The making of popstar fembots: Participation, co-creation, or online cultural exploitation?

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Translator: Armelle Chrétien
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1 Internet access, technological progress, and the digitization of our daily lives have led to new forms of cultural participation and artistic expression. From early on, these appeared as forerunners of the social Web as it is known and used today. In this context, people do not merely engage with the Internet as a means of communication, but as a studio and an interactive gallery: as a space for the co-creation, circulation, and active reception of artistic practices. Similarly, the use of social media has allowed for a spectacular proliferation of digital artworks, calling into question the figure of the artist and her authorship over her work.

2 The participatory dimension of Internet art is built into its creative process, often resulting in a combination of artwork and network. These creations-turned-data move within a culture of ongoing sign activity, based on a fully-embraced collectivism. The transmedial circulation of user-generated content (UGC) comprises the circulation of computer-generated imagery (CGI). Such contents make for a transactional—as opposed to merely interactive—imagery, rooted in a globalized aesthetics. By increasing the circulation of image-based information, the digital revolution has helped transform human attention: now measured by the collection of information, it has become a resource whose value is determined by the economy of attention. This economic model largely predominates in the age of ubiquitous computing.

3 Virtual reality, motion tracking, 3D modeling and deepfakes are all technologies that call into question our traditional conceptions of truth, artifice, and the nature of art. The democratization of these technologies has paved the way for the emergence of virtual humanoid artists. These idealized models who attract communities of “followers” are accordingly called “virtual influencers.” The present article will focus on female virtual influencers, predominantly represented in 3D form, in Asia and the
Western world. While these digital characters are created thanks to graphics software, their personality is defined by a first-person worldview and the purpose of their presence on social media is one of influence. Among these characters, a recurring figure is the popstar fembot: a virtual influencer who was risen to fame in the music industry, extending the sphere of her activities and influence to contemporary art, modeling, and vlogging.

Despite being a fictional character, the virtual idol retains numerous human features. The outer appearance of the popstar fembot, who is usually young, relies on hyperrealistic features in the Western world, and on the “Moe”\(^6\) anime aesthetic in Asia. Her figure is thin and her ethnicity can vary: she may be biracial. Her personality is seen as likeable, cheerful, and optimistic. One of her strengths includes her capacity to influence her followers’ opinions on social media, where she expresses her beliefs, often by way of personal confessions. Frequently infused with activist ideals in the West, but rather apolitical in Asia, she resembles a micro-human-female-celebrity (influencer). Her life as an artist falls in line with clichéd success stories, abiding by the codes of glamor. Her international fame is supported by a series of intricate media operations, which are the focus of the present study.

Yet the digital birth of the virtual idol does not confine her to a purely digital life. Her existence fuses the virtual with reality, tearing down the borders of cyberspace by bringing cyberculture over into “mainstream” popular culture.\(^7\) In 2019, the Chinese pianist Lang Lang 朗朗 was accompanied onstage by a hologram of fembot Luo Tian Yi 洛天依. Together, the two artists performed songs from the traditional Chinese repertoire. When Luo Tian Yi 洛天依 isn’t singing, she’s showing off her skills as a prima ballerina. These examples institute a “phygital”\(^8\) presence wherein the experiences of the physical world blend with the experiences of the digital world. It follows from this that virtual idols exist within a hybrid cultural space. They stand at the junction of material and virtual, private and public, artistic and commercial, making up a synthetic totality in between reality and fantasy.

**The effective participation of the virtual in our perception of popstars**

In order to make popstar fembots as realistic as possible, a physical operation is conducted on the essence of their soul—their voice—as well as on the human presence within them. The fembot’s soft, high-pitched voice contrasts with human voice. Not only does it exceed the tessitura of the human voice, it also differs from it in nature. Her artificial voice is created thanks to speech synthesizers which translate voice into MIDI language.\(^9\) This voice, initially produced from recordings of human voices, is subsequently modified with computer-music software. Modifications include pitch correction, as well as an equalizer affecting the sound’s frequency envelope. Fixing the “flaws” in human voice means that virtual idols always sing on key. The first stages of this process emerged with the Vocoder, invented by Homer Dudley in 1939. Vocoder is an electronic device designed to process sound signals and analyze the main spectral components of voice. The results of the analysis are used to manufacture synthetic sound. Its use became widespread in the 1970s, especially within the musical avant-garde. The electronic band Kraftwerk and jazzman Herbie Hancock, among others, took to it and incorporated their Vocoded voices into their compositions, creating a new
aesthetics of sung sound. These treatments give voices a metallic texture suggestive of singing human-robots. In certain music genres, smoothing out natural imperfections in the human voice has now become standard practice: processes born from the Vocoder and Autotune (pitch correction) are now widely used within the music industry. However, these tools do not have the same “robotic” effect on popstar fembots. Their pitch-perfect singing only better replicates the ideal frequencies of the human voice. The bot singer’s voice is an optimized version of the human voice. The increased artificiality of the human voice, as well as the standardization of natural and artificial voice processing, can prompt a cognitive dissonance in our hearing experience. In December 2020, the American singer Ashnikko released Daisy 2.0, a song co-performed with virtual idol Hatsune Miku. But listening to the track makes for a confusing experience: it’s hard to tell a synthetic fembot voice from an electronically-processed human voice. By its very nature, a musical work of this kind is a novel experience. This confusion is extended on a visual plane: the music video features the two singers in a fantasy CGI-universe whose most notable aspect is the avatarization of Ashnikko, who appears in CGI. Her realistic features appear harmoniously alongside the Moe-style face of her co-performer Hatsune Miku. Their union extends through their hair: their signature hairdo, two long blue ponytails, supplement their digital identities with a touch of genetical twinship. The likeness between the animated figures is so striking that it would be hard to tell an avatarized human body from a virtual synthetized body. By altering her human appearance, the singer-turned-animated-simulation seeps into tentacular digital networks. We are witness to an uncanny—unheimlich—mutual participation between the human and her avatar simultaneously blurring and reinforcing the borders between the two, at times swapping their respective features.

This artistic experience involves a wide array of technologies, but the technologies making it possible to avatarize a human idol and activate a popstar fembot are one and the same. They all combine physical reality with digital systems. One of the more mundane technologies used to humanize popstar fembots is motion-capture: human actors can animate fictional characters thanks to the capture of their movements in real time. The recording is then rendered graphically and applied to the virtual body. When the facial or bodily expression of the human actor is in motion, it is synchronously transcribed onto a duplicate body. As such, the animation of the digital body engages the physicality of our bodies. This encounter is facilitated by enhanced reality technology: the physicality of our reality is overlaid with elements calculated by a computer in real time. Digital photo editing has also become commonplace in our day-to-day lives. It is used by influencers, especially on selfies, which can also imply a mutual participation of the human and the machine, redefining their borders.

In this context, the selfies taken by the famous Kardashian family are of particular interest. Their selfies express their perfect command of their corporate image, with digital editing technologies used as communication tools. Human faces, improved by enhanced-reality filters, build a certain imagery of artificial bodies which later become the dominant standard for human bodies on social media. In our feeds, the synthetic aspect of human selfies grows hand-in-hand with the naturalization of CGI characters. The participation of artifice in redefining what is natural causes a glitch in our perception. This is evidenced by our increasing trouble in telling apart human faces with artificial features from entirely artificially created beings. This visual experience calls into question aesthetic qualities and the origin of our creative possibilities on the
social Web. On the other hand, we realize that humanized features encourage feelings of kinship we may experience toward fictional characters. The likeness we experience confers an authentic feel upon them. This impression is heightened by the development of digital special effects technologies. Image technologies amaze us by the artfulness with which they simulate and transcribe life.

**The effective participation of the audience in creation**

In parallel, the activation of popstar fembots is made possible by the audience’s involvement in the production and specification of the artificial singer. Whether this means creatively interacting with other fans, being involved in live-streamed performances, or writing online fanfiction based on their favorite fembot popstars, the constant curating of a transactional relationship with fembots’ audiences is the key to immortality. The idol, born out of the digital womb, exists as long as she is fueled by her audience. The virtual artist is a fluid cultural category where the definition, features, meaning, and values of its digital aura are in constant evolution because they can only be maintained by being constantly regenerated (and, as it were, refreshed) by the active involvement of their audience.

Just like human celebrities, fembot popstars enjoy a highly active and invested community of fans (their fandom, or fanbase). These communities sometimes carry the name of their idol, for instance the “Miquelians,” as virtual influencer Miquela Sousa’s fans are called. The name was given to them by the virtual artist and leverages “self-branding” as a way to build audience loyalty. As a marketing technique, it consists in promoting a real or fictional individual’s image and skills by turning them into an “established brand.” Through the bond they establish with their fans, celebrities create a relationship of “parasocial interaction,” planting feelings of identification, friendship, and intimacy among fans. In this way, fandoms feed into the lives of virtual idols by creating different sorts of online content.

One of the relevant aspects of fandom’s participation and active reception is that it allows fans to express themselves artistically by cocreating and modifying the works of virtual artists. In the case of virtual singer Hatsune Miku, her official songs are the result of artistic productions created and shared by her audience. Miku’s entity is fundamentally defined by this collaborative process, insofar as she was initially designed be the marketing face of the software she is built on: Vocaloid2, a voice synthesizer software developed by Yamaha Corporation. This program helps users synthesize songs composed of lyrics and melodies. In 2007, the introduction of Miku by Crypton Future Media Inc. was an undisputable commercial success, going above and beyond the expectations of her production company. The distinctiveness of the fictional character’s sudden fame lies in the creative and affective involvement of her fanbase. As soon as she was created, users strove to give life to their new heroine in a collective manner. These communities of creative users interact and create, using the Internet as their medium. In this case, online cultural participation shifts towards a form of transaction wherein the artist-creator (fembot) and her audience, the technical medium (Vocaloid2) and its users, the artistic uses of the medium (songs), and its technical features (relative to how it is used) become inseparable, to the point of fusing together. In this transaction, the porosity between the arts and digital industries deceives our expectations: we no longer know if the software is designed to produce...
songs or if the songs are only designed to promote the software by illustrating its possibilities, or even if songs and software combined aren’t just a playground to develop a collective creativity shatter traditional concepts of “artistic creation.”

Crypton Future Media Inc. also stands out by virtue of its active engagement with Hatsune Miku’s fandom. By taking on a stewardship role—it supports amateur artistic production through the payment of royalties—and by improving the technological means of expression available to its users, the Japanese company has won the general trust of the Vocaloid community. It has chosen to adopt a Creative Commons License which allows non-commercial uses of Miku’s image and voice. The launch of its website PIAPRO has boosted exchanges between enthusiasts, offering a wide array of artistic contributions ranging from fanart to amateur concerts.

The use of the Internet is instrumental to Hatsune Miku’s aura, which grows hand-in-hand with her fandom’s use of platforms such as Nico Nico Douga or 2channel, as networked sites of artistic collaboration. Masahiro Hamasaki, Hideaki Takeda, and Takuichi Nishimura have shown how the creation of a song involves collaborative heuristic processes in which artistic tasks are first communicated through social media, then divided up among users. One user writes the lyrics while another handles sound design, sends the audio file to another fan, who will later produce a music video, in order to pass it on to another, etc. With Hatsune Miku, fans are both artists, managers, producers, musicians, choreographers, as well as the audience itself. This multiplicity of agents illustrates in an almost caricatural manner the growing professionalization of the consumer turned producer, heralded for the past fifty years as inaugurating a world of “prosumers” or “produsers.” The existence of popstar fembots sheds light on new ways of prosuming culture. All of this de facto implies the synchronic sharing of artistic content.

By introducing a new form of collective art practice, the software’s commercial avatar has gone beyond its initial purpose to become a viral pop culture phenomenon. In 2014, American artist Lady Gaga tweeted that the virtual singer Hatsune Miku would be the opening act to her Artpop Ball, which toured North America between May and June of that same year. In 2020, the virtual idol performed sold-out concerts in London, Paris, Berlin, Amsterdam, and Barcelona. The fembot popstar’s concerts crystallize a ritual meeting point for her fans. The virtual idol performs as a life-size hologram projected onto a big screen, accompanied by a human orchestra. By creating a ritualized time and space where the dematerialized performer and her fanbase can meet in person, Crypton Future Media Inc. has instituted a delicate balance between the company’s corporate image and the “meta-pleasure” experienced by Miku’s audience, who engages with her in a playful and intentional way.

A new ontology of cultural participation as a marketed collective techno-creativity

Overall, the collaborative and co-evolutive ecosystem that is Vocaloid stands in radical contrast to a fandom centered on an individual artwork, which remains separate from its fans by virtue of its centralized authority. In the absence of any original work or claim to authorship, the labyrinthic worlds of online transaction unravel from Miku’s multimedia content, attaining a degree unmatched by contemporary “spreadable media.” According to Yin, the popstar fembot is a perfect example of “reflexive
globalization,” which reflects and intensifies multidimensional cultural flow on a global scale.

However, Hajime Kobayashi and Takashi Taguchi suggest that this seemingly infinite creative impulse is in fact an instance of “managed creativity.” The use of social media platforms limits users in their narrative creation, with marketing strategies revealing their defining role in a system of creative products and services. It can still be argued that the advantages of phygital participatory creation have pushed the envelope of artistic prosumers’ collective creativity. Artistic live streams, musical talent shows, video games, and camgirls are all media used during the many collaborations between human popstars, fanbases, and fembot popstars.

These art forms showcase the diversity, malleability and, more surprisingly, the tangibility of our spaces of expression. As the result of a collective endeavor—or rather, of an open-ended group dynamic—the virtual artist stands at the crossroads of digital modelling and human celebrities, of screens and concert halls. She stands at the crossroads of art, technology, and entrepreneurship. Singer or fembot, the artist figure is defined by a context of collaborative activity, in her capacity to inspire others: her existence depends on her fans and followers. Rather than in the artwork itself, the focus lies in the optimization of artistic creation and in the responses elicited among the audience. The living rhizomatic artwork is supported by multiple authors, while the network resembles an optimized artist, acknowledged for its strong artistic gestures. By giving life to something that is in and of itself lifeless, the audience’s involvement is constitutive of both the artwork and the artist, the product and the market. In fact, one of the more notable features of this new ontology of the artist is to synchronize together a pop icon, a collaborative endeavor, and a corporate media. All of these transactional figures, designed by, for, and through the Internet, simultaneously act as a creative medium, instrument, and environment. As a hybrid product born from the fusion of the arts, of corporate marketing and collaborative computing, combining the human and the machine, popstar fembots introduce new technical, artistic, social, and aesthetical experiences, paving the way for a new ontology of cultural participation as a marketed collective techno-creativity.

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NOTES

3. Deepfake is an artificial-intelligence-based image synthesis technique. It is used to superimpose existing audio and video files onto other videos. The term “deepfake” is a portmanteau of “deep learning” and “fake.”
5. The term refers to a type of video-based blogging in which users film themselves while addressing the camera.

9. The Musical Instrument Digital Interface, or MIDI, is a communication protocol as well as a file format dedicated to electronic music. It allows communication between electronic instruments, controllers, sequencers, and music software.


11. In an interview called “What Does Hatsune Miku Embody? The Vision of Wataru Sasaki,” published in *The Japan Foundation, Performing Arts Network Japan* (2018), the creator of the music software personified by Hatsune Miku explained the origins of the artificial voice: “To make a Vocaloid, you begin by recording a human voice, and then you have to piece them together in a patchwork. It would sound strange if I used the term ‘the voice of a dead person,’ but what you have to do is peel away the parts that sound like they were once human. Like the dry contents of a cup of instant noodles, you have to get it down to something that sounds dry, without a sense of the living flesh and blood. In other words, you get it down to something simple that has nothing left of a person’s voice or emotions, and then like adding hot water to bring the noodles back to their original moist start, you have to put life back into it.”


15. This passage draws on Ingrid Hoelzl (who in turn draws on John Dewey) to differentiate between simple interaction, which takes place between two preformed entities, and transaction, in which the relationship taking place between two entities contributes to their mutual reconfiguration. See Ingrid Hoelzl, “L’image-transaction. What you see is not what you get,” *Multitudes*, no. 77, 2019, p. 129-140.

16. Born in 2016, Miquela Sousa describes herself as an “inclusive, Brazilian-Spanish, change-seeking robot” advocating social equality, #BlackLivesMatter, trans women’s rights, and equal pay for women. In June 2018, she was the first virtual influencer to be listed among *Times* ‘25 most influential people on the Internet.’ In 2020, this fembot’s income was estimated at over 10 million dollars, at a time when the COVID-19 pandemic curbed most human activities. In February 2021, she had over 3 million followers on Instagram.


20. Crypton Future Media Inc. is a Japanese corporation based in Sapporo, Hokkaido. It produces and markets sound banks and voice synthesizer software based on the Vocaloid technology. Its software is personified by several virtual avatars, with Hatsune Miku as their figurehead.

23. PIAPRO is a collaborative website dedicated to Vocaloid, where users can share and remix their music, illustrations, lyrics, and 3D models.
24. Fanart refers to any artwork produced by a fan and inspired by (or reproducing) one or several of the fictional characters of an existing artwork. Fanart can be literary, pictorial, or audiovisual.
25. Hatsune Miku’s fanbase regularly organizes amateur virtual concerts, like *Hatsune Miku Live* held at the *Motsukora Con XVII* festival in Spain, in 2015. The choreography, songs, staging, and activation of Hatsune Miku are made possible thanks to her fans’ direct involvement, who use the same technologies developed by Crypton Future Media Inc. for official concerts.
26. Launched in December 2006, the Japanese website Nico Nico Douga is a video sharing platform. One of its distinctive features is the possibility to overlay comments onto the user window: users can superimpose the video and their own comments (called bullet comments) in real time and in a personalized way. This function enhances feelings of immersion and community among users.
27. Launched in May 1999, 2channel is the main textboard website in Japan. A textboard is an anonymous Bulletin Board System (BBS) forum. 2channel’s worldwide success led to creation of 4chan in the US.
30. Lady Gaga announced on Twitter: “My favorite digital pop star Hatsune Miku is opening The ARTPOP Ball from May 6-June 3!,” April 15, 2014.
36. In February 2021, Vtuber (Virtual YouTuber: a fictional character animated by a human body who streams content on video sharing platforms such as YouTube, Nico Nico Douga, Twitch, etc.) and Japanese virtual idol Kizuna AI invited popstar Sakurako Ohara to participate in creative games on the virtual set of her show “AI Love Saku Live, Valentine’s Day Live,” streamed on her YouTube channel. The two protagonists promoted their latest musical news while drawing on their digital tablets. The drawings appeared in real time on the main window, eliciting many reactions from the audience who could comment simultaneously.
37. In October 2020, the Chinese company iQIYI launched Dimension Nova 跨次元新星, the first musical talent show dedicated to virtual idols. The competition included 22 virtual artists performing in front of a jury made up of human celebrities.
38. Born in 2020, Seraphine is a virtual influencer, a performer in the virtual k-pop band K/DA, as well as a character (“skin”) in the video game League of Legends, produced by Riot Games.

39. ProjektMelody, or Melody, is the first 3D Hentai Camgirl, and describes herself as an artificial intelligence. At the end of 2020, the Vtuber-camgirl opened a chatroom on the website Chaturbate, one of the main websites for explicit adult pornography, on which camgirls, camboys, and couples take part in live sexual performances. The fictional character is a member of Vshio, one of the first Vtuber agencies based in the Western world.

ABSTRACTS

Access to the Internet, technological advances and the digitization of our daily lives have given rise to different forms of cultural participation and artistic expression. These incorporate technologies that make it possible to digitize the human body and the embodiment of a digital self in the form of an avatar. The democratization of these technologies has favored the emergence of a recurring figure, that of the fembot pop star: a virtual influencer, whose field of activity is integrated into that of the music industry and can extend to fields contemporary art or even politics. As a hybrid product resulting from the fusion of the arts, corporate marketing and collaborative computing, combining human and machine, the fembot pop star brings new technical, artistic, social and aesthetic experiences—paving the way for a new ontology of cultural participation as a commercialized collective techno-creativity.

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Keywords: fembot pop star, virtual idol, avatar, art collaboratif, fandom, data fandom

AUTHORS

CÉLIN JIANG

Célin Jiang (born in 1993) is an artist-researcher, performer and educator. She lives and works between Paris and Shanghai. She graduated from HEAR (with honours) in 2018 and is continuing her practice in Shanghai within the research programme “Offshore School, Creation and Globalisation” at ENSAD Nancy until June 2019. In autumn 2019, the artist continues her research within the post-graduate programme “Arts and sound creations” at ENSA Bourges. In 2020, she will continue her research-creation work within the DIU of the ArTeC+ University Research School. At the end of 2021, she joined the Digital Image and Virtual Reality research team (INREV) within the École doctorale esthétique, Sciences et Technologies des Arts (EDESTA) of the University of Paris 8, in a research-creation thesis: her research focuses on Fembots Pop Stars in Asia and the West. Célin Jiang’s work is transdisciplinary, political and infiltrated: it aims to explore the relationship between arts, technologies and digital humanities. The decolonial approach of her work is rooted in cyberfeminism. By questioning our perception of identities in a globalized context of transcultural aesthetics, Célin Jiang advocates for interoperability and considers collaborative work as a vector of metamorphosis: how does the dissident potential of
artistic expressions operate in the phygital era of social networks? In 2020, she won the 3rd prize for radio creation Oreilles curieuses of Radio Campus Paris for the sound piece "Voyage en bus."

Her work has been exhibited at Ars Electronica 2020 (Linz, AT), Liebe und Zuneigung Festival - Europäischen Kulturtage Karlsruhe 2021 (Karlsruhe, DE), Rencontres internationales Monde-s multiple-s 2020 à L’Antre Peaux (Bourges, FR), Artes Sonores Tsonami Festival 2021 (Valparaiso, CL), Madein Gallery (Shanghai, CN), etc. Personal website: https://www.celinjiang.com / social networks: https://www.instagram.com/bis0u.magiqu3