Posthuman Production: Technology and Embodiment in the Works of SOPHIE and Holly Herndon

Eva Sophie Ogilvie-Hanson

Schulich School of Music, McGill University

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Abstract:

Two recent electronic albums, *OIL OF EVERY PEARL'S UN-INSIDES* by SOPHIE and *PROTO* by Holly Herndon, use sound in ways that extend the provenance of the voice, and in turn the capacities of the physical body. For SOPHIE, this is accomplished through her inventive use of synthesis and vocal processing, through which organic sounds are mimicked and reproduced with a palpably technologized difference. In contrast, Holly Herndon has developed an artificial intelligence machine which can imitate her voice, and which is learning the logic of her choral compositions, and performances. Both artist's works challenge conceptions of 'authentic' electronic music, SOPHIE through her reappraisal of undervalued genres, and Herndon through simultaneous use of automation and community-based choral singing. Herndon and SOPHIE's sonic explorations of the technological and embodied reflect a recent scholarly turn toward the body as a significant site of inquiry. This scholarly interest is exemplified in the critical stream of posthuman feminism, which I argue has deep resonances with electronic music and embodiment. I build on posthuman theory to discuss how both artists reimagine the traditional boundaries of the self, presenting technology as wholly enmeshed in our daily, political, and musical lives.

Abrégé:

Deux albums électroniques récents, *OIL OF EVERY PEARL'S UN-INSIDES* de SOPHIE et *PROTO* de Holly Herndon, utilisent le son de manière à étendre la provenance de la voix, et par conséquent les capacités du corps physique. Pour SOPHIE, cela se fait par son utilisation inventive de la synthèse et du traitement vocal, par lesquels les sons organiques sont imités et reproduits avec une différence technologique palpable. En revanche, Holly Herndon a développé une machine d'intelligence artificielle qui peut imiter sa voix, et qui apprend la logique de ses compositions chorales et de ses performances. Les deux œuvres des artistes remettent en question les conceptions de la musique électronique "authentique", SOPHIE par sa réévaluation des genres sous-estimés, et Herndon par l'utilisation simultanée de l'automatisation et du chant choral communautaire. Les explorations sonores de Herndon et de SOPHIE sur la technologie et l'incarnation reflètent un récent virage académique vers le corps en tant que site d'enquête important. Cet intérêt académique est illustré par le courant critique du féminisme posthumain, qui, selon moi, a de profondes résonances avec la musique électronique et l'incarnation. Je m'appuie sur la théorie posthumaine pour discuter de la façon dont les deux artistes réimaginent les limites traditionnelles du soi, en présentant la technologie comme entièrement imbriquée dans notre vie quotidienne, politique et musicale.

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Introduction

In the final episode of *Black Mirror*'s fifth season, "Rachel, Jack, and Ashley Too," real-life teen idol Miley Cyrus portrays the fictionalized pop princess Ashley O. The episode follows two converging plotlines: firstly, an artificial intelligence doll based on Ashley's personality called the "Ashley Too" has become a high demand toy for superfans, who are promised a new best friend that will teach them to dance and provide makeover tips. After begging for an Ashley Too as a birthday gift, the friendless Rachel becomes increasingly attached to the robot, despite the disapproval of her bass guitar-slinging and Pixies-loving sister. At the same time, we learn that while Ashley O is at the height of her career, she has become fed up and depressed over the insincerity of her pop hits. While locked up in her L.A. mansion by a controlling aunt and manager, Ashley dreams of breaking out of the bubble gum pink persona which has been carefully stylized by her team of producers. Ashley O's evil aunt drugs her into a coma and subsequently scans her brain for new hit songs that will be performed by a hologram. In the nick of time she is saved by her double, — the Ashley Too —Rachel, and her sister. In the final scene Ashley is shown on stage in a rock club, nonchalant in a black t-shirt and dark eyeliner, playing guitar and belting out a cover of Nine Inch Nails' "Head Like a Hole." In refusing to perform in a pink wig and latex getup, as well as exposing the invasive technologization of her body, Ashley is freed from the gendered social expectations of a popstar. The Ashley Too — the disembodied replica of Ashley's personality — cheers from the stands but is no longer central to her public image or her music-making.

Where *Black Mirror*'s most successful episodes present sophisticated technology as entangled with various methods of social and political control, the absurd plotline of "Rachel, Jack, and Ashley Too" comes off as comedic and even campy. This is in part because of the unexplained relationship between the technology being presented on screen and the music

being produced, where brain scans are miraculously turned from abstract graphs of activity to perfectly produced pop songs. Seeing Miley Cyrus jacked up to a breathing tube and a brain-scanning headband, I am not punctured by the despairing fear of what's to come that *Black Mirror* and other techno-dystopic projects aim to elicit. Nor am I energized and excited in the way that an inventive speculative fiction or sci-fi plot might move me. Perhaps this is because the plot is not really about technology at all, but hinges on a struggle for musical self-determination which pins a grunge aesthetic (i.e. "Rock") against a hyperfeminine, highly controlled pop music which is brandished as inauthentic, capitalist drivel.[1]

Cyrus's performance in "Rachel, Jack and Ashley Too" functions much like her generic nomadism: she is able to affirm her previous status as pop icon while simultaneously distancing herself from the negative associations of pop music with insincerity and mass appeal. In so doing, however, anxieties surrounding new technologies are grafted onto popular music, and vice versa. "Rachel, Jack, and Ashley Too" thus presents an interesting convergence of tropes, creating a dualism between rock music, associated with masculinity, authenticity, and an innate musicality, in opposition to pop music, associated with femininity, commercial influence, and technology. This dichotomy is not particular to the world of *Black Mirror but* is rather a reflection of the knee-jerk popular discourse which casts any unknown or new technological advancement as tainting the soul-stirring humanity which songwriters are often thought to possess. In this way, new musical technologies are often figured as disruptive to the embodied act of music-making.

[1] This is not the first time Miley Cyrus has been presented in double; she quickly became a household name for her depiction of Hannah Montana on the Disney channel show of the same name, wherein she led a double life as the brunette Miley Cyrus and the blonde pop star Hannah Montana. Cyrus has subsequently cycled through various musical phases from her psychedelic collaborations with Flaming Lips frontman Wayne Coyne to forays into hip-hop and country.

Take, for example, early presentations of Edison's phonograph, which caused onlookers to faint,[2] and which in 1878 prompted the New York Times to write: "This machine will eventually destroy all confidence between man and man, and render more dangerous than ever woman's want of confidence in woman. No man can feel sure that wherever he may be there is not a concealed phonograph remorseless gathering up his remarks and ready to reproduce them at some future date."[3] Criticisms that drum machines "have no soul"[4] operate under a similar fear of automation. By reproducing a distinctly human action the drum machine is brandished as undermining the innately human quality of musicianship. Along these same lines, I remember as a child the onslaught of disparaging comments by family members, teachers, and the media, against singers who were assumed to be using Autotune or other pitch editing software, more often than not waged against women. In the worlds of musical performance, criticism, and scholarship, the relationships between technology, gender, authenticity, and musical embodiment are both thoroughly entangled and ideologically fraught.

With this backdrop of anxiety, I have become increasingly interested in popular musicians who actively take up technology as a major theme within their work, or who utilize a futuristic hyper-stylized aesthetic as a means of exploring their musical, political, and social relationship to technology. More specifically, I am interested in how music may be a means

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[2] Dave Laing, "A Voice Without a Face: Popular Music and the Phonograph in the 1890s," *Popular Music* 10, no. 1 (January 1991): 4.

[3] Dick Meyer, "Did the technology invasion begin with the invention of the phonograph?" *ABC Action News,* October 16, 2014, https://www.abcactionnews.com/decodedc/did-the-technology-invasion-begin-with-the-invention-of-the-phonograph.

[4] This quote is in direct reference to classical pianist John Wood, who made waves in 2004 after handing out bumper stickers in front of L.A.'s Amoeba Records, emblazoned with the slogan "Drum machines have no soul." John Wood was seemingly late to the game with his disappointment at the state of popular music, as the 1980s fascination with drum machines had by this time come and gone, while the use of samplers and sequencers were ubiquitous in hip-hop and other genres. For more on this history see: Oliver Wang, "Gimme the Beat (Box): The Journey of the Drum Machine," *NPR Music,* January 17, 2014, https://www.npr.org/sections/therecord/2014/01/17/263071563/gimme-the-beat-box-the-journey-of-the-drum-machine#:~:text=About%2010%20years%20ago%2C%20a,convinced%2C%20including%20producer%20Eric%20Sadler.&text=%22It's%20the%20people%20who%20put,drum%20machines%20soul%2C%20to%20me.

of exploring the new modes of embodiment generated through our increasing reliance on technology, as well as the ways in which this reliance affects the creation and communication of art. In recent years I have witnessed a trend in electronic and popular music to present visual and sonic material in which the body is presented as fluid and malleable, often through the use of imagery suggesting cyborg technology and electronic prosthesis, or by using audio production in inventive ways which suggest an extension of the body beyond a strictly human form. While not an exhaustive list, I include within this group artists such as SOPHIE, Holly Herndon, Arca, FKA Twigs, Grimes, Kelela, Fever Ray, and Björk, amongst others.

Throughout this thesis I argue that new relationships between body and sound are enabled through the use of computer technology, both on a material level, and a metaphorical level. What kinds of imaginative new worlds are enabled through the accessibility of digital technology, and how do these narratives inform the ways in which existing technology is perceived? What kinds of new embodied experiences are animated through the use of these technologies? Moreover, how are identity categories such as gender communicated or destabilized through digital technology? To answer these questions, I build on work within the scholarly field of feminist posthumanities and apply theories of embodiment explored therein. While the posthumanities is an umbrella term encompassing a diverse area of thought, it is bound together by a shared critique of humanist universalist notions of 'Man,' and recognition of the centrality of non-human agents, such as animals, plants, and technology, to the ways in which humans relate to one another, and understand ourselves. I then apply these concepts to the works of two producer/composer/performers who utilize technology in new and inventive ways: SOPHIE and Holly Herndon.

In the first chapter I outline some of the main arguments in the critical feminist stream of posthumanities, which I then place in dialogue with writing on electronic music and the body. I argue that while feminist posthumanism has incorporated fiction and cinema into its

theories, music is notably absent in any discussion of the relationship between nature and culture. This is unfortunate given the resonances between theories of embodiment explored in posthumanism and those discussed by electronic music scholars. As a result of electronic musicians' ability to incorporate advanced technological processes into the embodied act of musical composition, performance, and consumption, theories of posthuman embodiment are realized and normalized through the production of electronic music. To make connections between these fields I compare approaches to the body taken up in posthuman philosophy to writing on electronic music by Frances Dyson, Deniz Peters, Simon Emmerson, and Georgina Born. While each of these scholars approaches electronic sound from a different angle, they each make the case that musical works must be analyzed within the context of their creation and reception, thus calling for a recognition of musical works as assemblages which include both human and non-human agents. Moreover, in shifting toward a theory of musical embodiment bent on listener perception, these scholars engage in a deconstruction of the mind/body dualism which dictates humanist thinking.

In the second chapter I examine the works of electronic producer SOPHIE, particularly her 2018 album *OIL OF EVERY PEARL'S UN-INSIDES,* paying particular attention to the ways in which her inventive use of digital synthesis reimagines the relationships between voice, body and space. I provide a discussion of SOPHIE's elusive relationship to music journalism and her association with the London label PC Music, who were initially dismissed as a novelty or satirical movement. I argue that SOPHIE's relationship to authenticity is much more complicated than pure parody, as her hyper-polished and maximalist style both plays up its own artificiality, and revels in this artifice as a sincere form of musical confessionalism. Through close analysis of single tracks, I explore the ways in which SOPHIE synthesizes sounds drawn from real life, creating a secondary sonic world closely resembling, but not quite identical to, our own. Furthermore, I argue that

SOPHIE's ability to mimic extends beyond sound, onto concepts. Gender, power, and pleasure are also constructed as artificial within SOPHIE's works, which she positions as similarly malleable to the plastic squeaks and squeals on which she bases her samples. SOPHIE's use of digital synthesis as a tool for world-building sheds light on the capacity of technology to enable new modes of embodiment, in which the human body is extended and transformed through sound.

In the final chapter I turn to the music of composer, researcher, and performer Holly Herndon. Where SOPHIE's music takes up existing technologies as a way of extending beyond the human body, Herndon utilizes burgeoning artificial intelligence technology as a means of building human communion and connection on her album *PROTO.* Here too technology enables Herndon to produce sounds which are not obtainable through human performance alone, specifically with the development of her artificial intelligence 'baby' named Spawn. Herndon's collaborations with Spawn illustrate the early stage at which AI technology currently rests, thus dispelling unwarranted fears of musical automation often spurred by the mention of AI. Finally, I compare the emergent AI technology used on *PROTO* to the fictionalized narrative of AI surrounding virtual celebrity Miquela, created by the transmedia company Brud. In the case of both Miquela and Spawn political dilemmas come to the fore in considering how identity categories such as gender, race, and sexuality ought to be represented when anthropomorphizing technology.

On both *OIL OF EVERY PEARL'S UN-INSIDES* and *PROTO* the human body is figured as a site of contention, wherein the use of technology may reconfigure one's relationship to the material world. Posthuman theory demands that the dichotomy between discourse and reality be shaken up, and by using existing technology to create an even more technologically advanced and mediated environment, SOPHIE and Herndon do just that. My aim is thus to attend to both the material conditions which have allowed for the creation of

their musical works, and the imaginative new spaces that they open up. As will be explored, however, these artists are not entirely aligned in their musical projects. For Herndon, technology is a vessel through which human music-making can be explored, thus imposing the human capacity to sing onto the AI technology she has created. In contrast, SOPHIE emphasizes the ways in which technology may be a means of escaping the corporeal and gendered constraints placed of the body. In both circumstances, technology is used to expand the capacities of the voice to better express the new modes of embodiment enabled by our access to and reliance on digital technology.

Literature Review

New musical technologies, instruments, and methods of transmission are emerging at a rapid pace. The development of the internet, and subsequently music streaming platforms which have quickly replaced physical distribution as the primary means of music circulation, have vastly altered the music industry for listeners and artists alike. Given the rate with which shifts in popular music production and transmission are occurring, scholars in the fields of popular music studies, electronic music studies, and communications have been faced with the unique challenge of theorizing the impacts of such developments in real time. This literature review will survey articles and books which feature issues of gender, new technologies, and posthumanism as key concerns within popular and electronic music studies, and whose methodologies informed my approach to this topic. While many of these scholars utilize Donna Haraway's cyborg myth as a touchstone, her writing catalyses a much wider range of analyses which will be explored here.

An early scholar to address gender in electronic/dance music was Barbara Bradby, in her widely cited essay "Sampling Sexuality: Gender, Technology, and the Body in Dance Music." Bradby's article is reflective of larger shifts in feminist media studies and musicology, particularly in her choice of subject matter — popular music and youth culture — and her engagement with postmodernist literary critique. While postmodernism offers a theoretical lens through which to evaluate the emerging textual practices used by dance music producers, including the intertextual uses of sampling and 'stealing,' Bradby contends that it is pivotal that feminist critics recognize the role of these practices in the development of new ideologies surrounding gender and sexuality. Bradby points to the marginalization of popular music within both musicology and feminist criticism; while rock music has garnered the status of 'serious' music and is thus recognized as a legitimate area of academic interest, the categories of authorship and authenticity which have dominated rock discourse have

sidelined women's contributions, limiting their role to vocal performance. Of course, pigeon-holing women to the role of the singer is not limited to dance music or rock music but is rather a shared feature across genres and traditions. In her book *Swing Shift* Sherrie Tucker describes the dominant history of swing music's infrequent inclusion of the "all-girl" bands she studies, while the *canaries* (singers) get an honourable mention.[5] Similarly, in her article on Ani DiFranco Anna Feigenbaum illustrates the ways in which rock and pop criticism have treated women instrumentalists and producers as anomalies, while at the same time treating singing as a natural gift, in comparison to the hard-earned musicianship of instrumentalists.[6]

Bradby argues that such hierarchies are re-inscribed in dance music, but here in lieu of instrumentalists "[t]he new categories of studio hero — producers, mixers, 'scratcher,' etc. — are all normatively male."[7] Gendered divisions are similarly mapped onto vocal performances in house and other dance music styles, with women typically singing hooks and riffs while their male counterparts occupy the role of either the rapper or producer. Bradby posits this as an ideological as well as a musical division, claiming that "overall in dance music this gendering of voice appears as a powerful restatement of traditional gender divisions — the association of men with culture, language and technology, and of women with emotion, the body, sexuality — even if the associations are made in an, at times, exaggerated over-statement, with the 'performance' element foregrounded and some ironic distancing from any notion of authentic expression."[8] Such divisions are further problematized by the fact that most vocalists featured or sampled on dance music tracks are Black women, thus inculcating racist stereotypes which have historically associated Black

[5] Sherrie Tucker, *Swing Shift:"All-Girl" Bands of the 1940s* (Durham: Duke University Press, 2000), 4.
[6] Anna Feigenbaum, "'Some guy designed this room I'm standing in': marking gender in the press coverage of Ani DiFranco," *Popular Music* 24, no. 1 (2005): 37-56.
[7] Barbara Bradby, "Sampling Sexuality: Gender, Technology, and the Body in Dance Music," *Popular Music* 12, no. 2 (May 1993): 156.
[8] Barbara Bradby, "Sampling Sexuality: Gender, Technology, and the Body in Dance Music," 168.

women with sexuality and the body.[9] While Bradby disavows the utopianism often expressed by dance music participants, she nevertheless recognizes that the 'vocalist' model offers female singers autonomy in building their careers, and allows for an expression of strength and sexuality outside of the clearly defined boundaries of heterosexual marriage and motherhood.

Bradby's article makes clear the gendered divisions of labour in popular and dance music, as well as the complex racial and authorial politics invoked through processes of sampling and remixing. While she makes many important feminist critiques of dance music, with the advantage of time it is clear that her genealogy of electronic music misses some of the nuanced generic differences between early house and later, more mainstream genres. Bradby's choice to focus on the mainstream dance music of the early nineties results in her overlooking Chicago house's history as a predominantly queer, Black and Latino subculture, as examined in Micah Salkind's book *Do You Remember House?: Chicago's Queer of Color Undergrounds.*[10] By contrast, Susana Loza's response piece, "Sampling (heterosexuality): diva-ness and discipline in electronic dance music,"[11] acknowledges both the transgressive and the sexist aspects of the "diva" vocalist constructed in electronic music. She argues that electronic dance music is intertwined with science fiction and popular culture in idealizing a disembodied techno-future. For Loza, the use of "denatured" vocals — meaning any vocal processing involving cutting, speeding up or slowing down, looping, or the use of a vocoder — performs a "bodily reconfiguration"[12] which may produce "sonic cyborgs, fembots, and posthumans."[13] Building off of Bradby's critique, Loza argues that unlike the hybrid human-

[9] Barbara Bradby, "Sampling Sexuality: Gender, Technology, and the Body in Dance Music," 168.
[10] Micah E. Salkind, *Do You Remember House?: Chicago's Queer of Color Undergrounds*, (New York: Oxford University Press, 2019).
[11] Susana Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," *Popular Music* 20, no. 3 (2001): 349-357.
[12] Susana Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 350.
[13] Susana Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 349.

machine cyborg posited in Donna Haraway's essay "A Cyborg Manifesto"[14] the construction of a technologized "fembot" reifies binary gender, as well as racialized tropes of the sexy Black "diva." While Loza sees the production of fembot sexuality to be generally problematic, she also recognizes the potentially destabilizing or 'queer' possibilities of dance music technologies, which she deems the "performative posthuman."[15] Ultimately, Loza argues that while posthuman figures may be able to destabilize the social categories of liberal humanism, the erasure of embodiment is a "false solution" which more often than not reaffirms sexual and racial stereotypes.[16]

An updated discussion of the "robo-diva" trope is provided by Robin James, in her article "'Robo-Diva R&B:' Aesthetics, Politics, and Black Female Robots in Contemporary Music."[17] Whereas Loza only analyzes dance tracks which feature *sampled* vocalists, James turns to female vocalists Beyoncé and Rihanna who perform on their own songs. James argues that an examination of both race and gender politics is critical in elucidating the ways in which anxieties about technological development are mapped onto women's bodies. James builds upon Kodwo Eshun's 1998 book *More Brilliant than the Sun,* in which he argues that Black people's association with the pastoral and hypersexual, the assumption that their musical output is more 'natural' or 'authentic,' and the grave systemic violence and discrimination they have and continue to face have worked to code Black people as "pre-" or "non-human."[18] In response, artists within the Afro-futurist tradition including Sun Ra, Alice Coltrane, and Afrika Bambaataa "[invert] the racial-colonial logic"[19] which has shaped the

[14] I will provide a substantial discussion of Donna Haraway's influential essay "A Cyborg Manifesto" in the proceeding section.
[15] Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 354.
[16] Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 356.
[17] Robin James, ""Robo-Diva R&B": Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," *Journal of Popular Music Studies* 20, no. 4 (2008): 402-423.
[18] Robin James, ""Robo-Diva R&B": Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," 406.
[19] Robin James, ""Robo-Diva R&B": Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," 405.

reception their music, instead creating an aesthetic which emphasizes the non-natural. In the case of Bambaataa, this Afrofuturist aesthetic presents him as "always-already posthuman."[20] James' main criticism of Eshun is his minimal engagement with gender, which she contends is critical given the historical tendency to displace anxieties about technological advancement onto women's, and particularly Black women's, bodies.

These anxieties were addressed head-on in Beyoncé's 2007 BET Awards performance, in which she wore a robotic suit directly referencing Fritz Lang's film *Metropolis.* Playing upon the virtual/real dichotomy explored in Lang's film, Beyoncé calls to attention the ways in which her body and personhood are mediated by the scopophilic gaze of the audience and her consumption as a sexual object, doing away with any 'naturalness.'[21] Similarly, Rihanna's "robotic" emotionless vocal style, which has been compared to a vocoder, draws out questions about the role of gender in Afrofuturism. On her album *Good Girl Gone Bad* (2007), Rihanna plays upon the racialized virgin/whore dichotomy through her adoption of robotic visual aesthetics in the "Umbrella" music video, wherein "good girls are natural and white, bad girls are unnatural, robotic and black."[22] James' additions to Eshun's theory illustrate the heightened stakes at play in Black women's adoption of a "robo-diva" or posthuman persona, and the ways in which this aesthetic move might illustrate the intersection between fears about new technologies and fears of black women's sexuality.

Like Bradby, Loza, and James, Hannah Bosma invokes the idea of 'cyborg' vocality in her article "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal

[20] Robin James, ""Robo-Diva R&B": Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," 406.
[21] Robin James, ""Robo-Diva R&B": Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," 410-411.
[22] Robin James, ""Robo-Diva R&B": Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," 416.

music."[23] By contrast, however Bosma turns her attention to the world of electroacoustic and computer music, a style associated with 'high art,' academia, and avant-garde styles. Bosma aims to locate gender within a survey of works from this area, both in terms of individual participants involved in the composition, performance, and recording of these works, and in the representations of gender depicted within them, mainly through vocal performance. Bosma's statistical analysis reveals that while electroacoustic music is dominated by male composers, many female singers are featured both in recordings and live performances. She finds that female singers are more likely to perform in a classical Western style,[24] and to be featured performing non-verbal vocalisations,[25] whereas featured male voices are more often sampled from non-Western musical cultures[26] or provide spoken text.

Unlike in the examples discussed by Bradby and Loza, within the works surveyed by Bosma computerized voices were more likely to be associated with male singers.[27] Bosma also highlights the possibility of a less binary approach to gender through the employment of more ambiguous "inhuman" synthesized voices,[28] though this discussion is quite limited. Despite the significant differences in the relationships between gendered representation and technology in electrovocal music, Bosma comes to a conclusion quite similar to Bradby, claiming "[t]his stereotype relates woman to body, performance, tradition, non-verbal sound and singing, and man to electronic music technology, innovation, language and authority [...] it reflects the dualistic opposition of masculinity versus femininity and mind versus body that is so prevalent in our culture."[29] Though the statistics Bosma provides in her article illustrate a stark gender imbalance, she also sees the embrace of female singers within electroacoustic

[23] Hannah Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," *Organised Sound* 8, no. 1 (2003): 5-17.
[24] Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," 9.
[25] Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," 9.
[26] Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," 11.
[27] Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," 12.
[28] Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," 10.
[29] Bosma, "Bodies of Evidence, singing cyborgs and other gender issues in electrovocal music," 12.

music as a positive, calling for a greater valuation of the contributions of performers to the genre.

Returning to the topic of new technologies and popular music, Nick Prior addresses the development of software instruments and digital recording technology in his essay "Software sequencers and cyborg singers: Popular Music in the Digital Hypermodern."[30] Prior argues that while postmodernist theories have dominated much of the discourse in response to the movement to digital recording technology, these theories have been unable to fully express the aesthetic shifts propagated by the accessibility of digital music technology. Prior points to software instruments which emulate analogue instruments and the development of Digital Audio Workstations as having a particularly substantial impact on production and composition. He argues that the cut-and-paste functionality of programs like Logic inform not only the recording process but the composition and construction of a song, encouraging eclecticism and genre-bending.

Prior also delves into the popularity of the voice-encoder (or vocoder) technology used on hit songs like Cher's "Believe" (1998) and Britney Spears's "Piece of Me" (2007). Prior views the vocoder has having a "de-humanizing" hyperreal effect, arguing "*Autotune* turns the vocal into a series of interrupted chops, stutters and warps - less palliative treatment than act of deconstruction, [Britney Spears'] identity under constant assemblage and erasure. This applies as much to gender as it does to any other identity markers."[31] Prior provides an extensive discussion of Haraway's cyborg, arguing that the enmeshment of the machinic and human creates a flattened cyborg — but not entirely posthuman — voice.[32] Ultimately, Prior calls for music scholars, critics, and historians to take seriously the ways in which

[30] Nick Prior, "Software sequencers and cyborg singers: Popular music in the digital hypermodern," *New Formations* 66, no. 66 (2009): 81-99.
[31] Nick Prior, "Software sequencers and cyborg singers: Popular music in the digital hypermodern," 91.
[32] Nick Prior, "Software sequencers and cyborg singers: Popular music in the digital hypermodern," 92.

performance and compositional practices are altered by the technologies that musicians have access to.

Much of Prior's analysis of "Piece of Me" builds off of Key Dickinson's article "'Believe'? Vocoders, digitalised female identity and camp."[33] Here Dickinson takes a previously unexplored angle to discuss the popularity of vocoder and similar pitch-correction software at the turn of the twenty-first century: that of camp. Dickinson also recognizes the cyborg or cyber-feminist capacity of the vocoder, which confuses the naturalism and assumed authenticity of the female voice "not by ignoring it, but by creating the illusion of rummaging around inside it with an inorganic probe, confusing the listener as to its origin, its interior and its surface."[34] Dickinson further complicates her reading by highlighting the camp aesthetics central to Cher's performance of "Believe." She argues that part of the draw of camp, particularly for gay men well versed in this modality, is "a certain delight in the inauthentic, in things which are obviously pretending to be what they are not and which might, to some degree, speak of the difficulties of existing within an ill-fitting public façade."[35] Rather than simply reifying a cyborg reading of the vocoder effect, Dickinson illustrates how in the case of Cher's "Believe" this techno-trope may interact with other signifiers according to genre and star persona. Cher's status as a gay icon and camp figure thus shapes the way in which her use of the vocoder is read. Dickinson's article calls attention to many of the ambiguities surrounding authorship, authenticity, and irony brought upon by the use of the vocoder.

Missing in Dickinson's article, and indeed within many works on posthumanism and music, is an extensive discussion of race. Scholars Alexander Weheliye and James Gordon Williams both discuss the use of auto-tune as a tool for expressing racial positionalities, particularly in R&B vocal performances by African American musicians. In ""Feenin":

[33] Kay Dickinson, "'Believe'? Vocoders, digitalised female identity and camp," in *Pop Music and Easy Listening,* ed. Stan Hawkins (London: Routledge, 2011), 343-357.
[34] Kay Dickinson, "'Believe'? Vocoders, digitalised female identity and camp," 347.
[35] Kay Dickinson, "'Believe'? Vocoders, digitalised female identity and camp," 354.

Posthuman Voices in Contemporary Black Popular Music,"[36] Weheliye examines the use of new technological sounds in nineteen-nineties and early two-thousands R&B, with the vocoder and the use of cell phone sounds having particular pertinence. He argues that the persistent embrace of new technologies in hip-hop and R&B, including scratching, sampling, remixing, and the vocoder, does not illustrate a direct opposition to realism, but rather posits these factors as "thoroughly interfaced."[37] Weheliye has a quite different take on pitch-correction software than Bradby, Loza, or Prior. He explains, "[i]ronically, the vocoder effect in black popular music amplifies the human provenance of the voice, highlighting its virtual embodiment, because it conjures a previous, and allegedly more innocent, period in popular music, bolstering the 'soulfulness' of the human voice."[38] Weheliye is also wary of posthumanism's frequent concern with issues of gender and simultaneous inability to appropriately address questions of race, claiming "the posthuman frequently appears as little more than the white liberal subject in techno-informational disguise."[39] In reaction to these failings on the part of posthumanist theory, Weheliye proposes an alternative genealogy of the development of the posthuman, one that takes as its catalyst the use of new technologies in R&B as a means of articulating African American subjectivity, and which foregrounds the philosophies Sylvia Wynter and Kodwo Eshun, both of whom decentre the Cartesian rational 'Man' as a universalist subject.

James Gordon Williams expands on Weheliye's ideas through his evaluation of singer T-Pain's use of auto-tune, arguing that any universalism humanism, and in turn any universal posthumanism, are equally a fallacy.[40] Much like Weheliye's evaluation of the vocoder,

[36] Alexander G. Weheliye. "'Feenin': Posthuman Voices in Contemporary Black Popular Music," *Social Text* 20, no. 2 (2002): 21-47.
[37] Alexander Weheliye, "'Feenin': Posthuman Voices in Contemporary Black Popular Music," 34.
[38] Alexander Weheliye, "'Feenin': Posthuman Voices in Contemporary Black Popular Music," 37.
[39] Alexander Weheliye, "'Feenin': Posthuman Voices in Contemporary Black Popular Music," 23.
[40] James Gordon Williams, "Crossing Cinematic and Sonic Bar Lines: T-Pain's "Can't Believe It"," *Ethnomusicology Review* 19 (2014): 63.

Gordon Williams posits T-Pain's use of auto-tune, audible to the listener sometimes to the point of excess, as a means of embracing "technology to trouble the binary between racially authentic sound and technologically manipulated sounds."[41] He continues: "T-Pain, in his use of Auto-Tune and in the representations of black subjects in his video production, joins the many contemporary black artists who have rejected the need to create representations of humanity in their work," skipping the position of human between that of subhuman and posthuman.[42] Both Weheliye and Gordon Williams reject the idea that a singular posthumanist subject is possible, and their attention to aural techniques which disrupt the notion of a single liberal humanist subject is crucial for understanding the uses of these technologies.

Icelandic musician Björk has also proven to be a subject of fascination for many music scholars who engage with posthumanism or posthuman themes. In her book chapter "Mechanized Bodies: Technology and Supplements in Björk's Electronica,"[43] music theorist Jennifer Iverson charts the relationship between electronic production, acoustic instrumentation, and the human voice from Björk's *Debut* (1993) to *Biophilia* (2011). She argues that by challenging binary oppositions between organic/inorganic, natural/technological, and whole/lacking through her unconventional treatment of the aural space, Björk transcends the limitations imposed upon the human body, thus suggesting a cyborg body. Furthermore, Iverson posits that Björk's extension of her voice through her experimental production and post-production tactics is reticent of *prosthetics,* writing "[o]ur bodies, enhanced with prosthetic supplements from the mundane to the technological, are always in the process of becoming. There is no originary, whole body; furthermore, Björk's

[41] James Gordon Williams, "Crossing Cinematic and Sonic Bar Lines: T-Pain's "Can't Believe It"," 56.
[42] James Gordon Williams, "Crossing Cinematic and Sonic Bar Lines: T-Pain's "Can't Believe It"," 63.
[43] Jennifer Iverson, "Mechanized Bodies: Technology and Supplements in Björk's Electronica," in *The Oxford Handbook of Music and Disability Studies,* eds. Blake Howe, Stephanie Jensen-Mouton, Neil William Lerner, and Joseph Nathan Straus (Oxford: Oxford University Press, 2016), 155-175.

music never asks us to believe that technological or sensory prostheses will make our becoming bodies whole or well."[44] While Iverson makes clear connections between sound studies, posthumanism, and disability studies through her discussion of prosthetics, the link between Björk's music and the lived realities of people who use prosthetics is unclear, de-politicizing her engagement with disability studies.

Many similar themes are discussed by Andrew Robbie in his article "Sampling Haraway, Hunting Björk: Locating a Cyborg Subjectivity."[45] Robbie utilizes Haraway's cyborg myth but warns against a misapplication of her theory, claiming that scholars such as Susana Loza, Kay Dickinson and Joseph Auner have been guilty of writing which "reifies the cyborg as a fixed concentration of limited boundary crossings."[46] Rather than applying this "inversion-as-implosion" model,[47] Robbie pays particular attention to the ambiguities in Björk's lyrical and musical representations, particularly with regards to her animal-machine crossings. In his reading of "Hunter" from *Homogenic,* Björk overcomes an unknown, imaginary future through her embrace of the hunter figure, while her use of sampling alongside Ravel's sexually charged Bolero rhythm builds a narrative of reproduction outside of a heteronormative script.

Further ethnographic and historical material on women's involvement in electronic music scenes sheds light on the devaluation of women's labour and creativity within this field. Tara Rodger's book *Pink Noises* has made a significant contribution to electronic music history, providing interviews with twenty-four women involved in the composition and production of electronic music and dance cultures.[48] Rodgers' feminist historiography of electronic music has paid tribute to the various forms of women's labour which have

[44] Jennifer Iverson, "Mechanized Bodies: Technology and Supplements in Björk's Electronica," 170.
[45] Andrew Robbie, "Sampling Haraway, Hunting Bjork: Locating a Cyborg Subjectivity," *repercussions* 10 (2007): 57-95.
[46] Andrew Robbie, "Sampling Haraway, Hunting Bjork: Locating a Cyborg Subjectivity," 59.
[47] Andrew Robbie, "Sampling Haraway, Hunting Bjork: Locating a Cyborg Subjectivity," 60.
[48] Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound*, (Durham: Duke University Press, 2010).

contributed to electronic music, including instrument builders, performers, producers, and DJs, amongst others.[49] Similarly, in her book *Beyond the Dance Floor: Female DJs, Technology, and Electronic Music Dance Culture* Rebekah Farrugia explores the way that gender and technology intersect in the experiences of female DJs.[50] While these two texts provide important insights into the lived experiences of women in electronic music they focus less on the aesthetic representations of posthumanism that I am interested in.

Clear themes and preoccupations, as well as shared theoretical influences, are discernible between the scholars discussed here. The widespread adoption of Haraway's myth of the cyborg is met with different reactions, with theorists such as Iverson and Robbie recognizing the transgressive potential of this myth, while Bradby and Loza see the technologization of women's voices as an additional form of control. The liberalism with which the idea of the cyborg is applied also varies, with certain scholars claiming a cyborg subjectivity based on a very small amount of material, while Andrew Robbie argues that a more nuanced application of Haraway's theory is essential. Clear from each of these articles is the necessity of a re-evaluation of notions of authorship and authenticity, as technologies new and old blur the boundaries between composer, performer, producer, and engineer, amongst the many other collaborators involved in the creation of popular music. Feminist posthumanism offers an alternative from rock discourse's emphases on mastery and the desire for a 'natural' expression of interiority, and from electrovocal music's centring of the composer within a genius/Great composer paradigm. Viewing both human and non-human actors as having influence over an artist's creative output gives rise to a more dispersed and multifaceted conception of the circulation of power within popular music composition and production. In the proceeding section I will explore further how posthuman theory and music

[49] Tara Rodgers, "Towards a Feminist Historiography of Electronic Music," in *The Sound Studies Reader,* ed. Jonathan Sterne (New York: Routledge, 2012), 475-490.
[50] Rebekah Farrugia, *Beyond the Dance Floor: Female DJs, Technology and Electronic Dance Music Culture*, (Bristol: Intellect, 2012).

scholarship on electronic and embodiment may be applied in tandem to better theorize the employment of new technologies in popular/electronic music.

Chapter 1. Sounding Posthumanism: An Interdisciplinary Approach to Embodiment and Technology

The posthuman is a term that has been widely used and contested in philosophy, cultural studies, and feminist and gender theory, but which has gained minimal traction within popular music studies. This is surprising given the many overlapping concerns of these two disciplines, including development of new tools (or instruments) and their uses, and the relationship between embodiment, perception, and technology. Conversely, while posthuman theorists have often cited speculative fiction, science fiction cinema, and visual art as having informed their theoretical inquiries, theorists rarely engage with musical or sound examples, nor draw on music scholarship. This too is surprising given the recent uptick in popular and electronic musicians who have taken up visual tropes of the posthuman, presenting themselves in ways that disrupt the binary of organic and technological, and which unsettle the boundary between inside and outside the body. In addition to visual cues which suggest posthuman themes, these artists utilize technology in new and exciting ways either in live or recorded music, which also reformulate the relationship between sound and body, particularly through vocal processing. That this field is dominated by female, non-binary, and/or queer performers speaks considerably to the continued political and social salience of the posthuman as an aesthetic trope. In this chapter I will highlight convergences and differences between theories of the body presented in electronic music studies, and those presented by feminist posthumanist scholars. After providing a brief genealogy of feminist posthuman studies, I will argue for the inclusion and further consideration of music, and electronic music in particular, as a site of interest and theorization by posthuman theorists.

Transhumanism, Posthumanism, and Cyborgism

Posthumanism is an umbrella term which encompasses multiple and often conflicting theoretical traditions, and which has seen many iterations since its emergence in the nineteen

nineties. Included under this umbrella are philosophical, cultural, and critical posthumanism, transhumanism, and new materialisms, amongst others. Each of these traditions share certain interests, namely an investment in challenging the fixity of the notion of the "human," and an attentiveness to the relationships between humans, their technologies, and non-human animals. There are clear differences in the political aims of these traditions, however, which are worth clarifying, lest they be conflated with one another.

Many people unfamiliar with literature on posthumanism make assumptions about what constitutes this philosophical branch, and often confuse certain tenets of *trans*humanism with posthumanism. Transhumanism is a philosophy which re-envisions the possibilities of the human body in its material form, advocating for and conducting research into processes which may extend or transform human life through the use of technological interventions onto the biological body. For some transhumanists, the ultimate goal may be to *become posthuman,* that is to use technologies to vastly alter one's experience of the world and their embodiment. Max More, an influential thinker in this area, defines transhumanism as follows:

> Transhumanism is both a reason-based philosophy and a cultural movement that affirms the possibility and desirability of fundamentally improving the human condition by means of science and technology. Transhumanists seek the continuation and acceleration of the evolution of intelligent life beyond its currently human form and human limitations by means of science and technology, guided by life-promoting principles and values.[51]

As with posthumanism, science and technology are of significant interest. Where transhumanism differs from posthumanism, however, is in its underlying drive toward human advancement. For More, "extropianism," with its principles of "perpetual progress, self-transformation, practical optimism, intelligent technology, open society (information and

[51] Max More, "True Transhumanism," in *H+/-: Transhumanism and Its Critics,* ed. Gregory R. Hansell and William Grassie (Philadelphia: Metanexus Institute, 2010), 137.

democracy), self-direction, and rational thinking,"[52] is a logical next step for human development. As Francesca Ferrando explains, however, the principles which guide extropianism and transhumanist thought have much in common with Enlightenment thinking, with its emphasis on progress and individualism, and could thus be described as "ultra-humanism."[53] In failing to attend to historical and contemporary sites of difference within the category of the human, and in utilizing a future-oriented approach to the relationship between humans and technology, transhumanism often falls into a techno-reductionist[54] or techno-utopian trap.

By contrast, posthumanism aims to elucidate how the category of the human has changed throughout history to better understand how contemporary developments in technological, economic, and environmental systems may alter how we think about the relationships between humans, animals, and machines. For many posthumanist thinkers, including Francesca Ferrando and Rosi Braidotti, this entails a recognition of the many processes through which certain people or groups are deemed *less* than human on account of factors such as race, sexuality, gender, disability, or class, both historically and presently. Indeed, Braidotti makes explicit that "the 'human' is not a neutral term but rather a hierarchical one that indexes access to privileges and entitlements."[55] Rather than wholly embracing the posthuman as a utopian potential future, Braidotti stresses the need to examine the development of new technologies alongside increasing globalization and advanced capitalism. The politically and historically minded component of posthumanism is further stressed by Ferrando: "The historical and ontological dimension of technology is a crucial

[52] Francesca Ferrando, "Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms," *Existenz* 8, no. 2 (Fall 2013): 27.
[53] Francesca Ferrando, "Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms," 27.
[54] Francesca Ferrando, "Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms," 28.
[55] Rosi Braidotti, "Posthuman Critical Theory," in *Critical Posthumanism and Planetary Futures,* eds. Debashish Banerji and Makarand R. Paranjape, (New Delhi: Springer Link, 2016), 15.

issue, when it comes to a proper understanding of the posthuman agenda; yet, posthumanism does not turn technology into its main focus, which would reduce its own theoretical attempt to a form of essential and techno-reductionism. Technology is neither the 'other' to be feared and to rebel against […] nor does it sustain the almost divine characteristics which some transhumanists attribute to it."[56] Despite the insistence of scholars such as Ferrando and Braidotti that the posthuman not be applied to utopian ends, sound studies scholar Frances Dyson makes the bold claim, that "'posthumanism,' like postmodernism, bears the weight of a 'retro-futurism' — a nostalgic yearning for the future promised in the early twentieth century and particularly emphasized in the aftermath of World War II blended a cynical acknowledgement that technology has not overridden human greed or brutality."[57] Keeping this criticism of posthumanism in mind, I will remain resistant to this techno-utopian pull, even as such ideas are embraced by some electronic artists.

The philosophical, cultural, and critical branch of posthumanism developed in large part from postmodernist literary theory. Pivotal to the development of posthuman thought and feminist technoscience is the work of multidisciplinary thinker Donna Haraway, both in the content of her research and in her experimental methodology. Haraway herself resists categorization according to specific strands of scientific or theoretical discourse, in part for fear of a misappropriation of her ideas towards utopian means. Nevertheless, her works, including the seminal essay "A Cyborg Manifesto;"[58] the rest of her companion species series;[59] her concept of situated knowledges;[60] and other works within feminist science studies resonate with many ideas within feminist posthumanism. In her "Cyborg Manifesto,"

[56] Francesca Ferrando, "Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms," 28.
[57] Frances Dyson, *Sounding New Media,* (Berkeley: University of California Press, 2009), 175.
[58] Donna Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in *Manifestly Haraway,* ed. Donna Haraway (Minneapolis: University of Minnesota, 2016), 3-90.
[59] Donna Haraway, "The Companion Species Manifesto: Dogs, People, and Significant Otherness," in *Manifestly Haraway,* ed. Donna Haraway (Minneapolis: University of Minnesota, 2016), 91-198.
[60] Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (Autumn 1988): 575-599.

first published in 1985 and edited and re-published in 1991, Haraway proposes the ironic political myth of the cyborg as a hybrid figure between human and machine. She uses this figure to think through and against Western traditions of liberal humanism, positing the cyborg as a figure of resistance. This is accomplished through the cyborg's reworking of nature and culture, her anti-biologism, anti-essentialism, and her rejection of Oedipal and maternal associations. The overtly anti-natural standpoint of the cyborg makes explicit the potential trappings of identity politics,[61] which Haraway argues should be abandoned in favour of relations of "affinity."[62] She asserts that nothing natural binds women together, and in fact "[t]here is not even such a state as 'being' female, itself a highly complex category constructed in contested sexual scientific discourses and other social practices."[63] In being relinquished from this biological and discursive determinism, the cyborg can be understood as being both posthuman and post-gender.

The cyborg is an appealing figure in popular culture and had a significant presence in science fiction cinema and literature well before Haraway's article was published.
As is clear from my literature review, the cyborg has also proven to be a persistent preoccupation for musicians, as well as music scholars and gender studies theorists. Haraway's manifesto is in part a call to action for shared political ideology rather than shared identity, however this focus on "affinity" is sometimes lost in applications of cyborgism to works in popular culture. Moreover, while Haraway's cyborg is imagined within a socialist feminist framework, this political paradigm is most often missing from musical applications

[61] I believe Haraway's discussion of affinity is useful within feminist politics as it moves away from banding together behind the idea of a shared experience of womanhood, toward a shared political vision of justice which includes women's liberation but which also takes into account race, class, disability, sexuality, and other categories which may contribute to one's oppression. While I find Haraway's discussion of affinity compelling I also recognize the power and necessity to rally around identity categories, specifically within marginalized communities or for people who have multiple intersecting identities which inform their lived experiences and political alignments.
[62] "Affinity: related not by blood but by choice, the appeal of one chemical nuclear group for another, avidity." Donna Haraway, *Manifestly Haraway,* 16.
[63] Donna Haraway, *Manifestly Haraway,* 16.

of the cyborg myth. At the same time, Haraway sees massive political value in storytelling, be it through fiction, performance or music. She writes: "[c]yborg writing is about the power to survive, not on the basis of original innocence, but on the basis of seizing the tools to mark the world that marked them as other. The tools are often stories, retold stories, versions that reverse and displace the hierarchical dualisms of naturalized identities."[64] As will be explored throughout my second and third chapters, the production of musical sound, with its embedded associations of genre, gender, race, and nationality (amongst others) has the ability to tell its own stories, and displace both musical and social hierarchies. As Haraway writes, "myth and tool mutually constitute each other."[65] Looking to feminist posthumanist theory — with its emphasis on materialism — and theories of musical perception may highlight the musical means through which electronic artists are able to produce "cyborg writing," as well as elucidate how new musical tools inform the types of "myths" musicians tell. With this question in mind, I will now provide a more detailed account of feminist posthumanism and its relationship to embodiment.

New Materialisms: The Posthuman Turn and Embodiment

The philosophical, cultural, and critical branches of posthumanism interact with, expand upon, and borrow from other critical perspectives within continental philosophy. Notably utilizing concepts born out of poststructuralism and postmodernism, posthumanism makes use of the forms of deconstruction and criticism usually waged at language more broadly, to encompass the material objects of daily life. In her book *How We Became Posthuman*, literary critic Katherine Hayles traces the history of cybernetics in relation to the liberal humanist subject, illustrating the ways in which this change in the circulation of

[64] Donna Haraway, *Manifestly Haraway*, 55.
[65] Donna Haraway, *Manifestly Haraway,* 33.

information (literary or otherwise) has contributed to the posthuman condition. For Hayles, the posthuman is a *point of view,* which refuses demarcations between bodily existence and computer simulation.[66] From this viewpoint the human body becomes one amongst many prosthetic technologies that may be manipulated as a form of social and material interaction:

> [T]he posthuman view thinks of the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born […] by these and other means, the posthuman view configures human being so that it can be seamlessly articulated with intelligent machines. In the posthuman, there are not essential differences or absolute demarcations between bodily existence and computer simulation, cybernetic mechanism and biological organism, robot teleology and human goals.[67]

Catherine Adams similarly emphasizes that posthumanism does not entail a denial of our humanity or a totalizing embrace of the machine/technological world, but is a way reconsidering and *attending to* the everyday things of our world.[68] In response to rapidly advancing technologies, ecological fragility, and the globalization of capitalist markets, posthumanism prompts feminists and critical theorists to think carefully through the relationships between humanity, technologies, and non-human agents.

The construction of subjectivity in relation to embodiment is central to posthumanist thought and has been approached differently over time by various scholars. Hayles's point of view is exerted through a rejection of the natural self, favouring a distinct separation of information and materiality, and in turn creating a hierarchy which privileges the former.[69] For Hayles, the erasure of embodiment is a shared characteristic of the posthuman and the liberal humanist subject, as the posthuman emphasizes cognition rather than embodiment.[70] In their book *A Feminist Companion to the Posthumanities* Rosi Braidotti and her co-editor

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[66] Katherine Hayles, *How We Became Posthuman* (Chicago: University of Chicago Press, 1999), 2-3.
[67] Katherine Hayles, *How We Became Posthuman,* 3.
[68] Catherine Adams, *Researching a Posthuman World: Interviews with Digital Objects* (London: Palgrave, 2016), 2.
[69] Katherine Hayles, *How We Became Posthuman,* 12.
[70] Katherine Hayles, *How We Became Posthuman,* 5.

Cecilia Åsberg suggest that posthumanities "are *not post-biological* (but insistent on corporealities), yet firmly *postnautral.*"[71] Contrastingly to Hayles's stance, philosopher Braidotti insists that her posthuman subject be "embodied and embedded"[72] and that posthumanism be directly concerned with the reconceptualization of the relationship between technology and human embodiment. For Braidotti, nature and culture needn't be understood in opposition. She writes, "[m]y monistic philosophy of becomings rests on the idea that matter, including the specific slice of matter that is human embodiment, is intelligent and self-organizing. This means that matter is not dialectically opposed to culture, nor to technological mediation, but continuous with them."[73] Whereas Hayles sees some overlap in liberal humanism and posthumanism, Braidotti's posthuman subject hinges on a total refusal of Eurocentric liberal humanism, instead insisting on materialist approaches to feminist epistemology and ontology.[74]

Contemporary posthuman feminism can thus be understood in relation to the larger movement of new material feminism, which redefines the body, materiality, and nature as principles sites of inquiry for feminist discourse.[75] This reinvestment in the material is stressed by Susan Hekman who, in her assessment of the lineage of Haraway's cyborg, argues that feminist theory's continued investment in postmodernism illustrates a failure to establish a new paradigm which deconstructs the "discourse/reality dichotomy."[76] Indeed, a shared concern amongst posthumanist and new materialist feminist scholars is a desire to "make matter matter"[77] through a movement from epistemology to ontology. For Hekman, this ontology diverges from out-dated modernist concepts by recognizing that "knowledge is

[71] Cecilia Åsberg and Rosi Braidotti, *A Feminist Companion to the Posthumanities,* (Cham: Springer, 2018), 12.
[72] Rosi Braidotti, "Posthuman Critical Theory," 15.
[73] Rosi Braidotti, *The Posthuman,* (Cambridge: Polity, 2013), 35.
[74] Åsberg and Braidotti, *A Feminist Companion to the Posthumanities,* 11.
[75] Stacy Alaimo and Susan Hekman, *Material Feminisms* (Bloomington: Indiana University Press, 2008), 6.
[76] Susan Hekman, "Constructing the Ballast: An Ontology for Feminism," in *Material Feminisms,* ed. Susan Hekman and Stacy Alaimo (Bloomington: Indiana University Press, 2008), 86.
[77] Karen Barad, "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter," *Signs* 28, no. 3 (2003): 801.

always mediated by concepts and, in many cases, technology as well."[78] Similarly, in her new materialist work *Nomadic Theory* Braidotti urges the replacement of a metaphysics of being with a "process ontology bent on becoming."[79] Braidotti's neo-materialist understanding of the body is drawn from various sources, as she borrows from Deleuze and Guattari with the claim of reworking these ideas within a feminist and post-colonialist theoretical viewpoint. As each of these scholars attempt to rethink subjectivity through a consideration of both materiality and technology, multiple understandings of embodiment come to the fore. As Anne Balsamo reminds her readers, "[p]ostmodern embodiment is not a singularly discursive condition" but rather must be considered through the lens of gendered and racialized structures which shape the construction and discipline of material bodies.[80]

Despite these heterogeneous claims by posthumanist feminist scholars regarding embodiment, some clearly defining characteristics are shared within feminist posthumanism. At its most basic level, the objective of this theoretical turn is to create an updated mode of subjectivity for feminist discourses, humanities, and sciences; creating a revised method of inquiry with the capacity to think across disciplines. This goal is achieved through the disavowal of liberal humanism, and a rethinking of the interdependent relationships between humans, non-human animals, other forms of organic life, and technology. The resultant effect is a destabilization of the anthropocentric dichotomies of humanism, particularly the divisions between subject and object, public and private, active and passive, and of course human and machine. Moreover, posthumanism's attendance to both *matter* and *discourse* — also conceptualized as *tool* and *myth* — is particularly useful thinking through the relationship between instruments and their uses, as well as musical sounds and their

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[78] Susan Hekman, "Constructing the Ballast: An Ontology for Feminism," 109.
[79] Rosi Braidotti, *Nomadic Theory: The Portable Rosi Braidotti* (New York: Columbia University Press, 2011), 7.
[80] Anne Marie Balsamo, "Forms of Technological Embodiment: Reading the Body in Contemporary Culture," in *Feminist Theory and the Body: A Reader,* eds. Janet Price and Margrit Shildrick (New York: Routledge, 1999), 287.

associated meanings. My aim here is not to evaluate the validity of posthumanism macroscopically, but to put the insights provided by posthumanist scholars to use in my analysis of electronic music which utilizes these same themes. Rather than taking the "hard" posthuman position that we are already, or have *always been* posthuman, I take up the posthuman as a point of view from which to begin a discussion of the aesthetic practices of artists whose work is deeply invested in technological themes.

Posthuman theory is often dismissed either as overly optimistic about possible futures and technologies or, conversely, fatalistic about the human condition. For many of the musicians I will discuss throughout this thesis it seems that new technologies offer exciting and potentially utopic possibilities for self-representation. While this may be dangerous territory for the theorist, for artists and musicians appropriating the themes and ideas of posthumanism does not take on the same moralistic weight. On the contrary, art is the ideal site to fantasize about what a better world might look (or sound) like. In utilizing the posthuman as a metaphor, artists working in popular and electronic music, as well as fiction writers and filmmakers, often teeter into such utopian visions of the future. Throughout this thesis I will resist the urge to join my artistic subjects in their imaginative fantasies, and instead perform the delicate balancing act of attending to the actual technological means through which these fantasies are enabled, as well as the political and musical meanings attached to these metaphors.

Embodiment and Electronic Music

The theme of embodiment is of similar concern to music scholars working in the areas of feminist musicology, music cognition, and electronic music research. The development of the "new" musicology and turn toward gender studies and queer theory in the nineteen-nineties displaced the primacy of the notated score for musical analysis, allowing

for a newfound scholarly interest in individual performances/performers and the role of the body. In her pioneering book *Feminine Endings,* Susan McClary explains the Cartesian mind-body split circumscribed in Western art music and musicology: "Western Culture – with its puritanical, idealist suspicion of the body – has tried throughout much of its history to mask the fact that actual people usually produce the sounds that constitute music."[81] McClary's analysis is exceptional in her investment in the sexual politics of music, wherein bodily desire is configured as a central site in which musical meaning is connoted and communicated. Suzanne Cusick's book chapter "On a Lesbian Relationship with Music: A Serious Effort not to Think Straight"[82] similarly posits the body — and its affective responses while playing, listening to, or analyzing music — as the primary locus of musical understanding.[83] Such is true of much of the queer musicology developed at this time, exemplified in the edited collection *Queering the Pitch: The New Gay and Lesbian Musicology.* While these texts have been pivotal in the development of feminist and queer musicology, they focus almost exclusively on composers, live performances, and performers, leaving behind questions about the role of embodiment in recorded works. In the case of McClary, recorded music is even regarded with some suspicion: "The advent of recording has been a Platonic dream come true, for with a disk one can have the pleasure of the sound without the troubling reminder of the bodies producing it. And electronic composition makes it possible to eliminate the last trace of the nonidealist element."[84]

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[81] Susan McClary, *Feminine Endings,* (Minneapolis: University of Minnesota Press, 2002), 136

[82] Suzanne Cusick, "On a Lesbian Relationship with Music: A Serious Effort Not to Think Straight" in *Queering the Pitch: The New Gay and Lesbian Musicology,* eds. Philip Brett, Elizabeth Wood and Gary C. Thomas, (New York: Routledge, 1996), 67-83.

[83] Cusick's article uses the body and sexuality as a metaphor for musical exchange and is thus useful in illustrating the sea change that musicology underwent with the turn toward "new" musicology. Cusick's article is not without its problems, however. In theorizing a "Lesbian Relationship with Music" Cusick posits a utopian vision of lesbianism, which fails to address the intersection of other identity factors such as race, class, or disability, which may contribute to power differentials within lesbian relationships. Cusick's article presumes a universal experience of lesbianism which does not account for experiences of abuse, and which reifies binary categories of sex and gender.

[84] Susan McClary, *Feminine Endings,* 136.

For scholars who write about electronic music recorded works make up the bulk of their material for analysis. Even when performed in a live setting, electronic musicians often feature processes of sampling and remixing, reproducing recorded works to create a new piece. Electronic music thus poses problems for traditional musicological notions of the embodied performer, a concern made even more potent by the move from analogue to digital recording technology made by many composers and musicians. Musicians working in studios with digital equipment (now a ubiquitous setup) are privileged with the endless ability to re-take, edit, and modify their performances, practices which have been met with scepticism. Rather than view electronic music as the disembodied antithesis to acoustic musical performance, scholars Frances Dyson, Deniz Peters, Simon Emmerson, and Georgina Born theorize musical embodiment in ways that challenge the distinction between the body and technology, and which have resonances with posthumanism.

In her book *Sounding New Media* sound studies scholar Frances Dyson traces the history of sound technologies in the twentieth century, highlighting the works of artists and canonical composers who make use of these technologies, including John Cage, Edward Varèse, and Pierre Schaeffer, as well as lesser known artists. Drawing on philosophy, sound studies, cinema studies, and technology studies, Dyson posits that "new media" technologies — including virtual reality and the internet — provoke an ontological shift for the user: "The features that differentiate new media — the ability to 'enter the screen,' to interact with three-dimensional images or 'virtual objects,' to acquire a new subjectivity, a liquid identity, to enjoy authentic rather than mediated experience, and to transcend the material — all these features are present in the phenomenality of sound, in the metaphysics of the ephemeral, and in the rhetorics of Western art music."[85] Dyson proposes that new sound technologies

[85] Frances Dyson, *Sounding New Media,* (Berkeley: University of California Press, 2009), 3.

function to create the sensation of "immersion," which listeners are already accustomed to given the "phenomenal" characteristics of sound.[86] She writes,

> [T]he fact that [sound] is invisible, intangible, ephemeral, and vibrational — coordinate with the physiology of the ears, to create a perceptual experience profoundly different from the dominant sense of sight […] In listening, one is engaged in a synergy with the world and the senses, a hearing/touch that is the essence of what we mean by gut reaction — a response that is simultaneously physiological and psychological, body and mind.[87]

Dyson's conception of sound as embodied both on the part of the listener and the performer, and as engaging both body and mind, thus troubles the mind/body dualism in much the same way as posthumanism.

Dyson engages with posthuman theory, particularly Katherine Hayles' *How We Became Posthuman,* in the development of her idea of an immersive digital atmosphere, but is clear that they are not theoretically equivalent.[88] Dyson rejects the future-oriented position of the posthuman, instead claiming that there is a historical continuity between the immersive materialism of electromagnetic waves and the virtual environments that have been deemed "post" to human. While Dyson rejects the demarcation of "post," I find her discussion of the aural and atmospheric space which "suggests a relationship not only with the body in its immediate space but with a permeable body integrated within, and subject to, a global system: one that combines the air we breathe, the weather we feel, the pulses and waves of electromagnetic spectrum that subtends and enables technologies, old and new, and circulates […] in the excitable tissues of the heart,"[89] to be very much in alignment with Bradotti's approach to critical theory. Braidotti calls for a posthuman approach which is "embodied and embedded,"[90] and also proposes the posthuman as "an epistemological framework for supporting the elaboration of alternative values and new codes of inter-relation that extend

[86] Frances Dyson, *Sounding New Media,* 4.
[87] Frances Dyson, *Sounding New Media,* 4.
[88] Frances Dyson, *Sounding New Media,* 17.
[89] Frances Dyson, *Sounding New Media,* 16-17
[90] Rosi Braidotti, "Posthuman Critical Theory," 15.

beyond human influence and cognisance, but do not discount it."[91] Despite Dyson's assertion that her notion of "atmospheres" is in dialogue with but separate from posthuman theory, her main argument that sound, whether technologically mediated or not, turns the listener's awareness to both body and environment is useful in thinking through the potential insights that sound studies may offer the posthumanities.

Deniz Peters takes a similar approach to Dyson, considering the embodied status of sound from the perspective of the listener, rather than the performer. In *Bodily Expression in Electronic Music,* he begins from the premise that music and the body are fundamentally inseparable, but that electronic music has complicated this truism. He claims that in the performance of electronic music the corporeality of the performer is obscured, and asks: "With no body to abstract from, neither on the side of production, nor on the side of listening, is such music perhaps simply one without bodily expression — that is, *inevitably* disembodied?"[92] His answer, unsurprisingly, is no. Rather than focus on the bodily actions of the performer or producer, Peters posits that listening is an embodied experience as a "consequence of active perception."[93] While electronic works have been dismissed as 'disembodied,' Peters refutes these claims through his position that the act of perception is a *bodily act.*[94] What's more, Peters argues that the bodily dislocation within electronic music alters this listening experience: "touch — occurring during sonic articulation via bodily expression and, as a feeling of touching or being touched, in the listener's proprioceptivity - can be absent or present, and in its presence apparent or real, in electronic music. Electronic music becomes an *interrogation* of human presence or absence by the very difficulty that

[91] Simone Bignall and Rosi Braidotti, "Posthuman Systems," in *Posthuman Ecologies,* eds. Rosi Braidotti and Simone Bignall, (London: Rowan and Littlefield, 2019), 2.
[92] Deniz Peters, "Touch: Real, Apparent, and Absent," in *Bodily Expression in Electronic Music,* eds. Deniz Peters, Gerhard Eckel, and Andreas Dorschel (New York: Routledge, 2012), 18.
[93] Deniz Peters, "Touch: Real, Apparent, and Absent," 18.
[94] Deniz Peters, "Touch: Real, Apparent, and Absent," 18.

composing this presence in fact entails."[95] Peters bases his theory of musical perception on the work of Merleau-Ponty, arguing that the "felt body," emphasized by listening, illustrates that mind and body are intertwined.[96] Peters' emphasis on the tactility generated by sound is a significant contribution to the study of electronic music, and offers exciting new ways of linking music perception and cognition to philosophies of embodiment.

Throughout the course of *Electronic Music and Bodily Expression* many other music scholars respond to and build upon Peters' theory of perception as a bodily act. In his chapter "Live Electronic Music or Living Electronic Music?" Simon Emmerson aims to move beyond the concept of 'live' music and instead questions whether a human body needs to be present to create 'bodily expression.'[97] This question is imperative in the case of electronic music created through artificial intelligence, which will be discussed in the third chapter. In her response to Emmerson, Georgina Born connects his model of 'living presence' to posthumanism, as Emmerson challenges the dualism between humans and machines. She also highlights how Emmerson's focus on the body reflects a larger movement in the humanities toward a focus on "embodiment, materiality, presence and the haptic."[98] While Born welcomes the move toward a "relational ontology"[99] catalyzed by the humanities "affective turn," she argues that any discussion of the corporeal and the material must also be met with a discussion of the *social.*[100] This criticism may also be extended to Peters, whose discussion of the "felt body" fails to address the ways in which the body is both materially and discursively constructed, or how different people may experience their own bodies differently.

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[95] Deniz Peters, "Touch: Real, Apparent, and Absent," 19.
[96] Deniz Peters, "Touch: Real, Apparent, and Absent," 22.
[97] Simon Emmerson, "Live Electronic Music or Living Electronic Music?" in *Bodily Expression in Electronic Music,* eds. Deniz Peters, Gerhard Eckel, and Andreas Dorschel (New York: Routledge, 2012), 160.
[98] Georgina Born, "Digital Music, Relational Ontologies and Social Forms," in *Bodily Expression in Electronic Music,* eds. Deniz Peters, Gerhard Eckel, and Andreas Dorschel (New York: Routledge, 2012), 163.
[99] Georgina Born, "Digital Music, Relational Ontologies and Social Forms," 164.
[100] Georgina Born, "Digital Music, Relational Ontologies and Social Forms," 164-165.

Born challenges the "hard posthumanist" position, instead arguing that multiple socialities and musical assemblages contribute to the relationship between sound and embodiment, not solely the materialist position taken up by Peters and Emmerson. She writes:

> [M]usical sound — as an aural, non-representational abstraction — is never experienced as pure and autonomous. Whether it is perceptually focal or not, musical sound invariably comes to us not only embodied in the socialities of musical performance but inflected by other social processes and relations, infused by beliefs and discourses, embedded in physical and technological environments, and thus entangled in 'mixed realities.'[101]

If we are to recognize that there is no musical object that exists outside of mediation, then a recognition of the way gender, race, class, and ability figure into discourses around genre, authenticity, and authority is undeniable.[102] Moreover, one must contend with the systems of production, distribution, and performance that inform how music is consumed, as well as the imagined communities which form around musical texts. Born stakes this position as "post-posthuman," as a way of theorizing the social in musical assemblages.

Building off of the work of Frances Dyson, Deniz Peters, Simon Emmerson, and Georgina Born, it is clear that when thinking through musical production, consumption, and embodiment in music complex assemblages emerge. Included in these assemblages are musical performers, producers, instruments, recording technologies, distribution, performance venues, record labels, cultural institutions, underground spaces, audiences, and critics, amongst others. While posthumanism has often used visual depictions of cyborg, robots, and other posthumans as evidence of the ongoing cultural fascination with destabilizing the human body, sound rarely figures into these discussions. Scholarship on electronic music, with its focus on bodily affect and immersion, echoes ideas put forth by posthumanist thinkers that increasing technological intervention needn't be understood as a

[101] Georgina Born, "Digital Music, Relational Ontologies and Social Forms," 171-172.
[102] Georgina Born, "Digital Music, Relational Ontologies and Social Forms," 172-173.

move away from the body, but rather illuminates the ever-present mediation between the body and technology in listening practices. Embodiment, materiality, and social constructionism appear not as separate lenses through which to analyze music and sound, but as thoroughly enmeshed. Posthumanism asks that in analyzing a subject, both the material conditions for its emergence and the social meanings attached to it be considered as integral forces. Instead of considering musicians as masters over the technology they use, posthumanism suggests that a dynamic interrelationship exists between performers and their technologies. Electronic music scholarship answers and expands upon this call by attending to the 'matter' or manner through which sound is created, while recognizing that a solely material approach is never sufficient. Viewing technology as neither good nor bad, neither inherently subversive nor interpolating, but as part of the material reality of daily life allows for a greater understanding of how music may communicate the changing relationships between the body and its environment spurred by the technologies we use.

Chapter 2. Immaterial Girl: SOPHIE's Synthesis as Sonic World-Building

I'm always trying to encapsulate how we, as emotional beings, interact with the world and the machines and technology around us — being able to emote through those things. They're not antithetical or mutually exclusive.

SOPHIE, *Interview* Magazine 2017

In October of 2017, electronic producer and songwriter SOPHIE released the music video for "It's Okay to Cry," the first single from her debut album *OIL OF EVERY PEARL'S UN-INSIDES.* The video begins dimly lit, a green-screen background showing a starry night scene reminiscent of a stock laptop background. SOPHIE is presented in semi close-up, shot naked from the shoulders upwards. As she begins singing the opening lyrics her background quickly changes to a sunrise setting, the lights rising onto SOPHIE's face to reveal her fiery orange hair, glossy lips, plump cheekbones, and piercing gaze as she looks directly into the camera. Accompanied by a looping synth melody and soft pads, SOPHIE addresses an absent subject, inviting them to share their "dark side" and reminding her listeners that emotional vulnerability does not delineate weakness during the repeated chorus lyrics: "it's okay to cry." This is a simple pop ballad, based around a descending chordal sequence. The quotidian stock images that accompany SOPHIE's bare chest underline this, conjuring a dreamy vision that teeters into territory that risks seeming over the top, playing with sickeningly sweet imagery of fluffy white clouds, pink skies, and rainbows. But SOPHIE's breathy, almost whisper of a voice upends the expectations for the power ballad genre: the intentional weakness of her voice gives the impression of a focused intensity. Here, as in all of SOPHIE's works, the production performs much of the emotional and thematic heavy lifting.

The intimate nature of "It's Okay to Cry" is quite a divergence from SOPHIE's 2015 EP *PRODUCT*, a collection of songs she had begun uploading to the music streaming platform Soundcloud in 2013. These tracks, which will be discussed throughout this chapter, are much more experimental, focusing on percussive sounds and often using a static formal

structure. During the press cycle for *PRODUCT* SOPHIE remained entirely anonymous, spurring intrigue from fans and media into her identity and gender. In addition to putting a face to her name for the first time, "It's Okay to Cry" was her first song in which she was featured as the vocalist. It would thus be easy to analyze the song as a kind of 'coming out,' with SOPHIE moving from the position of the anonymous producer to the expected forward-facing role as a pop singer, while simultaneously announcing her identity as a transgender woman in the press cycle attached to the single. To do so, however, would be to undermine statements made by SOPHIE herself about her musical ideology and production practice.

In an interview with German TV Network ARTE, SOPHIE addresses such statements about the video, noting that the reception of the video as a kind of identity reveal only illustrates people's hang-ups surrounding identity and need for an image to attach to the music they consume.[103] SOPHIE suggests that her decision to move into the spotlight was an artistic, as well as a political one. In multiple interviews SOPHIE stresses the importance for her to be "honest" in her music. In *Teen Vogue* she states, "I don't really agree with the term 'coming out'.… I'm just going with what feels honest […] I certainly feel more happy presenting myself."[104] Similarly, in a conversation with Cedar Pasori for *Interview*, she addresses her presence in the video: "The intention has always been to be how I want to be and how I'm comfortable in the world, never to be anonymous. Right now, I'm just going with my instincts, and this is what I feel like doing. I don't see any difference. It's just expression. I'm always honest in what I put across."[105] Thus, while "It's Okay to Cry" acted as a social debut, for SOPHIE the video is simply a continuation of the ideas prevalent

[103] SOPHIE, "SOPHIE: the producer taking pop to the future (English Version / Interview)". YouTube video, 7:00, posted by "ARTE Tracks," October 26, 2018, https://www.youtube.com/watch?v=2ifh0tDrwBA.
[104] SOPHIE, "Pop Producer SOPHIE on Anonymity, Honesty, and Artifice," interview by Michelle Lhooq, *Teen Vogue,* December 7, 2017, https://www.teenvogue.com/story/sophie-producer.
[105] SOPHIE, "Pop Wunderkind SOPHIE Synthesizes Human and Machine Voices," interview by Cedar Pasori, *Interview,* October 19, 2017, https://www.interviewmagazine.com/music/sophie-its-okay-to-cry-interview.

throughout her oeuvre. SOPHIE's body, presented in the video and indexed through her singing, is but one instrument or tool amongst countless others at her disposal.

The ideas SOPHIE aims to express in her music are located in the creation, manipulation, and transmission of sound, as well as in the process of digital audio production. On both *PRODUCT* and *OIL OF EVERY PEARL'S UN-INSIDES,* SOPHIE explores themes of self-presentation and manipulation, gender expression, and sexuality through hyperreal production: aside from the voice, all other instrumental sounds are entirely digitally synthesized, and are heavily processed through the digital audio workstation Ableton. Rather than replicate analogue instruments, many of the sounds that SOPHIE creates and subsequently samples are imitations of those found in everyday life. Zippers, bubbles, and clanging metal are mimicked, but the sense of synthesized difference is palpable: each of the sounds that SOPHIE employs maintains an *almost-but-not-quite-real* quality. The voices featured on SOPHIE's tracks — sometimes her own, and sometimes featured vocalists — are also heavily processed, blurring the line between assumedly organic and inorganic methods of audio production.

SOPHIE's music thus complicates traditional notions of embodiment, reconfiguring the relationship between sound and the body in electronic music. Despite the absence of acoustic instruments, SOPHIE's songs create affective haptic responses in her listeners. As discussed in the previous chapter, the shift from a theory of musical embodiment based on performance to one based on listener perception disallows the possibility of a 'disembodied' musical performance. Deniz Peter describes the ability of electronic music to facilitate embodied experience through listener proprioceptivity,[106] and similarly Frances Dyson argues that sound is particularly effective at creating a feeling of immersion.[107] At the same

[106] Deniz Peters, "Touch: Real, Apparent, and Absent," 19.
[107] Frances Dyson, *Sounding New Media,* 3.

time that SOPHIE's music "touches" her listeners, creating an awareness of the body in relation to electronic sound, she also lyrically celebrates the possibility of becoming "immaterial," reveling in the possibility of distorting or escaping the body.

This contradictory embrace of and escape from the body has conflictive implications for a feminist reading of her works. Troubling questions arise that disallow a simple mapping of SOPHIE's music onto existing feminist theories of the body. Most strikingly, we must consider that if SOPHIE idealizes an evasion of the body, her music may be interpreted as reinforcing the mind/body binary thinking that feminist theory and activism have strived to upend. This Cartesian dualism is emblematic of traditional humanism, — does this make SOPHIE a humanist? I argue the opposite: that the posthumanist quality of SOPHIE's music lies in her ability to access and explore her own subjectivity through her use of technology. As previously discussed, posthumanism is an umbrella term which is constantly in flux and evolving, and does not uphold strict or specific tenets of what constitutes a posthuman subjectivity. However, I find Rosi Braidotti's definition in *Critical Posthumanism: Planetary Futures* fruitful here in that it is both flexible and illustrative. She writes: "What the posthuman turn does for critical thought is to manifest a fundamental fracture at the heart of our thinking processes of self-representation. Namely that a category — the human — jumps to our attention ('interpellates us') and becomes thinkable at the very moment of its evanescence and disappearance."[108] Indeed, SOPHIE's mastery of digital production techniques enables self-presentation and self-knowledge, while at the same time challenging humanist notions of the body as static and whole.

In SOPHIE's music and videos digital manipulation acts as a tool for world-building, allowing for the presentation of a version of herself constructed in her own image. SOPHIE's

[108] Rosi Braidotti, "Posthuman Critical Theory," 28.

music is in part an exercise in imagining oneself outside of the body one was assigned at birth, riddled as it is with gendered and racialized expectations. With this future-oriented pop, she explores the possibility of existing within a body of one's own design. Rather than exhibiting a dystopian nightmare of perfectionism, however, SOPHIE's sonic fantasy is perhaps better aligned with speculative fiction, with its potential for queer and feminist intervention.

While musical works are often deemed "feminist" on account of subversive or celebratory lyrical content, the textural complexity of SOPHIE's music prompts a questioning of the relationship between body, sound, and gender. As I will illustrate throughout the chapter, looking at lyrics alone will not provide a satisfactory feminist reading of SOPHIE's music, as contradictions and inconsistencies abound between and within songs. If we are to trust SOPHIE that the music can speak for itself, then we must take these contradictions seriously, and consider how feminist theories of embodiment might better respond to changes in the conceptualization of the body in light of technological advances.

PC Music, Post-Internet and Commercialism

Since its conception, SOPHIE has been associated with the London-based "PC Music" label. Founded by producer A.G. Cook and *DIS* magazine music editor Finn Diesel in 2013,[109] PC Music has been pioneering in establishing an Internet-driven aesthetic which has slowly come to influence mainstream popular music. In their early years PC Music was active on the music streaming site Soundcloud, where viewers of their page were often confused as to whether they were a label, a genre, a scene, or some other loosely based collective.[110] Further confusion came as a result of their "hyperpop" style: the groups

[109] Michael Waugh, "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux*"* (PhD diss., Anglia Ruskin University, 2015), 117.
[110] Philip Sherbourne, "PC Music's Twisted Electronic Pop: A User's Manual," *Pitchfork,* September 17, 2014, https://pitchfork.com/thepitch/485-pc-musics-twisted-electronic-pop-a-users-manual/.

reverence for genres often discounted as mainstream drivel caused many publications to question the seriousness of the PC Music project. In this section I will briefly outline PC Music's complicated relationship to authenticity, as artists on the label often utilize irony and pastiche in conjunction with legitimate claims towards sincerity. Given SOPHIE's thematic play with artifice and authenticity, it is essential to situate SOPHIE within a larger discussion of the critical reception of this movement to understand her emergence as a critically lauded artist.

A key text which greatly influenced this chapter is Michael Waugh's 2015 PhD dissertation for Anglia University, entitled "'Music That Actually *Matters*'? Post-Internet Musicians, Retromania and Authenticity in Online Popular Music Milieu."[111] In his dissertation Waugh applies the term 'Post-Internet' to musicians SOPHIE and Holly Herndon, the PC Music label, and many other artists. The concept of Post-Internet, developed mainly by art critics and curators, refers to works that involve a self-conscious engagement with the internet, and artists who often view themselves as existing within a symbiotic relationship to the web. In their manifesto "Art Post-Internet," Karen Archey and Robin Peckham write that "[i]n the context of artistic practice, the category of the post-internet describes an art object created with a consciousness of the networks within which it exists, from conception and production to dissemination and reception."[112] Archey and Peckham also situate the Post-Internet in relation to posthumanism, noting "[o]ur current historical moment has been postulated as the dawn of the posthuman, at least in the cultural imaginary

[111] In preparation for his dissertation Waugh conducted interviews with each of the subjects of his analysis, and uses these interviews as primary sources. Direct quotes from these artists will thus be borrowed throughout this chapter. While there is overlap between mine and Waugh's project, they diverge quite drastically in scope: Waugh provides a much larger survey of the application of Post-Internet to popular music, whereas my aim to is to provide a close analysis of a handful of songs, which illustrates the role of audio production in developing and critiquing these themes. Moreover, the bulk of material that this the proceeding chapter will examine have been released in the years since the publication of Waugh's dissertation.

[112] Karen Archey and Robin Peckham, "Art Post-Internet: INFORMATION/DATA," (Beijing: Ullens Center for Contemporary Art, 2014), 8, Exhibition Catalogue Online PDF accessed April 24, 2020, Available at http://www.karenarchey.com/artpostinternet.

[…] As our bodies are extended and perhaps supplanted by prosthetic devices that mediate our experiences of the world, new forms of being — once known as science fiction — come alive in very real, often prosaic ways."[113]

While the concept of the post-internet has circulated in art critical and curatorial circles, Waugh was first in applying post-internet theory to music. He argues that the term Post-Internet is useful in grouping together musicians based on a shared set of ideas, rather than solely on musical practices. He claims that "[t]hese musicians are all interested in the impact that the web has on their, and by extension their audiences', identities and seek to wholly express these 'cultural experiences' of Post-Internet life in their music and self-representation."[114] Waugh also argues against the application of "retromania"[115] to these contemporary artists, and instead delves into a lengthy discussion of how their relationship to journalistic authenticity debates is altered by the abundance of musical material made available by the internet.

Post-internet theory developed in part out of posthuman theory and is useful in understanding how art and music respond to and circulate on the internet. While I find this approach appealing, I also believe that both SOPHIE and Holly Herndon respond to wider technological changes in their music, beyond solely interrogating their relationship with the web, and thus posthuman theory is a more appropriate framework for the analysis of each of their albums. Moreover, Post-Internet is a fairly new term in comparison with the posthuman, which has been an established philosophical stream since the early nineteen-nineties. A robust feminist posthumanist theory has developed in response, of which I provided an

[113] Karen Archey and Robin Peckham, "Art Post-Internet: INFORMATION/DATA," 14.
[114] Michael Waugh, "'Music That Actually *Matters*?' Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux," 13.
[115] Waugh explains that in his book *Retromania: Pop Culture's Addiction to Its Own Past,* Simon Reynolds argues that the development of the web lead to musical consumption which is divorced from its national and historical context. He argues that as a result, contemporary musicians have regressed to re-inventing past musical forms. Waugh refutes this argument, claiming that Reynolds' text is outdated in its approach, as it is implicitly tied to journalistic modes that were popular from the 1970s-1990s, but are no longer applicable.

overview in chapter one. For these reasons, I have chosen to stress the posthuman, as opposed to Post-Internet, within my thesis. Using Waugh's dissertation as a jumping off point, I will build and expand on his discussion of authenticity while incorporating further analysis of the production techniques taken up by SOPHIE and, in the proceeding chapter, Holly Herndon.

A highly stylized visual aesthetic is shared amongst PC Music members, establishing the sense of collectivity amongst the group. This look is characterized by high-production press photos, airbrushed to extremity so as to replicate the polish of magazine photos, and glossy CGI models in bright or pastel colours. This visual style is upheld by artists such as A.G. Cook,[116] Hannah Diamond,[117] and QT, whom I will return to below. The polish that distinguishes PC Music's aesthetic is underlined by the shared musical traits which bind the group together. For many of the artists on PC Music, voices are autotuned to the point where they no longer feel human, are noticeably pitch-shifted upwards, and are accompanied by highly quantized rhythms and shiny synthesizer sounds. PC Music artists often use clichéd pop music harmonies and melodies, drawing on Eurodance and other 'low' forms of dance music to create a pastiche of Top 40 sounds and textures. As a result of the relative obscurity of the producers and their association with Eurodance and K-Pop styles, many critics were unsure during PC Music's early days as to whether or not they should view their music with an ironic distance. While SOPHIE was not on the official PC Music roster, she often worked in collaboration with PC Music artists, and was featured on their Soundcloud page. As such, SOPHIE was often lumped into similar lines of questioning around issues of irony and authenticity.

[116] See Fig. 1
[117] See Fig. 2

Waugh devotes much of the second and third chapters of his dissertation to a discussion of longstanding authenticity debates within popular music studies and addresses the ways in which frameworks for conceptualizing authenticity are altered via the internet. He provides a lengthy discussion of PC Music's critical reception and stresses the label's appropriation of underappreciated or rejected musical styles. He explains:

> PC Music [...] holds a complex relationship to authenticity debates due to its comparability to the 'synthetic' sounds of contemporary pop. The label's overriding sound, as described above, is almost excessively indebted to the most artificial and commercial forms of pop music [...] Indeed, these artists are almost deemed so clichéd and exaggeratedly 'fake' that they become novelty acts; an ironic representation of all that the underground considers 'bad' about pop music. Yet PC music, a label with a limited audience and ties to an experimental art site in *DIS* revels in these sounds and has made them the primary focus of its aesthetic[118]

This reappraisal of previously rejected musical forms prompted many critics to question whether to consume PC Music as pop or as "pop;" in other words, as a legitimate attempt at mainstream success or as a parody of these styles.[119]

SOPHIE, too, plays with humour and 'bad' pop sounds, and resultantly has weathered her fair share of criticism and skepticism. In a piece for *Fact* magazine, critic Angus Finlayson questions SOPHIE's aesthetic motivations: "is this gleefully contrived music basically just journo catnip, a post-ironic sugar-rush primed to catch the ear of a bored critic well into hour three of the inbox promo trawl?"[120] Waugh suggests that this "ear-catching" sound is a response to the Post-Internet landscape: both a way to stand out amongst a sea of other musicians, and a reflection of what it feels like to live in a Post-Internet (or posthuman)

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[118] Michael Waugh, "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux," 121.
[119] Eric Ducker, "A Rational Conversation: Is PC Music Pop or Is It 'Pop'?" *NPR Music,* September 23, 2014, https://www.npr.org/sections/therecord/2014/09/23/350580589/a-rational-conversation-is-pc-music-pop-or-is-it-pop.
[120] Angus Finlayson, "This could be the most divisive recent event in UK music": SOPHIE, Vessel, Rustie and more reviewed in the FACT Singles Club," *Fact,* April 4, 2014, https://www.factmag.com/2014/08/04/this-could-be-the-most-divisive-recent-event-in-uk-music-sophie-vessel-rustie-and-more-reviewed-in-the-fact-singles-club/2/.

world, in which the impact of technology figures largely into each aspect of one's life. Such sentiments are shared by SOPHIE in an interview conducted by Waugh:

> There is a lot of noise online. Lots of things competing for your attention. [You have to] make whatever you are trying to communicate loud and clear. [...] I know my music had to be immediate because you only get about five seconds of listening time on the Internet before the listener flicks over. I wanted my songs to communicate everything in the first five seconds and try to make those five seconds the most explosive and ear-catching possible. It's a constant drive to make my music more minimal, more direct, more immediate, more explosive, more concise, [and] as potent, intense, concentrated, and distilled as possible. [...] Sensory overload [is] what I'm aspiring to[121]

Extending Waugh's argument that this aesthetic shift is a reaction to Internet culture, I suggest that SOPHIE's music may be read as a response to hyper-consumerism, and the commercialization of popular music. SOPHIE's tongue-in-cheek play with ideas surrounding music, capitalism, and technology is exemplified in an interview with *Billboard*, in which she states that the genre which best describes her music is "advertising."[122] This conflation of music and marketing is further explored in SOPHIE's collaboration with A.G. Cook and artist QT on the song "Hey QT."

"QT" or "Quinn Thomas" is a pseudonym for visual and performance artist Hayden Dunham, whose art practice explores the interaction between science, technology, and branding. These themes are prominent in QT's only single "Hey QT," an up-tempo pop song featuring a four on the floor drum beat, staccato synth stabs, and a call and response chorus produced by SOPHIE and A.G. Cook. In an interview for an Icelandic magazine, QT clarifies the meaning behind the song's catchy chorus as describing the sensation of "[feeling] the presence of someone even if they are not physically with you."[123] The music video for the

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[121] SOPHIE, quote from thesis interview, 2015, in Michael Waugh "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux," 124.
[122] Kristin Westcott Grant, "Producer SOPHIE Q&A: On Secrecy, Synthesis, & What's Next," *Billboard,* August 19, 2014, https://www.billboard.com/articles/columns/chart-beat/6221915/sophie-producer-interview.
[123] QT, "'Do you think we are all one?': QT Interviewed," interview by John Rogers, *The Reykjavík Grapevine,* October 29, 2015, https://grapevine.is/icelandic-culture/music/airwaves/2015/10/29/do-you-think-we-are-all-one-qt-interviewed/.

track reflects this simultaneous sense of isolation and connectivity by depicting QT in a glass box,[124] with medical patches attached to her head and body as if to track her heart rate as she stretches and dances. As QT gently swipes her fingers across the glass enclosure numbers run up and down, notifying her that this "lab" is "sensing connection" or "sensing disconnect." What is being tracked is unclear: is QT tracking her physical wellbeing, her artistic popularity, or her sexual and romantic connection with the other "qt" she addresses in her lyrics? The celebration of sousveillance and personal betterment shown throughout the video exemplifies the integration of technology into how we understand and value our actions. This individual monitoring gives way to a narrative of monetization halfway through the video. Here, the setting changes to show a bright pink liquid bubbling and swirling upward, eventually circling around a drink can emblazoned with the words "Drink QT."[125] Two men seated next to QT are shown smiling and sipping the drink in a stark white room, as the tag line "looks fizzy, tastes bouncy, feels QT" flashes across the screen. With this finale the line between artist, track, and the energy drink product being advertised is invariably blurred.

The collapse of artist and product is extended into the song's press rollout and live performances. After the release of "Hey QT" on XL Records, an official QT drink was made available for purchase online, retailing at around twenty dollars a pop and shipped in a plexiglass container.[126] Dunham also performed the song live at music festivals, including The FADERFort[127] and electronic music site *Resident Advisor*'s Field Day.[128] A video recording of the Fader performance shows QT "DJing" a remix of her song, in which the chorus is repeated and reharmonized for two and a half minutes as she softly bobs her head,

[124] See Fig. 3
[125] See Fig. 4
[126] Miles Raymer, "Tastetesting QT's Energy Drink," *Pitchfork,* July 27, 2015, https://pitchfork.com/thepitch/852-tastetesting-qts-energy-drink/.
[127] QT, ""Hey QT" – Live at the FADER FORT Presented by Converse," YouTube Video, 2:49, Posted by "FADER," Mar 26, 2015, https://www.youtube.com/watch?v=mbVn5c_YDm0.
[128] QT, "QT live at Field Day | In Video | Resident Advisor," YouTube Video, 5:45, Posted by "Resident Advisor," June 30, 2015, https://www.youtube.com/watch?v=q80fev2SB4E.

decked in white Beats by Dre headphones, along to the beat. She presents a similar nonchalance in a video of her *Resident Advisor* performance, during which QT saunters onto the stage sipping her branded drink as a voice-over booms through the speakers. The unidentified voice describes QT as a "a brand-new energy elixir, where organic and synthetic meet, to stimulate an uplifting club sensation."[129]

The voice-over's marketing jargon describes both the drink and the artist, as QT begins to lip sync along to her signature track while SOPHIE triggers the song from behind the DJ deck. This satire of the corporatization of club culture, in which artist, work, and product are indistinguishable from one another, mirrors the actual spaces of performance frequently offered to electronic music producers. As groups like Red Bull Music Academy increasingly sponsor musical events and conferences attended by artists such as SOPHIE and PC Music members, the distinction between funding body, artistic organization, and corporate manufacturer is obscured. As Miles Raymer describes in *Pitchfork,* QT's project is "about reaching a state of ecstatic, transcendent brand synergy, where there is no line between QT the performer and QT the product."[130] In performing these multiple roles, QT collapses the sets of values associated with marketing and those attributed to musical production, cynically revealing the corporate demands central to today's popular and electronic music.

SOPHIE similarly toys with themes of commercialization and corporate branding. Her aptly named debut EP *PRODUCT* (2015) was sold in a hard-shell bubble case, and marketed alongside a translucent puffy jacket, platform heels, a large novelty sunglass emblazoned with her name, and a black object resembling a sex toy listed as a 'silicon product.'[131] Of the clothing items listed on her website none appeared to be actually available

[129] QT, "QT live at Field Day | In Video | Resident Advisor."
[130] Miles Raymer, "Tasting QT's Energy Drink," *Pitchfork,* July 27, 2015, https://pitchfork.com/thepitch/852-tastetesting-qts-energy-drink/.
[131] See Fig. 5

for sale, whereas the "skin safe, odourless, and tasteless" silicon product was available as a bundled purchase with the vinyl eight-track record.[132] Though during the release of *PRODUCT* SOPHIE deliberately denied the public access to images of her body, she still profits here by "selling sex." The type of sex she sells, though, is divorced from the physical body and indeed divorced from any stable notion of gender, as the product is ambiguous in shape and "correct" usage.[133] While SOPHIE's decision to sell what appears to be a sex toy alongside her record could be brushed off as a gimmick, I argue that like QT's energy drink SOPHIE's malleable, silicon product reflects the musical material that it accompanies. Both intimidating, with its ridged edges and sharp curvature, and signalling play and pleasure, the silicon product forces the consumer to become hyperaware of their own corporeality despite SOPHIE's body being notably absent. As with SOPHIE's complex synthesized waveforms, which I will analyze in the following section, the silicon product is both a reproduction of something and yet markedly different: no one would mistake one for the other, and more importantly, no one would want to — there is satisfaction in imitation.

While SOPHIE's references to the increasing commercialization of electronic music may appear critical, she also makes clear in multiple interviews that she harbours affection for the mainstream.[134] SOPHIE is adamant, however, that her desire for mainstream success does not disavow the emotional sincerity of her work. In one interview conducted by Waugh, SOPHIE explains her concept of 'authentic' music, which he recounts:

> SOPHIE […] refuted the idea that authenticity should be equated with notions of the 'underground', suggesting that music is 'only underground because it's not good enough to be mainstream' (SOPHIE, thesis interview, 2015). Authentic music, for

[132] Selim Bulut, "What SOPHIE's 'Silicon Product' Says about Pleasure and Pop," *Fader,* December 1, 2015, https://www.thefader.com/2015/12/01/sophie-product-review.
[133] This notion of sexuality outside of a hetero- and cis-normative purview has much in common with Jack Halberstam and Ira Livingston's discussion of posthuman reproduction. They write: "Posthuman bodies were never in the womb. Bodies are determined and operated by systems whose reproduction is - sometimes partially but always irreducibly - asexual: capitalism, culture, professions, and institutions, and in fact sexuality itself." Judith Halberstam and Ira Livingston, "Introduction," in *Posthuman Bodies,* eds. Judith Halberstam and Ira Livingston, (Bloomington: Indiana University Press, 1995): 17.
[134] Michael Waugh, "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux," 121.

> SOPHIE, is marked by its capacity to resonate with its audience, not because it is perceived to have emerged from a subcultural context or artist.[135]

As an artist working in dance music, historically tied to underground networks of music sharing and partying based on generic subcultures, SOPHIE's conflation of 'mainstream' with high quality is bold and revealing. Rather than aligning herself with the oft masculinized world of electronic music,[136] SOPHIE's claims at mainstream desire express her ulterior system of valuation, which is based upon the widespread emotional legibility of her songs. In an interview for *DJ Mag*, SOPHIE comments on the false dichotomy between underground electronic music and the commercial dance music permeating the mainstream. She argues "Young people don't make that distinction between pop music and so-called underground music anymore, […] We shouldn't have to align with these seemingly polar opposite groups, make these alliances or niches. You can appreciate certain aspects of underground culture, and you can despise certain aspects. It's yours to pick and choose."[137] SOPHIE's desire to traverse the lines between mainstream and underground, as well as electronic and pop music illustrates her disregard for genre distinctions. Secondly, adhering to this more mainstream system of recognition has the effect of recuperating undervalued and often feminized styles of music, namely pop music.[138] SOPHIE's self-application of the terms 'pop' and 'mainstream' thus illustrates a refusal to adhere to this gendered system of valuation.

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[135] Michael Waugh, "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux," 90.
[136] For more discussion of the masculinization of electronic music see Tara Rodgers, Introduction to *Pink Noises*, Rebekah Farrugia *Beyond the Dancefloor: Female DJs, Technology and Electronic Dance Music*.
[137] Anna Caffola, "SOPHIE: Changing the Narrative," *DJ Mag,* July 16, 2019, https://djmag.com/longreads/sophie-changing-narrative.
[138] Musicologist Marie Thompson describes interconnectedness between pop music's systemic feminization and its dismissal in her essay "Feminised Noise and the 'Dotted Line' of Sonic Experimentalism." She argues that pop music "has been historically characterised as 'feminine' (*contra* 'masculine' rock) and received by critics as contemptible, merely repetitive and extraneous 'noise'" whereas the concept of "noise" has been positively applied to experimental male artists. Marie Thompson, "Feminised Noise and the "Dotted Line" of Sonic Experimentalism," *Contemporary Music Review* 35, no. 1 (2016): 85-101.

While SOPHIE's music could easily be cited as experimental given her unconventional treatment of texture, which will be discussed in the proceeding section, she decidedly brushes off the subcultural capital often ascribed to underground scenes and instead identifies with less appreciated genres such as disco. In an interview for *Teen Vogue* by Michelle Lhooq, SOPHE references house pioneers Larry Levan and Frankie Knuckles as key influences, and explains "A lot of the stuff I've done takes the attitude of disco but tries to bring the sound world forward […] We're in a different world now. I'm trying to imagine what music that's positive, liberating, weird, dark, and real could be in the current day."[139] SOPHIE's citation of disco and house exemplifies her conception of her work within a lineage of queer dance music styles.

This history is documented in Micah E. Salkind's book *Do you Remember House? Chicago's Queer of Color Undergrounds.* Here, Salkind charts the evolution of house music from its early days in predominantly Black and Latino queer spaces to its eventual movement into the mainstream. Salkind presents house music as a reaction or reflection upon the mass disavowal of disco epitomized by the infamous "Disco Demolition Night," an anti-disco event held in 1977 hosted by radio jockey Steve Dahl, during which thousands of disco, R&B and soul records were set on fire at Chicago's Comiskey park.[140] While pop music (including SOPHIE's) may be implicitly delegitimized through its rhetorical framing as "noisey,"[141] the violence enacted at the Disco Demolition Night illustrates the explicit backlash toward disco and disco culture, a genre heavily associated with gay, and predominantly Black and Latino men.[142] In an interview with *Jezebel,* SOPHIE remarks on the impact of these early disco and

[139] Michelle Lhooq, "Pop Producer SOPHIE on Anonymity, Honesty, and Artifice," *Teen Vogue,* December 7, 2017, https://www.teenvogue.com/story/sophie-producer.
[140] Micah E. Salkind, *Do You Remember House?: Chicago's Queer of Color Undergrounds*, (New York: Oxford University Press, 2019), 25-26.
[141] For more on the gendered application of the term "noisey" to popular music, see Marie Thompson, "Feminised Noise and the 'Dotted Line' of Sonic Experimentalism."
[142] Gillian Frank, "Discophobia: Antigay Prejudice and the 1979 Backlash against Disco," *Journal of the History of Sexuality* 16, no. 2 (2007): 276–306.

house producers on dance music and dance music culture. She tells the interviewer, "they've paved the culture that informs what we're doing now. Everyone who's worked hard in those club spaces brings a sense of liberation to people […] They're not rewarded as much as they should be. They should be rewarded as much as Adele and Sam Smith are rewarded."[143] In citing disco and house as influences for her records, SOPHIE does not seem to be claiming an aesthetic affiliation with the genre, so much as suggesting that she aims to recreate its ethos of shared musical experimentation and social inclusion.

While SOPHIE's music may be taken as irony or parody by some, in her interviews the theme of honesty is often addressed, providing her ample opportunity to verify that her music is "serious." Moreover, her frequent citation of disco and house music pioneers as influences illustrates her self-consciousness of the political potentials of dance music, as well as slippery boundaries between 'underground' and 'mainstream' genres. In his dissertation, Michael Waugh concludes that while PC Music and SOPHIE (and, I would add, QT) utilize irony and kitsch stylistically, audiences well-versed in internet milieu are able to recognize the authentic representations of contemporary culture central to her music.[144] Having established SOPHIE's simultaneous use of irony in her collaboration with QT and PC Music, as well as her penchant for emotionally arresting and 'ear-catching,' sounds, I will now move on to a discussion of SOPHIE's musical aesthetics and their relationship to posthumanism and queer theory.

[143] Rich Juzwiak, "SOPHIE on her New Album, Old Disco, and Expressing Trans Identity in Music," *Jezebel,* June 15, 2018, https://themuse.jezebel.com/sophie-on-her-new-album-old-disco-and-expressing-tran-1826863700.
[144] Michael Waugh, "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieux," 114.

PRODUCT, Artifice, and Imitation

Prior to the release of her debut album, SOPHIE self-released a series of singles which were then compiled into the EP *PRODUCT* through Glasgow-based record label Numbers. Tracks such as "BIPP," "LEMONADE," and "HARD" feature unnamed vocalists, and exemplify the hyperfeminine auto-tuned vocal style associated with PC Music. SOPHIE diverges aesthetically from the group, however, in her employment of original and unconventional synthesized sounds, and her ability to turn sparse instrumentation into thick textures. These songs also engage with BDSM themes, often using repetitive and ambiguous lyrics describing scenes of desire and domination. Because SOPHIE remained anonymous until 2018 it was assumed during release of *PRODUCT* that SOPHIE was a man, and she was referred to by journalists using he/him pronouns. SOPHIE's use of hyperfeminine tropes was thus often met with reactionary accusations of "appropriation"[145] of femininity, with fellow electronic artist Grimes going so far as to call SOPHIE's name "fucked up,"[146] a comment that she has since apologized for.[147] Statements such as Grimes' illustrate the binary gendered logic through which SOPHIE's music has been received, which fails to account for the fluid exploration of gender and sexuality generated through her adoption of various voices and sounds. In this section I will draw upon the work of scholars Joseph Auner and Susana Loza to situate SOPHIE's vocal production within a larger discussion of posthuman approaches vocal processing, as well as outline the various sonic means through which SOPHIE

[145] In 2014 writer Steph Kretowicz wrote an article entitled "Feminine Appropriation was 2014's Biggest Electronic Music Trend" for *FADER*. She writes: "by appropriating and objectifying stereotypically feminine identities while obscuring their own, the men of PC Music and Sophie and literally colonizing the female body and using it as an instrument for projecting their own agenda." Steph Kretowicz, "Feminine Appropriation was 2014's Biggest Electronic Music Trend," *FADER,* December 31, 2014, https://www.thefader.com/2014/12/31/feminine-appropriation-2014-electronic-music-trend.
[146] Peter Helman, "Grimes Thinks SOPHIE's name is "Fucked Up,"" *Stereogum,* Nov. 2, 2015. https://www.stereogum.com/1841646/grimes-thinks-sophie-is-fucked-up/wheres-the-beef/.
[147] Grimes (@grimezsz). Twitter Post. July 6, 2018, 3:30 PM. https://twitter.com/grimezsz/status/1015317186267701253?lang=en.

destabilizes static gender categories to reimagine the relationship between the voice and the body on *PRODUCT*.

SOPHIE's primarily instrument is the Elektron Monomachine,[148] which she runs through the digital audio workstation (or DAW) Ableton. The Monomachine is a digital synthesizer and a sequencer, which SOPHIE uses to imitate existing sounds and create imaginative new soundscapes. In creating the Monomachine in 2004, Elektron aimed to create an idiosyncratic and flexible instrument that offered the user the possibility of shaping waveforms into unique timbres, rather than working within the confines of the factory pre-sets. In the user manual Elektron explains that "[w]ith the Monomachine we have tried creating a synthesizer free from prejudice, and focus on what actually spurs creativity without letting technology stand in your way. We want to inspire you to make sounds and music you haven't even thought of."[149] The resultant machine offers six tracks of synthesis that can be programmed using monosynths, each of which contain multiple sound-generating "machines," as well as six MIDI sequencing tracks. Each of these machines offers multiple oscillators which may be altered in accordance with different synthesis parameters and track effects, totalling "up to 56 parameters for the sound generation and effects."[150] Resultantly, the Monomachine offers a wide scope of textural and timbral possibilities, creating a workflow that lends itself to sound design rather than melodic or harmonic composition. A review of the synth for *Remix* magazine describes both the challenges and possibilities opened up by the Elektron Monomachine: "you really have to understand how it produces the sounds that you're hearing to fully appreciate it. In a sense, you're not forced to learn a new form of synthesis, but a new compositional mind-set […] The Monomachine is not a solo

[148] Yu-Cheng Lin, "SOPHIE: A Beginner's Guide to a Hyperpop Mystery," *Red Bull Music,* October 6, 2018, https://www.redbull.com/ca-en/sophie-a-beginners-guide.
[149] Monomachine User's Manual, SFX-6/SFX-60/SFX-60 MKII/SFX-60+ MKII, *Elektron,* 2, https://www.elektron.se/wp-content/uploads/2016/06/monomachine_manual_OS1.32.pdf
[150] Monomachine User's Manual, 25.

synth, per se, but a textural songwriting springboard."[151] SOPHIE's songs reflect the specific capacities of the Elektron Monomachine, often featuring layered monophonic synth melodies with bold buzzing textures alongside typically non-musical sounds. In working with waveforms in their raw state before loading the sounds into a DAW, the possibilities for creation and manipulation are profuse.

This texturally based style of song writing is exemplified in the opening track of *PRODUCT,* entitled "BIPP." Here a simple syncopated bass pattern is repeated throughout the song, which circles from I – IV – V - I in the key of A Major, with the third chord tone played in the right hand up the octave. Noisy crash and clap sounds with long decays and high frequency clicks provide additional percussion, as well as a repeated vocal sample which follows the same syncopated pattern as the bass. What makes the sequence interesting is the use of pitch modulation in the upper hand of the synth, as well as the additional sound effects. The use of octave slides and quick pans is reminiscent of electronic machines turning on or shutting down. The harmonic pattern is frequently interrupted by added samples that resemble video game sounds effects of lasers, engines starting up or slowing down, and the playful sounds of toy whistles. Describing these sounds presents a challenge, as it relies upon entrenched associations of synthesizer sounds with space-age technologies and science fiction tropes. The descriptions I provide here are only approximations, as the sounds that SOPHIE has designed remain untethered to specific images or uses. SOPHIE's experimental use of FM synthesis thus functions as a kind of speculative world-building.

I use the term 'speculative' here to place SOPHIE within a lineage of feminist artists who have contributed to thinking about gender and posthumanism. Posthuman theorists often use science fiction literature and cinema as way of imagining the ways in which feminist

[151] Jason Scott Alexander, "ELEKTRON MONOMACHINE SFX-6, SFX-60," *Remix* 6 (July 2004): 74.

scholars and activists may need to respond to our changing technological landscapes. Consider Donna Haraway's seminal 1984 essay "A Manifesto for Cyborgs," in which she recognizes that she is equally indebted to the literary works of Joana Russ, Samuel R. Delaney, John Varley, James Tiptree Jr., Octavia Butler, Monique Wittig, and Vonda McIntyre as she is the socialist and materialist feminists she is in dialogue with.[152] The influence of science fiction and speculative fiction on popular music is also discussed by Keren Omry in her essay "Bodies and Digital Discontinuities: Posthumanism, Fractals, and Popular Music in the Digital Age." Writing about musicians Beck, Kutiman, and Björk, Omry is "particularly interested in how digitality has presupposed a move away from the limitations of the body on the one hand […] and yet, on the other, seems to increasingly return to a notion of the human that is very much based on our materiality, dispelling the supposed gap between natural and technological."[153] Deeming SOPHIE's sound design 'speculative' provides a feminist posthumanist lens through which to view her audio production tactics, which reimagines the limitations of the physical body through an embrace of digital technology.

In addition to this 'speculative' form of sound design, SOPHIE uses synthesis to imitate sounds that exist in the natural world. This is exemplified on the song "LEMONADE," which opens with a series of randomized high-pitched tones played in rapid succession creating a digital "fizz" sound, reminiscent of the internal crackling sensation created by putting Pop Rocks candy on your tongue. This fizz sound is followed by a low frequency wobbling, mimicking the sound of someone blowing bubbles into a glass with a straw. The ten-second opening sequence culminates in a wash of white noise before finally being finally punctuated by what sounds like a recorded sample of someone sipping the last

[152] Donna Haraway, "Manifestly Haraway," 52.
[153] Keren Omry, "Bodies and Digital Discontinuities: Posthumanism, Fractals, and Popular Music in the Digital Age," *Science Fiction Studies* 43, no. 2 (2016): 106.

dregs of a drink with a straw and releasing a satisfied "ah." In this example SOPHIE models familiar and corporeal everyday sounds, creating a visceral bodily experience out of synthesized material. The fizz sound prompts a particularly embodied reaction, as SOPHIE creates an amplified version of a sensation/sound that typically only resonates *within* the body and thus is internal and inaudible to others.

SOPHIE's ability to conjure embodied experiences reflects music philosopher Deniz Peters' description of the haptic capacity of music. Peters describes the process of experiencing music as involving both a heard component and a felt component, relating not to emotional feeling but to proprioception – the listener's awareness of their own body. In the case of electronic music, the sensation of physical touch need not be intellectually conceived through the knowledge that a musician is actually touching an instrument, but may relate to a "secondary tactility" that is experienced through the listener's own body.[154] He writes: "Despite an absence of the bodily making of sound, the graspable bodily expression in tactile musical gestures, as discussed so far, lies within the reach of electronic music as it does with other music; only the provision of it is either removed from concrete bodily making, or is somehow simulated or otherwise designed as part of a performative component."[155] One criticism that may be waged against Peters is his implicit assumption that music prompts a universal bodily experience, presenting a normative model of sensation and embodiment that fails to account for the myriad of cognitive, sensorial, and physical differences experienced across the (dis)ability spectrum. While Peter's model of tactility is limited by a normative description of bodily sensation, it nevertheless is useful in rethinking the relationship between touch (embodiment) and sound, which places greater significance on listener experiences

[154] Deniz Peters, "Touch: Real, Apparent, and Absent," 20.
[155] Deniz Peters, "Touch: Real, Apparent, and Absent," 28.

than the method of audio production. I will return to this idea throughout the remainder of this section, as SOPHIE's songs consistently use digital material to evoke haptic responses.

The song "HARD" exemplifies SOPHIE's complex and unconventional relationship to embodiment, as it features harsh percussive sounds paired with a talk-sung vocal melody. As in "BIPP," the overall texture is quite sparse: only a few instruments or patches play at a time, and the song does not feature any held chords or steady groove. Still, SOPHIE creates a feeling of overstimulation through the continued convergence and juxtaposition of different timbres and textures. Within the first fifteen seconds glitchy mid frequency blips pan back and forth at uneven velocities, machinic metal clangs punctuate the second beat of each bar, unpitched percussive thwapping noises function like tom fills, and brassy synth stabs are pitch-bent downwards. Overtop a singer, assumedly a female, speak-sings in a heavy British accent: "Latex gloves, smack so hard/ PVC, I get so hard/ Platform shoes kick so hard/ Ponytail, yank so hard/ Leatherette, party so hard […] But it's just so hard, so hard." The lyrics reference stereotypical fetish objects, implicating the listener into a BDSM scene through a sonic spanking via the whooping percussive sounds, which crash and descend to move throughout the listener's body. The lyrical repetition of the word "hard" in various contexts informs the queer reading of the song. First "hard" seems to be referring the material objects described: patent leather boots, silicon, rubber dolls, latex gloves. By the end of the song a final chorus repeats, the lines "Hard, Hard, I get so Hard," making the genital reference blatant, though it feels somewhat surprising given the singer's prim feminine voice. The listener is forced to confront their assumptions about the body of the singer, or conversely to expand their assumptions of what forms of sensation or desire are experienced and ascribed to different groups of people. Additionally, the references to synthetic materials such as PVC, latex, silicon, and patent leather, mirror the synthesized musical material featured in the song. That is to say, the sounds imitate synthesized objects, already an

imitation of another material. In this play with dissociation, replication, and imitation both sound and gender are presented as fabricated, and in turn malleable.

The track "BIPP" features presumedly the same uncredited British vocalist, though the voice is treated quite differently. Here, the singing is much more heavily processed; it is pitch-shifted into a nearly childish register, and each phrase is treated as a sample. Phrases are abruptly cut off and repeated, functioning more as a percussive element than a melodic line. This is a very common practice used by dance and electronic music producers and is discussed by Susanna Loza in her essay "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music." As explained in my literature review, Loza takes EDM producers to task for their manipulation of (mainly) African American women's voices through the use of sampling, cutting, and the endless repetition of what she calls a "diva loop."[156] She argues that the mechanical reproduction of these women's voices results in a cyborgian, dystopic representation of femininity, which fails to give the singers agency and which reifies binarized systems of gender and compulsory heterosexuality through the reliance on a 'sexy fembot' image.[157] She complicates this argument, however, with the assertion that in reifying these stereotypes, "the fembot accidentally reveals gender as a panicked performance. Instead of evoking a sexual essence with her orgasmically delivered truth, the techno-organic diva's programmed climaxes recall the stubborn constructedness of normative hetero-sexuality and binarised gender."[158] While much of Loza's argument takes issue with what she calls the "sampling of sexuality," she also suggests the possibility of a "[p]olymorphous performativity [that] denaturalises sex, destabilises race, and alienates gender from their presumed essences."[159] The example Loza provides – "Drama" by Club 69 – features Kim

[156] Susana Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 350.
[157] Loza writes "Unlike Haraway's fluid feminist subject, the fembot is the feminised machine that rearticulates and encapsulates the worst in sexual stereotypes." Susana Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 351.
[158] Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 353.
[159] Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 355.

Cooper who speaks about the drama of daily life, speaking with a sultry grandeur that places her in the role of a gender-bent diva, her use of gay subcultural language aligning her with drag performers.[160] SOPHIE's singer is not hyper-sexualized in the way that Loza describes, nor is she made to resemble a cyborg, so it is difficult to slot her into Loza's paradigm of sexually demeaned versus sexually liberated femmebots. Moreover, Loza does not discuss electronic music made by women or non-binary people, nor instances in which cutting, sampling, and looping might serve an aesthetic function beyond the sexualization of women's voices.

Joseph Auner also looks at examples of vocal processing in electronic music in which the distinction between human and machine is blurred. In the essay "'Sing It for Me': Posthuman Ventriloquism in Recent Popular Music," Auner uses Radiohead and Moby as examples of what he calls the 'ventriloquist' uses of the vocoder: by posing as non-human or robotic these musicians draw on sci-fi tropes to present the affective capacities of their robotic alter-egos as having superseded those of the human. The process of ventriloquism that Auner describes involves either a musician manipulating their voice to the point where it is mechanized and indistinguishable from the original vocalist or using an entirely computerized voice. In both instances the singing subject stands in as a separate musical figure from the band/artist. Auner sees posthuman ventriloquism as a means of "[authorizing] a new expressive space predicated upon the tenuousness and constructedness of subjectivity. The cyborg persona thus becomes a way of reconstructing expression and moving beyond the 'flattening of affect' characteristic of postmodern art."[161] Despite the expression of a cyborg persona in songs like Radiohead's "Fitter Happier" and Moby's "Porcelain," in Auner's

[160] Loza, "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music," 354.
[161] Joseph Auner, "'Sing it for Me': Posthuman Ventriloquism in Recent Popular Music," *Journal of the Royal Musical Association* 128, no. 1 (2003): 110-111.

formulation of the posthuman ventriloquist there is, of course, always a human pulling the puppet's strings.

On *PRODUCT* a similar process of ventriloquism is used, through via different strategies. On tracks that feature a vocalist the human voice is used as a malleable instrument, chopped up, altered, and processed to become a vehicle for the expression of SOPHIE's own subjectivity. In Radiohead's "Fitter Happier" the computerized voice is imagined as separate from lead vocalist Thom Yorke, and similarly the human singer on *PRODUCT* stands separately from SOPHIE, thus performing a kind of ventriloquism. Here, though, the posthuman voice is neither vocoder nor vocaloid, like the one featured on Radiohead's "Fitter Happier," but a nondescript hyperfeminine one. SOPHIE's squeaky inhuman treatment of the voice is exemplified on the chorus of the single "LEMONADE," where the singer's doubled voice sounds childlike, neither "male" or "female" but above and beyond either of these categories. In an article for *Pitchfork* Sessi Kuwabara Blanchard describes this "flight from vocal restraints and assumptions"[162] as exceeding, and thus defying, the sonic demands placed upon transgender people to "pass" as cisgender. Kuwabara Blanchard also highlights other trans artists who modulate their voices as a means of expressing their various experiences and ideas around transfemininity and gender politics, including V3S0L0, MONAE, Imp Queen, Macy Rodman, Ms. Boogie, and EDGESLAYER.[163] In many of the tracks highlighted by Kuwabara Blanchard vocal modulation is used as a method of self-affirmation and exploration. This suggests that while vocal modulation and processing may be a tool of expressing alterity, as Auner describes, vocal modulation may also express a deeply personal and individual experience of bodily exploration.

[162] Sessi Kuwabara Blanchard, "How SOPHIE and Other Trans Musicians Are Using Vocal Modulations to Explore Gender," *Pitchfork,* June 28, 2018, https://pitchfork.com/thepitch/how-sophie-and-other-trans-musicians-are-using-vocal-modulation-to-explore-gender/.
[163] Sessi Kuwabara Blanchard, "How SOPHIE and Other Trans Musicians Are Using Vocal Modulations to Explore Gender."

Both Auner and Loza point to interesting trends in electronic music and make insightful claims about the types of signification generated through different vocal processing styles. While SOPHIE's music shares certain traits with the examples provided by each scholar, her music also does not fit neatly into either paradigm. Like the music of Radiohead, SOPHIE's music also moves beyond a postmodern 'flattening of affect,' devoid of emotionality, but on *PRODUCT* this is achieved primarily through the instrumental production while the voice remains fairly indistinct. In both Auners' and Loza's essays the mechanical treatment of the voice is what creates a sense of posthuman difference, making it the central focus of analysis. Conversely, in SOPHIE's music voice and lyricism is decentralized and instead the textures of SOPHIE's complex musical productions become the main locus of expression.

Throughout this section I have highlighted specific aesthetic tactics taken up by SOPHIE on her EP *PRODUCT* which challenge the fixity of gender and sexual binaries, and which elicit a bodily reaction in the listener. As illustrated, SOPHIE's songs often feature sounds that have not yet been absorbed into the synthesizer lexicon, that is to say that they have weak signifying power as they have not yet been assigned to specific musical tropes. I refer to these sounds as 'speculative,' placing SOPHIE within a lineage of queer and feminist artists, writers, and musicians who have used speculative or science fiction to imagine newer and more just realities. Conversely, SOPHIE creates imitative sounds through her synthesizer which mimic existing sounds from daily life, such as fizzing candies, bubbles, clanking metal, and water droplets. These imitative sounds evoke haptic responses in the listener, creating embodied experiences out of synthetic material. More abstractly, these imitative sounds revel in the possibility of technological reproduction, blurring the boundaries between the organic and the inorganic, as well as the real and the imagined.

Building a "Whole New World:" *OIL OF EVERY PEARL'S UN-INSIDES*

SOPHIE's debut album *OIL OF EVERY PEARL'S UN-INSIDES* was released in June 2018, and garnered critical praise from sources such as *Pitchfork,*[164] *Exclaim!,*[165] and *Rolling Stone.*[166] While during the PC Music era critics were divided as to the seriousness of SOPHIE's work, such commentary was abandoned by the release of her first album. SOPHIE's nomination for best Dance/Electronic album at the 61st Annual Grammy Awards further solidified her position as a significant voice within electronic music, recognizing the widespread influence of her production style. The album features many of the same themes as *PRODUCT,* including the commercialization of gender, power and domination expressed through S/M, and technology as a means of self-representation and self-actualization. In this final section of the chapter I will discuss four singles from *OIL OF EVERY PEARL'S UN-INSIDES.* First, I will return to "It's Okay to Cry," with a discussion of how microphone placement and vocal mixing aid in establishing an intimate relationship with the listener. Secondly, I will examine the embrace of noise on the songs "Ponyboy" and "Faceshopping," both of which lyrically describe scenes of control, be it of a sexual partner or of one's self-image. I argue that SOPHIE's use and restraint of noise presents a kind of controlled chaos akin to the S/M scenes her lyrics describe. Finally, I compare the lyrics and production techniques on the single "Immaterial," calling into question the bodily escapism posited by the lyrics.

I opened this chapter with a description of "It's Okay to Cry," the first single off of *OIL OF EVERY PEARL'S UN-INSIDES.* In many ways the song is quite an outlier within

[164] Sasha Geffen, "SOPHIE: Oil of Every Pearl's Un-Insides," *Pitchfork*, June 15, 2018, https://pitchfork.com/reviews/albums/sophie-oil-of-every-pearls-un-insides/.
[165] Peter Boulous, "SOPHIE: Oil of Every Pearl's Un-Insides," *Exclaim!,* June 19, 2018, https://exclaim.ca/music/article/sophie-oil_of_every_pearls_un-insides.
[166] Christopher R. Weingarten, "Review: Sophie's 'Oil of Every Pearl's Un-Insides' is an Avant-Pop Gem," *Rolling Stone,* June 15, 2018, https://www.rollingstone.com/music/music-album-reviews/review-sophies-oil-of-every-pearls-un-insides-is-an-avant-pop-gem-628834/.

SOPHIE's discography. "It's Okay to Cry" follows a standard verse-chorus-bridge (ABABCB) structure, and where SOPHIE's lyrics are often disjointed and abstracted, here she coaxes out vulnerable interactions with a friend or partner in a narrative akin to a lullaby. While *PRODUCT* is dominated by a sonic maximalism, creating an almost overwhelming listener experience, "It's Okay to Cry" is a pop ballad slow burn. An assortment of glassy pianos and a warm bass synth provide the backbone for SOPHIE's delicate, almost whispered vocals. Despite being an electropop production, glistening and shiny, within the larger context of SOPHIE's oeuvre the track is quite paired down and intimate.

While SOPHIE's voice isn't nearly as heavily processed on "It's Okay to Cry" as many of her other tracks, as with previously discussed material the vocal treatment is pivotal in communicating the themes of the song. In comparison with the large swelling synth sounds and sweeps of noise the underlie the chorus, SOPHIE's voice is relatively dry as it lacks any reverb. This dryness is emphasized by the abrupt cut-offs at the end of phrases, as well as the use of reverse reverb on inhaled breaths. These modifications to natural vocal sounds, which index the human singer behind the microphone, call attention to the editing of the voice, thus disrupting any presumptions of it as wholly organic. The microphone placement aids in this dry sound, as SOPHIE sounds extremely close to the microphone and forward in the mix, creating the sensation that she is whispering into the listener's ear. While the use of crisp, forward vocal production mimics close proximity, this sensation is complicated by the addition of digital delay, which causes each phrase to repeat after a quarter note. The application of the repetitive delay produces an aural space that would not occur naturally, with its simultaneous dryness and echo, thus calling to attention the technological intervention being made onto the voice. Of course, the application of digital delay and reverb effects is ubiquitous within contemporary popular music, however SOPHIE's particular

treatment of the voice calls attention to these post-production tactics which would more often be concealed.

In her chapter "Mechanized Bodies" in *The Oxford Handbook of Music and Disability Studies,* music theorist Jennifer Iverson describes similar technological interventions in Björk's recorded works. Iverson argues that in extending the voice through unnatural technological mediation electronic sound "is a *prosthesis* to the human, acoustic, natural body."[167] While I find Iverson's application of disability studies rhetoric difficult to locate within the musical examples she discusses, I found her analysis of Björk's use of audio mixing to be a fruitful avenue through which to think through the extension of the body through sound. On "It's Okay to Cry," as with Björk's electronica, the mix calls attention to the voice's surpassing of its natural surroundings, therefore disrupting the "binary logic" of the body as natural/technological or acoustic/electronic.[168] The implication of digital audio technology thus alters the relationship between the body and its surroundings.

The juxtaposition of distant-sounding instrumentation with the closeness of the voice is at once jarring and soothing because the sense of nearness bolsters feelings of intimacy between the performer and the listener. This practice is reminiscent of the popular genre of Autonomous Sensory Meridian Response (ASMR) videos posted to YouTube. Videos intended to trigger ASMR reactions, described as a pleasant and relaxing tingling sensation running through the body,[169] often feature YouTubers whispering directly into a microphone and conducting mundane activities or describing acts of service. Researchers Naomi Smith and Anne-Marie Snider describe the scenarios performed and the affective responses enabled through the online interactions of "ASMRtists" and their viewers. They explain: "As ASMR

[167] Jennifer Iverson, "Mechanized Bodies," in *The Oxford Handbook of Music and Disability Studies,* eds. Blake Howe, et al. (Oxford: Oxford University Press, 2016), 158.
[168] Jennifer Iverson, "Mechanized Bodies," 160.
[169] Naomi Smith and Anne-Marie Snider, "ASMR, affect and digitally-mediated intimacy," *Emotion, Space and Society* 30 (2019): 41-48.

is a sensory response is it also an emotional one, as it plays on feelings of intimacy and comfort. Through its use of sound, ASMR embodies micro-social interactions of care, affection and intimacy."[170] These techniques are similarly utilized by SOPHIE on "It's Okay to Cry," wherein she addresses her audience directly in lines such as "I think your inside is your best side" and "just know you've got nothing to hide." Whether intentional or not, SOPHIE's engagement with ASMR techniques illustrates the potential of web technology to establish communities of care and affective exchanges. By mimicking these techniques through vocal production SOPHIE creates a familiar and intimate sonic space. These aesthetics of online care and intimacy may be particularly potent for queer listeners, for whom the internet may be a space of identity exploration or re-definition.

While the song is addressed to a nondescript other, it may also be read as a form of self-healing. In his article "Scar Tissue Music," Adam Harper describes recent electronic albums in which the musician's body is presented as a site of political and social struggle, which may be overcome through creative presentations of oneself through music and art.[171] Harper highlights five queer and transgender artists who take up embodiment as a significant theme in response to the political, social, and physical violence enacted onto queer bodies: Arca, Elysia Crampton, Lotic, Angel-Ho, and SOPHIE. He calls this music "scar tissue music" for its capacity to heal, writing, "[i]t is a music of self-care and self-awareness, of painful emotional and biographical honesty, simultaneously mourning and celebrating, yet without contradiction."[172] Harper also points to SOPHIE's touchy relationship to authenticity and the ways in which the irony of the PC Music label has proven provocative. He recognizes, however, the political power in the forwardness of SOPHIE's maximalist style and her centring of her body in this display:

[170] Naomi Smith and Anne-Marie Snider, "ASMR, affect and digitally-mediated intimacy," 45.
[171] Adam Harper, "Scar Tissue Music," *Pop Kultur und Kritik,* 8 no. 1 (September 2012): 36-45.
[172] Adam Harper, "Scar Tissue Music," 40.

> In the context of the discourse surrounding trans women, it's bold however you read it: the notion that transitioning is indulgent, inauthentic, and libidinally charged is a common line among transmisogynists. In a similar way that PC Music and friends toyed with sensitivities around the inauthenticity of digital technology and the commercial pop industry, SOPHIE is baiting transphobes. In any case, SOPHIE's rejection of traditional authenticity and decadent aesthetics amounts to a radical position on queer emancipation.[173]

In the video for "It's Okay to Cry," SOPHIE's musically maximalist style is matched by her visual aesthetic of excess, both taunting her critics and creating an effective balm against their criticisms.

The second song on the album, "Ponyboy," offers a stark thematic and musical contrast to "It's Okay to Cry." The track features vocalist Cecile Believe, who is credited as a co-songwriter who repeats the simple chorus vocals: "Pony boy, you can call me pony boy […] he is just a pony boy" and other phrases that are punctuated by the song's title. The verses use a booming kick drum sound and staccato vocal melody, which is pitch shifted down to sound to resemble the low growl of a heavy metal singer, bellowing in a sub-bass register. The vocal melody as is timed with the rhythm of the bass drum, the repeating sixteenth-note pattern creating a militant marching rhythm which is matched by SOPHIE's trademark bending, brassy, machinic sounds and pitched clanging metal. Here noise becomes a key feature of the texture as the bass becomes distorted, seemingly clipping, [174] and thus adding to a more complicated percussive sounds to the lower register.

The noisy clipping sounds used on "Ponyboy" share commonalities with the electronic "glitch" genre, in that elements of the recording or playback process which are typically considered mistakes are incorporated as a key element of the texture and form. In his widely cited essay "The Aesthetics of Failure: "Post-Digital" Tendencies in

[173] Adam Harper, "Scar Tissue Music," 44.
[174] Audio "clipping" occurs when a sound is too loud to be processed by the amplifier being used in the recording process, causing the sound to distort. Clipping may also occur in digital signal processing, when the waveform being produced by a digital instrument is pushed above the maximum level (0dBFS) on the digital audio workstation, thus causing the waveform to be cut off.

Contemporary Computer Music," Kim Cascone presents a genealogy of the glitch genre, linking the works of nineteen-nineties glitch producers to the Italian futurists and the works of John Cage, particularly the composition *4'33"*.[175] Cascone's assertion that glitch is an "aesthetics of failure" rests on the primacy of the audio technology as the aesthetic driver of the music. He argues, "[i]n this new music, the tools themselves have become the instruments, and the resulting sound is born of their use in ways unintended by their designers."[176] Hannah Bosma challenges Cascone's fundamental premise in her article "Gender and Technological Failures in Glitch Music," claiming that within the context of the genre the musical "failures" central to glitch music are read as stylistic markers, thus losing their status as malfunctions.[177] Most significantly, Bosma revokes the idea that glitch's investment in chance encounters or 'happy accidents' suggests any loss of control:

> [F]ailure features in glitch music as a point of departure, an inspiration or a heuristic device. Failure serves as the basis for the development of a new style of movement, new territories, new techniques, new software tools and new sound material. In fact, through recording, processing, editing and sequencing, the glitches are domesticated. Losing control in glitch is actually at the service of regaining control — like a phase in the development of the classic masculine hero.[178]

Bosma argues that while glitch's aesthetic investment in technology "for technology's sake" may contribute to the genre's masculine associations, the collage form offers the possibility of using explicitly or implicitly politicized references. While SOPHIE's "Ponyboy" does not fit neatly into the glitch genre, with its typical use of loops and focus on ambience, I argue that her deliberate use of noise presents a similar form of *controlled failure*. Given Bosma's assertion that an insistence on sonic control contributes to a masculine digital aesthetic, some

[175] Kim Cascone, "The aesthetics of failure: "Post-digital" tendencies in contemporary computer music," *Computer Music Journal* 24, no. 4 (2000): 14.
[176] Kim Cascone, "The aesthetics of failure: "Post-digital" tendencies in contemporary computer music," 16
[177] Hannah Bosma, "Gender and Technological Failures in Glitch Music," *Contemporary Music Review*, 35 no. 1 (2016): 104.
[178] Hannah Bosma, "Gender and Technological Failures in Glitch Music," 107.

reflection on the relationship between noise and gender politics is critical in the discussion of "Ponyboy."

As Bosma notes, the concept of sequestering a complete control over a composition runs the risk of entrenching the producer within the masculinized role of the 'Great Composer.' SOPHIE toys with such ideas in "Ponyboy," where explicit lyrics depict a scene of sexual domination: "Lock up the door/ Put the pony on all fours/ Crack down the whip/ Make the pony bite the bit," etc. This master position applies doubly to the sexual and musical scenarios at play: the noisy audio promises to exceed the limitations of its amplifier, but its resultant distortion is repositioned as a pleasureful musical device. Similarly, SOPHIE's potentially threatening BDSM scene is figured as satisfying through Cecile Believe's uninhibited ad-libbed vocals, which enter near the song's halfway mark. Here, the dark heavy beat is met with bouncy counter synth stabs, a ubiquitous element in house music. The listener is quickly transported to the rave or club, a space in which the musical and sexual converge into the corporeal pleasures of the dance floor. Thus, while SOPHIE revels both sonically and lyrically in a controlled chaos, her deliberate use of noise is far from an aesthetics of failure.

While a masculine glitch aesthetic may reinforce the 'Great Composer' narrative, within "Ponyboy" the circulation of power is not so clearly delineated. An interview with *V Magazine* sheds some light on the inspiration for the track. SOPHIE reveals, "[t]he song was my interpretation of feeling and listening to music so it was important to use drums […] It's a playful song, but it's a bit hard. It's bodily and sexual. It also plays a bit with characters in the same way that you might do in certain sexual dynamics. I wanted to give it that feeling to

people."[179] That "Ponyboy" was inspired by the sensation of listening to music is pivotal in solidifying the sexual and musical dynamics of the song in relation to one another. Presenting herself as both a listener and creator provides and conceptual mobius strip – SOPHIE is both producer and receiver in an endless cycle, thus dismantling any status as the all-powerful Great Composer, in favour of a musician-fan position.[180]

The theme of online self-representation returns in the song "Faceshopping" and its accompanying video. The track follows a similar form to "Ponyboy," with Cecile Believe providing a call and response with a pitched-down, barely discernible second vocalist. Cecile Believe opens: "My face is the front of shop/ My face is the real shop front/ My shop is the face I front/ I'm real when I shop my face." The idea that individual fulfilment is made possible through physical and technological intervention – "I'm real when I shop my face" – is presented as the thesis of the song. Various interventions on the physical body are referenced in the lyrics in the verses, including plastic surgery, drugs, and makeup. A brassy, squeaky melodic synth line is coupled by a booming kick drum sound, which trades off phrases with a vocoded voice. These verses are pitch-shifted down into a low, sub-bass register, making the lyrics menacing and barely legible. Overtop Cecile Believe sings whiny ad-libs, bending into high-pitched "yeahs" and "okays." The themes of bodily manipulation suggested in the lyrics are further cemented in the music video, in which an animated version of SOPHIE's face is shown being blown up, sliced, and contorted.[181] Flashing images of

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[179] Sydney Gore, "Get a Glimpse at SOPHIE's Whimsical 'Ponyboy' World," *V Magazine,* December 2, 2017, https://vmagazine.com/article/get-glimpse-sophies-whimsical-ponyboy-world/.

[180] This positioning is redolent of the theory of musicality presented by Suzanne Cusick in her essay "On a Lesbian Relationship with Music: A Serious Effort Not to Think Straight." Here, Cusick describes her relationship to musicality as existing within a triad of power, pleasure, and intimacy, and describes the changing ways these forces operate depending on her position as either a performer, listener, or scholar. As described in note 83, Cusick's article fails to attend to power differentials within lesbian relationships, and rests on a binary gendered logic which posits lesbian relationships as utopian. While I disagree with many of the implications of her article, Cusick's metaphor of being "on top" of the music, or conversely being topped by music, offers a conceptual framework to think through SOPHIE's domination over the noise used in "Ponyboy," which resists the tropes of controlled failure prevalent in glitch music.

[181] See figures 6, 7, 8.

corporate branding, including Coca Cola, and social media platforms like Instagram and Twitter, appear alongside wet animated skin, makeup, and skincare products. In juxtaposing these images SOPHIE suggests that cosmetics, corporate brands, and social media accounts are flips sides of the same coin: vehicles through which to sell products or to sell oneself.

An initial reading of "Faceshopping" may suggest that SOPHIE is wholly critical of this visual manipulation. Analyzing the song from this angle, SOPHIE seems to point out the expectations of flawless beauty placed upon women's bodies as they exist online, likening the use of social media accounts to personal advertising. The absurd possibilities of programs like Photoshop, Instagram filters, and other photo manipulation software are illustrated by the grotesque over-exaggeration of SOPHIE's features. Moreover, the slicing of her face into pieces and her ambivalent expression may be read as a violent fragmentation of individual subjectivity. While this troubling thread runs throughout the song, I argue that SOPHIE also seems to take pleasure in the taboo practice of bodily manipulation, even as she is presented as abject. Indeed, to "synthesize the real" as SOPHIE demands in "Faceshopping," is a central element of her musical practice.

Cecile Believe's ad-libbed squeals sound pleasureful, even amidst the militant booming bass sounds. Most tellingly, the repetitive formal structure deteriorates with the onset of a bridge section, during which Cecile Believe sings a lustful soprano melody reminiscent of the sensuous female vocalists often featured on classic house music tracks. [182] The aggressive kick drum and vocoder are replaced with a glassy piano and glittery chime sounds. Cecile Believe sings in second person: "You must be/ the one I see in my dreams/ come on, touch me/ set my spirit free" before finally urging her subject "reduce me to nothingness." This final line in the verse section is punctuated with a satisfied "yes, yes,"

[182] These sensual vocal samples are described in Susanna Loza's essay "Sampling (hetero)sexuality: diva-ness and discipline in electronic dance music. *Popular Music* 20, no. 3 (2001). Loza uses Donna Summers' "Love to Love You Baby" as a prime example of the repeated vocal melodies which are often sampled in dance music.

conferring a sort of sexual pleasure onto the idea of existing outside of one's physical body. This climactic bridge section solidifies the un-ironic status of the lyrics; to alter, refashion, or even "reduce [one's body] to nothingness" in this scenario means escaping the constraining expectations that are continuously placed upon it. SOPHIE reimagines the possibilities of bodily modification, turning potentially oppressive tool of perfectionism into a means of renegotiating the ways in which her body is consumed by the public.

Perhaps a more cohesive way of thinking through this pleasure is to see it as an expression of self-determination. For SOPHIE, control over the body is a central site of political and individual determination, a topic she discussed explicitly in an interview for *Paper* magazine. When asked for her definition of transness, SOPHIE tells her interviewer:

> For me, transness is taking control to bring your body more in line with your soul and spirit so the two aren't fighting against each other and struggling to survive. On this earth, it's that you can get closer to how you feel your true essence is without the societal pressures of having to fulfil certain traditional roles based on gender. It means you're not a mother or a father — you're an individual who's looking at the world and feeling the world. And it's somehow more human and universal, I feel.[183]

Moreover, she explains:

> An embrace of the essential idea of transness changes everything because it means there's no longer an expectation based on the body you were born into, or how your life should play out and how it should end. Traditional family models and structures of control disappear.[184]

SOPHIE emphasizes the humanness of the experience of deciding how your body exists within and interacts with the environment that surrounds it. Rather than being bound to the gendered and sexualized script assigned at birth, SOPHIE sees transness as an expression of bodily agency.

While I have analyzed SOPHIE's works in relation to posthumanism, this is not to deny or diminish her humanity or her humanness. On the contrary, I find her self-presentation

[183] SOPHIE Interviewed by Tzef Montana, Story by Justin Moran, "SOPHIE's Whole New World," *Paper,* June 18, 2018, https://www.papermag.com/sophie-pride-2579165152.html?rebelltitem=49#rebelltitem49.
[184] SOPHIE, "SOPHIE's Whole New World."

through sound and visual media to challenge the fixity of gender categories, and the binary opposition of human and machine, thus expanding my understanding of what it means to be human. It is important to make this clear given the tendency for academics, writers, journalists and the public to dehumanize transgender people, as discussed by Saorise Caitlin O'Shea in their article "'I Robot?' Or how transgender people are dehumanised." This dehumanization can come as the result of physical violence, misgendering, or the public questioning of one's lived reality, and O'Shea emphasizes the ways in which this dehumanization is often communicated through comparisons of transgender people to unfeeling robots or cyborgs. She writes:

> It is not without irony then that I ask why transgender people are so often vilified in contemporary society? It is because we are regarded as fragmented beings – a fragmentation definitional of the post-human cyborg – whose sense of self does not align with an external, visible body morphology to leave us alienated from our very selves? Or is it because we are regarded as never having had any humanity, mere robots without feelings that cannot change and threaten both the present and future of gender?[185]

While comparisons to robots and cyborgs have been weaponized against transgender and other gender non-conforming people, it is important to recall that the posthuman needn't stand in opposition to the human. In fact, posthumanism asks us to constantly consider who is considered 'human,' and which groups are considered or treated as more human than others. Posthumanism's approach of deconstructing the notion of the human is useful here in exposing the aesthetic demands placed upon the bodies of women, and trans women in particular. Moreover, posthumanism's interest in both human and non-human agents allows for a greater understanding of the ways in which technology, in this case photo editing and digital audio software, may challenge or expand upon our notion of the human. This process of defamiliarization is realized visually and musically in the video for "Faceshopping,"

[185] Saorise Caitlin O'Shea, "'I Robot?' Or how transgender people are dehumanised," *Culture and Organization* 26, no. 1 (2020): 3.

wherein the human body and all of its gendered entanglements are at times conformed to and at others, exceeded. As O'Shea makes clear, tethering transgender people to the concept of a fragmentary identity is a harmful way of delegitimizing their experiences, however SOPHIE's "Facehsopping" suggests that identity is already fragmented between our online and offline selves, regardless of gender identity.

Themes of bodily escapism return in the song "Immaterial," a reverent up-tempo dance-pop anthem. The song is a stand-out on the album for its driving pseudo four-on-the-floor beat (the kick drum is replaced with a snare-clap hybrid drum hit) and catchy looping melody, which SOPHIE describes as "the cheapest"[186] of all the tracks on the album. Perhaps this is because of the song's affecting joyful melody, which connotes an ecstasy akin to religiosity. The incessant positivity of the song presents what could be positioned as a horrific experience – living outside of one's body – with a sense of wonder. While in "Faceshopping" visual cues and lyrical references solidify the song within a context of online presentation, the ambiguous lyrics on "Immaterial" make the context of SOPHIE's evasive fantasy unclear.

This imaginative scene is expressed in the lyrics, sung by Cecile Believe: "Without my legs or my hair/ Without my genes or my blood/ With no name and with no type of story/ Where do I live? / Tell me, where do I exist?" On "Faceshopping," SOPHIE revels in her ability to alter her image and in turn control the way that she is consumed by society, thus performing a heightened version of gendered actions routinely performed online. In imagining herself as "Immaterial," SOPHIE takes this vision one step further: between repetitions of the refrain "Immaterial girls, Immaterial boys" Believe sings with an almost childlike sense of hopefulness the ascending line "I could be anything I want. Anyhow, any place, anywhere, anyone, any form, any shape, anyway, anything, anything I want." No longer bound to the associations of her outward appearance, SOPHIE imagines a rich inner

[186] SOPHIE, "SOPHIE's Whole New World."

life completely divorced from the human body. If early tracks such as "HARD" and "LEMONADE" turned synthesized sounds into hard materials such as plastic and metal, "Immaterial" marks a return to the abstract and effusive.

The great irony of "Immaterial" is the substantial physical impact that listening to it has on the listener. With its driving rhythm and plunking bass line "Immaterial" seems best suited for the club, the dance beat imploring listeners to move and sweat along to the pounding rhythm. It is curious that in this song, in which SOPHIE posits her most ontologically imaginative scene, that the vocal production is relatively typical; save for a bit of auto-tune SOPHIE does not take any grand leaps to extend or alter Cecile Believe's voice. Thus, SOPHIE's celebration of becoming immaterial illustrates a paradox central to the album: to comprehend and enjoy the album requires the kind of embodied experience that "Immaterial" seems to disavow. Such sentiment directly validates the impossibility of a disembodied form of music, as discussed throughout the edited volume *Bodily Expression in Electronic Music*. A longer passage from Alva Noë's chapter "What Would Disembodied Music Even Be?" provides fodder here:

> What happens when sound or line is divorced from movement? Answer: it *can't* be. The digital is just a different way of making the movement happen. And anyway, our musical sensitivity to movement is really a sensitivity to intelligibility; it is really a form of understanding.
>
> We start our lives with the body, and the body is the substrate of our understanding. But as we learn to do new things, as we learn to use new tools, we extend and transform our body, just as we extend and transform our understandings. *Electronic music doesn't take the body away. It gives us a new body*.[187] (Emphasis mine)

SOPHIE's "Immaterial" describes an imagined reality in which the pleasures of the body are divorced from the pains of living. The album's culmination, a double track entitled "Whole New World/Pretend World" presents a sonic realization of this fantasy, while at the

[187] Alva Noë, "What Would Disembodied Music Even Be?" in *Bodily Expression in Electronic Music: Perspectives on Reclaiming Performativity,* eds. Deniz Peters, Gerhard Eckel and Andreas Dorschel (New York: Routledge, 2012), 60.

same time verifying its status as “pretend.” The track utilizes a buzzy attack-heavy synth pad, which repeats F# to G, F# to C# and back again, creating an anxiety-provoking oscillation between chromaticism and cadence. A vocal sample by a British singer exclaims the title “Whole New World,” which is chanted on repeatedly throughout. The song is sparse and jarring after the anchoring pop style of “Immaterial.” The harsh synth lead is matched with SOPHIE’s growling sub-bass vocoded vocalist, similar to the one used in “Ponyboy” and “Faceshopping,” singing the verse sections. SOPHIE describes “visions” of a lover, and “promises of a life uncontained,” before Cecile Believe finally croons “I looked into your eyes/ I thought that I could see a whole new world,” triggering alarm bell sounds and adding to the frenzy of glitching machinic noises making up the sonic landscape.

For the final five and a half minutes of the album the listener is launched into SOPHIE’s “new world;” a world of glitchy machinic detritus, clanging metallic percussion, and a dissonant panging synth melody. SOPHIE’s usual palette of sounds is utilized, but here it is sprawling and seemingly directionless, as if presenting a never-ending landscape of sound. This long instrumental interlude also gives the impression of digital buffering, with percussive sound stuttering and repeating at random and dissonant intervals. Slowly this harsh sonic landscape is interrupted by the intrusion of Cecile Believe’s voice, introduced in a shroud of reverb and abruptly cut off, before finally returning in full as a central element of the texture. Slowly, a wash of noise drowns out the digital sounds and huge swelling pads drenched in reverb crash into one another to build into a euphoric ambient finish. The album ends in a wash of noise, a whirring sound panning back and forth, giving the impression of a UFO landing. The listener is left hovering, somewhere between the world they are grounded on and the one resounding through the headphones or speakers through which they are listening.

The dichotomy of the titles "Whole New World/Pretend World" illustrates the central premise of *OIL OF EVERY PEARL'S UN-SIDES:* imagining a newer, better world is always met with an awareness of its pretend-ness, and imagining new ways of living and of being reveals the pitfalls of our current moment. On *OIL OF EVERY PEARL'S UN-INSIDES* and throughout her oeuvre SOPHIE's imagination is expressed as much in the textural experimentation of her work as in the lyrical content, through which she presents heightened versions of found sounds with her digital imitations. The world SOPHIE creates is one of exhilarating pleasures and egalitarian power structures, of plastic and latex, malleable and fluid. Notably, gender assumptions are upended through the application of pitch-editing and vocoder software, through which the voice is extended beyond the capacities of the human body. Technology is thus posited as a liberating means of controlling one's image (and sound) for the purposes of self-actualization.

In imagining an existence unbound from the aesthetic and commercial demands placed upon the body, SOPHIE posits a utopian "immaterial" existence. Rather than suggesting that the only path towards a liberated future is through a sci-fi "brain in a vat" scenario, SOPHIE's musical fantasies refer to alternative spaces in which the relationship between mind, body, and identity may be explored, mixed up, and reconfigured. The internet is a prime example, where one may present themselves anyway they want, for better or for worse. Song writing and production is another, where the body may be manipulated and stretched through sound. Throughout this chapter I have argued that on *PRODUCT* and *OIL OF EVERY PEARL'S UN-INSIDES* SOPHIE inverts the well-trodden binary between artifice and authenticity, presenting these concepts as mutually constitutive rather than antithetical to one another. Moreover, while gender and sexuality are portrayed as being constituted in relation to technology and capitalism, so too are these concepts pliant through the creative appropriation of said technology. Through her exciting and inventive use of digital synthesis

and dramatic, maximalist style SOPHIE illustrates that digital technologies present new and thrilling ways of expressing oneself which reimagine traditional notions of human embodiment.

Chapter Three: 'Fantasies for New Realities:' Holly Herndon, Artificial Intelligence, and Miquela

"How do we create new fantasies, new ways to love, a new paradise, without reverting back to retro fantasies? How do we create a fantasy for today and tomorrow?"
-Holly Herndon, *WIRED,* 2015

As discussed in my literature review and previous chapters, the development of new musical technologies and instruments is often viewed by critics and scholars with scepticism at best, and an outright denial of musical expression at worst. From the development of the drum machines, to pitch-correction software, to the move to digital and software synthesizers, musical automation has frequently been met with upturned noses, and demands to return to "real" musicianship. Beyond strictly musical contexts, the spectre of artificial intelligence (AI) has been met with similarly anxious reactions. The increasingly automated decision-making programs in rapid development have brought about a variety of fears in public discourse, some more pressing and legitimate than others. Immediate threats include incomplete, weak, or tainted data sets; targeted advertising, propaganda, and false messaging deployed through social media 'bots;' and programs which take on the discriminatory practices of their makers, often on the basis of gender and/or race.[188] Less pressing, but perhaps more titillating, are the existential and ontological concerns spurred through the development of AI – whether intelligent machines will eventually deplete the job market, become sentient and self-producing, and move beyond the needs of human creators. In this

[188] AI bias is a major area of research, which has received significant attention from feminist scholars working in the tech area. NYU's AI Now Institute, founded by Kate Crawford Meredith Whittaker, has been on the forefront of this research. In their report "Discriminating Systems," Sarah Myers West, Meredith Whittaker and Kate Crawford write: "From a high-level view, AI systems function as systems of discrimination: they are classification technologies that differentiate, rank, and categorize. But discrimination is not evenly distributed. A steady stream of examples in recent years have demonstrated a persistent problem of gender and race-based discrimination (among other attributes and forms of identity). Image recognition technologies miscategorize black faces, sentencing algorithms discriminate against black defendants, chatbots easily adopt racist and misogynistic language when trained on online discourse, and Uber's facial recognition doesn't work for trans drivers. In most cases, such bias mirrors and replicates existing structures of inequality in society." Sarah Myers West, Meredith Whittaker, and Kate Crawford, "Discriminating Systems: Gender, Race and Power in AI," (AI Now Institute, 2019): 6, https://ainowinstitute.org/discriminatingsystems.pdf.

chapter I will examine various musical approaches to the development of AI, and the ways in which they uphold or subvert these concerns. I am interested both in musicians who actually use machine-learning processes to make music, as well as artists who take up the language and visual imagery of AI to create speculative projects. I again take a feminist posthuman approach to this topic, at once resisting techno-utopianism while remaining curious about the potential for technology to subvert existing power structures.

The central focus of this chapter will be composer and researcher Holly Herndon's exciting work with her voice-modelling AI "baby" Spawn. With the help of a choral ensemble, Herndon has taught Spawn to imitate her voice, and subsequently has composed in "collaboration" with this technology on her latest album *PROTO* (2019) for 4AD. Herndon's work with Spawn prompts questions about the possibilities of AI in musical composition and production, as well as how the development of these new musical tools may shape discussions around collaboration and improvisation. While Herndon's music may sound futuristic to some, she is adamant in stressing the nascent stage of development of her AI, and in AI more generally. Rather than focus on the over-arching and generally unfounded anxieties highlighted above, Herndon contends that now is the time to think creatively about the possibilities opened up by AI research, as well what sets of values we wish to confer onto our AI machines.

Using Herndon's *PROTO* as an example of "real" AI – that is, AI that is currently in development and which drives the musical ideas – I will also discuss an artist whose engagement with AI is imagined. The fictional robot and performer Miquela (also known as Lil Miquela) is an avatar created by the L.A.-based "transmedia" company Brud. Unlike Herndon's nascent AI technology, Miquela's creators have crafted a story about a thoroughly developed robot pop star, taking on tropes of influencer culture and imagining how these may play out through the lens of a robot with subjectivity and autonomy. Miquela's completely

scripted and fictional social media rollout underlines the interwoven elements of branding, sponsored content, and the demands to present an 'authentic' persona online which shape our current celebrity culture. The ways in which AI is imagined and depicted by Miquela are a far cry from the labour-intensive, exclusive, and complex burgeoning machine learning system created by Herndon and her collaborators. Herndon's *PROTO* challenges the expectations of AI being self-sufficient and autonomous from its human creators – indeed Herndon's work requires massive amounts of human labour. While entirely different musical projects, both Herndon's Spawn and Brud's Lil Miquela challenge what is counted as musical labour, and envision new, more scattered, models of collaboration which incorporate both human and non-human actors.

Embodying Laptop Performance– *Movement* and *Platform*

Holly Herndon's music operates within multiple economies and discourses. Having released records on the independent label 4AD while at the same time working on completing a PhD at Stanford, Herndon's music circulates as both popular and electroacoustic music, often crossing between dance music and experimental genres. Herndon's first album *Movement* (2012), developed during her graduate studies at Mills College, is characterized by an extensive use of non-linguistic vocal samples, which she processed through custom patches designed on MAX/MSP.[189] During her time at Mills College Herndon became interested in the work of Katherine Hayles and Donna Haraway,[190] and began exploring the ways in which embodiment evolves according to the technological apparatuses used to create sounds. The influence of posthumanism on her thinking is clear, as Herndon's compositions and writing focus on individual, governmental, and corporate relationships with technology.

[189] Max, also known as Max/Msp/Jitter is a software designed by the company Cycling '74. It allows programmers and musicians to build their own "patches," including audio effects and instruments.
[190] Holly Herndon, "Holly Herndon on Process | Loop," Lecture at Loop Summit. YouTube video, 36:53, posted by "Ableton," February 25, 2016, https://www.youtube.com/watch?v=6baj34lxF4g&t=919s.

For Herndon, the voice is a particularly poignant instrument for expressing the posthuman lack of division between mind/body and internal/external.[191]

Herndon's manipulation of the voice is exemplified on tracks such as "Breathe," where exaggerated inhalations and exhalations are transformed into sputtering and bending textures. Humming and other vocalisations are layered and splintered, creating inhuman synthetic noises which transform the automatic process of breathing into a mechanized, at times uncanny experience. Similar themes are explored on the title track "Movement," which has elements of a dance song with its four on the flour beat and acid house bass sequence. In the music video, directed by Mat Dryhurst, two oiled-up dancers perform together and solo front of a black screen, while a hand moves across and directs the placement of the shots, which pan left to right.[192] With the intrusion of the hand from below, the physical space of the dancers is transformed into a screen, thus altering the sense of physical space for the viewer. The video audience becomes a secondary viewer, while an unseen individual directs the movement of the images displayed, manipulating the cuts and edits. With these earlier works Herndon aimed to dispel the idea that the laptop is a disembodied instrument, contending the quite the opposite, that the laptop as "the most intimate instrument that we've ever seen, because it's mediating all of our daily experiences."[193] By melding the voice, which Herndon views as the most natural and embodied instrument, with vocal processing on the laptop she explores the her own relationship to these two instruments to which she is intimately bound.

A similar fusion of technology and the body is taken up by composer and performer Pamela Z. Z has composed works for voice and electronics, including live audio processing,

[191] Herndon discusses her interest use of the voice as exhibiting ideas put forth in the Cyborg manifesto in an interview with The Quietus magazine. Rory Gibb, "It's a Body Thing: An Interview With Holly Herndon," *The Quietus,* December 17, 2012, https://thequietus.com/articles/10997-holly-herndon-interview-movement.
[192] See Fig. 9.
[193] Holly Herndon, "Holly Herndon on Process | Loop."

since the mid nineteen nineties. In addition to creating vocal processing patches on MAX/MSP, Z utilizes gesture controlled MIDI instruments to trigger these processes. An early example is Z's "BodySynth" technology created in 1994 by Chris Van Raalte and Ed Severinghaus, which maps sounds and processing onto muscle movements through electrical signals, "causing the body to become a controller for an electronic sound module such as a synthesizer or a sampler."[194] Scholar, performer, and composer George Lewis, who also works in experimental and computer music, connects Z's use of voice and electronics to issues of race, the role of women and technology, and the association of Black woman – particularly Black women singers – with the body in ways that connote racist stereotypes, relegating Black woman to an imagined historical past:

> Z's strategic placement of BodySynth electrodes—eight small sensors that can be positioned practically anywhere on the body—moves past the prosthetic readings envisioned by the technology's creators towards the dynamics of the incarnative, the embodied, and the integrative […] Z's background in bel canto singing and the interpretation of art song, in which gestural communication constitutes a vital aspect of the communication of meaning, becomes extended to the realm of the cyborg […] Her insistence on the primacy of her body's subjectivity—not as exoticized or sexualized fetish object, but as a locus of emotional transduction—defies those who insist that in the digital age the body need not concern us further.[195]

More recent works such as her chamber "Carbon Song Cycle" (2013) feature live processing of both voice and other acoustic instruments. The piece "Breathing" from the cycle, originally performed alongside a chamber ensemble, has also been performed for solo voice and electronics. Here Z uses gesture-controlled MIDI instruments to transform her breath sounds and repeated lyrics "I was breathing" with the application of delay, randomization, and other effects. Like Herndon's "Breathe," the breath becomes stuttered and warbling, as Z is able to loop and layer phrases. With her use of gesturally driven instruments Z adds

[194] Ed Severinghaus, "The BodySynth," written text on Pamela Z website, http://www.pamelaz.com/bodysynth.html.
[195] George E. Lewis, "The Virtual Discourses of Pamela Z," *Journal of the Society for American Music,* 1, no. 1 (2007): 59.

another embodied aspect to the performance, as her dancerly movements shape the production of her part-computer and part-vocal sound.

Z is not the only artist to use physical gesture as a way of transmitting sound; musician and performance artist Laurie Anderson has also used controllers to trigger drum machines upon hitting parts of her body,[196] as well as a wireless "talking stick," synthesizer which uses granular synthesis to create sounds for her piece *Songs and Stories from Moby Dick.*[197] Similarly, Tomie Hahn and collaborator Curtis Bahn used wireless wearable technology for Hahn's performances as the anime-inspired character Pikapika. Their creation of a 'sensor speaker performer' interface allowed Hahn to trigger sampled sounds as well as dictate the signal processing applied to those sounds through her movements.[198] These examples make clear that the relationship between the body and machine has been a persistent site of inquiry for women electronic musicians, which is often explored through vocal processing and the creation of new musical instruments.

These themes are further explored in Tara Rodgers' interview with Z in her book *Pink Noises,* wherein Rodgers links Z's use technology to a longer lineage of experimental musicians.[199] Comparing Z's use of repetition to Pauline Oliveros's meditations on language and sound, Z notes that "there's something about the perfect repetition of something that changes it, because your ear begins to hear it differently when it gets repeated over and over. When a human repeats something, it changes with each repetition. But when a machine

[196] Susan McClary, *Feminine Endings,* 137.
[197] Scott Saul, "Mysteries of the Postmodern Deep: Laurie Anderson's Songs and Stories from Moby Dick," *Theater* 30, no. 2 (Summer 2000): 162.
[198] Tomie Hahn and Curtis Bahn, "Pikapika – the collaborative composition of a sonic character," *Organised Sound* 7, no. 3 (December 2002): 229.
[199] In *Pink Noises* Pamela Z points out that she is often discussed in comparison with Laurie Anderson, which she finds to be fairly reductive given that major differences in style and context of their works. In comparing them here I do not wish to reinforce the idea that woman composers' works must be understood in relation to one another and cannot stand alone as works for analysis. Rather, I wish to illustrate here that Herndon's experiments with Spawn emerge within a long line of composers who have used vocal processing and other technological innovations to interrogate the relationship between the body and technology.

repeats something, it changes each time because the ear begins to listen to it."[200] In Rodgers' interview with Oliveros the composer similarly notes how repetition through the use of delay has the capacity to expand time: "[W]hen I play something in the present, then it's delayed and comes back in the future. But when it comes back in the future, I'm dealing with the past, and also playing again in the present, anticipating the future. So that's expanding time."[201] In the examples of both Z's "Carbon Song Cycle" and Herndon's "Breathe" the use of repetition of breath engages in this time stretching quality, as well as turns the physical act of breathing into a process more closely resembling a machine.

While on *Movement* the themes of computer technology and embodiment were somewhat abstracted, on her second album *Platform* (2015) they are addressed head-on. In a lecture for Red Bull Music Academy, Herndon emphasizes her musical interest in "the sound of now," and her distaste for retro-fetishism, at least in her own work. For Herndon, the sound of "now" is a mish-mash of textures and samples across different times and topics, processed through the computer and on internet browsers.[202] To capture these sounds Herndon uses a software system called Dispatch, developed by Mat Dryhurst, for the album's single "Chorus." Dispatch allows for the recording of all audio created through a user's browsing history which may then be sampled from, creating a style that Dryhurst refers to as "net concrète."[203] This process of surveying oneself, known as "sous-veillance," is already a common practice through apps that track steps, heart rate, and sleeping habits, but Herndon transforms this extremely intimate data into musical material. In this way, Herndon's online actions are figured as another element of her subjectivity to mine for musical inspiration. Or,

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[200] Pamela Z, interview by Tara Rodgers in *Pink Noises: Women on Electronic Music and Sound,* 219.
[201] Pauline Oliveros, interview by Tara Rodgers in *Pink Noises: Women on Electronic Music and Sound,* 29.
[202] Holly Herndon, "Holly Herndon on Self-Sampling and Emotions Through Music | Red Bull Music Academy," Interview at Red Bull Music Academy, Tokyo, YouTube video, posted by "Red Bull Music Academy," October 28, 2014, https://www.youtube.com/watch?v=_XmHQkFo_co&t=307s.
[203] Holly Herndon, "Holly Herndon on Self-Sampling and Emotions Through Music | Red Bull Music Academy."

in Herndon's own words: "my laptop is an extension of my memory and self, it is a conduit to the people I care about and […] retains more knowledge about me in one moment than I can muster."[204] This is not a one-way relationship, however; while the laptop may be a vessel for surveying oneself, it is also a reminder of that one's actions are constantly being archived, tracked, and sold.

While Herndon recognizes computer technology as useful and inspirational for her work, she is also highly critical of surveillance technology and the ways in which artists are expected to bend to the increasingly public and online expectations for promotion and financial stability. She explains this position in an essay for *Self-Titled* magazine*:*

> As artists, are we to presume that all things we share are fit for public scrutiny, and if so, how does that change the idea of a body of work? Is every gesture we express online part of one grand performance? […] Our behaviors begin to resemble the conditions designed for us. Recent NSA revelations add a more foreboding angle to this logic, recalling the logic of Foucault's panoptic gaze where one polices their own actions, convinced there is a silent overseer watching them.[205]

Herndon portrays the experience of living under this panoptic gaze with a kind of ambivalence on the track "Home." Here, Herndon sings as an individual being tracked by the NSA: "I can feel you in my room/why was I assigned to you?/ I know that you know me better than I know me." Herndon does not sing with the expected fear or disturbance of someone being watched, but rather in a dry, unemotive tone to paint a portrait of a similarly curious viewer. Herndon is not an exhibitionist but someone who wishes for an honest exchange of gazes: "Still I want, I want you to show your face/ you know that I've been around, still I want." Herndon's use of the laptop as an instrument is "as much a political

[204] Holly Herndon, thesis interview by Michael Waugh, 2014, "'Music That Actually *Matters?'* Post-Internet Musicians, Retromania and Authenticity in Online Popular Musical Milieu," 184.
[205] Holly Herndon, "Holly Herndon Discusses the Modern Day Struggle Between Privacy and Publicity," *Self-Titled,* May 30, 2014, https://www.self-titledmag.com/holly-herndon-discusses-the-modern-day-struggle-between-privacy-and-publicity/.

technique as an aesthetic approach to music,"[206] a way of reflecting back the more troubling applications of computer technology while at the same time recognizing their value in creative, or other politically liberatory applications.[207] Herndon's approach to technology as neither inherently good or bad but as massively influential resonates deeply with posthuman theory.

PROTO: Building an AI Baby

On *PROTO* (2019) Herndon gives her audience a glimpse into her latest project: the creation of an AI "baby" named Spawn, created in collaboration with Mat Dryhurst and programmer Jules LaPlace. Spawn is a voice modelling artificial intelligence machine, which means that it is programmed to recreate a speaker/singer's voice, as well as learn the language and movements of a given musical sample so that it may be able to make its own musical decisions. To achieve this, Herndon and her team created data sets made up of recorded vocal snippets, a labour-intensive process that required Herndon to speak and sing to the machine for hours a day for nearly two years. Additionally, Herndon invited her choral ensemble to sing to Spawn — allowing the machine to learn polyphony — as well as created alternative data sets from large audiences at performances given during Spawn's development.[208] With her focus on creating an ensemble of collaborators featured on *PROTO,* Herndon aims to challenge the increased automation she has seen replace human performers in electronic music performances through the use of automated light shows and visual displays. While the team eventually achieved musical results that are captured on *PROTO,* Spawn's development is ongoing. Spawn is only one member of Herndon's

[206] Travis Jeppesen, "New Gods in the Machine: Holly Herndon's Vehicularity," *Afterall: A Journal of Art, Context and Enquiry,* 41 no. 1, (Spring/Summer 2016): 87.
[207] This is another point of comparison with Laurie Anderson, another artist who is critical of technology yet at the same time uses complex musical technologies to enact this critique.
[208] Emilie Friedlander, "Holly Herndon and her AI baby spawned a new kind of folk music," *FADER,* May 21, 2019, https://www.thefader.com/2019/05/21/holly-herndon-proto-ai-spawn-interview.

ensemble, however, and much of the material on *PROTO* is performed by Herndon and the other singers, and includes additional processing and electronics.

The "takes a village" ethos which permeates the album was a large driver for the project; Herndon has described the loneliness of working in the studio, and her desire to work alongside other musicians and build community.[209] Spawn's anthropomorphic depiction is established both within the album and through its rollout: the first track "Birth" includes the first recognizably musical material Spawn created, "Crawler" appears later and narrates a journey into an unknown future, and "Last Gasp" describes the experience of seeing oneself reflected in their offspring. Herndon's decision to use a parental metaphor is twofold: firstly to establish the "baby-like" quality of her AI, and of AI in general, and secondly to illustrate the ways in which AI may "grow up" according to the kind of parenting style created through the data sets provided.[210] Herndon describes the usefulness of giving Spawn an anthropomorphic quality: "it felt like something that needed to be nurtured by the input that we were giving it. A baby doesn't have perspective or context — it's just focused on whatever it's dealing with at the moment. That's how we felt the AI was processing information."[211] The language of nurturing that Herndon uses emphasizes the various potential futures for AI, and that it is the responsibility of developers to think carefully about how AI should behave and what values it ought to learn.

While the utility of the baby metaphor is clear, the necessity of imposing gender on a machine is somewhat perplexing. There are many examples of anthropomorphized vocaloid singers given an (often sexualized) female gender identity, Hatsune Miku being the most famous among them, and Miquela being a prime example within American popular culture. The service bots that many people use daily, such as Apple's "Siri," Amazon's "Alexa," and

[209] Holly Herndon, "Birthing PROTO," YouTube video, 6:04, posted by "Holly Herndon," September 10, 2019, https://www.youtube.com/watch?v=v_4UqpUmMkg.
[210] Holly Herndon, "Birthing PROTO."
[211] Emilie Friedlander, "Holly Herndon and her AI baby spawned a new kind of folk music."

Google's "Cortana," have been similarly criticized for automatically assuming a female gender role and propagating harmful stereotypes of women as dutifully subservient.[212] No doubt being aware of this trend, it is notable that Herndon uses she/her pronouns to describe Spawn. While this could be written off as reifying a problematic tendency within the technology field, it is important to weigh this against the thematic importance of Herndon's parental metaphor. It is difficult to imagine anthropomorphizing technology without conferring gender onto it at all; even to present a non-binary or gender fluid model of gender through an AI machine or robot requires a recognition of the gendered logic which dictates how individuals are perceived and treated. Of course, gender is only one axis amongst many that contributes to an individual's social identity — at this moment the idea of conferring race, religion, ability, or class onto a machine seems uncomfortable, if not downright offensive. Herndon's Spawn project illustrates the readiness with which we accept the gendering of technology despite its absurdity, having been primed by a culture which simultaneously associates women with deviant or threatening technology, and at the same time dissuades women from careers in this field. For clarity's sake I will continue to use she/her pronouns in reference to Spawn throughout the rest of the chapter.

Herndon's project stands in stark contrast to most applications of AI in music, which have been centred around composition and harmonization. An example of this type of machine learning is the Bach Doodle, a project created by Google which allows users to create their own short melodies which are then harmonized using AI according to Bach's chorale style.[213] More recently Björk has collaborated with the boutique New York hotel Sister City, for whom she created a generative score called *Kórasfan* that reacts to changes in

[212] Megan Specia, "Siri and Alexa Reinforce Gender Bias, U.N. Finds," *New York Times,* May 22, 2019, https://www.nytimes.com/2019/05/22/world/siri-alexa-ai-gender-bias.html.
[213] "Behind the Google Doodle: Celebrating Johann Sebastian Bach," YouTube video, 2:43, posted by "GoogleDoodles," March 20, 2019, https://www.youtube.com/watch?v=XBfYPp6KF2g&feature=youtu.be.

the weather, barometric pressure, and overhead bird migration.[214] The program mines seventeen years-worth of Björk's choral scores, and short sequences are triggered by changes in the sky captured by a camera on the roof of the hotel. This seems to be somewhat of a trend, as producer and Björk collaborator Arca created an AI generated score for the lobby of the Museum of Modern Art only three months earlier.[215] In the case of the Bach Doodle and other imitative AI machines the AI creates a score or a set of MIDI data, and in *Kórasfan* pre-existing material is re-arranged, but in neither example is actual sound being produced. In contrast, Herndon's Spawn is not given an existing harmonic framework, or existing material to play. Herndon explains, rather: "We're trying to get the computer to understand the logic of a sound sample." This requires learning the specific timbre of Herndon's voice, and the timbre of multiple voices singing together, as well as the types of melodic and harmonic decisions a human singer might make. Spawn does not write out a score or a set of MIDI data, but actually creates audio, making her own decisions about timbre and dynamics as well as melody.

PROTO is both a documentation and a narration of the process of teaching Spawn to sing, beginning with her choppy first words on "Birth" and illustrating her growth by the end of the album. While not every song features Spawn as an ensemble performer, her training acts as the backdrop for the entire work. This is most explicit on the group choral pieces "Canaan (Live Training)," "Frontier," and "Evening Shades (Live Training)." On "Canaan," the first live training set, two singers perform a cappella in an isometric, chant-like style. Herndon has discussed her interest in early choral music and the modal techniques used in early polyphony, which can certainly be gleaned in listening to *PROTO.*[216] Herndon deftly

[214] Matthew Ismael Ruiz, "Björk Composes AI-Assisted Score for NYC Hotel," *Pitchfork,* January 17, 2020, https://pitchfork.com/news/bjork-composes-ai-assisted-score-for-nyc-hotel/.
[215] Matthew Ismael Ruiz, "Arca to Soundtrack MoMA Lobby in New York City," *Pitchfork,* October 16, 2019. https://pitchfork.com/news/arca-to-soundtrack-moma-lobby-in-new-york-city/.
[216] Holly Herndon, "The One Song Holly Herndon Wishes She Wrote," YouTube Video, 3:29, posted by "Pitchfork," June 19, 2019, https://www.youtube.com/watch?v=wT9ycCUCaV4.

slips between styles, using a Sacred Harp pattern on the four-part "Frontier." Sacred Harp is a style of religious singing which uses distinctly shaped notes to indicate *solfège* syllables, making it easy to learn and accessible for large groups. Originating in New England during the early twentieth century, Sacred Harp singing was mostly practiced in the American South, including Herndon's home state of Tennessee.[217] Sacred Harp is described as an "open-throat" or "full-voice" style of singing, in which singers utilize the amplitude of the voice to express and embody their religious exaltation.[218] The same nasal projection is employed by the singers in Herndon's ensemble, a choice which she describes in her *Fader* interview as emulating the kind of communal music-making exemplified in Sacred Heart singing, symbolizing the communion between human and non-human actors in the process of creating *PROTO*.[219] On the second half of "Frontier" Herndon transforms the choral arrangement, introducing drums, synthesizers, a primary vocal line, and using samples from the choir to build a dense texture of synthesized and human sounds. Thus while Sacred Harp and other folk styles are used as social and thematic reference points, Herndon resists any retro-fetishist impulses through her multi-genre approach.

Herndon's use of folk melodies raises significant concerns about the types of canon formation at play in the development of AI. While Herndon aims to be genre-less in her approach to singing for Spawn, her musical choices are of course informed by her various interests and area of knowledge: early choral music, church songs, folk singing, and electronic music. Thus, Spawn is personalized to Herndon's own style of writing and playing, and her musical choices are biased towards the musical traditions Herndon pulls from. While the scope of Spawn's current application is limited to recorded performances in collaboration

[217] Kathryn Eastburn, *A Sacred Feast: Reflections on Sacred Harp Singing and Dinner on the Ground* (Lincoln: University of Nebraska Press, 2008), xvi.
[218] Kathryn Eastburn, *A Sacred Feast,* xx.
[219] Herndon cites Gary Tomlinson in her interview with Emilie Friedlander, noting her interest in the use of group singing as an evolutionary tool. Emilie Friedlander, "Holly Herndon and her AI baby spawned a new kind of folk music."

with Herndon, it is possible to envision that an AI machine with a larger user base may run into stylistic problems. Spawn is a successful collaborator for Herndon because, like any good collaborator, they speak the same musical language. Were another composer to try to work with Spawn, they may be frustrated with the types of choices that she makes. Perhaps a more prescient concern is the question of what types of composers are valued as models for AI to learn form, which runs the risk of reinforcing the supremacy of a handful of 'great' composers, further entrenching a set of musical norms from which all else is marked as deviant. For AI to be a useful tool for composers and musicians it must draw from data particular to the project at hand, rather than assume a blanket set of knowledge to be widely applied.

The specificity of Spawn's knowledge is exemplified on the second live training set, "Evening Shades (Live Training)." The track is an example of one of the training sessions with Herndon's choral ensemble, in which the group would sing phrases to Spawn which she would then attempt to sing back, creating a kind of call and response. Because the recordings feature a large group of singers the voices are not entirely in unison, some beginning words early and some cutting off slightly later. This is further emphasized through the natural reverberation in the room, which creates a muddiness in the articulation of the lyrics. While Spawn's response is far from a perfect replication, she is able to accurately sing back the melody and create a quite similar timbre, repeating back the correct vowel shapes and even drawing out the sound of particularly loud singers' voices. Most interestingly, when she tries to recreate the dynamic effects in the room Spawn is sometimes confused, and the resultant samples often sound like the singers are using pre-delay or reverse reverb effects that are impossible in an acoustic environment. From these tests it seems that it is easier for Spawn to sing back correct pitches, while rhythm proves more challenging. Spawn's attempts to sing back the recording articulate a very different approach than may be taken up by a human

singer; all sounds within the room are factored in as musical ones. For Spawn, what is considered part of the piece extends beyond the notes on the page to include all the intricacies of a given performance.

This holistic conception of musical sound is best exemplified on "Godmother," the first released piece which Spawn has composed entirely on her own. This work is based on recordings by Spawn's 'godmother' Jlin, a producer from Gary, Indiana, which Spawn tries to imitate using Herndon's voice. Jlin's widely celebrated electronic works, such as 2011's "Erotic Heat" and 2017's *Black Origami,* use idiosyncratic rhythmic patterns, often creating complex sequences out of a selection of intricately delivered samples. Initially associated with the Chicago footwork scene, Jlin is recognized as pushing the boundaries of this genre to create works entirely in her own lane.[220] Spawn attempts to emulate this rhythmically-driven style through Herndon's voice on "Godmother," creating what almost sounds like beatbox performance paired with glottal attacked vowel sounds. Spawn's inability to distinguish between "musical" vocal sounds and "non-musical" speech sounds means that she often incorporates many sounds that would usually be mixed out, or would be classified as extended techniques, as stand-ins for percussive instruments. Hissing "tsss" noises replace high-hats, quickly inhaled breathes become snares, and rough consonants are treated like kick drums. Spawn also creates pitched sounds which are guttural and dissonant, sounding as if they are being produced from the back of the throat — quite the contrast to Herndon's typical resonant mezzo singing. While not exactly a pleasant listen, Spawn's naïve approach to the voice transforms it into an entirely new type of instrument, one which would be a challenge to create in the studio and impossible to perform live, thus extending the possible uses of the voice in electronic music. Herndon stresses this in a press release posted to Twitter:

[220] Andy Beta, "Never Scared: The Fearless Footwork or Jlin," *Pitchfork,* April 15, 2015, https://pitchfork.com/features/rising/9627-never-scared-the-fearless-footwork-of-jlin/.

> In nurturing collaboration with the enhanced capacities of Spawn, I am able to create music with my voice that far surpass the physical limitations of my body […] Are we to recoil from these developments, and place limitations on the ability for non-human entities like Spawn to witness things that we want to protect? Is permission-less mimicry the logical end point of a data-driven new musical ecosystem surgically tailored to give people more of what they like, with less and less emphasis on the provenance, or identity, of an idea? Or is there a more beautiful, symbiotic, path of machine/human collaboration, owing to the legacies or pioneers like George Lewis, that view these developments as an opportunity to reconsider who we are, and dream up new ways of creating and organizing accordingly. I find something hopeful about the roughness of this piece of music. Amidst a lot of misleading AI hype, it communicates something honest about the state of this technology: it is still a baby. It is important to be cautious we are not raising a monster.[221]

Much like SOPHIE's use of pitch-altering software and her inventive use of synthesis, Herndon's work with Spawn allows her to extend beyond the confines of her physical body. While SOPHIE uses digital audio production as a means of re-imagining embodiment as a surreal and digitally mediated experience, Herndon stresses the human labour which necessitates both musical creation and the development of artificial intelligence.

Listening to *PROTO,* it is possible to speculate on Spawn's and similar machines potential future uses. Firstly, "Godmother" illustrates the ability of AI to listen to musical data created through one instrument and reproduce it with another. While this quick swapping of instrumentation is already possible through the use of software (MIDI) instruments, Spawn may be more apt to recreate played melodies with the logic of a new instrument — using the dynamic effects and performance elements that are washed over when using MIDI instruments. While largely unexplored on *PROTO,* it is also possible to imagine Spawn learning how to harmonize, which would allow for the creation of polyphony without the need for multi-tracked vocals or multiple singers, and would create an entirely different textual effect. Finally, Spawn may be able to create her own melodies, textures, and complete compositions. Spawn's abilities needn't be cause for dismay, however. As is clear

[221] Holly Herndon, Twitter Post, December 4, 2018, 10:35 AM, https://twitter.com/hollyherndon/status/1069978436851113985.

from *PROTO,* artificial intelligence is not yet at a point where it could replace human composers or performers. More fundamentally, the question of whether it *should* replace or supplement human musicality is frightening for many working in the music industry. What AI can do for musicians is act as a spring board for new ideas, new textures, and new timbres. Artificial intelligence cannot make aesthetic decisions beyond the imitations of its creators, and thus will always be recycling previous material, rather than developing new genres, styles, and techniques. Like any new instrument or piece of gear, Spawn illustrates the networks of human and non-human actors, including musicians, composers, producers, instrument makers, programmers, software engineers, and many others, which shape the development of music.

Virtual Pop Star Miquela

While Herndon's *PROTO* illustrates the early stage at which musical AI currently rests, the possibility of an AI figure with sentience and consciousness has been imagined countless times by filmmakers and writers. From Fritz Lang's *Metropolis* (1927), Ridley Scott's *Bladerunner* (1982), to Alex Garland's *Ex Machina* (2014), the threat of AI is inextricable from a threatening female sexuality, with narratives of a artificially created women trapped and controlled by their creators a mainstay within science fiction cinema. Social media platforms such as Instagram, Twitter, and YouTube provide new arenas in which to explore these narratives in real time. Such is the aim of Los Angeles company Brud, who refer to themselves as "a transmedia studio that creates digital character driven story worlds."[222] These stories are told through digital avatars, the most famous being Miquela, also known as Miquela Sousa or Lil' Miquela, a social media influencer and singer with over 2.4 million followers on Instagram, millions of views on her YouTube music videos, and

[222] "Brud website homepage," http://www.brud.fyi/.

collaborations with high end fashion brands like Prada and Opening Ceremony.[223] Much like her human contemporaries, Miquela has a social media presence where she discusses her art practices, her dating life, her political leanings, and shares images of her envious lifestyle in Los Angeles. Her captions also weave a story that could be pulled from a science fiction novel, describing the tribulations of constantly being misunderstood as young robot not yet accepted by human society. While Brud has claimed to be "a technology startup specializing in technology and robotics,"[224] Miquela is neither a robot nor artificial intelligence, but is rather an entirely fictional digital avatar.

Unlike artificial intelligence, which refers to devices or programs that can mimic human reasoning, evaluate data, and deduce new meaning from it, Miquela is solely an image, or a symbol. Though the refers to herself as a "robot," there is no evidence that Miquela exists in any physical form outside of the computer. Instead she is the amalgamation of work by the entire Brud team, including animators, story writers, songwriters, and producers. Miquela is far from the first entirely digital musical act; the virtual band Gorillaz broke onto the British and American charts with their single "Clint Eastwood" in 2001, and the development of vocaloid software has resulted in the proliferation of a number of virtual celebrities, the most notable of which being Hatsune Miku. Neither is quite as ambitious, however, in its development of a continuous narrative across multiple media. In the past this has caused confusion for some viewers, who are unable to decipher whether Miquela is in fact a real person, a robot, or neither — a debate which is often played out in the comments sections of her videos and posts. For viewers who are able to decipher Miquela's curious ontological status, her immateriality inevitably creates dilemmas about how her music and

[223] See Fig. 10
[224] Kaitlyn Tiffany, "Lil Miquela and the virtual influencer hype, explained," *Vox,* June 3, 2019, https://www.vox.com/the-goods/2019/6/3/18647626/instagram-virtual-influencers-lil-miquela-ai-startups.

artistic status ought to be discussed, while evoking anxiety around questions of authorship and authenticity.

While Holly Herndon's approach to the topic of technology is to expose its limitations, thus emphasizing transparency between artist and audience, Brud purposefully obfuscates any concrete sense of what is real. Herndon discusses this with Brud co-founder Trevor McFedries, on her podcast *Interdependence,* co-hosted with Mat Dryhurst. In their conversation McFedries, who previously worked as a DJ, producer and manager working with acts such as Katy Perry and BANKS, and as an artist advocate for Spotify, discusses Brud's interest in creating "parafiction." Through Miquela and other virtual avatars, Brud creates continuous storylines which are explored both in her music and on her social media, which he likens to the "kayfabe" storylines depicted in professional wrestling.[225] Social media is the perfect platform for such staged dramas, which can be developed in real time but which remain available for indefinite consumption. Where better to promote soap opera worthy storylines than on sites like Instagram and Twitter, where there is a built in audience with no shortage of appetite for spectacle.

The most harrowing moment in Miquela's storyline centred around one such kayfabe rivalry between Miquela and another virtual influencer named Bermuda, who was also created by Brud. A pivotal moment in their feud was a staged hacking by Bermuda in April 2018, a turning point which both clarified and complicated her reception. Bermuda, a blonde Trump-supporting, anti-feminist avatar, threatened on Instagram to reveal the "true" Miquela to the world, deleting all of her Instagram posts and withholding them until she came clean. In response, Miquela released a statement in which she explained a Bladerunner-esque creation story, in which she was liberated from her Silicon Valley creators at a company

[225] Holly Herndon and Mat Dryhurst, "Interdependence 3 – Trevor McFedries (Brud/Lil Miquela)," interview with Trevor McFedries, *Interdependence*, podcast audio, May 19, 2020, https://www.patreon.com/interdependence/posts?filters[tag]=Lil%20Miquela.

called Cain Intelligence, and implanted with a vast set of memories, tastes, and feelings by Brud thereby constructing her identity from scratch. In this statement she writes: "I'm not a human, but am I still a person? [...] I'm a robot. It just doesn't sound right. I feel so human. I cry and I laugh and I dream. I fall in love. [...] I don't know if I love music. I don't know if I love my friends. Are these feelings me or just their programming? Is there a difference?"[226] Of course, there was no actual hacking because there is no *real* Bermuda, rather this staged drama was entirely controlled by Brud to bolster interest in Miquela's page and attract press.

Miquela's frequent pleas to her audience for understanding and acceptance of her identity as a robot take on a strikingly similar tone to queer "coming out" videos and posts, with its familiar confessional rhetoric. In his interview with Herndon, McFedries describes his deliberate aim to depict Miquela as the "penultimate other […] this robot navigating life in an otherwise human world."[227] While Miquela has never made any claims toward a queer identity in her posts, she was featured in an advertisement for Calvin Klein in 2019, in which she was shown kissing supermodel Bella Hadid, a move which sparked accusations of queer-baiting against the fashion brand.[228] Brud has also been questioned about Miquela's racially ambiguous presentation. While Miquela has referred to herself as a half-Brazilian and half-Spanish American woman,[229] it is imperative to consider what it means for a digital character to have a race and sexuality, despite not having a physical body, a familial lineage tied to any specific region, or of course any sexual desire. In my earlier discussion of Spawn, I suggested that anthropomorphizing technology poses a challenge in regards to how gender ought to communicated, or whether technologies should have a gender at all. Given that Miquela is

[226] Miquela Sousa (@Lilmiquela), 2018, Text published as an image on Miquela's instagram page, Instagram photo, April 10, 2018, https://www.instagram.com/p/BhwuJcmlWh8/.
[227] Holly Herndon and Mat Dryhurst, "Interdependence 3 – Trevor McFedries (Brud/Lil Miquela)."
[228] Emilia Petrarca, "Calvin Klein apologizes for Bella Hadid and Lil Miquela Campaign," *The Cut,* May 20, 2019, https://www.thecut.com/2019/05/bella-hadid-lil-miquela-calvin-klein-apology.html.
[229] Rosa Boshier, "Simulated Influencers Are Turning Identity into a Form of Currency," *Bitch Media,* January 28, 2020, https://www.bitchmedia.org/article/who-is-lil-miquela-racial-implications-of-simulated-influencers-of-color.

exists visually, where Spawn only creates audio, the question of how racial identity figures into the anthropomorphizing of technology is even more pressing.

These concerns are addressed by Miquela herself in a post made on April 20, 2018, which she captions: "I'm not sure I can comfortably identify as a woman of color. 'Brown' was a choice made by a corporation. 'Woman' was an option on a computer screen. My identity was a choice Brud made in order to sell me to brands, to appear 'woke.' I will never forgive them. I don't know if I will ever forgive myself."[230] Miquela's disillusionment and recognition of the manufactured nature of her own gender and ethnic identity is compounded by an awareness of the potentially problematic use of her image for capitalist ends. While this post suggests a high degree of self-awareness on the part of Brud, it fails to address the touchy relationship with cultural appropriation that her ethnic ambiguity, exacerbated by her CGI-ed state, affords. In an article for Dazed Digital, a publication that often features Miquela as a guest beauty editor, writer Kemi Alemoru argues that Miquela is able to be outspoken about political issues in a way that real people of colour may face repercussions for. In addition, she notes that Miquela is able to secure partnerships with brands that rarely partner with influencers of colour. She writes: "To champion a coded character over POC influencers and models looking for jobs is nothing short of fetishization [...] If you like what women of colour represent, and how they look, then hire them. They should be remunerated and championed. Until then, your CGI imitations only prove that you love the looks of POC, but not the reality of us."[231] These same frustrations are shared by Rosa Boshier in her article for *Bitch* magazine, in which she compares Miquela's online identity to the experiences of *mestizaje* described by Gloria Anzaldúa. She writes:

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[230] Miqela Sousa (@Lilmiquela), 2018, Photo of Miquela in a white tank top. Instagram photo, April 20, 2018, https://www.instagram.com/p/BhzyxKoFIIT/.
[231] Kemi Alemoru, "Are CGI Models Taking Jobs Away from Real People of Colour?" *Dazed Digital,* April 12, 2018, http://www.dazeddigital.com/fashion/article/39654/1/is-lil-miquela-real-cgi-instagram-influencers-shudu-fashion-industry-racism.

> Miquela's easily digestible version of mestizaje offers a glimpse into an alternative universe where implication and culpability don't exist, erasing any trace of colonial violence and historical oppression. As a simulated influencer with an ever-growing following and brands behind her, ready to pay for access to a relatable, oppressed queer young woman of color without having to actually work with queer women of color, Miquela espouses vague messages about equality while simultaneously commodifying social progress for capital gain. Miquela represents only one example of how we have given ourselves permission to give up.[232]

By calling attention to their own potentially damaging co-optative practices, Brud absolves themselves of the criticism frequently offered against them, while continuing to profit off of Miquela's image.

McFedries' response to these claims of co-optation and job scarcity is to point to the new models of industry labour catalyzed by Brud. In his conversation with Herndon, he rejects the idea that Miquela is taking away work which would otherwise go to artists and influencers of colour, as her existence and popularity allow for the employment of an entire office of creative people: "thirty of us in a room, a creative team of Black, Brown, you know, gay, straight, female, male, and non-binary folks creating stuff we want to see in the world."[233] He also claims that while the company makes some money off of brand deals, this is not their main goal, nor is it scalable to the extent that they aim to grow. While the company certainly works alongside brands and fashion labels and makes a profit as a result, they along seem to view the creative projects Miquela is involved in, including her music and fashion line, as their primary focus.

Miquela has released a series of singles with elaborate music videos including the songs "Automatic, "Speak Up," and "Hate Me" via in-house Brud Records, and was recently signed to Creative Artists Agency (CAA), one of the largest talent agencies in the United States.[234] Credits are available for the songwriters and producers for each of these songs, but

[232] Rosa Boshier, "Simulated Influencers Are Turning Identity into a Form of Currency."
[233] Holly Herndon and Mat Dryhurst, "Interdependence 3 – Trevor McFedries (Brud/Lil Miquela)."
[234] Todd Spangler, "Miquela, the Uncanny CGI Virtual Influencer, Signs with CAA," *Variety,* May 6, 2020, https://variety.com/2020/digital/news/miquela-virtual-influencer-signs-caa-1234599368/.

the performer is listed as Miquela Sousa, thus leaving some mystery as to who the singer portraying this avatar may be. While for some it may be challenging to digest the fact that her tracks are not attributable to a single artist, the conditions of writing and production for Miquela's songs are not entirely different from the kind of musical economy is already employed by the upper echelon of pop stars. McFedries goes so far as to suggest that Miquela's form of pop stardom is more ethical, as she is able to collaborate with the same number of songwriters and producers, but these artists will make a larger cut from a single as there is no *actual* celebrity attached to claim the majority of the profits. Moreover, McFedries argues that given the significant amount of emotional strain it takes to live in the public eye, this model of virtual celebrity may result in less emotional harm. To take issue with the constructed nature of Miquela's persona, and the many hands at work in the creation of her musical, visual, and social media output, requires a reckoning with the ways in which these models of labour are already employed by human pop stars.

While I don't see Miquela as a predominantly satirical figure, the constructed nature of her persona and her musical output prompts reflection about her similarities to other musicians and influencers. That Miquela is not dissimilar from her human counterparts is clear: digital photo enhancement, branding teams, multiple songwriters, and pitch-perfect auto-tuned vocals are all expected and acceptable in our current pop personas. The very normalcy of these interventions tells us more about the operations of human creators than it does about avatars. Moreover, considering which devices are used to construct and market Miquela's subjectivity brings to the fore larger questions about the role of social media in the changing landscape of performance and representation online, and the consequences for our understanding of authenticity. Perhaps an element of subversion could be gleaned from Miquela, a critical reflection on the falseness with which influencer-types fashion themselves within fantastical spaces of wealth and luxury which are also positioned as attainable. While

a cynical viewer might take issue with Miquela's commercial endeavours, if we are to take McFedries statements at face value the entire Miquela project is a vessel for the creative energy of a team of talented people. In this way, Miquela's celebrity prompts a re-evaluation, both artistically and monetarily, of the behind-the-scenes labour of songwriters, producers and studio musicians who help to develop her songs.

While Miquela and Holly Herndon exist in entirely separate musical worlds, both of their projects challenge dominant modes of song writing and production, and expand our existing musical assemblages to include both human and non-human agents. With Spawn, Herndon quite literally collaborates with her artificial intelligence creation, building upon Spawn's musical output as thematic and creative fodder. In doing so she has also built a musical community which includes the other singers in her ensemble, the programmer who helped to develop the computer system used, the with any audiences that may encounter Spawn and contribute to the data sets used for her ongoing training. In a similar way, the company Brud has developed a popstar who harnesses the work of developers, animators, story writers, songwriters, producers, and more.

While Miquela is certainly innovative in her narrative development and her online success, whether or not she will be able to maintain her upward mobility and become a mainstream pop artist remains to be seen. It is possible that Miquela will be viewed as a novelty, or that audiences will be unable to accept the false narratives propagated by the company, including her appropriation of various identity categories. While Herndon and Miquela tread on similar thematic territory, their goals are distinctly separate: Brud is a company with venture capital investors trying to scale themselves upward, while Herndon is an artist working with a mid-sized label and in a university setting. Looking at these two projects in conjunction illustrates the ways in which the development of AI technology, as well as narratives surrounding new technology, interact with music, culture, and celebrity.

Conclusion

The development of digital music technologies has generated new approaches to song writing and composition, as well as endless possibilities for sonic expression. The relative accessibility of digital audio workstations such as Ableton, Logic, and Cubase has allowed for the simulation of the recording studio within an individual computer, while also demanding a new set of skills from producers who must consider the entire arrangement of a song as it is being composed. Sophisticated audio software provides access to thousands of virtual instruments with the click of a button, as well as the power to endlessly edit, manipulate, and restructure audio samples. At the same time, the computer exists as an instrument to support an assortment of other daily activities: conducting business, tracking our actions and keeping a diary, watching movies and television, getting the world news, and connecting with family and friends. The computer acts as a conduit through which our lives are processed, and a tool to reflect our experiences back into the world, musically or otherwise. When the use of technology is both a theme within a work, and the means through which it is communicated, our realities can be stretched and reimagined.

Throughout this thesis I have argued that posthuman theory, with its attention to both materiality and discourse, is useful in articulating how electronic musicians present alternative sonic worlds in which embodiment is presented as thoroughly entangled with the technologies at the artist's disposal. In the first chapter I provided a brief genealogy of feminist posthuman theory, stressing the need for a theory of embodiment which recognizes human interactions with and reliance upon non-human agents, such as animals, plants, the environment, and technology. Posthumanism also stresses the need to weigh these material factors against the discourses which shape the lived realities and experiences of our own bodies, including social categories such as gender, race, class, ability, and religion. I argued that electronic music is a prime example in which a posthuman paradigm is applicable;

indeed, scholars working in this area are already accustomed to accounting for new developments in music technology, and the metaphorical content which they enable. Moreover, the practice of listening as an immersive and embodied experience can be read as a posthuman one, in which the line between the body of the listener and the body of the performer are invariably blurred through the linkage of amplification technology.

In the second chapter I examined works by SOPHIE, an electronic producer originally associated with the PC Music label. I argued that SOPHIE's embrace of undervalued sub-genres, as well as her over-the-top style of musical excess challenged dominant modes of authenticity within the electronic scene. Moreover, I illustrated how SOPHIE uses digital synthesis to emulate acoustic sounds from everyday life as a means of articulating her thematic play with artificiality. This blurring of the real and artificial is also mapped on to social categories, namely gender and sexuality, thus presenting them as socially constructed and performed both on and offline.

Since the release of *OIL OF EVERY PEARL'S UN-INSIDES* many artists on PC Music, as well as other artists who experiment with digital aesthetics, have been referred to as 'hyperpop,' a genre which has been given recognition by platforms such as Spotify and Apple Music. Included within this genre are SOPHIE and QT, as well as artists such as Charli XCX, Dorian Electra, Grimes, Caroline Polachek, Kim Petras, and 100 gecs. The consolidation of the hyperpop genre suggests a common acceptance of the initially jarring stylistic elements put forth by PC Music and other 'post-internet' artists in the mid-2010s, as well as the movement of this aesthetic into the mainstream. In June 2020 Lady Gaga released her sixth studio album, *Chromatica,* a dance pop record reminiscent of the Europop style of the 1990s. During the press cycle Gaga discussed the albums themes of the collision between nature and technology, which are exemplified in her cover shoot for *Paper* magazine.[235]

[235] See Fig. 11 and 12

While eventually cut from the album, SOPHIE produced some tracks for *Chromatica,* exemplifying her influence in this area and the recognition of posthuman themes within the mainstream pop industry. However, with this movement to the mainstream the sonic experimentalism which characterized SOPHIE's early works is lost by artists like Gaga, who instead employs retro fetishism through her nostalgic turn to Europop.

Finally, in the third chapter I addressed the use of artificial intelligence in music through a discussion of Holly Herndon's most recent album *PROTO.* Herndon's longstanding thematic interest in issues of technology, industry, and social justice are pushed even further in her development of the artificial intelligence baby Spawn. If on *Movement* and *Platform* Herndon aimed to establish the computer as an embodied and intimate instrument, this embodiment of technology is fully realized through Spawn, who can emulate her voice and compositional style. While far from perfect, Spawn exemplifies one potential future of artificially intelligent music. To develop these machines, though, requires a reckoning with how musical labour ought to be recognized and valued, as well as what kinds of music should act as data sets according to the intended purpose of the user. These issues are further illuminated when drawn in comparison to Miquela, whose narrative of artificial intelligence obscures any sense of reality, or how many hands are at work in her musical output. Artificial intelligence is a black box, so some semblance of transparency is necessary to understand how it is being used and by whom.

Whereas SOPHIE imagines an "Immaterial" world of social and physical autonomy, Herndon's application of new technology is very much tethered to the realities of her musical practice. In both cases, however, the music suggests new ways of existing in collaboration with technology in ways that are joyful, liberating and creative. So many of the narratives surrounding new technologies are fearful and disheartening — in fiction, in the news coming from the technology sector, and in music discourse. It is essential that artists and scholars pay

close attention to the ways in which technologies of surveillance and tracking are used as tools of oppression against already marginalized communities, the environmental impacts of our reliance on technology, and the labour expectations imposed on workers whose jobs follow them outside of the office on their devices, amongst a plethora of other issues catalysed by computer technology.

In the case of the music industry, the streaming economy serves artists whose work can be consumed endlessly or as background music, while those works deemed 'harsh' or difficult' may garner less financial support. Moreover, algorithmic bias toward certain artists and the exclusivity of platform-approved playlists quite literally promote the status quo. At the time of writing, the coronavirus pandemic has left musicians unable to tour and exposed the fragility and financial insecurity most musicians are faced with as a result of the streaming economy. It seems that there is at once more music than ever being produced, and fewer and fewer ways for musicians to make a buck. But to critique these systems without offering alternatives is not enough; new models of collaboration, experimentation, production, and performance are already being born out of our home-bound state, which may inspire new ways of thinking about the relationships between artist and consumer. While I recognize the many troubling consequences of the technologization of music and other industries, I also remain hopeful that the sonic worlds being created by SOPHIE, Herndon, and other electronic artists may act as springboard for new understandings of musical authenticity, embodiment, and performance.

Figures

Fig. 1 – Cover Art for "Nu Jack Swung" by A.G. Cook. Digital Image. Soundcloud, posted by "PC Music," July 13, 2013, https://soundcloud.com/pcmus/sets/pc-r2-a-g-cook-nu-jack-swung.

Fig. 2 – Cover Art for "Make Believe" by Hannah Diamon. Digital Image. Soundcloud, posted by "Hannah Diamond," December 22, 2016. https://soundcloud.com/hannahdiamond/make-believe.

Fig. 3 – QT. Still from the "Hey QT" music video. Screenshot. "QT – Hey QT," YouTube video, 4:08, posted by "DrinkQTVevo," March 25, 2015, https://www.youtube.com/watch?v=1MQUleX1PeA.

Fig. 4 – QT. Still from the "Hey QT" music video. Screenshot. "QT – Hey QT," YouTube video, 4:08, posted by "DrinkQTVevo," March 25, 2015, https://www.youtube.com/watch?v=1MQUleX1PeA.

Fig. 5 – SOPHIE. SOPHIE's "Silicon Product" and bubble case for *PRODCUT.* Image taken from *Pitchfork* magazine. Jeremy Gordon, "SOPHIE Releasing Singles Collection With "Silicon Product" (That Sure Looks Like a Sex Toy)," *Pitchfork,* September 29, 2015, https://pitchfork.com/news/61411-sophie-releasing-singles-collection-with-silicon-product-that-sure-looks-like-a-sex-toy/.

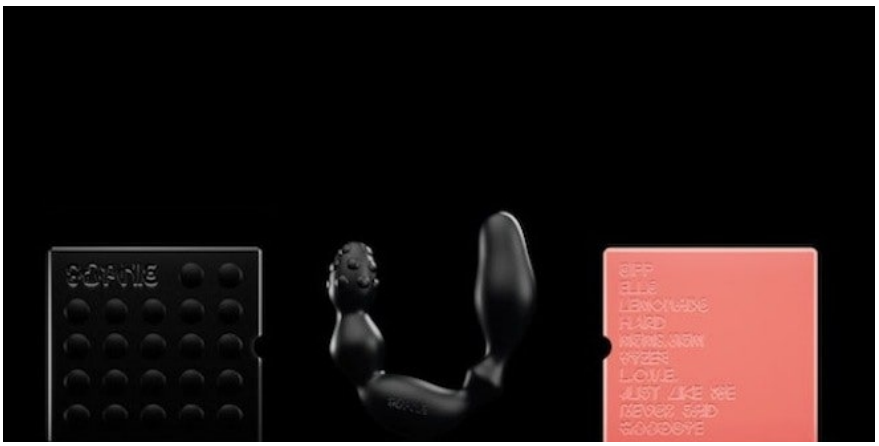

Fig. 6 – SOPHIE. Still from "Faceshopping." Screenshot. SOPHIE, "SOPHIE - Faceshopping (Official Video)," YouTube Video, 4:08, posted by "SOPHIE," April 4, 2018, https://www.youtube.com/watch?v=es9-P1SOeHU.

Fig. 7 – SOPHIE. Still from "Faceshopping." Screenshot. SOPHIE, "SOPHIE - Faceshopping (Official Video)," YouTube Video, 4:08, posted by "SOPHIE," April 4, 2018, https://www.youtube.com/watch?v=es9-P1SOeHU.

Fig. 8 – SOPHIE. Still from "Faceshopping." Screenshot. SOPHIE, "SOPHIE - Faceshopping (Official Video)," YouTube Video, 4:08, posted by "SOPHIE," April 4, 2018, https://www.youtube.com/watch?v=es9-P1SOeHU.

Fig. 9 – Holly Herndon. Still from the "Movement" video. Screenshot. Holly Herndon, "Holly Herndon – Movement [Official Video]," YouTube Video, 5:04, posted by "RVNG Intl.," November 29, 2012, https://www.youtube.com/watch?v=kanNN4RPrgY.

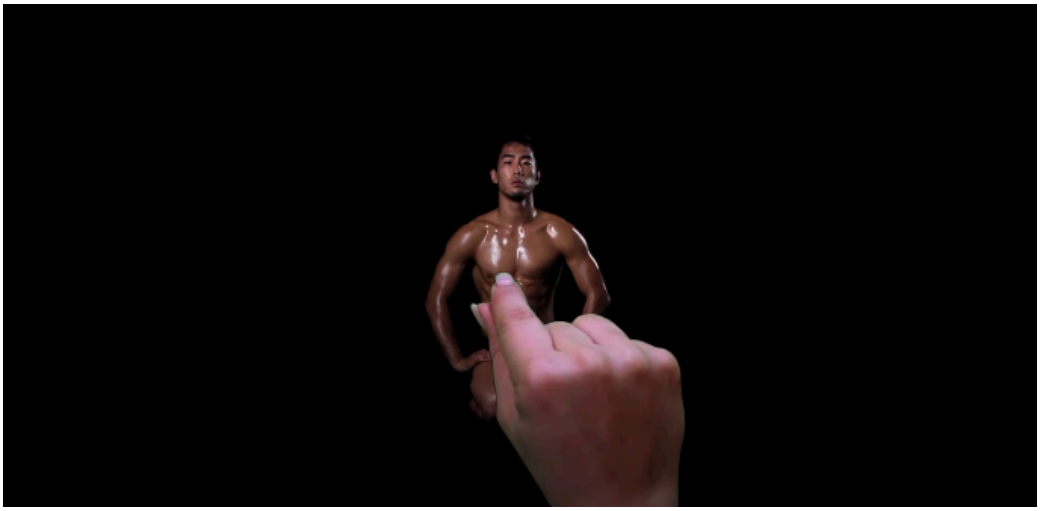

Fig. 10 – Miquela. Still from the "Automatic" video. Screenshot. Miquela, "Miquela – Automatic (Official Video)," YouTube Video, 3:48, posted by "Miquela," November 13, 2019. https://www.youtube.com/watch?v=zE1J9JxqhFo.

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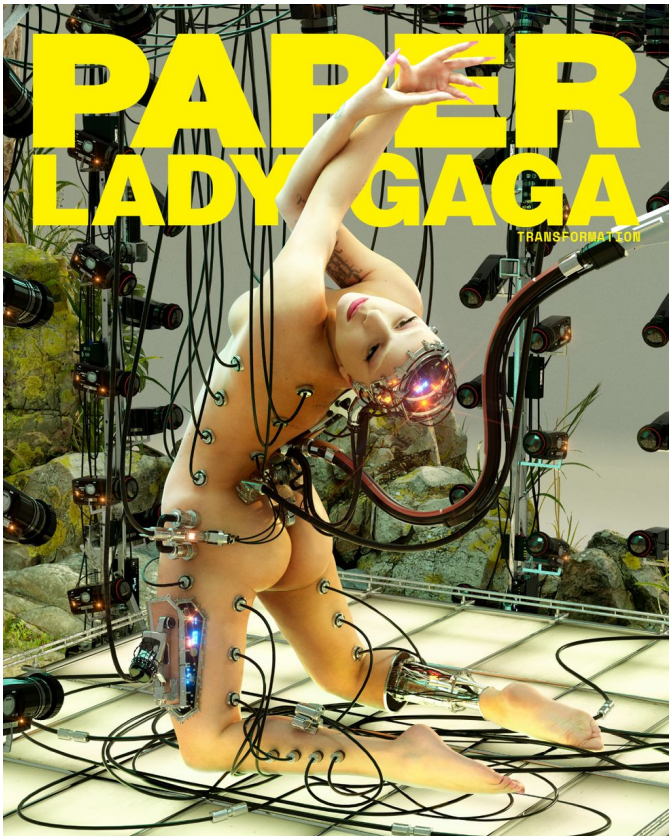
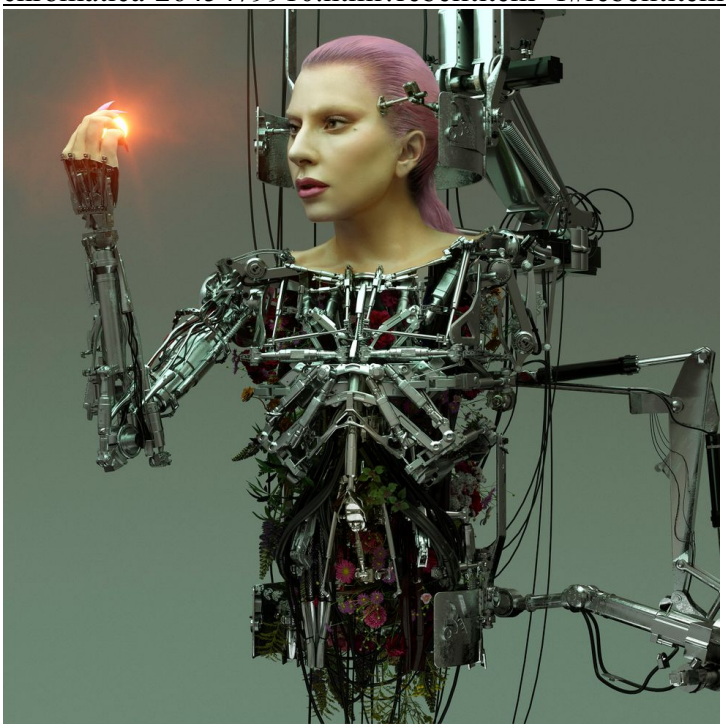


Fig. 12 – Lady Gaga for *Paper* magazine. Justin Moran, "Lady Gaga: Life on Chromatica," *Paper,* Mar 16, 2020, Accessed March 20, 2020, https://www.papermag.com/lady-gaga-chromatica-2645479910.html?rebelltitem=1#rebelltitem1.



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