The Evolution and Effects of AI Technology on Music Creation

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The tertiary sector in Australia is hastily preparing to respond to the potential threat of generative artificial intelligence and industrial-scale cheating. As Coaldrake 2023 writes “TEQSA is keenly aware of the extensive discussion and institutional responses occurring in response to the release of the generative artificial intelligence (AI) tool, ChatGPT, in November 2022.”

This paper looks at the history of AI music technology in the past 80 years but rather than then debate the obvious academic misconduct issues associated with the upsurge of generative artificial intelligence in the tertiary music sector, the paper will assess the demise of creativity that may occur with the sole reliance of replacing human interaction with computational tools such as - ChatGPT.

Developed by the AI research company OpenAI, ChatGPT can be used for natural language processing tasks such as text generation and language translation. As Koe (2023) states, “the tool was launched in November 2022 and has since been making waves across the internet for its detailed and often shockingly human like responses to queries.”

ChatGPT is theoretically capable of generating lyrics for a song, or even complete a song by assigning a title or a theme. It can also be utilized in music to generate melodies and chord progressions or even generate entire compositions. While it can produce music, Koe (2023) further notes that it is not a music composition software nor “a replacement for human creativity” and musical know-how. “It can be used as an inspiration tool or a tool to generate new ideas, but the quality of the output will depend on the input and the specific use-case.”

Emergent technologies have shaped the world of music for millennia. From the advent of man-made musical instruments, recordings, electronic music and now AI technology, the role of technology in the artistic process is continually growing.

In particular, the role of artificial intelligence in both understanding and creating music has significantly grown since the 1950s. From rudimentary algorithms to a multi-faceted industry with intelligent-music systems, the progressive growth in AI music intelligence displays a technical expansion of AI methodologies.

In the decades leading up to the modern era of music, the focus moved from algorithmic generation to generative modelling. Laske (1973), described this change as the difference between a *musical robot* and *musical intelligence*.

> “A musical robot is more akin to the early experiments in the 50s and 60s — it can recognize patterns, has a grammar for music, and has a general sense of problem-solving, but it achieves its goals with fairly direct and blunt methods.”

This trend towards AI systems building their own self-sufficient understanding of musical elements was the basis for the higher-level music intelligence we see today.

In the 1980s, Cope with his Experiments in Music Intelligence (EMI) indicated that the scope of computer composition could include a deeper understanding of music through his 3 basic methods: deconstruction, idiomatic timbral signatures and compatibility

His work revolved around this idea of ‘recombinancy’ where elements from previous works are combined and modified to create new pieces of music. Some of the greatest composers such as Mozart similarly played with recombinancy (either consciously or unconsciously) as they reshaped existing ideas/styles into their own work. In EMI, David Cope wanted to replicate this behaviour with computers and their data processing power.

Cope’s work was the foundation for many current AI models. Music examples are encoded into databases, then the collection of the recombinant segments is extracted using certain identifiers and pattern matching systems. From there, musical segments are categorized and reconstructed in a logical, musical order using augmented transition networks until new music output is produced.

In the current era of music AI technology, Yang (2020) reports that the roots of generative modelling and algorithmic composition have dynamically spread into higher-level research and even into the music industry. With the use of more experimental algorithms and deeper neural networks, the role of AI music intelligence in the creative process has grown significantly.

Commercial applications are assisting artists in their creative process for soundtracks and background music, yet the role of the human mind in the artistic process is still necessary for the true emotional and creative depth of original music. Instead of surrendering to this inevitable change, this paper purports that musicians will need to learn and adapt to consider using AI music intelligence as another tool in their creative arts processes but not as a replacement to the human element.

Nick Cave recently labelled ChatGPT song a “grotesque mockery of what it is to be human” when he weighed in on a fan’s attempt to get the chatbot to write a song “in the style of Nick Cave”. In Nolan (2023) Cave further noted that other fans had sent him examples of songs written by the chatbot in what he described as algorithmic awe. Cave goes on to say,” I do not feel the same enthusiasm around this technology,” adding, “I understand that ChatGPT is in its infancy but perhaps that is the emerging horror of AI – that it will forever be in its infancy, as it will always have further to go, and the direction is always forward, always faster. It can never be rolled back, or slowed down, as it moves us toward a utopian future, maybe, or our total destruction. Who can possibly say which? Judging by this song ‘in the style of Nick Cave’ though, it doesn’t look good, Mark. The apocalypse is well on its way. This song sucks.”

Cave elaborated on his stance, explaining that lyrics of actual value are formed by an “authentic creative struggle” that listeners can identify with and recognise their own struggles in. “I may sound like I’m taking all this a little too personally, but I’m a songwriter who is engaged, at this very moment, in the process of song writing. It’s a blood and guts business, here at my desk, that requires something of me to initiate the new and fresh idea. It requires my humanness,” he concluded.

The recent passing of the legendary American popular composer Burt Bacharach, has focused the music world on his remarkable career. Along with lyricist, Hal David, the pair wrote over 70 top ten hit songs during their outstanding careers.

If one was to attempt to construct an algorithm to emulate their success, surely it would require the sophistication and emotional framework that comes from deep within the psyche of what it means to be human. While much of their repertoire has a sameness to it, in that the well-trained musical ear can identify a Bacharach/David song by its fundamentals of melody, lyrics, harmonic structure and similar instrumentation, the reality for any aspiring songwriter is that their music seems to be a holy grail for most.

Simple yet beautifully constructed. Mainstream yet unique. Are these qualities at the essence of what we hear in that magic moment when a song or a piece of music moves us deeply?

Following Bacharach’s recent passing, American song writer Carole King - herself one of the all-time greats of the popular music genre - penned an opinion piece for the Washington Post where she wrote -

> “In 1962, the lyricist (and my then-husband) Gerry Goffin and I were driving up the Garden State Parkway when we heard Dionne Warwick’s recording of “Don’t Make Me Over” for the first time. We were stunned into silence. If we hadn’t been in the left lane between exits, it would have been a pull-over-to-the-side-of-the-road moment. When the song was over, I exclaimed: “What was that?” By “that” I meant the time signature changes, the instrumentation, and the unpredictable chords that allowed the melody to flow over them and carry the power of Warwick’s performance downstream. Gerry turned off the radio. I knew that he was already thinking about lyrics for a song in which we would aspire to rise to the standard of what we later learned was the song writing team of Burt Bacharach and Hal David.”

King goes on to say: “You can hear the strength and clarity of Burt’s musical ideas and arrangements throughout his career. When he began performing his own songs in concert, his was the authentic voice of a songwriter conveying what he heard in his head directly from the muse”.

This statement draws a clear dissemination of the stark differences in the topic discussion. Specifically, “The songwriter conveying what he heard in his head directly from the muse”. Perhaps, currently an unattainable aspiration in the AI world

Another legendary American popular composer also holds a special relationship with the muse. In 1968 Jimmy Webb penned what has become an iconic piece of popular

music. Macarthur Park, while musically ground-breaking at the time, contained lyrical imagery that is still a point of discussion over 60 years later: “Who did leave the cake out in the rain”?

The world of popular music today is of course vast and diverse. Songwriters employ many tools in search of the elusive song that can bring success. It is undisputed that computers have played an enormous role in the development of this industry, but perhaps the “New Reality” where AI can take a further leap forward to unlock the mystery of the innate power of human emotion and creativity, is still some way off.

Ultimately, you can ask ChatGPT anything and it will attempt to deliver. While it can generate music, it is not a music composition software nor “a replacement for human creativity and musical know-how. As if self-aware, the bot describes its talents as “It can be used as an inspiration tool or a tool to generate new ideas, but the quality of the output will depend on the input and the specific use-case”

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