Remix Culture as a Lens for Governing Derivative AI Models: A Hatsune Miku Case Study

Eun Jeong Kang
ek646@cornell.edu
Information Science
Ithaca, NY, USA

Waki Kamino
wk265@cornell.edu
Information Science
Ithaca, NY, USA

Susan R. Fussell
sfussell@cornell.edu
Information Science
Ithaca, NY, USA

Malte Jung
mfj28@cornell.edu
Information Science
Ithaca, NY, USA

ABSTRACT

AI co-creation acts as a form of remixing, where model weights trained on existing work enable the generation of derivative models that scale specific aesthetic styles. However, the ownership and ethical legitimacy of these derivatives remain uncertain, and a discursive space for reviewing the practices of diverse AI actors is currently lacking. This work fosters discussion on derivative AI model governance by examining the Hatsune Miku ecosystem—a mature remix culture centered on the Vocaloid voicebank. By analyzing how this culture manages proprietary rights alongside massive-scale participatory creation, we identify three core practices: 1) decentralized creative access with upstream acknowledgment; 2) negotiated authorship between original rights holders and derivative creators; and 3) the construction of ethical norms through community engagement. We offer these findings as a discursive lens to help AI developers and artists identify shared norms and reach a consensus on the governance of derivative models.

CCS CONCEPTS

• **Social and professional topics** → **Intellectual property**.

KEYWORDS

creative commons, AI governance, creative work, remix, Hatsune Miku

1 INTRODUCTION

Co-creation with AI is a form of *remixing* that enables creators to generate otherwise unimaginable content by re-purposing users' work through computational processing and model weights trained on others' work [13, 19, 21]. Anyone can create artwork using AI, and, moreover, they can create AI models that reflect their own style [23]. Some corporations provide open models (e.g., Stability AI, EleutherAI), enabling creators to fine-tune them with their own datasets [11]. These derivative models scale a creator's aesthetic style, allowing other user-creators to reuse the models – either to generate AI content or to develop further derivative models [10]. Consequently, derivative models inherit features from at least one parent model through a continuous process driven by multiple creators.

Although such a derivative model creation may contribute to democratizing access on models for artists, the question of how derivative models should be governed remains a concern within the creative domain, given that their originality and ownership are uncertain [7, 12, 16, 19, 23]. For instance, how can derivative model be legitimized to mitigate ethical concerns in their outputs while still respecting artistic autonomy? Furthermore, how should ownership of models be managed, and how should 'parent' contributors (i.e., data creators, AI corporations, data steward) be credited in derivative models? Although previous research has highlighted these big questions [6, 11, 23], there remains a lack of discursive space to holistically review each actor's practices together, understanding their context.

In this work, we foster discourse through a case study of an existing remix culture that touches similar problems regarding collective ownership while encouraging widespread creator participation. We focus on Hatsune Miku, a preeminent remix culture centered on the Vocaloid software voicebank, developed by Crypton Future Media (hereafter Crypton). Hatsune Miku's persona and design are licensed under the Creative Commons (CC) framework. Crypton retains the source license, while this framework empowers fan creators to remix the source and create creative works using the source's persona. This lowers legal barriers to participatory creation [18], enabling Hatsune Miku to stand out as a dominant media icon and foster communities that have produced a massive volume of derivative content – including over 170,000 videos, 95,000 songs, and 500,000 artworks. We note three practices regarding how derivative works of Hatsune Miku are governed: 1) operating decentralized creative access such that upstream work is acknowledged and inherited; 2) negotiating authorship to respect original rights holders and derivative creators; and 3) constructing ethical norms for participatory culture. In each practice, we draw discursive questions about how derivative model should be governed given unique traits of AI models and creative domain based on existing studies conducted with derivative model creators [16]. By examining the Hatsune Miku ecosystem as a reference point for derivative AI governance, we offer these findings as a discursive lens to help AI actors—from developers to artists—identify shared norms and move toward a consensus on the governance of AI derivatives.

Figure 1: The left image is original Hatsune character visual created by Crypton (© Crypton Future Media, Inc. 2007, licensed under a CC BY-NC), the middle image is derivative work 'Hachune Miku' [4] that later becomes officially afforded by Crypton. The right image is derivative work created by an artist (koko) [2].

2 CASE STUDY: HATSUNE MIKU REMIX CULTURE

2.1 Persona Inheritance in Decentralized Creative Access

Hatsune Miku has an official visual appearance, in addition to a voice persona, designed by Crypton. She is depicted as a 16-year-old female virtual singer with long, turquoise twin-tails (Figure 1 - left). Creators are allowed to interpret her persona and transform it in their own styles. For instance, they customize Hatsune Miku's outfit to reflect their local cultures (i.e., Korean traditional outfits) and marginalized identities. Consequently, her persona is not constrained by the official visuals; rather, it becomes fluid and open-ended as creators produce derivative works inspired by one another's creations [9].

Creators' derivative work is allowed to be published under the creators' name, with appropriate attribution to the character (i.e., Hatsune Miku, © Crypton Future Media, Inc. 2007). These works circulate on social media platforms such as YouTube and Nico Nico Douga (Japanese video sharing platform), where they facilitate further re-appropriation into new derivative content [22]. This ongoing process of reappropriation creates a large network of interconnected works, fostering a flourishing participatory cyberculture [17]. Although they are technically prohibited to generate commercial profit, the viral of derivative work spotlights professional skills of new artists, song makers, and producers [15].

This practice demonstrates that derivative works function as an *assemblage* [20] that shapes the collective understanding of the Hatsune Miku persona. While maintaining the core norms of the original character—a 16-year-old female virtual singer—Miku embraces individual creativity (Figure 1 - right), thereby broadening the audience for this subculture. This suggests that maintaining inherited persona traits may be essential for preserving a creator's legacy alongside appropriate attribution. However, in the context of model creation, creators often find it difficult to discern which attributes of the upstream models would be inherited. Furthermore, the data practices and contributions of the original creators are frequently opaque. This lack of transparency makes it challenging for artists to utilize models that align with their creative identity, as they cannot look beyond the basic dataset training procedures. Thus, we propose following discursive questions:

- **To what extent should derivative models be attributed to their source during the post-training process, and how should guidelines be established to govern a model's individuality?**
- **How should we define 'source'—distinguishing between upstream developers and data providers—and what mechanisms can ensure a transparent disclosure that all contributors can support?**

2.2 Negotiated Authorship in Content Attribution

Fan activities involving the creation of derivative works based on manga or anime are widespread in Japan and are famously known as "doujinshi" culture [15]. Crypton, the Hatsune Miku source right holder, acknowledges fans' derivative practices through a Creative Commons-inspired framework [8]. The corporation grants creators copyright over their specific derivative works, authorizing them to manage their own licenses. Notably, their practices demonstrate how Crypton negotiates authorship with those creators rather than exercising sole dominance over ownership. Crypton permits creators to receive compensation commensurate with their efforts, by establishing transparency in transactions involving derivative works. If creators wish to monetize their content through consumer transactions, they may do so by pre-registering the work and obtaining a certificate from the corporation [1]. This authorized consent mechanism enable artists to exercise their ownership within a permitted range. Additionally, in some cases, derivative works even become part of Hatsune Miku's official content; for instance,

Hachune Miku, a "super-deformed" meme version of the character (Figure 1 - middle), was eventually recognized and licensed by Crypton [4].

These practices demonstrate how the source rights holder manages derivative works in line with its intentions while respecting creators' openness and the attribution of their content, certifying these works as endorsed by the rights holder. In derivative model development, some licenses are based on Creative Commons (i.e., the CreativeML Open RAIL-M license [3]), allowing creators to add their own copyright notices alongside the standard license terms. However, it remains unclear who should be recognized as the rights holder of a derivative model – for example, whether this role belongs to data creators or model developers – and there is currently no complementary mechanism to formally acknowledge the significant effort and resources invested in the post-training process. Because different fine-tuning methods and training durations lead models to exhibit distinct behaviors, further discussion is required to determine how to assign authorship and how to appropriately scale these acknowledgments. We propose following discursive questions:

- **How can we design mechanism that enables stakeholders to negotiate authorship and who should be involved in designing the mechanism?**
- **How can authorship be discussed in a way that all stakeholders find equitable regarding originality, creativity, and accountability?**

2.3 Collective Ethic Norm Configuration

The openness of creative depiction often pushes the boundaries of what is considered ethical; Hatsune Miku's official persona as a 16-year-old girl creates a significant ethical threshold for creators of derivative works when depicting her outfits. Some derivative works depict her in sexualized contexts, such as "bunny girl" style, while treating her age as a blank slate [5]. Within Hatsune Miku communities, like reddit, the norms of ethical derivative work are constantly discussed by the fans themselves. Some fans argue this is a way for artists to cater to an adult fanbase; however, such depictions can damage original source's reputation and commercial viability. Furthermore, sexualized content can create an environment that is inappropriate or exclusionary for younger fans. These communities collectively construct ethical norms by treating derivative artworks as a discursive space; however, this norm-construction process is often slow and does not always gain attention.

This case provides two insights: 1) derivative work creators may not consider ethics in their work because of their own criteria set for boosting creative aspiration; 2) creators community can become a space where creators collaborate to construct norms for derivative artifacts. The case emphasizes the importance of designing appropriate mechanism to inform ethical work creation and aggregate community members' agreement to practice it. When considering that derivative model creators often create models that merely for non-consensual content [24], this case brought up two questions:

- **How can derivative model creators be supported to understand the societal impact of their creations and engage in mitigating potential harms?**
- **How can creative communities establish and maintain collective ethical standards for their members?**

3 DISCUSSION AND FUTURE WORK

In this work, we use "remixing" as an analogy to explore the governance of derivative AI models. The democratization of creative access via AI should not be viewed simply as the expansion of artist participation in the use, development, and governance of AI [14]. Beyond this, it is necessary to identify the actors who exercise power to expand or restrict the creative autonomy and norm construction of stakeholders—including data creators, derivative model creators, and end-users. Through "in-the-wild" case studies, we demonstrate how derivative work creators and source rights holders manage ownership under the CC framework, highlighting key questions for derivative model governance. We suggest expanding these case studies to include broader examples where derivative work is central to the creative domain, such as fan fiction (AO3), gaming (Roblox), or generative media (TouchDesigner). Analyzing these cases through the lens of anticipatory governance can provide insights into how to govern open AI ecosystems.

ACKNOWLEDGMENTS

We sincerely appreciate Yeonju Jang and Tuan-He Lee for their feedback.

REFERENCES

[1] 2019. Piapro Character Guideline. https://piapro.jp/license/character_guideline Accessed: 2025-12-31.
[2] 2020. rolling radio star hatsune miku. https://kokoronis.tumblr.com/post/635177497867304960/rolling-radio-star-hatsune-miku Accessed: 2025-12-31.
[3] 2025. CreativeML Open RAIL-M License. https://huggingface.co/spaces/CompVis/stable-diffusion-license/raw/main/license.txt Accessed: 2025-12-31.
[4] 2026. Hachune Miku. https://vocaloid.fandom.com/wiki/Hachune_Miku Accessed: 2026-02-01.
[5] 2026. (Rabbit Hole). https://en.wikipedia.org/wiki/Rabbit_Hole_(song).
[6] Shm Garanganao Almeda, Joy O Kim, and Bjoern Hartmann. 2025. Creativity Supportive Ecosystems: A Framework for Understanding Function and Disruption in Online Art Worlds. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*. 1–17.
[7] Yaniv Benhamou. 2024. Open Source AI: Does the Copyleft Clause Propagate to Proprietary AI Models? Revisiting the Definition of Derivatives in the AI-context. *Revisiting the Definition of Derivatives in the AI-context (June 10, 2024)* (2024).
[8] chiaki. 2012. Hatsune Miku Joins the CC Community.
[9] Kyle Davidson. 2017. Hatsune Miku and the crowd sourced pop idol. *Semiotics* (2017), 137–144.
[10] Jesus Diaz. 2025. Adobe Just Built an Industrial-Grade AI Weapon for the World's Biggest Brands. https://www.fastcompany.com/91425469/adobe-just-built-an-industrial-grade-ai-weapon-for-the-worlds-biggest-brands.
[11] Francisco Eiras, Aleksandar Petrov, Bertie Vidgen, Christian Schroeder de Witt, Fabio Pizzati, Katherine Elkins, Supratik Mukhopadhyay, Adel Bibi, Botos Csaba, Fabro Steibel, Fazl Barez, Genevieve Smith, Gianluca Guadagni, Jon Chun, Jordi Cabot, Joseph Marvin Imperial, Juan A. Nolazco-Flores, Lori Landay, Matthew Jackson, Paul Röttger, Philip H. S. Torr, Trevor Darrell, Yong Suk Lee, and Jakob Foerster. 2024. Near to Mid-term Risks and Opportunities of Open-Source Generative AI. https://doi.org/10.48550/arXiv.2404.17047 arXiv:2404.17047 [cs]
[12] Katy Ilonka Gero, Meera Desai, Carly Schnitzler, Nayun Eom, Jack Cushman, and Elena L. Glassman. 2025. Creative Writers' Attitudes on Writing as Training Data for Large Language Models. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25)*. Association for Computing Machinery, New York, NY, USA, 1–16. https://doi.org/10.1145/3706598.3713287
[13] David J Gunkel. 2025. Generative AI and Remix: Difference and Repetition. In *The Routledge Companion to Remix Studies*. Routledge, 232–246.
[14] Johannes Himmelreich. 2023. Against "democratizing AI". *AI & SOCIETY* 38, 4 (2023), 1333–1346.
[15] Stina Marie Hasse Jørgensen, Sabrina Vitting-Seerup, and Katrine Wallevik. 2020. Hatsune Miku: an uncertain image. In *The Uncertain Image*. Routledge, 64–77.

[16] Eun Jeong Kang, Fengyang Lin, and Angel Hsing-Chi Hwang. 2026. Policy or Community?: Supporting Individual Model Creators' Open Model Development in Model Marketplaces. *arXiv preprint arXiv:2602.19354* (2026).
[17] Ka Yan Lam. 2016. The Hatsune Miku Phenomenon: More Than a Virtual J-Pop Diva. *Journal of Popular Culture (John Wiley & Sons, Inc.)* 49, 5 (2016).
[18] Alex Leavitt, Tara Knight, Alex Yoshiba, P Galbraith, and J Karlin. 2016. Producing Hatsune Miku: Concerts, commercialization, and the politics of peer production. *Media convergence in Japan* (2016), 200–229.
[19] Eduardo Navas. 2022. *The rise of metacreativity: AI aesthetics after remix.* Routledge.
[20] Nick Prior. 2021. STS confronts the vocaloid: Assemblage thinking with Hatsune Miku. In *Rethinking music through science and technology studies.* Routledge, 213–226.
[21] Erin Reilly and Sam Hewitt. 2025. Remix in the Age of AI. In *The Routledge Companion to Remix Studies.* Routledge, 391–400.
[22] Adriana Sabo. 2019. Hatsune Miku: Whose Voice, Whose Body? *INSAM Journal of Contemporary Music, Art and Technology* 2 (2019), 65–80.
[23] Mar Canet Sola and Varvara Guljajeva. 2025. *Why Open Small AI Models Matter for Interactive Art.* https://doi.org/10.48550/arXiv.2511.09788 arXiv:2511.09788 [cs]
[24] Yiluo Wei, Yiming Zhu, Pan Hui, and Gareth Tyson. 2024. Exploring the use of abusive generative AI models on Civitai. In *Proceedings of the 32nd ACM International Conference on Multimedia.* 6949–6958.