AI, Music, and Education in Context

By Andy Sankey

Introduction and Historical Context

Technology and music have always had a close relationship in the creative and production, studio, and live industry. This is not just the electronic or digital, the progression from the single staff in Gregorian Chant to the five lined staves that we know today for example, the move to the more than one musical staff was seen to be corruptive, taking away from the aim of the chants, and it took an underground movement to become what it is today, amusing to think of Gregorian Monks in the middle ages as the first wave of Punks.

The development of timbre from Classical to Baroque is another early example of the use and application of 'new' instruments to be included in the composition and performance of music; timpani, baroque guitar, and harpsichord are a few that have continued to develop and influence contemporary music; drums, guitar, and keyboards.

Some of us will remember the development of music in the 1980's when electronica developed and started to influence music composition and performance. Before this though technology was being used in rock music, the Hammond organ for example used in many 1960/70's rock tracks, the Moog synthesiser, and the work of Wendy Carlos – Switched on Bach (1968) for example. Switched on Bach is an example of the synthesiser being used to emulate the acoustic instruments, an interesting album and given the technology at the time a great piece of work.

The 1980's was an example of when technology started to 'dictate' the creativity, by some artists. It was during this period that the abilities and functions of a synthesiser, drum machine etc. could perform music that would be either difficult or impossible for a human musician to perform. The development of the sequencer ensured perfect timing and multiple tracks to be recorded by one person (normally a keyboard player in my experience). Traditional musicians either saw this as a threat to their future or embraced and worked with it, I was the latter. It soon became apparent that technology was not creative, expressive, and lacked the emotional journey of the musician and soon became part of the compositional and performance process to enhance the sounds, dynamically and harmonically, similar to the Barque period, for example.

We did start to see the development of similar AI function during this period, specifically with the 'swing' functions on drum machines, attempting to give programmed drums a human feel. These function along with some clever and creative programming the synthesiser and sequencer were embraced and used in the studio and live environment as it is today, although in the 1980s the functions were basic and limited. The use of synthesis, envelope generated (ADSR), frequency modulation, analogue (additive and subtractive) continues and has become an art form, used within music, SFX, sound manipulation and generation. One of the more famous themes from this time using this technology was Dr Who and many UK children's TV programs driven by the work of the BBC Radiophonic Workshop, a pioneering group of musicians who embraced the technology of the time and created some great music and sounds. Delia Debyshire was one of the musicians in the workshop and an accomplished music concrete composer and the person behind the electronic realisation of the Dr Who theme, based on the original composition by Ron Grainer. Also, who can forget the sound of R2D2 from Star Wars, an electronically generated sound…

Another form of synthesis that has similar attributes to AI is SSEYO's Koan software developed by Tim Cole and Peter Cole in 1994, live multiple CD playback through rule-based computer software. Brian Eno, who coined the name Generative Synthesis, adopted this form of composition and working with SSEYO Pro software produced the 'Generative Music 1' album in 1996. Since then, this has developed into software and applications like 'Bloom' which self-generates sounds

producing ambient, random compositions based on rules selected from menus, Nintendo even released an interactive series of generative synthesis sample packs for the Nintendo DS called ‘Electroplankton’.

The one area technology did not influence at this time was the song writing. That said it was the era of ‘Bubble Gum Pop’ and Stock, Aitken and Waterman (SAW). SAW produced over 100 UK top 40 hits in the early 1990s and labelled as Eurobeat as a musical style. They applied a basic formula to the composition and production of songs and became instantly recognisable containing hooks and a structure starting with the chorus to have maximum impact. This music lacked in meaningful lyrics or songs but successful in the creation of memorable, radio friendly, upbeat feel-good music. This is where AI can have an influence and depending on your point of view a positive or negative one. When writing lyrics to work with the music rather composing music around a song some people use a rhyming dictionary as the words have less meaning, AI can do this with the use of prompts. I am not saying this is the way we should start working and I feel AI should only be used in this context as a starting point or to generate ideas, but there are similarities in the song writing method of SAW.

To most people AI is a new technology, the accessibility and development of how we interact with it is new with the release of ChatGPT and Google Bard (Gemini) etc. and now embedded within the software we use daily in work and play. But musicians have had AI for some time, as highlighted previously, although not as ‘intelligent’ as today. People who have used Logic Pro or GarageBand for example would have noticed ‘virtual drummers’, this is basically a creative AI. You create some music, using samples or real instruments etc. (think of these as prompts), choose your drummer (based on style) drag and drop into the sequence and a drum track is created for you based on the data available within the composition.

Is this the end?

Is this the end of the musician composer, songwriter, and producer?
Personally, I think not, it may become a distraction and influence the process, even become a way to generate music. But music is felt, not just heard, it is performed and experienced, it is composed and performed with emotion and feeling with lyrics that relate to people and come from the heart, all of which a computer does not have…. yet. It is important that we do not lose the social and communication skills, cross arts collaboration and understanding of other roles and responsibilities within the creative process. Technology should never take the place of the human; it is good to have constructive disagreements and sometimes results in outstanding outcomes, humans are analogue where this may occur, computers and technology is binary therefore, a logical (non-creative) outcome can only be achieved.

Education

If technology is used responsibly to support and enhance the creative process, as it has done historically in music, then it should not be seen as a threat. But and this is the big but, education is important and at the core of this technology to be used responsibly and in the correct way, not forgetting great music, compositions, scores, and songs of the past, with and without the influence of technology. These are the foundations of music history, and analysis of what makes a good film score and why, what is a great song and why, a good lecture on this is ‘The Secret Life of the Love Song’ by Nick Cave. This lecture, written for the Vienna Poetry Festival in 1998, analysing lyrics, words, and nature of the love song.

Engaging students in projects where technology is not used in the creation of music or production, apply traditional song writing and composition techniques can be enlightening and enjoyable. Using the computer as a recording device only with limited tracks available, I have found in a lot of cases the lack of technology increases creativity. It is not always about how fast you work and in a

lot of cases when people are searching for and editing samples etc. it would be faster to create the sample making it unique and specific to requirements. If you need a drum loop for example, employ the drummer to play it with direction and record as a loop, use different materials to create sounds, experimentation is a form of research when recorded and reflection and evaluation is applied to the outcome. This is where technology and various platforms can become useful, YouTube is perfect for recording the process with commentary of what, why and when students experiment and becomes an audio and visual journal. The reflection and evaluation will then be informed by the work they have completed and recorded in the form of a portfolio, AI cannot experience and reflect in the same way.

This is also reflected in the way a creative works and students learn by experimenting, making, and learning from mistakes over time to develop knowledge, skills and understanding to confidently apply when and as required. This is why vocational education works with creative subjects, student create a portfolio of all aspects, including successes and failures, if learning has been achieved and, in some cases, happy accidents occur, the process has worked. Failure is success in progress, creative arts is about experimentation, challenging rules, codes, and conventions to produce something that is by nature, original and subjective. Academic subjects and assessment methods such as examination will test only the knowledge of a subject in a limited amount of time, and in some areas, this is important and appropriate, but the creative industry requires people who have not just the knowledge and understand but the ability to apply these skills effectively, responsibly, and safely.

It is the responsibility of educators to ensure the understanding, use and application of technology is used in harmony with creativity, use history to show how the creativity can be lost to technology and how the creative process can be more enjoyable and engaging without technology. This does not only apply to music, the same can be said about other creative subject, performing arts for example, TV and Film are recorded out of sequence, relying on effects and technology in the editing, theatre is live and, in the moment, performed start to end with a narrative like live music and live TV.

Conclusion

Maybe technology and AI should be taught how it can be used academically to inform and support but should never form any part of the assessment. It could be treated as a source of research and referenced appropriately. The creative process and outcomes are experienced and influenced by human nature, this is what makes great songs, music, theatre, art etc. It is original, unique and means something, technology (AI) can only reproduce what it is given although in a random form it is still not completely original.