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Music AI's Potential Impact: Scoping the terms of the debate about value

Oliver Bown¹

¹University of New South Wales

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ABSTRACT

The debate around the impact of AI on creative industries such as music has become increasingly mainstream as innovations in creative AI technologies appear apace, and companies are seeking commercial opportunities in the field. Often these debates are only loosely grounded in holistic thinking about value. Using academic frameworks for understanding value in the arts, we can think more formally about AI's impact on different arts stakeholders and practices. This paper draws on critical work on value in the arts, applied to current debates about AI's impact on music, illustrated by recent online discussions. It concludes that equal attention needs to be paid to the intrinsic as well as the instrumental value of creative production, and that arguments around commercial and professional aspects of music need to be expanded in terms of societal benefits, and with an awareness of the social context of competitive individualism and its alternatives.

Introduction

The public debate about the potential impacts of music AI (here treated as a very broad term to include diverse generative music technologies, advanced or simple) has been ongoing since at least debates about the work of David Cope in the 1990s [1], arguably back to the Illiac Suite work of 1947 [2], and further still to the writings of Ada Lovelace, yet are also integrated with a far wider, ongoing debate, about music's social and economic value. A new generation of advanced generative AI tools has brought the debate to a new intensity, with more voices bringing a wider spread of knowledge, worldviews and concerns. Media articles discussing AI's impact on music are now daily. As an example, an overview in Rolling Stone comments: "The rate of advancement is a bit blinding. The big purveyors of creative toolsets are already moving fast to deploy this functionality ... we are about to see an ability to promote the computer from tool to collaborator"[3].

Dominant questions in these recent debates have included: whether musicians will be put out of work; issues of copyright such as whether musicians should be remunerated when their work is used to train models, or when their style is imitated; issues of data privacy; issues of platform monopolies; and the environmental impact of running massive machine learning (ML) models [4][5][6][7]. Whilst these debates progress with respective experts in copyright, data privacy, AI ethics and music economics, less attention has been paid to questions of the "intrinsic" value of the arts, their role in personal and cultural wellbeing, appreciation, pleasure and shared experience. In addition, public debates that centre on professional music can fail to fully acknowledge the scope of stakeholders beyond professional music practitioners themselves, including all amateur and casual music creators, and all music listeners [8][9][10][11][12].

The purpose of this paper is to draw on literature that helps scope and structure this broader debate, and then to offer some initial comments about how AI innovation plays into this framework. This may be of value to stakeholders considering the impact of AI on music, such as music AI startups which may wish to develop socially informed guiding principles. A series of short case studies, drawn from publicly available online data,

is used to capture some of the trends in thought in this area, discussed in terms of how they fit into the values framework.

Whilst drawing concrete proposals from this formative, ambiguous, complex and understudied area is unrealistic, this paper attempts to outline some discussion themes in need of attention and development in the music AI community. These are as follows:

- The consideration of AI's threat to the music profession needs to be widely expanded in terms of societal benefits. This needs to incorporate questions of how amateur and casual arts practices are supported, and how arts consumption is treated. Such topics should feed into related debates about professional copyright and revenue.
- In particular, attention should be paid to the present cultural milieu of competitive individualism in Western societies, and its noted detrimental effects, in comparison to other cultural contexts in which arts practice may occur.
- Within this we may wish to give special attention to the potential importance of instrumental practice, and more generally individual technical practices, and related concepts of creative self-efficacy and flow, with a strong focus on amateur activity.
- There is good reason, and great potential, to develop more detailed programs of research into AI's relationship to intrinsically valuable aspects of music creation (attention, pleasure, cognitive growth), and social topics including social bonding, shared experience, and social identity. In these cases, there are credible potential arguments for both benefits and threats from AI, and great potential for the unpacking of assumptions and connected arguments.
- The dominance, capability and limitations of startup ecosystems and tech giants in delivering such applications of AI to music needs to be subject to scrutiny, led by the AI music research community.

The value of the Arts

Although the literature on the value of the arts is vast, for the sake of focus this paper draws closely on one specific study, McCarthy et al.'s [\[13\]](#) extensive survey of scholarly work on the value of the arts, commissioned by the RAND corporation. I also consider some other foundational recent work on value in music, in particular Hesmondhalgh's [\[14\]\[15\]\[16\]](#) and Gross & Musgrave's [\[17\]](#) work situating music's values in wider socioeconomic frameworks.

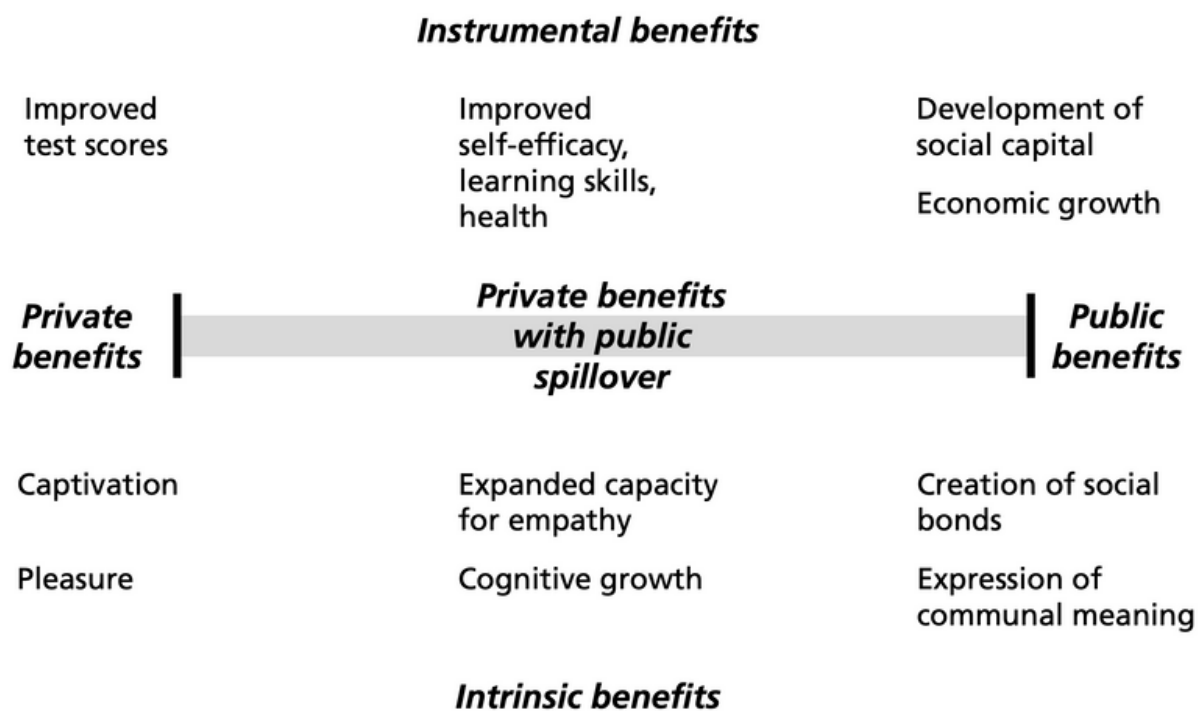
Gifts of the Muse : Reframing the Debate about the Benefits of the Arts

McCarthy et al.'s [\[13\]](#) major scoping of the various value cases made for the arts, as used by arts bodies, governments and the like, is representative of a pluralistic view of that value. Central to their analysis is the distinction between instrumental and intrinsic benefits, and one of their core arguments is that, although harder to evaluate, intrinsic benefit arguments were being left behind in arguments about the value of the arts, to detrimental effect. "Intrinsic benefits" they explain "refer to effects *inherent in* the arts experience that add

value to people's lives" (my emphasis). Instrumental benefits bear their effects outside of the art activity itself. For example, benefits to mental health or cultural cohesion are not *inherent* in the art activity.

"An argument for the arts that is based entirely on instrumental effects", they claim, "runs the risk of being discredited if other activities are better at generating the same effects or if policy priorities shift." But "intrinsic benefits are the principal reason individuals participate in the arts, and the intrinsic effects can produce public benefits of their own." Thus, both sport and art can benefit mental health and cultural cohesion, but each also has its own distinct benefits too.

In their scoping, instrumental benefits can be cognitive, attitudinal and behavioural, health related, social (e.g., promoting social interaction amongst community members, creation of cultural identities), and economic. Intrinsic benefits include captivation, pleasure, an expanded capacity for empathy, cognitive growth, the creation of social bonds, and the expression of communal meanings. Note that on some of these points, there is a complex and entangled boundary between instrumental and intrinsic effects, such as between cognitive growth and mental health benefits, and between strengthening social identities and the creation of social bonds.



McCarthy et al.'s map of benefits from the arts. The horizontal axis distinguishes public and private benefits, and the vertical axis distinguishes intrinsic and instrumental benefits. See text for more details. Image credit: McCarthy et al. 2001, published with permission from RAND Corporation.

From the themes above, for brevity, I focus on those for which AI's impacts might be more uncontrolled, and develop these with reference to other authors. By this I mean that, when it comes to art therapy or educational practices, environments can be controlled and therapists and curriculum designers have the power to steer

towards or away from the use of AI depending on their evaluation of its benefit, whereas when it comes to AI practices in the wider community of amateur music making, for example, there are no such gatekeepers.

Thus I briefly discuss McCarthy et al.'s comments on the instrumental effects: cognitive and behavioural effects, mental health, community-level social effects such as promoting social interaction amongst community members and the creation of identity; and the intrinsic effects: captivation and pleasure, capacity for empathy, the creation of social bonds, and the expression of communal meanings.

On cognitive and behavioural effects, the evidence they report supports the idea that practicing art can have broad benefits. Specifically, however, they note that the strongest *evidence* of benefits is in the performing arts.

Mental health research is an area that has seen growth since McCarthy et al.'s publication and we can look ahead to later work. Davies et al. [18] report significant correlation between positive mental health and arts engagement, despite correcting for social background factors. However, this study does not show causality (i.e., it could be that people with better mental health engage more in arts, rather than vice versa). In a survey study, Ole Bonde et al. [19] report that amateur musicians experience significantly greater positive health benefits than other groups, whereas professional musicians can have health issues. Active involvement in music also reinforced the *belief* in music's health benefits.

Moving to social instrumental benefits, McCarthy et al identify two elements:

- “Promotion of social interaction among community members, creating a sense of community identity and helping to build social capital at the community level.
- Empowerment of communities to organize for collective action.”

They note that such effects are commonly used in arguments supporting the arts, albeit with ambivalent supporting evidence. Critically, in the context of arts funding they highlight the danger of failing to acknowledge how such community effects can be achieved through other activities besides arts (e.g., sport or neighbourhood groups). This motivates their call to treat intrinsic benefits of the arts more seriously and rigorously.

McCarthy et al.'s central point, then, is that *intrinsic* effects are both unique to the arts, and present a series of intuitively apparent benefits that tend to be relegated in discussions of the arts' benefits, because they are more ambiguous, and operate on slower and larger scales that are harder to evaluate. Consequently, their survey of literature moves from evidence that is based in formal, often quantitative social and psychological studies, to arguments primarily found in humanities scholarship. Thus captivation and pleasure, they imply, need to be separated from knock-on mental health benefits, and awarded their own value: one may gain pleasure from a piece of music without it tangibly impacting one's life in other ways.

The wider point is that rhetorics of policy, often strongly utilitarian and grounded in economics, find little place for such conceptions of value, yet there is no reason why accounts of subjective experience shouldn't be used to speak to this value. McCarthy et al. may struggle to acknowledge a potential equivalence with their earlier point about intrinsic social benefits, here: other things like science, hiking, computer games and everyday conversation also drive captivation, pleasure and cognitive growth. But the claim, albeit still speculative, would remain; there are things the arts may teach us that we cannot learn in other ways.

McCarthy et al. go on to identify as “intermediate” the intrinsic effects of cognitive growth and the expanded capacity for empathy, meaning that they lie between personal/private effects and social/public ones. By their own admission the case for value here gets more speculative still, yet remains central to many people's lived experience of the arts.

Moving towards more social intrinsic benefits, the growth of social bonds, manifest in shared experience, is considered. “The arts, for example, provide the means for communally expressing personal emotion.” This extends to political expression between groups: “art also introduces new voices into the community, voices that can redefine the fabric of the culture. Jazz is a modern example of a form of music that emerged as a powerful voice of a marginalized community and evolved into a quintessentially American style of musical expression.”

An Expanded View of Value

The call to better attend to the intrinsic benefits of the arts is echoed in the wide-ranging contribution of David Hesmondhalgh to thinking around value in music. For Hesmondhalgh [15], one issue concerns how we understand (often reductively) musical ‘labour’ within wider discourses of labour and value. Hesmondhalgh raises the important point that whilst undesirable economic situations do eventuate for creative workers, such as the production of ‘free labour’, it would be simplistic to attend to such issues without taking into account the intrinsic pleasure of art making:

“Without denying for a moment the fundamental importance of a living wage, it seems dangerous to think of wages as the only meaningful form of reward, and it would surely be wrong to imply that any work done on the basis of social contribution or deferred reward represents the activities of people duped by capitalism. *Actually, it seems to me that this would run the danger of internalising capitalism's own emphasis on commodification. We have to hold on to the value of work done for its own sake, or as ‘gift’ labour*” [15] (emphasis added).

In related work [16], he opts for “human flourishing” as broadly capturing the more-than-economic value music can bring, most obviously through aesthetic experience; “to consider music's ability or otherwise to enhance people's lives, requires engaging with the significance of the domains of art and aesthetics in modern society”.

This results in five proposed dimensions of musical value that we can associate with McCarthy et al.'s personal intrinsic concept of value:

- “Music can heighten people’s awareness of continuity and development in life”, with powerful links to memory.
- “Music might enhance our sense of sociality and community”
- “Music can combine a healthy integration of different aspects of our being, combining reflection and self-awareness with kinetic pleasure”.
- “Music can heighten our understanding of how others might think and feel”.
- “Music is potentially very good at being a practice in the Aristotelian sense” - emphasising “the internal rewards of achieving standards ... rather than ... money, power, prestige and status.”

Furthermore, in [14], echoing McCarthy et al.'s domain of social intrinsic value, his work examines how aesthetic experience can influence senses of community, and potentially of social difference.

Can Music Make You Sick?

A more recent development has been work that focuses on negative mental health issues associated with professional arts work. A key text is Gross & Musgrave's [17] *Can Music Make You Sick?*, in which they develop a set of associations between musicians' mental health, the precarity (both economic and social) of their work, and the contemporary, digital, capitalist context in which music activity plays out, for which a central concept is the “logic of competitive individualism”.

Gross & Musgrave point to, as key to musicians' precarity, a contemporary myth grounded in “Web 2.0 rhetoric which speaks of digitalisation's democratising potential; a transfer of power ... to the musician,” a “fantasy of participation” and a “techno-positivist encouraging of ‘taking part’.” These concepts, as well as concepts of luck, they argue, hide the reality of economic, class and racial power structures. The implication is people are being led to believe there is a fulfilling and financially stable future when there is no certainty of this.

Additionally, the challenges musicians face of building a personal brand impact social relations. “Not only is precarity financial in terms of economic survival, or experiential in terms of the unpredictability of the music industry, but also psycho-social whereby musicians' very human relationships with each other are rendered fragile.”

Further interrogating standing concepts of music's value, Hesmondhalgh [20] challenges a dominant conception that “sees music primarily as a positive resource for active self-making” where he sees as relying on “an overly optimistic understanding of music, which implicitly sees music as somehow independent of negative social and historical processes.” Noting that much of 20th Century popular music strongly express

notions of personal autonomy, Hesmondhalgh asks how music may have become “bound up with the incorporation of emotional self-realisation, authenticity and creativity into capitalism”.

In a similar vein, McRobbie [21] considers how creative work has been caught up in stressful acceleration, increasingly following “the neo-liberal model, governed by the values of entrepreneurialism, individualization and reliance on commercial sponsorship”.

Emerging Public Debates on AI

I now consider how the expanded critical scope provided by these works can help enrich how these concerns play out across selected contemporary debates in music and AI. Three cases are taken from publicly available discussion on the internet, but I begin with a brief contextualisation with one of the more prominent historical debates about machine generated composition.

Douglas Hofstadter was a prominent voice in the earliest public debates on music and AI. In his 1979 book, *Gödel, Escher, Bach* [22], he wrote: “Music is a language of emotions, and until programs have emotions as complex as ours, there is no way a program will ever write anything beautiful. There can be ‘forgeries’ — shallow imitations of the syntax of earlier music — but ... there is much more to musical expression than can be captured in syntactical rules.”

Yet after experiencing David Cope’s work in the 1990s, Hofstadter [1] conceded that perhaps ‘forgeries’ could contain emotional content after all. Why, after all, couldn’t a model of a richly complex expressive emotional landscape be a great mimic? And if it did good mimicry, would we be guilty of essentialism if we said that this wasn’t *real* music? Hofstadter’s shift parallels a general shift in public stance as knowledge in both AI and psychology has evolved, to one in which there is nothing quite clear cut about ‘having emotion’.

This debate is back in full. In a recent takedown of a ChatGPT-generated song written in “the style of Nick Cave”, songwriter Nick Cave is more adamant [23]: “ChatGPT may be able to write a speech or an essay ... but it cannot create a genuine song”, which is a “blood and guts business”. This is an appeal to a stronger essentialism, claiming that his humanness is key to his songwriting. He is right to say that current LLMs cannot reflect on any lived experience, and makes a convincing case that this *should* matter, even if we can’t hear the difference (though we clearly can). One could say that just as current LLMs do not have any predilection to truth statements due to their statistical nature, nor would one expect their reflections on lived experience to be “true” (Cave appeals to what is “genuine”).

Cave also makes a more subtle point: “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”. This represents a wide concern with AI’s potential false promises of achievement, and the zealotry to roll out technologies as applied products with detrimental impacts. A swathe of AI chatbots now front customer experiences, with the promise that they can

understand customer requests, yet their widespread adoption primarily serves cost reduction, not quality of customer experience. To say such chatbots “work” depends on whom the work is for.

Another, more subtle example of similar sentiments comes from a recent Twitter thread. A Master’s student at ETH Zürich, Flavio Schneider, working in music AI, posted examples from a music text-to-audio generation system he was developing [24]. Most of the replies to the post are enthusiastic and congratulatory. However, later on in the thread, the tone shifts to include derogatory and critical comments: “six months of your life wasted, that’s insane”, “I hate this”, “soo who’s songs are you stealing to make this useless vapid tech again”, “Wow this sounds like shit”.

Whilst some of these negative comments are specific about rights to training data or musician’s jobs, the tone of the musical put-downs belie opinions about the nature of its creation. There is an insinuation of arrogance in the researcher, as if in his joy in the results, he is ready to conclude that music is a solved problem, placing him above musicians. Alternatively, the insinuation could be of naivety, whereby he thinks the results are better than they are, or of stupidity or betrayal to the art of music, since he could have used his time to just create (better) music himself.

A counter view comes from a wide field of artists beginning to explore AI in their practice. For example, the acclaimed AI music practitioner Portrait XO describes her process in a 2022 interview [25]: her team “created this AI model that learned how to sing like me ... that gave me 10 hours of new audio and I basically picked ... through. ... I allowed the process of just surrendering to what I was hearing to guide me on a new way of songwriting. ... I played this game of fill in the blank with this other version of myself.” Within this process she highlights the creative value of the “unpredictable nature of AI being used this way”.

Portrait XO also describes how the tone has changed in the conversation she is having with people, from people being more concerned about AI replacing composers, to more interesting questions about what you can do with the technology.

Discussion

It is not straightforward to understand exactly how such statements of value concerning AI map to frameworks of value in the arts, such as McCarthy et al.’s. A first thought is to consider how different actors’ frameworks for thinking about value both share overlaps and have points of difference. In McCarthy et al.’s terms, we could say that intrinsic aspects such as captivation and cognitive growth are points where attitudes about AI fissure: from a pro-AI perspective, experiments with AI are *interesting*, and potentially creative and conceptually valuable material as part of an experimental practice, independent of the quality of sound or music produced. Portrait XO, for example, is in good company in wanting to explore the glitch, eeriness and bizarre qualities of algorithms as artistic material. She shares in one of the most commonly reported uses of generative AI, as a stimulus for creativity, a scattergun, unusual and glitchy co-creator, a seeming pseudo-agency.

Like Portrait XO, the Nick Cave fan and the music AI researcher seemingly make no claim to the human-equivalent and production-ready performance of the systems. They see the AI output as offering curious interest, worthy of debate, even enlightening in its mistakes. Yet implicit in the cited negative tweets is a rejection of the idea that AI music systems and its related research might have experimental value and offer creative stimulation.

Is this fissure around AI music's potential to be aesthetically and cognitively valued directly related to perceptions of AI music practices themselves, or those issues surrounding AI's use: its potential threat to creative revenues, or possible exacerbation of the corporatisation or commodification of music? In these public debates, there appears to be great potential for conflation of these issues. Hostility towards AI may itself be intrinsic, or grounded in wider socio-political concerns. Most prominent is the perception that the economic conditions that support big tech and startup cultures, which may in turn be aligned to those conditions which make professional creative work challenging, are driving continuing commodification and platformisation of musical practices. AI music practices may thus become threatening because, driven by profit-seeking motives, they do not simply grow organically, but get pushed on us, and more specifically, they facilitate this corporate push (e.g., in the guise of “democratising” creative production). Unlike prior waves of music technology innovation, a threat here is that music production practices, following distribution and communication, become inescapably drawn into a platform economics.

But whilst this threat is real, opposition to AI music practices may also be read at face value. It is worth noting that a “bias” by audiences against works created by machine processes is a long standing topic of study in computational creativity. A paper by Moffat and Kelley [26] reported that audiences had a lower rating of a creative work if they knew it was made by AI, than if they didn't. The result is in part contested by later studies by Pasquier et al. [27] and Norton et al. [28], but without conclusion.

It will be important to unpack such potential views, and situate them in relation to both McCarthy et al.'s theme of cognitive growth, and Hesmondhalgh's of human flourishing, and in doing so reveal underlying socio-political tensions. Essential to this is to determine to what extent such issues are unique to AI, isolated from the panoply of technologies it is part of. We have cultures of techno, drone and other electronic and art musics that are already devoid of lyrics and live instrumental performance, and are even purposefully robotic, yet still considered valuable by the artistic communities that inhabit them.

Much of the public debate around the threats or benefits of AI is therefore in familiar territory. Proponents of AI, such as Portrait XO and the duo of Matt Dryhurst and Holly Herndon [29], have expressed the view that it is just another form of expression that is misunderstood by its detractors, like punk, techno or rock and roll.

This connects with the specific attention in both McCarthy et al.'s and Hesmondhalgh's analyses to the kinetic value of performative arts for cognitive development and wellbeing, alluding to a more complex cognitive-physiological-social conceptualisation of music's value. What if something is lost when we separate music

making from instrumental performance? Related to this, historically, theorists of the evolutionary and developmental psychology of music have placed great emphasis on the importance of physical entrainment [30], with a possible link between musical entrainment and language learning [31]. Thus whilst Cave's comments are directed to a song's lyrics, they allude to other important forms of social and emotional connection that we gain through playing together. A related threat of AI, therefore, can be perceived in its potential to extend an already ongoing diminution of the educational focus on learning to play an instrument.

Cave's comments extend into the theme of the capacity for empathy, and also more tenuously the social themes of bonding and community expression. If listening to lyrics about lived experience, listening to live musical expression, or singing and playing together have the capacity to build empathy and offer key life supporting experiences, another threat appears in how the use of AI might "banalise" that kind of emotional and critical cultural engagement through song.

It is far harder to engage with the social (both intrinsic and instrumental) aspects of music's value in this debate as it is harder to perceive how technologies shift behaviour at a macrosocial scale. The competitive individualist framework drawn on by Gross and Musgrave, and Hesmondhalgh's challenge to the dominant positive discourse on music, help push a broader scope. Whilst AI may generally be perceived as continuing a progression of reconfigurations of music through technology under capitalism, it could also conceivably relieve or exacerbate some of the stated negative aspects of contemporary music practice. Whilst it is likely to reduce work through automation, it could equally increase engagement, as in amateur and casual music practices, through creative empowerment (often described inappropriately as "democratisation"). Meanwhile, it remains unclear what effect, if any, AI might have on communal expression and social bonds: how AI is perceived to potentially threaten these qualities of music is another area warranting further study.

These remain open questions that need to be addressed by strong interdisciplinary research programs that can connect transformations in technologies with social effects. But, much like the importance of attending to the intrinsic as well as instrumental value of music, an immediate goal for academic researchers working on technical problems in AI music could be to reclaim the idea that AI music is itself a practice with intrinsic value, offering fascination and interest, and the potential to reveal new insights into music, human cognition and human culture. To do this means at least reasserting critical academic scrutiny over forms of commercial practice which prioritise economic competitiveness over social benefit, and aligning with critical research that helps understand how innovations in AI music are being deployed via startup ecosystems and competition amongst corporate giants.

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