers (<http://www.geocities.com/SiliconValley/Bay/8745/>) with MIDI ports and almost overnight took over the European and Far East music markets. Meanwhile Apple computers dominate the USA music market and Mark of the Unicorn Performer (<http://www.motu.com/>) and Opcode Sequencer later Vision (<http://www.opcode.com/>) become favored sequencers.

In 1988 Dr. Peter Gannon launches PG Music and the software Band-In-A-Box (<http://www.pgmusic.com/>). Coda introduces Finale an extremely powerful, but was considered difficult to learn, notation program for the Mac. Twelve Tone Systems released Cakewalk (<http://www.cakewalk.com/>) an intuitive, menu-driven sequencer for the PC running MS-DOS. Digidesign (<http://www.digidesign.com/>) introduced its first DSP (Digital Signal Processing) board for the Mac, which led to digital audio recording on the Mac. Steinberg's Cubase (<http://www.steinberg.net/>) and C-Lab's Notator (<http://www.notator.org/index.html>) compete as sequencer of choice for the Atari.

Connecting The Guitar Into This World



In 1979 I began experimenting with the first Roland Guitar Synthesizer GR-500. The GR-500 used an analog synthesizer expander-type module with a modified guitar/pickup system. The synthesizer module itself was a simple analog affair with Bass, Solo Synthesis, and String sounds based on previous Orchestral and analog mono-synthesis from Roland. Performance accuracy was temperamental but was good for the time and pre-MIDI. Looking back it's hard to believe I gigged and carried this whole arrangement around with me including a notebook with all the synthesizer settings, which had to be carefully set up!

In 1984 with Roland's launch of the first midi-guitar I traded the GR-500 in and started playing with the GR-700 and G-707 midi guitar. Whilst the guitar and synthesizer combination was more flexible and reliable than the GR-500, I could never get used to the guitar and was never comfortable with the sounds produced by the synthesizer unit. The midi implementation was very basic and there were many features, which were missing and only available on later specs. So whilst it enabled basic

connection to the first midi devices, I was never happy with having an uncomfortable guitar and bulky floor unit for that connection.



All of these I replaced with the Roland GI-10.

(<http://pages.slic.com/snolan/>). In my opinion it was one of the best midi guitar connection devices but unfortunately is no longer available. The GI-10 was a half-rack space guitar-to-MIDI and pitch-to-MIDI converter. It required a specialist pickup on the guitar a Roland GK-2A, or it could be used with a microphone. Some of you will be horrified to learn that I

had it fitted to my Gibson L7-C (with existing Charlie Christian pickup!) by British guitar maker and technician Bill Puplett. He constructed a beautiful little platform that attached itself to the bridge and suspended itself just below the strings and was fully adjustable!

Some of the first Guitar albums to use Guitar Synthesis and MIDI were Pat Metheny's "The First Circle" and "Song X" and John McLaughlin Trio "Que Alegria"

Two sites to check out for more details on MIDI and Guitars are: Troubadour Tech Midi Guitar Page

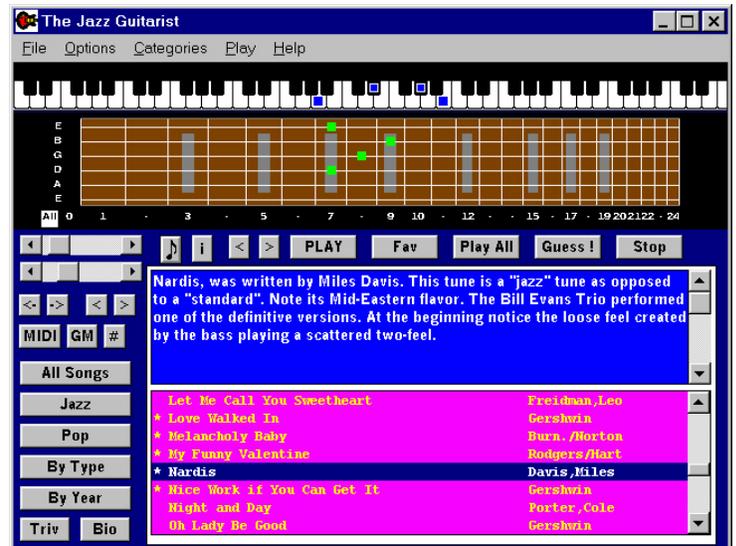
(<http://jpsongs.com/troubadortech/mgtr.htm#discon>) and the MIDI Guitar Unofficial Internet Home Page

(http://home.epix.net/~joelc/midi_git.html) and there's even new software which will enable you to connect your Guitar directly to your PC GuitarMaster (<http://www.robosens.demon.co.uk/>)

Jazz Guitar and the early 1990's

In 1993 PG Music makers of Band-In-A-Box produced one of the first software instructional programs for the Jazz Guitarist called simply "The Jazz Guitarist" (now discontinued). It consisted of a selection of Jazz Guitar Standards played by guitarist Oliver Gannon. The beauty of the program was that Oliver Gannon had played the standards in real-time using midi and so that the feel was very real. An on-screen guitar fret board showed you exactly what guitar notes were being played, you could play it in real time or step through the piece chord by chord. Since then PG Music have gone on to produce Jazz Guitar Master Class (<http://www.pgmusic.com/jazzguitarmasterclass.htm>) and Master Jazz Guitar Solos (<http://www.pgmusic.com/jazzguitarsolos.htm>). See also the Band-In-A-Box User Group (<http://www.biabgroup.com/>)

In 1994 The Munich Guitar Institute, Germany and Sales Curve Interactive, UK (<http://www.sci.co.uk/>) produced a series of Guitar Instructional multimedia disks including Jazz Guitar designed for Windows 3.1 (Discontinued)



The World Wide Web comes of Age

The year 1995 was a watershed year for the Internet and the World Wide Web. PC's had become the dominant computer platform and music application's had moved into the main consumer market. Since then we have seen an explosion of the Internet and Internet related technology. You can now watch video, listen to your favorite artists, find transcriptions (<http://www.alisdair.com/educator/transcriptions.html>), email other guitarists, get lessons and even study music online (<http://www.worldwidelearn.com/music-courses.htm> and http://www.educationplanet.com/search/Art_and_Music/Music).

There is now a plethora of software for guitar (<http://www.harmony-central.com/Software/Windows/guitar.html>), specialist jazz software (such as Jazz Scale Suggester System <http://members.w-link.net/~jsss/>), music notation software (<http://ace.acadiau.ca/score/others.htm>), ear training, theory, transcribing tools, you can find a teacher (<http://www.privatelessons.com/>), there is mountains of information; the challenge is finding your way to what you need or want. You can use the search engines to find what you are looking for but a good place to start is to go to an online discussion group and there are specialist groups for virtually every conceivable topic.

In 1995, I help establish what has now become the Yahoo Jazz Guitar Discussion Group (<http://www.jazzguitargroup.com>). It was set up on a Listserv (<http://www.lsoft.com/>) in Germany and was an out growth from the original 1982 Jazz Guitar BBS. It's the largest specialist Jazz Guitar Discussion Group on the web with over 1600 members and is operated as free service. Members come from all over the world and range from beginners to professional players. The other moderators and I try to ensure that we have a friendly commercial free discussion environment. You can choose to not receive any email and only read and post on the web, the instructions you get when you join will tell you how. All are welcome to join.

There is also Usenet. Usenet started in 1979 at Duke University as a collection of bulletin boards (now called discussion forums or newsgroups). Over the years, the number of such newsgroups grew to the thousands, now hosted all over the world and covering every conceivable topic. History of Usenet (<http://www.vrx.net/usenet/history/>). In October 1995, Bob Patterson (<http://www.jazzguitar.com/>) put a proposal in to form the newsgroup news:rec.music.makers.guitar.jazz that was accepted and on December 12, 1995 went live.

With any of these specialist groups you can ask where to find transcriptions, for recommended recordings, what people think of a certain piece of instructional material, what guitar, amps, talk about recordings, discuss theory, technique, tunes, concerts, recordings, festivals, and events.

The Future

We will see more and more convergence of technology. The Internet has shaken up the music industry in almost every conceivable way from the composition of music to its distribution. Digital Audio (MP3s) is now an integral part of our lives.

The major publishing houses are now working on making all their sheet music catalogs available for download and with this will come the ability to purchase a song title in a specific key and listen to it. (<http://www.sheetmusicdirect.com/> <http://www.sunhawk.com/> <http://www.net4music.com/>)

A number of pioneering organizations have tried to use the web for Jazz Education using the full multimedia capabilities, video, sound and interaction. For example, Knitmedia's J@zzschool (<http://www.jazzschool.com/>) offered schools with suitably "wired" classrooms the ability to learn about jazz from "famous" Jazz musicians by interacting directly with the participating musicians live over the Internet. The Online Conservatory (<http://www.onlineconservatory.com>) offered live interactive piano lessons using specialist MIDI software called NetSessions. Unfortunately most of these programs have not been successful and either have been abandoned or put on hold.

Online music collaboration tools which enable musicians and audio engineers to work together using the internet, producing the ability to work on music project in real-time and simultaneous multi-user access, from anywhere in the world have been developed by Rocket Network (<http://www.rocketnetwork.com>) . There are experiments with online jamming (<http://www.worldjam.com/>), whilst in the infancy, they can be fun to try. (<http://www.ss7x7.com/mixers/livejam/jamming.asp> and <http://pd.klingt.org/>). For more technical information read Sergi Jordà and Otto Wüst PDF technical paper [A System for Collaborative Music Composition over the Web](#).

Currently, English is the Internet's main language. However, by 2003 the number of Chinese speaking surfers will more than double and begin to outstrip the number of English speaking surfers and there will be a substantial increase in the number of other languages. This will bring interesting new musical collaboration possibilities.

Conclusion

I think one of the main challenges we face is dealing with an information (and misinformation) overload. Many of my music students come to their initial lessons armed with books, CD's, transcriptions, MP3 players and printouts from the web (I've even had students arrive with suitcases of books!). Armed with this, there is the feeling that they can become great players overnight. The information is great but requires application and direction for results.

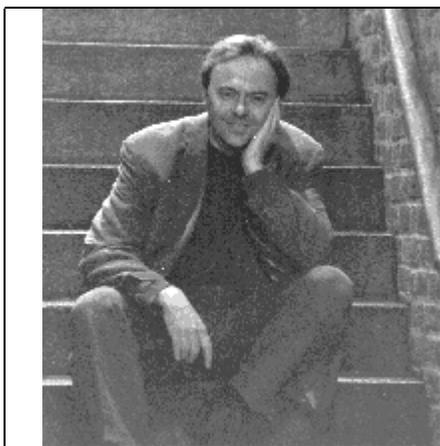
Like many of the early computer musicians, I see many great things from what has been developed. However, there are times I do feel like Mary Shelley's Dr. Victor Frankenstein that we created a monster that is now out of control! The Internet and computer are delivering some incredible musical possibilities and information, but we must balance this against our needs as human beings to create music that is live and is part of our human interaction. Jazz is about interaction between people in a live setting.

"Sometimes the lights all shining on me and other times I can barely see, lately it occurs to me, what a long strange trip it's been."

More information on this and other links can be obtained from my web site <http://www.alisdair.com/>

Have Fun, Cheers

Alisdair MacRae Birch, NY August 2002



Alisdair MacRae Birch is a British musician and jazz guitarist currently teaching and playing in NY. He has performed through out Europe and West Africa, appeared on TV and radio and played in theatre orchestras.

As a consultant for Sounds Digital Ltd he worked in the Research and Development labs of IBM, Microsoft, Sun, HP and Digital Equipment and wrote his PhD. Computer Science Thesis on "Performance Aspects of Computers with Graphical User Interfaces".

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