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Music Education and Artificial Intelligence: A Conversational Editorial

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adam patrick bell

Do people read editorials anymore? I will confess that I rarely do despite having written many over the past few years as editor of two other journals. I suspect I am not the only person who has acquired a "search engine mentality" by using keywords to identify and retrieve a specific article, thereby bypassing the rest of the issue in which it is contained, editorial included. That said, I think *Action, Criticism, and Theory for Music Education* (ACT) is a different animal. It has a rich history of including thoughtful and thorough editorials to introduce each issue, and as editors of this special issue on artificial intelligence (AI) and music education, we aim to follow suit by providing some helpful and engaging context to frame the seven articles that comprise this collection. To our knowledge, this is the first edited collection of peer-reviewed scholarship on AI from the perspectives of music educators, but as our call for papers indicated, AI researchers have been presenting and publishing on music education dating back at least to the 1990s (e.g., Smith, Smaill, and Wiggins 1994).

Mark Daley

During the 1990s there was a lot of interest in applications of computer science. There were a lot of computer scientists who had additional scholarly interests and collaborators who were looking to take the skills and knowledge that they had and apply them to other domains. Music education would not have been top of the list in the 1950s at the Dartmouth conference on AI—where the term AI was first coined—but by the 1990s, people were looking for applications of AI and applications of machine learning based on both interest and the fact that some applications had started to show real practical utility. Someone, somewhere had a collaborator in music education, or was interested in music education and said, "Hey, let's try this."

adam patrick bell

In that spirit of, "Hey, let's try this," the way that this special issue came about is Vincent Bates, a former editor of ACT, asked if I would consider editing an issue on AI. Initially, I questioned if I'm the person in our field to take on this task, but at the same time, I could not think of many people in music education who were doing research in this area. Coincidentally and conveniently, Ran Jiang, a doctoral student in music education here at Western University, was beginning to do research at the intersection of AI and music education.

Ran Jiang

It was during this period that I was spending time with my friend who is a database engineer, and he asked me, "What do you think of AI composition?" I recall that I responded to him with a very defensive answer because I was triggered by the idea of AI potentially replacing musicians. Thinking more deeply about my friend's question, I decided that it would be an interesting topic to research, and we agreed to collaborate. From this experience I have come to realize the need for musicians and scientists to collaborate and communicate more on this important topic.

adam patrick bell

And so here we are, musicians and scientists collaborating on this important topic. The invitation to edit this issue arrived in my inbox in October 2023, and in that

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same month Mark had just started his new role as Western University's Chief AI Officer. I suspected Mark was inundated with requests because it seemed like everyone was talking about ChatGPT and grappling with its implications for academia writ large. Undeterred, I had an inkling he might join us as an editor because in addition to being an established AI researcher, he is also a seasoned musician. Thankfully, Mark told us he could not say no to our proposal. Mark, can you provide us with some context of what seemed like a sudden swelling of interest in AI in 2023?

Mark Daley

OpenAI first productized large language models (LLMs)—GPT-3—at the end of 2022, and I had access to that as a researcher long before ChatGPT came out. For me, that was the real phase transition moment. Prior transformer-based neural nets had been really interesting from a theoretical point of view and a practical point of view, but they were toys. No one thought these are going to be able to write really good, coherent prose about complex topics for long periods of time and then GPT-3 absolutely disproved that. So that was the real turning point for me, but that was only visible to those who were active researchers in the field, and close to it. ChatGPT productized that in a way that was easy to use and brought it to the world. All of a sudden, the world goes from being vaguely aware of AI as like, "I know my credit score is kind of based on some algorithms and stuff," and "I know there's robots in *i, ROBOT* and *Star Wars*, but that's science fiction." We went from that to like, "I'm talking to my computer in natural language, and that was only supposed to happen in *Star Trek*, right?" That was a real eye-opening moment, bringing broader society into the state-of-the-art in machine learning and that caused a whole bunch of investment, which caused even further advances to happen. Now we are in an exponential improvement curve in terms of the capabilities and capacities of these models.

adam patrick bell

In framing this special issue on Music Education and AI, a topic that is ever-changing, I wonder, what is the value of an article written in 2024 that's published in 2025? Most of these articles were written sometime in 2024 and revised later that year. Since that time, for example, there's been a lot of discussion about DeepSeek.

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I am curious to hear your perspectives about what we should be taking away from these articles that discuss technologies that have changed or no longer in use.

Mark Daley

You have hit on exactly the reason why, in computer science, nobody cares about journal publications. Conference publications are all that matter because by the time something's published in a journal, it is hopelessly out of date. And that's one of the reasons I became a theoretician—your theorems are true forever. As soon as you start working with technology, the pace of change is so quick that the closer your intellectual product is to the details of the technology, the shorter the shelf life is of the research. If your research is highly theoretical, and you're asking a question in the most general possible sense, how does this technology interact with this aspect of learning or this aspect of society, that is probably going to be fairly robust to small changes in the technology, but there is a lot of papers in many literatures that are of the genre, "ChatGPT can't do X," and by the time the paper is published, it turns out ChatGPT has been able to do exactly that thing for eight months!

adam patrick bell

This is a journal that focuses on theory, and all the articles that were accepted in this issue use different theories to discuss their chosen topics. For example, theorists referenced in this issue include familiar names such as Bourdieu, Buber, and Latour, but also newer theories from related fields such as media studies. It is clear that the topic of AI draws music education researchers who do interdisciplinary and/or transdisciplinary work. The authors of the articles in this issue reference what AI technologies were available to them at the time of writing, such as ChatGPT, but I think they are more focused on the implications of the technological trends in/for/as/around music education.

Ran Jiang

In the process of editing this issue, we recognized some themes continually surfacing in multiple articles, with the most prominent being agency. It is the primary focus in Väkevä and Partti's "Generative AI as a Collaborator in Music Education: An Action-Network Theoretical Approach to Fostering Musical Creativities."

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adam patrick bell

Yes, and agency is also central in Jiang's article, "Breaking the Boundaries: Philosophical Encounters with Artificial Intelligence in Music Education," as well as in Treß's "Tracking Down the Musical Habitus of the Machine" and Dong and Younker's "A Philosophical Inquiry Into Utilizing ChatGPT Through an I-Thou Framework." In the case of Väkevä and Partti, they consider wherein collaboration is happening within this murky place of AI-generated music and who has the agency. These are issues that music educators need to grapple with continually. The articles by both Jiang and Treß dovetail with the one by Väkevä and Partti, as they provide a range of examples involving using AI technologies in music education contexts. Most of these examples concern technologies that are available to the public. For example, in your article, Ran Jiang, you explore using Mubert to create music, but you also discuss a case of someone building their own AI model to make music, which adds a less voiced perspective in music education—the programmer.

Ran Jiang

He was interested in using AI to compose music. As he was learning how to build his AI model, he read many research papers on music and technology in terms of how to build AI. He realized that if he knew more about music learning, he could build a better model. AI was like a door for him to rethink music learning.

adam patrick bell

I also appreciated reading Treß's explorations with different platforms, including Suno, Midjourney, and ChatGPT, to consider how these tools might be applied to music education. Drawing on Bourdieu's concept of habitus, Treß considers how AI "inherits classifications, dispositions, and structures in music education," which I see as an important extension of the agency theme that runs through many of the articles in this issue.

Mark Daley

The history of artistic production is filled with technology transitions, causing anxiety around agency. We invent the camera and "Oh, photography is going to kill oil painting." It didn't. It changed oil painting, and it created a whole new art form,

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but in the moment, there was a lot of fear: "Well, that's not really art. You're just pressing a button." It turns out there's more to photography than just pressing a button.

adam patrick bell

From the harpsichord to the digital audio workstation (DAW), there are many musical instruments that could be reduced to "pressing a button."

Mark Daley

There are all of these examples of technology disrupting a sense of agency, but it is a little different this time, because this is a cognitive technology. It is a technology that thinks; for most of our existence, at least in the Western world going back to the Greeks, humans have defined ourselves as other from nature because we are really smart. Now we have entities that think not exactly the way we do, but they do something that looks like cognition. When you ask Suno to write a whole song for you, that feels different than using Pro Tools, where I am still in control and manually doing everything. It feels a little bit qualitatively different now with Suno because the tool we are using possesses something that resembles intelligence, and it certainly feels like intelligence, and so that changes our sense of agency. It changes our sense of authorship. I am excited about this because I think we are going to get whole new kinds of creativity and music. To quote John Cage, "I can't understand why people are frightened of new ideas. I'm frightened of the old ones" (Kostelanetz 2002, 241).

adam patrick bell

As we explained earlier, the emergence of ChatGPT was a catalyst in bringing about this issue on AI and music education, and so we anticipated, even expected, that some of the articles would discuss ChatGPT. Dong and Younker's "A Philosophical Inquiry Into Utilizing ChatGPT Through an I-Thou Framework" discusses using ChatGPT to write a dissertation, with Dong, the student, and Younker, the supervisor, navigating this approach to academic writing.

Ran Jiang

I know the first author, Xiao Dong, and we have discussed this issue frequently. We feel like we need AI to polish our writing because English is not our first language. Dong uses AI like a tutor that is available to them anytime. I do not understand objections to this perspective. If the worry is about students using AI to generate papers from nothing, then the issue is not AI, it is the student who is not confident or happy with their writing. That might be the problem we need to discuss.

Mark Daley

When I talk to students, their number one favorite thing about using ChatGPT, or Claude or Gemini or whatever to tutor them, is the lack of judgment. The thing that comes up over and over again is, "I'm not afraid to ask stupid questions. I would be afraid to ask that question in front of my peers or to ask that question to a mentor, but I don't care if ChatGPT judges me."

I think we have to divide the world into pre- and post-September 2024. Daniel Kahneman has this great book, *Thinking, Fast and Slow* (2011)—it is folk psychology but really useful. He states that humans use two types of cognition, "System 1" and "System 2." System 1 is, I offer you coffee and a donut, and you just say, "I want the donut." You do not pull out a pen and paper and do a cost-benefit analysis. You just go with your gut. And System 2 is, I ask you, "Do you want to do a PhD in music education, music composition, or music theory?" You need to think about this and do research to make a decision. So, you go and reason. Large Language Models based on transformers that we had prior to September of 2024 were basically the machine equivalent of System 1. The fact that they could do any reasoning at all was kind of remarkable, but they were pure intuition machines. You ask them a question, you give them a prompt, and they just start talking from their gut. And once they have said something, they cannot unsay it.

In September of 2024, OpenAI released o1, which was the first commercially available reasoning model, where the model had been trained using reinforcement learning to pull out a pen and paper and work on a scratch pad before it starts answering you. That allows it to do both chains of reasoning and sophisticated mathematics. If you watch the reasoning chains, it will backtrack, just like a human. It will get really excited about an answer and be like, "Ah, you know what?

This isn't working." Then it will flip over the table and start over from scratch. That fundamentally changes a lot of things in terms of what these models are capable of. To put a fine point on it, o1 Pro, which is the compute-intensive version of OpenAI's o1 reasoning model, was used by Joshua Gans (2025), who is an economist at the University of Toronto, to write an entire paper on what happens to the efficient market hypothesis if time travel is possible. He just gave this question to o1 Pro, and it came back ten minutes later with, "Oh, here's exactly what happens. I've stated the theorems, and I've given proofs for each of them, and I've written it up into a little manuscript." He spent about an hour, most of his time, formatting the manuscript for the journal and sent it to *Economics Letters*, with an honest cover letter. It passed peer review. There are multiple examples now where there are entirely AI-generated research papers in the literature, and they belong in the literature because they make novel contributions to human knowledge. That is fundamentally different to using ChatGPT-4 to copyedit my French all the time because my grammar is not perfect. That is a qualitatively different world in which we now exist, not a hypothetical future world.

adam patrick bell

The last three articles in this issue veer more into critique. In his article, "Considering the Possibilities and Problems of AI in Music Education: The Need for Critical Literacies," Emmett O'Leary makes it clear in the title that literacy is going to be key to navigating the types of issues that music educators encounter, whether it is agency or something else. I appreciate how O'Leary, like other authors in this issue (bell; Jiang; Treß), discusses the role of algorithms and different AI models and systems because it will help music educators better understand the tools they are working with or choosing not to use.

Mark Daley

AI technology is changing so quickly; the affordances it offers and the capabilities it has are changing on a monthly and sometimes weekly cadence. So, saying, "I've developed literacy with generative AI tools," that is a very time limited skill, and a huge amount of time and energy right now has to be invested into maintaining and updating it. If you do not have a core set of competencies, it is difficult to abstract

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back to the question of, "How do I critically and mindfully employ this technology in achieving, for example, my pedagogical objectives?"

adam patrick bell

O'Leary also touches on the possibility of "deskilling and deprofessionalization" of music educators, which is something Ran Jiang alluded to earlier in our conversation when she first encountered AI in music. I think this is a concern shared by many in our profession. How might we music educators navigate this issue?

Mark Daley

With any advanced technology transition, there are always fears of labor displacement and substitution. There were people who really loved weaving by hand, and then we invented the Jacquard loom. There are still people who weave by hand, but they are exceptionally rare. Many things are done by machines now. Hand crafted human trade has been partly lost to us, and that is an inevitable consequence of technology transitions. That does not mean that fashion as an art form died, it meant that designers were now able to imagine things that would have been impossible without mechanized looms. The same thing is going to happen in any discipline, including music education. Some of what we currently value and what we love is going to turn out to be better done by a machine than by us, and it is not going to be pleasant. Suno is already a better composer than I am, and I study music composition, and that hurts, but it is reality. Is it better than Georgi Ligeti? Not to me, but that is okay. Maybe someday it will be. We are going to have to wrestle with these issues. What it means is that what we can do as a human that a machine cannot do, like interact with other humans and in an authentic way, we are going to be doing more of that, and so our competencies as educators are going to shift. And if you are excited about new challenges, this is going to be great. If you are super happy with your life exactly the way it is right now, this is going to be terrible, because a lot of things are getting disrupted.

adam patrick bell

In addition to labor disruptions, authors addressed other impacts of AI, including environmental consequences. In their article, "The Model for Convivial Tools Applied to ChatGPT," Shevock and Holster apply a model by Shevock and Bates

(2020) to the context of analyzing whether to adopt and use AI technologies by considering the following criteria: Community, Waste, Convenient/Foolproof/Accessible/Noncoercive/Repairable/Dependable, and Agency. Like O'Leary, they advocate for music educators to develop a form of literacy related to assessing AI technologies, but this article has a particular emphasis on considering the climate crisis as it relates to AI. At the end of 2024 I was reviewing literature about AI and the environment (e.g., Valdivia 2024), and the concerns that kept surfacing related to wasting water, diverting power from people that could use it for better purposes, and considering the Global North-Global South disparity regarding who benefits from using AI technologies. On the one hand, I can understand the argument that we music education researchers should "stay in our lane" and leave the environmental issues to environmental researchers, but on the other hand, I cannot separate music education from the environment and therefore commend Shevock and Holster's willingness to engage with this issue.

Mark Daley

There is a study by Tomlinson et al. (2024) that examines the carbon footprint of asking an AI both to generate a short essay versus a human and to generate an image versus asking a human. The carbon footprint of a human creator doing either text or image is about 1000 times higher than having the AI do it. So, I'm not sympathetic to the headlines about how AI is going to destroy the environment, partially because some of them are really poorly sourced and massively overstate the problem. We should be intelligent about energy use. For example, I am one hundred percent in favor of green data centers, with entirely green energy. But if humans actually care about the climate, we have to look at the numbers, and the numbers say that human artistic creation, even in 2025, is three orders of magnitude worse for the environment than AI creation. If we are actually environmental activists, we should be having AI create everything.

Ran Jiang

I agree. I think in terms of structural problems, AI can make decisions more rationally in general.

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adam patrick bell

I was assuming humans want to be artistic creators. It is a human thing to do. I don't know why we need to focus on AI producing art.

Mark Daley

I agree. I enjoy creation, right? That is part of who I am as a human being, but that creation comes at a real carbon cost. I could have used the time I spend writing a piece of music that my friend is going to perform once at a recital, for something else that would benefit society more broadly. There is a conceit in me saying I am entitled to 1,000 times the environmental footprint of AI creation because it makes me feel good.

adam patrick bell

The other hot button topic that comes to mind is intellectual property. Recently, *the Atlantic* published a website titled, "Search LibGen, the Pirated-Books Database That Meta Used to Train AI" (Reisner 2025), and sure enough, I can find my books there. I am in the system now. For music, I do not know if it has been confirmed that any of the companies used copyrighted material, but there is a lot of skepticism that it has been done because the songs sound so remarkably similar to the prompts.

Mark Daley

There is no easy solution here. As someone who is a creative, I want to have control over how the things I create get used in the world. Some of the stuff I create uses a Creative Commons license. Anyone can remix it, mash it up, do whatever they want with it. For other things, I want some agency over how it gets used; however, copyright protection has only existed for a short period of time, and it was most effective when it was really difficult to distribute things like music. It was possible for a small number of agents to monopolize the distribution of recorded music. We live in a world where information travels at the speed of light in fiber optic cable, and that is fast. And so those protections, while noble, are not practical because they cannot keep pace with the speed of change. And then you bring in the AI world and it is impractical to enforce this against an entity like Meta, that clearly has legal

counsel and knows better than to misuse copyrighted material, but the economic incentives are so monstrously huge that Meta leaders do not care. An executive made a management decision with the following rationale: "Should we be using Libgen? Probably not. I'm not going to feel good when I look in the mirror tomorrow morning, but we need that data in our model so that it's competitive. And if we don't, there will be another company or another nation-state that does, and then we'll fall behind. We're just going to do it." In sum, our society has solid, ethical, moral arguments for why we should protect creators' rights aligned with none of the actual incentives.

Ran Jiang

The copyright system is just one of the products or features of capitalism. I have heard a lot of programmers' opinions about music copyright, and their point is harsh. They say things like, "Oh, if you are good, you don't have to worry about your copyrights being validated or replaced by AI." Musicians are very uncomfortable with this situation. There is a lack of communication between tech companies and musicians, especially when the tech company makes AI models. What data do they use to build it? We non-AI scientists do not know what music they use in their database.

adam patrick bell

This is a topic I discuss to some degree in my article in this issue, "Pedagogy of the Prompt: Music Education, Artificial Intelligence, and Big Tech Magic," because like O'Leary and Treß, I wanted to understand how AI music-making models and systems work. This led me to consider how prompting, not just with text but with music, too, will be an important skill to understand, learn, and teach in the profession of music education. Additionally, this inquiry led me to a critique of Big Tech, particularly Google, because these companies present and promote their technologies as magic. For me as an artist, I do not want to save time making music. I want to put more time into making music.

Mark Daley

I think you have hit on something deep and really human here. A product manager at a Big Tech company is in that Silicon Valley mindset of, "I am here to make a

product to make your life easier." No one will use Dropbox if it is terrible, but if Dropbox just works and it is seamless and it's easy, then people will use it. That mindset makes sense when you are selling products to consumers, but if you are a creative, such as a composer, the struggle is almost the point. Yes, I could create beautiful music just by pressing a button. I kind of can with Suno or Udio, but I get zero joy out of that. Psychologist Mihaly Csikszentmihalyi (1990) created the theory of flow, where the level of task difficulty and level of competence perfectly match. He has a TED talk from about 20 years ago where he explains that if you want to have a happy life, spend as much time as possible in a flow state (Csikszentmihalyi 2004). If Google gives me a tool that can create music when I press a button, then I am not in a flow state. I am not being challenged. I want that grind. I want that struggle. I want to suffer from my art, and other human beings want to know that I suffered from my art too. So, I think what we are actually going to foster here is a massive dissociation between people and purely commercial art. This is new because commercial art in the 1960s was still art, right? Human generated art and purely commercial art made by pressing a button is easy, and the product manager is happy, versus fine art, where none of the art on the walls of my house is AI generated because it is not meaningful. The art that is meaningful to me has provenance, and so I think that these easy-to-use tools will just further exacerbate that divide between purely commercial art for a non-artistic purpose and fine art for the purpose of being art that communicates to other humans.

adam patrick bell

I don't get it for music education. What is the point of a using an end-to-end song-making application?

Mark Daley

What is exciting for me is not using these tools as "press a button, get a song out," is a new set of affordances with which I can be creative.

Ran Jiang

The existence of AI reminds that you feel when you create. I am a classical pianist, and the education I received when I was younger was focused on how you contribute to the field of music, and less about how you feel. With AI, teachers need to ask

themselves, what is the purpose of learning music if there are so many AI tools that can just replace you in terms of music creation? The key is that musicians enjoy the process of making music. This is something that might need to be constantly reiterated or reinforced when we feel the threat of AI on music education.

adam patrick bell

Where do we go from here? I have learned a lot by engaging with the ideas and arguments of my colleagues who have contributed articles to this issue, but it is not lost on me that we are only scratching the surface.

Ran Jiang

We need to continue to work across disciplines. Our profession would benefit from having more conversations like the ones we have had in the process of compiling this issue.

Mark Daley

I think we are about to enter a world in which the demand for music education is going to really go up. There are two examples of end-to-end AI generated papers, one in economics and one in computer science. These are, traditionally, disciplines we advise young people to go into: "Oh no, don't go into visual art. You'll never get a job. Study economics and you can work at a bank or study computer science, you can get a job as a programmer." I am not saying that at some point careers in economics and computer science will be totally disrupted, but they are actively being disrupted.

What does it mean to live a good life as a human being? Fortunately, humanists have been asking that question for a long time, and artists have been giving us answers for a long time. I think there is going to be a large cohort of humans who say, "Well, no point in being an engineer, and I didn't really love it that much anyways." Some people just love engineering, and they are going to do it because that is what makes them happy. But there are going to be people who want to get into Csikszentmihalyi's flow state. And for a lot of humans, music can do that. I foresee a renaissance in arts and humanities, as humans start to have true agency in how they spend their time and how they spend their lives, rather than just, "Well, I have to work to live."

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