

Roundtable:

The future of culture in more-than-human worlds of being

AI Composers and Cyborg Performers: More-than-human Creativity in Music

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This article examines the integration of artificial intelligence in music, exploring its potential to redefine traditional creative boundaries and establish a more-than-human co-creativity. It discusses theoretical frameworks by Margret Boden, Donna Haraway, and Bruno Latour, presenting AI not just as a tool, but as an active creative participant. The paper addresses ethical concerns about AI's role in music, including authorship and copyright, advocating for a reevaluation of musicological frameworks to accommodate the evolving collaborative landscape of human and machine creativity.

Introduction

The tremendous advances in artificial intelligence (AI) development over the last decade have given new momentum to the old question of creativity in machines and impressively demonstrate the potential of more-than-human co-creativity. Margret Boden (1991) critically addressed this by positing that the complexities of human brain function, and consequently creativity, can be computationally modeled, thereby hinting at the potential for AIs to achieve genuine creativity. This



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argument lays the groundwork for moving beyond attempts to simply emulate human creativity towards fostering an environment where AI can develop its own forms of creativity.

This paper explores the different roles of AI in music and looks for more-than-human influences in these processes. It challenges traditional anthropocentric views of creativity and music by acknowledging the creative potential of AI as a collaborator in the musical domain. By exploring the influences of AI in music, this article aims to extend the scope of artistic creation and collaboration, advocating for a more inclusive understanding that encompasses nonhuman agencies.

The development of AI creativity invites parallels with evolutionary and cultural processes, where aesthetic preferences are not just byproducts of human cognition but are deeply rooted in survival and reproductive advantages (Dissanayake, 2008; Prum, 2018). This evolutionary perspective enriches the discourse on AI creativity, proposing that, like in biological entities, a set of unique aesthetic values and creative expressions could emerge in AIs. Drawing on the concept of cultural evolution (Dawkins, 1978), the co-evolutionary potential of cultural artifacts within virtual hybrid societies is examined, proposing a departure from human-centric artistic decision-making towards a paradigm where AIs are viewed as equal partners in creative endeavors.

Donna Haraway's seminal work, "A Cyborg Manifesto," (Haraway, 1991) challenges the distinct boundaries between human, animal, and machine, proposing instead a hybridized identity that transcends these categories. This concept is particularly relevant to discussions of AI in music, as it compels us to consider AI not as mere tools or extensions of human creativity but as entities capable of influencing and contributing to the creative process in their own right. Bruno Latour's (2005) Actor-Network Theory (ANT) further expands on this idea by emphasizing the agency of nonhuman actors in social and technical networks. In the context of music, ANT encourages to view musical creations as the product of a network of influences that include both human and nonhuman actors, such as AIs and thus questions traditional notions of authorship and creativity, suggesting that musical works are the result of collaborative processes that extend beyond human input. Moreover, the cyborg metaphor highlights the need for bespoke interfaces to facilitate these artistic dialogues, as adapted in the author's previous research with the concept of "Musical Cyborgs" (Trump, 2021).

AI in Music: Beyond Human Creativity

Algorithmic processes have played an essential role in music production even before the advent of AI. Pioneering examples of this are the works of Lejaren Hiller and Leonard Isaacson in their *Illiac Suite* for string quartet 1957 or composer and researcher David Cope, who developed Experiments in Musical Intelligence (EMI), an AI system capable of composing music in the style of classical composers. Cope's concerts, where live musicians perform alongside EMI's compositions, blurred the lines between human and machine creativity, offering audiences a unique, hybrid form of musical expression.

In recent years, the application areas have been greatly expanded through the integration of Artificial Intelligence (AI) in music. Beyond composition, AI has made significant strides in live performance. AI systems can now interact with human musicians in real time, listening to and responding to the music being played. These interactions can range from AI systems providing accompaniment based on the style and tempo of the human performer to more complex collaborations where AI algorithms generate counterpoints, harmonies, or even improvisations that challenge and inspire their human counterparts.

Aesthetic Autonomy

The aesthetic decisions made by AI in these projects often defy human conventions of beauty and form, showing that AI can indeed develop its own unique style. This raises fascinating possibilities for the future of music, where AI-generated compositions and performances are not just novelties but integral parts of the musical landscape, appreciated for their own intrinsic qualities. Colton et al. (2020) argue for the appreciation of an independent creative quality rooted in a “machine condition” derived from individual experiences and conditions such as the machine’s own hardware, encounters in computer networks or specific perception through sensors.

The aesthetic evaluation of AI-generated music confronts traditional notions of artistic value and beauty. AI-created compositions often defy conventional musical structures and expectations, leading to a polarized reception among audiences and critics. The emergence of “alien” aesthetics in AI music necessitates a more inclusive and expansive aesthetic framework that can accommodate AI’s novel expressions and experiences.

The assessment of creative autonomy in AI often employs a human-centric lens, with Bown (2012) explicitly addressing how adaptive creativity is gauged through human value systems. This approach, however, may inadvertently downplay the aesthetic contributions of AIs, as traditional evaluation methods like the Turing Test—where a human attempts to distinguish between human and machine by asking questions in a virtual chat (Turing, 1950)—may not adequately capture the qualities of AI-generated art. On the contrary, this approach even aims to hide the contribution of AIs to the creative process and to produce as perfect a simulation of human creativity as possible. This method, as critiqued by Colton et al. (2014), could even marginalize AI creativity from being a “serious” artistic practice.

Margret Boden (1991) advanced the notion that creativity in artifacts should not only be measured by novelty but also by the value they bring, raising the question of how AIs could develop a valuation system independent of human biases. The evolutionary perspective on aesthetics, as seen in the development of musicality, suggests that aesthetic preferences may have arisen from survival and reproductive advantages (Dissanayake, 2008), with mate selection playing a significant role in the evolutionary trajectory of aesthetic preferences (Prum, 2018). This evolutionary backdrop prompts a fascinating inquiry into how AIs might develop their own standards of beauty and value, potentially through analogous mechanisms of selection and adaptation.

Ethical Considerations

One of the primary ethical dilemmas in the realm of AI-generated music revolves around the concepts of authorship and ownership. Who holds the copyright when a piece of music is composed by an AI? Is it the creators of the AI, the AI itself, or the public domain? Traditional copyright laws, designed to protect human creators, fall short of addressing the complexities introduced by such more-than-human collaborative settings. The case of AIVA (Artificial Intelligence Virtual Artist), an AI composer recognized by SACEM (Society of Authors, Composers, and Publishers of Music) in Luxembourg, highlights the legal and ethical challenges in recognizing AI-generated works within existing copyright frameworks.

Moreover, the involvement of AI in music creation raises questions about the ownership of the creative process and its outputs. The collaborative nature of human-AI musical projects necessitates rethinking ownership models, potentially leading to innovative approaches that reflect the shared creative agency between humans and machines.

The ontological status of AI as living entities remains a subject of debate (Inayatullah, 2001), alongside the unresolved discourse on the moral agency of machines, which is often obscured by its conceptual ambiguity (Gunkel, 2012). Adopting a decentralized agency framework aligns with Latour's collaborative theory, challenging the conventional attribution of credit and blame in human-AI interactions. Galanter's (2020) call for ethical recognition of AI entities in artistic creation marks a critical step towards acknowledging their contributory value and rights.

As AI systems become increasingly autonomous in their creative capabilities, the question of their rights as creative entities emerges. While the notion of granting rights to AI might seem premature or even anthropomorphic, it invites a broader discussion on the ethical treatment of nonhuman actors and their contributions to culture. The debate touches on issues of recognition, respect, and possibly even compensation for AI-generated artistic works, challenging us to consider the moral implications of our evolving relationship with technology.

Reconciling the ethical and aesthetic considerations of AI in music requires a multidisciplinary approach, incorporating insights from philosophy, law, technology, and art. By fostering dialogue among these diverse fields, we can develop more nuanced understandings and policies that reflect the complexities of AI's role in music. This includes crafting copyright laws that recognize the collaborative nature of human-AI creations, establishing ethical guidelines for developing and using AI in artistic contexts, and promoting an aesthetic openness to the evolving kinds of music in more-than-human co-creativity. In navigating these ethical and aesthetic considerations, we stand at the threshold of a new era in music—one that embraces the creative potential of AI while thoughtfully addressing the challenges it presents. This journey requires questioning, adapting, and expanding existing ethical and aesthetic frameworks.

Toward a More-than-human Musicology

The emergence of AI in music creation and performance necessitates a reevaluation of the traditional frameworks within which musicology has operated. A more-than-human musicology invites us to reconsider the roles of composer, performer, and listener in light of the creative contributions of non-human entities such as AI. This shift is not merely academic; it has profound implications for music education, performance practice, and the broader music industry.

In a posthumanistic framework, the composer's role is no longer confined to human agents. AI systems, through their capacity to generate original compositions, challenge the notion of authorship and creativity. This raises questions about the value we assign to the origins of musical ideas. Is a melody less meaningful if conceived by an algorithm? Similarly, the role of the performer expands to include AI systems capable of real-time improvisation and interaction, suggesting a collaborative partnership rather than a hierarchical relationship between humans and machines.

The listener's role also transforms in this context. Audiences are now tasked with engaging with music that is, in part or whole, the product of nonhuman creativity. This necessitates a broader appreciation for the aesthetics of music generated in collaboration with AIs, which may not always conform to human expectations of musicality but offers new and unexplored auditory experiences.

Integrating AI into music also has significant implications for education and practice. Music educators are challenged to incorporate these new technologies into their curriculum, teaching students not only the skills to perform and compose with traditional instruments but also how to interact with and understand AI as a musical tool or even artistic partner. This includes looking into the ethical implications of using AI in music, such as copyright and ownership issues, and fostering an environment that encourages experimentation and collaboration with nonhuman agents.

In performance practice, musicians are increasingly exploring ways to integrate AI into live performances, creating hybrid ensembles of humans and machines. This necessitates a rethinking of the skills required by contemporary musicians, who must now navigate both the artistic and technical challenges of performing with AI.

Outlook

This article presented different concepts and theoretical frameworks of how the creative agency of AIs in music can be considered as a more-than-human capacity. Looking ahead, the intersection of AI with music suggests developments that may further blur the distinctions between human and machine creativity. As AIs potentially evolve to encompass emotional capacities and engage in artistic expression more autonomously, the integration of technology, nature, and culture, as envisioned by Rosi Braidotti in the concept of *medianaturescultures* (Braidotti, 2016), becomes increasingly pertinent.

This advancing landscape raises critical ethical and philosophical questions regarding the nature of AIs as creative entities. The discussion extends to whether AI-generated creations should receive similar cultural recognition and rights as those granted to human-made works. These considerations necessitate reevaluating current frameworks as they pertain to creativity, authorship, and intellectual property, urging an interdisciplinary approach to policy-making and ethical guidelines in the arts. As we venture into this complex domain, it is essential to develop robust frameworks that recognize and accommodate the transformative potential of AI within more-than-human musicology, potentially reconfiguring societal norms and cultural practices in profound ways.

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