Reframing "Aura": Authenticity in the Application of Ai to Irish Traditional Music

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Abstract. Through a case study on the interaction between artificial intelligence (Ai) and Irish traditional music, we investigate contested issues of artistic agency and the meaning of the "authentic" in a world of Ai-generated music. We consider musical authenticity from three perspectives: 1) the source/cause of art; 2) the art *itself;* and 3) the recipient. Throughout, we adopt a posthumanist framework that ascribes agency to both human and non-human actors. We interpret authenticity as a relative, malleable concept and argue that the partnership between Ai and folk music enriches each of these perspectives. This paper adds to the intensifying debate around the application, evaluation, ethics, and future of Ai-generated music.

Keywords: Authenticity, artificial intelligence, folk music.

1 Introduction

Artificial intelligence (Ai)[1] is moving machines beyond acting as mere reproducers of art into active participants in creating art. Instead of querying the technical reproduction of the artistic product, questions begin to revolve around the "reproducibility of the work that produces the work of art" (Schröter, 2019, p. 305). How is this evolving role of the Ai machine changing creative practices, our experience of art as human expression, and the value of art – perceived and realized? Are there sacrosanct domains of artistic practice that should be protected from such mechanized interlocutors before irreparable harm comes from their "inauthentic" participation?

In the current discussions of Ai-generated art, "aura", a term often synonymous with "authenticity", makes frequent appearances (Vass et al., 2019; Kurt, 2018). In his seminal essay, "The Work of Art in the age of Mechanical Reproduction", Walter Benjamin defines "aura" as the unique presence of art in time and space, stating that it is the aura of an "original" work of art that makes up its authenticity (1969, p. 220). Discourses of authenticity continue to have an enduring significance in various forms of musical traditions, from early music (Kenyon, 1988) to rock (Atton, 2019), from electronic music (Mau and Nicholas, 2020) to country music (Peterson, 1997). In Irish traditional music, authenticity is a key "indicator of worth" (Vallely, 2005, p. 55). Ai-generated musical materials are no exception. In fact, because of the historical fear and

[1] We use the acronym "Ai" to emphasize the fact that the kind of "intelligence" displayed by a machine is unnaturally brittle, and not at all like intelligence possessed by humans.

denial of technology in discussions of art (Hertzmann, 2018), the issue of authenticity becomes even more crucial in the evaluation of Ai-generated music.

This article dissects and analyzes issues of authenticity in Ai-generated music that *sounds* traditional. In this process, we attempt to decipher "aura", a highly visible term in current discussions of authenticity in art generated by Ai. Amidst ongoing debate over the application of Ai to music, one criticism targets the lack – in the artistic result – of authorial voice, "intentional/mental autonomy" (Colton et al., 2020, p. 344) or agency, and, hence, the lack of authenticity. We investigate such contested issues of artistic agency and, from there, the meaning of the "authentic" in a world of Ai-generated music. Inspired by Husserl's ontology of "intentional objects" that separate the effect (the "sound itself") from its source (Husserl, 1970), each of the following sections considers music authenticity from a unique vantage point: 1) that of the source/cause of art; 2) the art *itself*; and 3) the recipient. While recognizing that both human and machines can *cause* and *receive* art, for the purpose of this paper we focus our discussion primarily on the much-debated role of the machine as art-maker, and the agency of human audiences as they receive and appreciate such art.

At its core, we interpret authenticity and "aura" as a relative, malleable concept and argue that the creative partnership between Ai and folk music enriches each of these three perspectives. We concur with Cascone (2004, p. 4) that "aura" can reside in multiple locations simultaneously (and can shift from one site to another), resulting in "a network of aura" and, in turn, multiple loci of authenticity. We believe that this investigation prepares researchers, musicians, and other members of the music Ai community to better understand the nature of authenticity in Ai-generated art, to more fully grasp its nuances, and to appreciate its value from multiple analytical angles. This can also inform conversations about the ethical issues surrounding the mechanization of the arts. Ultimately, this article adds to the intensifying debate around Ai-generated music – its application, evaluation, ethics, and future – with a special focus on interactions between Ai and folk music.

2 Background

2.1 The MUSAiC project, and *folk-rnn*

The project "MUSAiC: Music at the frontiers of artificial creativity and criticism" (ERC-2019-COG No. 864189) broadly addresses the impacts of Ai technology applied to music. Among its objectives are to catalogue the current landscape of the use and impacts of involving Ai in music listening, composition and performance, and criticism, and to analyze its benefits and drawbacks, anticipated and unanticipated. A particular focus of MUSAiC is the impact of Ai on contemporary practices of traditional music, such as Irish traditional music, not to mention the use of folk music data for research in Ai and the ethical questions and dilemmas this poses.

The impetus of MUSAiC comes from tensions observed between Ai technology and tradition arising in the context of another project involving the computerized study of a music corpus (Ben-Tal et al., 2018). One outcome of that project was *folk-rnn*, an Ai system trained on symbolic music transcriptions of traditional dance music from Ireland (Sturm et al., 2016) and shows surprising success in generating plausible transcriptions

in these music styles (Sturm and Ben-Tal, 2018). *folk-rnn* models are accessible on the WWW,[2] and a crowd-sourced online repository of Ai-generated work[3] is growing (Ben-Tal et al., 2021). So far, people around the world visiting these websites have generated over 66,000 tunes in symbolic notation, 1,010 of which have been entered into the repository, and only a tiny fraction of which have been judged or performed (Sturm and Ben-Tal, 2018; Sturm and Maruri-Aguilar, 2021).

Some see such an application of Ai as insensitive, blasphemous, and disrespectful, "setting loose" a lifeless algorithm on data of a living tradition (Breathnach, 1971; hAllmhuráin, 1998) thought to be ancient and cared for by anonymous others who themselves toil to pass it on. On the other hand, setting loose a lifeless algorithm on such data for purposes of music identification, as in the case of *Tunepal* (Duggan and O'Shea, 2011), is by and large welcomed and embraced – or not, in the case of *TuneTracker* (Duggan and Su, 2014). Can *folk-rnn* and systems like it contribute to the death of musical authenticity, as an audience member cautions when lamenting the "funeral of authenticity" caused by "heart-less" computers ("Hanne Kjersti Yndestad", 2018)? Do these systems magnify a "crisis of proliferation" (Attali 1985), where "carcinogenic" replication outstrips consumption, and so smother traditional music to death? *folk-rnn* thus presents a useful object for studying the authentic in music.

2.2 Authenticity in Art and Music

Benjamin's "Little History of Photography" ("Photography") (1996) and "The Work of Art in the Age of Mechanical Reproduction" ("The Work of Art") (1969) develop the idea of "aura", a concept Benjamin connects to the idea of authenticity. The first explicit mention of "aura" appears in "Photography", where Benjamin establishes the aura as "a strange weave of space and time" (1996, p. 518). For him, the aura found in early photography was largely derived from primitive technology. In "The Work of Art", Benjamin examines the loss of aura – "[art's] unique existence at the place where it happens to be" – in even the "most perfect reproduction" of a work of art (1969, p. 220). He writes, "it is this unique existence … that bears the mark of the history to which the work has been subject" (Benjamin, 2008, p. 21). Thus, while aura or authenticity in "Photography" arises mainly from technical conditions, in "The Work of Art" it is embedded in the context of history, tradition, and ritual.

Traditional music scholars have written extensively on the topic of authenticity. In the edited volume *Authenticity and Early Music: A Symposium* (1988), most contributors agree on the importance of recognizing the music performer's perspective, rather than composer's intent, as the guiding principle in locating authenticity. Tomlinson, however, reasserts in his contribution the importance of historical "intent" to musical meaning. The goal of historical performance, to him, lies in realizing "not a work's 'authenticity', but its 'authentic meaning'" (Tomlinson, 1988, p. 115). Finally, both Brown (1988, p. 27-56) and Brett (1988, p. 83-114) in their contributions draw a distinction between an objective, historical authenticity and a perceived authenticity.

Reflecting on the revival of Irish traditional music, Vallely writes: "Authenticity is at the heart of what traditional music is about for a large number of its players …" (2005, p. 55). Working against an absolute "authenticity", Vallely cites six

[2] https://folkrnn.org
[3] https://themachinefolksession.org

understandings of the term by Richard Peterson (1997), among them "credible in current contexts" and "real and not imitative". Understanding authenticity as a dynamic, transhistorical process, Trachsel (1995) writes on the conflict between "oral" and "literate" authenticity in the context of Irish traditional music, while highlighting the authenticating role of the performers and audiences. Spencer (2009), on the other hand, reflects on the dual aesthetic systems in play at Irish music competitions and at the impromptu gatherings known as "sessions", proposing that the criteria for authenticity vary across contexts. Instead of asking "what is authenticity", he asks: "who needs authenticity and why" (Spencer, 2009, p. 60)?

3 The Artist and Artistic Intent

3.1 Authenticity, Agency, and Authorship

Philosophical discussions of authenticity often center around the concept of a "true self" (Laceulle, 2018), and are hence inevitably entwined with notions of subjectivity and agency. Kurt (2018) suggests that subjectivity manifests itself in the creation of art through the exhibition of aesthetic and emotional "intent". To Tomlinson (1988), for early music, it is by being faithful to the "historical intent" behind a work that one realizes its "authentic meaning".

The question of agency in theories of technology is a complex one. While scholars generally agree that technology is caught up in historical, social, and institutional webs (Bijker et al., 1987), opinions differ on whether one can assign agency to technological systems (Taylor, 2001, p. 31). In the academic study of artificial creativity, debates over artistic agency often surround the notion of "authorship" (Eshraghian, 2020). The question about whether machines may be perceived as the author of an artwork perplexes many. Scholars such as Coeckelbergh (2017) ascribe authorship to the algorithm, asserting that it is the algorithm, rather than the programmer, of an Ai system that functions as the artistic agent. Sharing Coeckelbergh's view, Kurt (2018) nevertheless admits that one of the problematics in this discourse lies in the lack of "intentionality" of computer programs. It is precisely this absence of human intent, however, Kurt claims, that gives an element of uniqueness, authenticity, and hence "aura" to the artwork of the machine.

Audience criticisms of Ai-generated folk music (such as *folk-rnn*) land on its lack of "heart", "feeling", "soul", and "life", pointing directly to essential elements that make up the human condition ("Pugsrule", 2017). Writing on the "democratization" of art in the age of Ai, Schröter (2019) brings in the notions of mortality and embodiment in his discussion of authorship, asking whether artistic knowledge can ever be separated from the working, human body. "[W]orks of art must not be the connection between knowledge and a *false body* – this would be what we call forgery", he writes (2019, p. 306). Citing the theory of scarcity in political economy, Schröter proposes that it is the mortality of the human artist that gives works of art a place in history, making them scarce and hence of market value.

3.2 The Social Life of Machines

We now turn to the recent emergence of a posthuman turn in critical theory, according to which all entities – objects, things, and human organisms – should be classified not in terms of their "origins and causality", but in terms of their "forces and impacts" upon other entities (Braidotti, 2017, p. 18). In *Art and Agency*, Alfred Gell takes a similar approach when he casts art as a "system of action", in which art objects function as agents that possess the power to captivate their viewers (1998, p. 6). In music, Bates (2012) recounts the "social life" of musical instruments, arguing that considerations of agency should depend on "effect" rather than "intentionality". Colton et al. (2020) proposes a rethinking of the "machine condition", advocating that we take seriously the machine "self", its experience, memory, physicality, and its creative expressions.

We thus change focus from the problematics of "intentionality" and, instead, ask: what are the "impacts", "forces", or "effects" of an Ai composer on Irish traditional music? In folk music, the composer is often unknown, unidentified, or intentionally kept anonymous (Hillhouse, 2005). This is therefore an exceptional case where the "authenticating role" of a musical work lies not so much in the author, but in its performers and audiences (Trachsel, 1995, p. 41). Does this peculiarity of folk music then legitimize the involvement of nameless machines? Rather than neutralizing the work of the machine due to its anonymity, we argue that the featuring of an "Ai author", itself not agent-less according to posthumanist theory, leads to important questions about the very role of composer in the discourse of folk music. When one objects to the idea of "machine folk" and its authenticity, is the dissenter targeting the algorithm that generates the folk tune, or is he/she against the very idea of associating a "traditional" tune not with a collective, a community, but with an individual, a single entity – even if that entity is acting in accordance to statistics derived from a community? In the context of folk music, the machine composer thus faces the challenge of "double-authentication": authenticating itself as an agent like other human composers; and authenticating its newly created tunes as "legitimate" folk music comparable to those of unidentified composers that continue to be played and enjoyed today – not to mention adapted and refashioned in new contexts.

4 Sound and its *Thing-Power*

4.1 The Myth of Originality

In *Traite des objets musicaux* (1966), Schaeffer gave the name "reduced listening" to the listening mode that focuses on the sound *itself*. We now examine the material outputs of machines, that is, the "encoded ontologies" of sound. While Benjamin ties the notion of "aura" and authenticity to the ideas of uniqueness and originality, a related understanding of authenticity is that authentic music must be "real and not imitative" (Peterson, 1997). Do tunes generated by *folk-rnn* and played by musicians then meet this criterion for authenticity? On the one hand, unlike the reproductive technologies examined by Benjamin that generated unlimited numbers of "copies", the outputs of *folk-rnn* can vary widely from one another. One can therefore argue that while produced under certain "statistical regularities" (Miller 2020), each tune generated by *folk-rnn* and performed (as if such a thing has been done for centuries) is in itself unique in time and space, born with its own inherent "aura" and authenticity.

On the other hand, however, while we are no longer dealing with the "reproduction" of the art itself, as Schröter (2019) states, the "reproducibility" is now shifted to the entities – here the machine and its algorithm – that produces the work of art. The virtually endless outputs of *folk-rnn*, in other words, all share the same underlying statistics and logic. Ai art, while appearing "novel", can be argued to be fundamentally based in rules and a desire for "the similar" (if not "the same"), thus lacking the element of "transgression" that is an immanent part of human creative thinking (Mersch, 2020, p. 24). Writing against artificial creativity, Mersch labels such processes one of "mass fabrication", and the resulting work a "deep fake" (p. 24). The issue of "over-production" is another area of concern for Mersch. As in the case of *folk-rnn*, it can generate more "works" in a day than could a human in a lifetime. This "reproducibility" of Ai algorithms – not unrelated to the "crisis of proliferation" theorized by Attali (1985) – thus raises questions about our sonic environment as expressed by Schafer (1993) and as articulated by an audience member of *folk-rnn* who deems it "reckless" to send "3,000 machine-created fiddle tunes into the world" ("Ergo", 2017). The issue of originality and, in turn, of authenticity in Ai-generated music is far from a simple one.

4.2 The Folk, Nation, and Identity

Other criticisms of machine folk have pointed to the antithesis between "machine" and the very concept of the "folk". Indeed, art does not take place in a "vacuum" and is situated within a framework of socio-historical relations and cultural dialogues. Besides the quality of originality, many writing on Irish traditional music, such as Spencer (2009), have asserted that it is these extramusical associations that "authenticate" the music we hear. Spencer's observation is in line with that of Charles Taylor, an influential contemporary thinker on authenticity, who argues that we constitute our identities and an authentic life in "dialogical relations with others" (1991, p. 47-48). The same can be proposed for the life and "authentic" identity of a folk melody.

Traditional music often functions as the carrier of a community's "collective memory" (Shelemay, 2006, p. 18). As a genre often tied to nationalist ideologies, folk music is first and foremost about the "mind and soul" of a people (Trachsel, 1995, p. 43). It is from the "authentic Irish folk melodies" that one locates a "'genuine' Irish identity" (p. 43). This discourse of folk music thus raises an important question concerning the politics of representation in Ai art. What is "machine folk" *about*? Does it share the "memories" and "national identities" of the melodies and data that it was trained on? Does this lack of *direct* association with musicians, stories, and histories deprive *folk-rnn*-generated tunes of their right to authenticity? Or rather, does the most apparent association of the tunes with a nearly unexplainable and incomprehensible algorithm (Sturm, 2018) – its "absurdity" (Kurt, 2018, p. 76) – contribute to a mythical quality of "distance-no-matter-how-near" that is key to Benjamin's theorization of authenticity (Bolter et al., 2006, p. 25)?

4.3 Invention of Tradition

As audiences of Ai-generated folk music express their concerns that these newly generated tunes by an *a*cultural machine may eventually be perceived as "actual traditional tunes" ("Ergo", 2017), we now discuss the potential "enculturation" of

machines and the "invention" of a machine folk tradition[4] (Hobsbawm & Ranger, 1983). Against the essentialist reading of "authenticity" and "tradition", we hold that both are highly fluid concepts that are far from timeless and unchanging. Writing on the situational nature of authenticity, Spencer (2009) proposes that different aesthetic systems be in place for the evaluation of different musical texts and contexts. How, then, should *folk-rnn*-generated tunes be heard, understood, and appreciated if they do not possess the essential characteristics of folk music?

In line with our earlier consideration of the "social life" of machines, we adopt political scientist Jane Bennett (2010)'s idea of material agency, which she terms *thing-power*. We couple Bennett's formulation with musicologist Nina Eidsheim (2015)'s "vibrational theory of sound", which situates sound in a vibrant network of human and nonhuman *actions.* Eidsheim's approach also complements the viewpoint of Seaver (2017) on algorithms *as* culture and – more specifically – as the result of "a variety of human *practices*" (2017, p. 4). In this way, rather than thinking of machine folk as context-less, motion-less, and ahistorical work born out of a "vacuum" (Mersch, 2020, p. 12), we can consider each Ai-generated tune as uniquely embedded in a lively network of actors and relationships consisting of technologists, music practitioners, the audiences and the artistic communities, the machine, and its algorithm. In fact, it would be short-sighted to analyze *folk-rnn* itself as separated from this network.

Indeed, artifacts have politics (Winner, 1980). Sound is understood, in this way, as a subject-in-process that is always social, cultural, and political even if it no longer falls squarely under an existing tradition. From the moment of generation, each *folk-rnn* tune, still an "infant" in its course of contextualization, must take its own journey of authentication, a dynamic, historical process during which the past slowly "grows" into the present (Trachsel, 1995, p. 41). Thus begins the social life of a machine folk tune. As the melody slowly establishes "dialogical relations" (Taylor, 1991) with other entities, be it a community of musicians, researchers, audiences, or other machines, it gradually constitutes its authenticity. A new tradition of "machine folk" can in this way be "invented", marked with its unique aesthetic system and socio-cultural associations.

5 *Listening* to Authenticity

In *The Race of Sound* (2019)*,* Eidsheim posits that the source of a voice has its roots in the listener (p. 9). Eidsheim begins her first chapter by introducing the concept of *musique acousmatique,* initially used by Schaeffer to refer to "a sound that one hears without seeing the causes behind it" (Schaeffer, 1966, p. 91). As alluded to in section 4.1, an acousmatic listening experience, according to Schaeffer, is one that "reduces" sounds to the field of *hearing*. A year after the publication of Schaeffer's *Traité des Objets Musicaux*, Barthes, in his 1967 essay titled "The Death of the Author", challenges the practice of incorporating authorial intent into textual interpretation and instead positions the reader as the conceptual space containing the text's meanings.

[4] Hobsbawm begins *The Invention of Tradition* by clarifying the differences between traditions (marked by invariance), customs (marked by relative flexibility), and pragmatic convention or routine (no major rituals or symbolic functions). He then defines "invented tradition" as "a process of formalization and ritualization, characterized by reference to the past, if only by imposing repetition" (1983, p. 4).

Music scholars, when theorizing authenticity, have put forth similar opinions: from Trachsel's claim (1995) that the "authenticating role" of a work lies mainly in its audiences and performers to the arguments of Brown (1988) and Peterson (1997) that it is the "persuasiveness" and "credibility" of a performance – in other words, the *effect* of a performance on its audiences – that determines its authenticity.

In this final section, we thus look at the recipient of Ai-art – the human audience and the artistic communities – who, we argue, play a uniquely instrumental role in "authenticating" machine folk. After all, at the heart of folk music is people. In an online response to an article introducing *folk-rnn*, "Mats J." (2018) asks: "How can the joy and passion associated with performing, sharing and exploring a tune somehow be compromised by the sudden revelation that the tune in question isn't man-made?" Underlying this comment is the conviction that despite the "machine-origin" of machine folk, ultimately, for the thousands of tunes whose authors are often not knowable, it is the human conversations and artistic practices existing around the work that give rise to much of its meaning. In the broader context of Ai-generated music, due to the "inhuman" nature of machines as the "art-maker", the role of the human recipient escalates to a more active position, shifting from a "decoder" of meaning to an "encoder" (Kurt, 2018, p. 8). It is for similar reasons that, when writing on electronic sounds whose source is *unseen*, Schaeffer calls for a shift of focus from the sound source to the mode of "listening" (Kane, 2014, p. 26). We argue that Schaeffer's call can be well extended to the domain of Ai-generated sound, whose algorithmic source is not only *unseen* but largely inexplicable. *folk-rnn* has, in this way, become a community project of both individual and collective *listening*.

But the act of listening is far from neutral. Some research questions the existence of bias among listeners toward evaluating Ai-generated music (Moffat and Kelly, 2006; Pasquier et al., 2016). The MUSAiC project will continue this investigation on listener bias in Ai-generated folk music. By better understanding the art of listening (in contexts beyond the human), we can arrive at a more nuanced grasp of musical authenticity as it is variously constructed, "heard", and framed by both human and machine actors.

6 Conclusion: A Community Project

In this paper, we have examined the various constructions and flexible meanings of authenticity – or, rather, *authenticities* – in the context of Ai-generated folk music. In the process, we ascribe agency to both the creative human actors and their non-human, machine partners in an attempt to underscore their auratic "co-presence" during the course of artistic creation and their effects and impacts upon each other. By adopting a posthumanist framework, which acknowledges "vitality" in both human and nonhuman bodies, we hope to arrive at an understanding of Ai-art not as a lifeless "deep fake", as Mersch (2020) suggests, but as a unique form of "assemblage" (Bennett, 2010, p. 23) – a complex, interwoven web of heterogeneous materials that are constantly affecting each other, always in motion and imbued with unlimited possibilities of "authentic meanings". This reconceptualization, we propose, will help guide future practitioners of music Ai – especially those working at the intersections of technology and traditional (folk) art forms – to interacting with the impactful "vibrant matters" at hand in a culturally, ecologically, and ethically sensitive manner.

This posthumanist approach, however, in no way denies human power, itself an important form of *thing-power* (Bennett, 2010, p. 10). Indeed, the MUSAiC project actively seeks to engage the traditional music communities in discussions around the application of Ai to music practices. Among such efforts is *The AI Music Generation Challenges*, the 2020 version of which tasked participants to build an Ai system that generates the most plausible double jigs, as judged against the 365 published in O’Neill’s *The Dance Music of Ireland: 1001 Gems* (1907; Sturm and Maruri-Aguilar, 2021). The four judges involved, all experts in Irish traditional dance music, had various opinions, but they all spoke highly of select submissions, most particularly the winning jigs generated by two different versions of *folk-rnn*.

The “social life” of these jigs has since outlived the competition, as one of the judges recently revealed in private communication that he has taught the tune to several of his students. “The relation of a tune to specific musicians is vital to contextualization and authentication…”, writes Spencer (2009) as he reflects on the negotiation of authenticity in the context of Irish traditional music today. Thus, through its gradual association with individual musicians and artistic communities, the winning *folk-rnn* tunes have begun a process of authentication that similarly confronts every new folk tune composed by human authors (Hillhouse, 2013). It is in this way that memories are constructed around an Ai-generated folk melody, that histories of a tune can be told and written, and that a seemingly “soulless” work of art comes to life.

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