

Review

Integrating NFTs into Feminist Art Practices: Actualizing the Disruptive Potential of Decentralized Technology

Natalie Ponder 

Collections and Exhibition Specialist, Sixth Street Museum District, Hattiesburg, MS 39401, USA;
nponder@hattiesburg.org

Abstract: The integration of NFT technology into the art market utilizes a two-pronged approach of decentralization and increased accessibility as an equalizing answer to rectify gender discrepancies in the contemporary art world. This is not the first time that technology as an art medium has been used as a feminist tool to disrupt the previously established status quo. Through the exploration of the 1990's Cyberfeminist Net Art Movement, this article will discuss how female-identifying artists employ technological characteristics such as anonymity and online gender masquerading to answer the exclusionary issues affecting their art practices. Furthermore, it will examine how NFTs work to build upon the previously established revolutionary movement of the 1990s to evolve the contemporary art practices of feminist artists. Additionally, this article will address the impacts of this new digital landscape, where anonymity is preferred and algorithmic ordering is non-existent, as a more pragmatic way of creating, selling, and buying art. Finally, this article will examine how the integration of blockchain technology—entirely machine-operated and free from human manipulation—aims to eliminate the human biases of identifying factors such as gender that can be concealed or fabricated when operating in an online sphere.

Keywords: NFTs; cyberfeminism; Net Art; crypto technology; gender discrepancies; feminist art practices; art markets; gender



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1. Introduction

The integration of non-fungible tokens (NFTs) as both a new technology and a new art form has facilitated discussions over the disruptive potential that the new technology poses amongst curators, artists, and academics alike. While NFTs have encouraged first-time artists to begin creating—with many notable names such as Madonna and Grimes bridging the gap from music to art—they also provide a new medium for established artists such as Banksy and John Gerrard to create new works (Kinsella 2021). This budding technology has already been adopted by auction houses, with both Christie and Sotheby auctioning off record-high NFTs and creating secondary NFT marketplaces in an attempt to collect blue-chip digital works (Whiddington 2023). Furthermore, the British Museum adopted NFTs and used them to sell over 200 works by Hokusai, and the Museum of Modern Art in New York has released its own collection of NFTs in partnership with artist Refik Anadol (Cuseum 2022). The proliferation of NFTs into these traditional art spaces demonstrates a marked technological shift in the world of art. So, what are the factors that account for the technology's rapid rise in popularity amongst artists?

The power and appeal of these NFTs, especially for female-identifying artists, come from the decentralized system of operation that they use. In the vast expanse of the NFT market, which exists in cyberspace, where anonymity is preferred and algorithmic ordering is non-existent, it appears that this newfound system will provide a more pragmatic way of creating, selling, and buying art. Additionally, the blockchain NFT system, free from human manipulation and entirely machine operated, aims to eliminate human biases on the grounds of identifying factors such as race and gender that can be concealed or fabricated

when operating in an online sphere. For women artists, this promise of a decentralized and equalizing alternative to the traditional art world, where gender bias and discrimination are exacerbated by gallerists, auction houses, museums, and art dealers, is an assuring solution¹.

This article will highlight several established methods of biases throughout the art world before examining the attempted responses to rectify these discrepancies, starting with the 1990's Cyberfeminist Net Art Movement. Additionally, this paper will attempt to analyze NFTs as a logical progression of the Cyberfeminist Net Art Movement as it adapts the previous movement's key elements of online anonymity and gender masquerading to the modern technological age to circumvent exclusionary art practices. Through the examination of contemporary feminist-art practices, this paper aims to explore the disruptive potential of NFTs for women artists and whether or not the technology's implementation as an art medium is effective in mitigating the current gendered discrepancies.

2. Gender Bias in the "Traditional" Art World

In order to examine the purported benefits of NFTs and their disruptive potential for female-identifying artists, it is important to delineate the systemic biases and barriers that contemporary women artists are faced with. In exposing these faults, a comparative evaluation of NFTs as an intended answer to the status quo and an analysis of their effectiveness is elucidated.

2.1. Women Artists in the Traditional Art World

One of the primary issues affecting contemporary women artists in the traditional art world is gender discrimination on the basis of artist names. One conducted study found that when participants were asked to pick artworks based on their personal preference, there was no clear predilection for artists with traditionally male names. However, when participants were asked to guess artworks that were more pedigreed or more expensive, participants were more likely to choose artworks by male artists (Hoffmann and Coate 2022). The results of the study indicate that a gendered bias is placed on artwork when discussing the monetary value of works, when participants were asked to indicate more renowned artworks, and when they were asked to indicate which paintings they thought would be preferred by others (Hoffmann and Coate 2022). This means that when art is viewed through the lens of fame, popularity, and marketability, a clear preference for artworks by male artists is shown. The results from this study can be extrapolated when examining the market-driven side of the art world. With these innate gender biases present, collectors, buyers, and gallerists looking to make a profit through the sale of art equivocate fame, higher monetary value, and prestige to male artists, or, artists with traditionally male-sounding names. Micol Hebron, gallery owner, curator, and artist, stated, "You are more likely to make money selling or reselling art by a man than a woman. And it's not because women make work that's less good. It's because we've made capitalism a patriarchal system" (Boroff 2015). Therefore, those looking to sell or resell works can be, and are, influenced by something as minuscule as a male artist's name attached to the artwork.

Name-bias studies are not the only notable evidence of discrimination that women artists face in the traditional art world. A 2024 Artsy study, "The Women Artists Market Report", found that only 25% of all inquiries on for-sale artwork were for works by female-identifying artists, while in 2023, women artists' works accounted for a mere 9% of the auction market (Lesser 2024). Furthermore, WorldMetrics, a data site dedicated to aggregating statistics, states that, as of 17 June 2024, female artists only account for 30% of all represented London gallery artists (Lindner 2024). Additionally, 88.3% of works in the top 18 United States' museums' collections are by male artists, and only 13.7% of living artists represented by galleries in Europe and North America are women of non-white backgrounds (Lindner 2024). Therefore, evidence of gender bias in the traditional contemporary art world is still pervasive, while progress towards equality remains stunted. Female-identifying artists continue to remain underrepresented in museum spaces, gallery

spaces, and auction spaces, while the proclivity for male artists continues to persist. This effectively excludes female-identifying artists from entering gallery spaces and prevents them from gaining representation, exposure, and adequate financial compensation in comparison to their male counterparts.

The statistics for women artists in the contemporary art world remain disheartening. Despite the emergence of several proposed solutions from the opening of female-only galleries to museums hiring more female-identifying individuals to their boards and similar positions of power, the statistics indicate that women continue to comprise a small percentage of the current art world (Halperin and Burns 2019). As women artists attempt to combat the bias that their works are of a lesser caliber, worth less, and viewed as less preferred by others, their limited gallery representation and inability to break into the auction world reflect the harms these assumed biases continue to have. In an attempt to address these issues of bias and exclusion, NFTs and crypto platforms emerged as a solution for contemporary women artists looking to further establish themselves within the world of art.

2.2. NFTs as a Method of Decentralizing Equality

NFT technology proposes a two-pronged approach of increasing accessibility and decentralization to rectify gender discrepancies in the contemporary art world. These two tenets work in tandem in an attempt to provide an equalizing solution to the aforementioned exclusionary issues affecting women artists.

There is very little required to upload an artwork to an NFT marketplace, and due to the newness of the technology, there are minimal regulations regarding the types of NFT uploads that are allowed. Provided that an individual has access to the internet and a crypto wallet, as well as having a base knowledge of crypto platforms, they are able to upload and sell their artwork (Abrol 2023). Additionally, there are no stipulations about what type of artwork a marketplace will accept. NFT marketplaces are free-for-all forums that only require an email address and an online profile from a user before granting them access to millions of NFT artworks that are up for sale. In this new world of crypto, first-time artists can showcase their creations alongside Banny and Beeple on the same platform (Hirshhorn 2021). In fact, budding 3D artist Jo-Anie Charland began creating her digital architectural works in 2019 and frequently found herself in marketplace listings alongside Beeple, who created the world's highest-selling work of NFT art, *The First 5000 Days*, at a Christie's auction and whose NFT artworks average over USD 100,000 a piece (Cascone 2022). In fact, it is not uncommon to see women NFT artists in lists of top-selling works. No longer are they excluded to their own category of "Top Selling Women Artists" but are instead making it onto the top-selling lists overall, with Monica Rizzolli, a previously small ecological NFT artist, now on the same lists as Beeple and Pak (Bein 2024). With the elimination of algorithmic ordering to determine intrigue, value, and marketability, buyers are forced to rely on their artistic eye and personal tastes, which are generally less discriminatory towards women artists (Hoffmann and Coate 2022). The need to be a well-established or well-connected artist also dissipates under a crypto market. American artist, collector, and curator of contemporary art Kenny Schachter argues that this fact alone indicates a huge advancement for women and other marginalized artists as the need for a traditional, exclusionary gallery space is eliminated (School of Visual Arts 2021). Due to the fact that NFT marketplaces are not looking for a particular type of art, make no discernment based on profit or auction trends, and have no preference for a certain type of medium or subject matter, the traditional exclusionary gallery-showing tactics and art-dealer tactics are rendered obsolete. Furthermore, NFT marketplaces are structured by showcasing and categorizing artwork uploaded to the platform by the most recently minted NFT. The user of the marketplace then has the ability to sort by "trending NFTs" or "top-selling NFT collections" if they wish. However, since there is no default algorithm pushing a particular NFT artist or artwork to the top of the marketplace homepage by default, crypto platforms eliminate an innate bias or preference towards "traditional western aesthetic influences"

in the art historical sphere. If the first forms of art that the viewer is met with on the marketplace are the most recently uploaded forms of art, then female-identifying artists are just as likely to find themselves at the top of a marketplace page as their male counterparts, once again eliminating the exclusionary gallery-viewership tactics.

Additionally, the nature of an NFT marketplace provides an extra layer of anonymity that artists are able to opt into, which has the potential to work in female-presenting artists' favor. As previously established, once a user provides an email address to their desired NFT marketplace, they are then able to create an online persona that has the potential to be divorced from their actual identity (Schneps 2022). An artist's NFT marketplace profile could be under any name and any profile picture that the artist desires, and they are still able to buy and sell artwork. The creation of an anonymous identity is an advantage to artists who want to be separated from their gender identity or who wish to operate under a pseudonym to eliminate the biases associated with being a female-presenting artist. Now, women artists no longer have to contend with the biases associated with a more traditional-sounding female name. If they wish to combat the optics of marketability, profitability, and canonical success, the option to create an online persona under a different name or even a quirky catchphrase is now a possibility. NFT forums provide the potential for the elimination of name bias as the crypto market forces buyers, preliminarily, to grapple with personal tastes and objective preferences first, without the influence of gendered indicators.

Another key proponent of the NFT solution to equalize the art world is crypto technology's ability to create a decentralized online space. Decentralization works primarily between the buyers of crypto art and the sellers. Instead of working through the gallery spaces or auction houses of the traditional art world, artists now have the ability to work directly with their cohorts in a generally unregulated market to establish their own terms of sale (Whitaker and Abrams 2023). Furthermore, proponents of NFTs discredit the need for gallery spaces, auction houses, and art dealers under crypto technology's decentralizing platform. As the NFT marketplace currently operates, artists upload their art to the market and set the stipulations for terms of sale and price themselves. These terms may be negotiated with potential buyers if either party sees fit, but they are not controlled by a centralized source of power such as art market trends determining the prices of each work. The NFT platforms also eliminate the need for an artist to be represented by a gallery in order to gain access to the art market (Whitaker and Abrams 2023). The innate biases of gallery owners and art dealers are undermined through crypto technology's ability to circumvent additional human contact (O'Dwyer 2018). Additionally, artists no longer have to rely on their connections to the art world or firmly establish themselves in the contemporary art sphere to showcase and sell their art. The more traditional exclusionary tactics of the contemporary art world are dismantled by eliminating the concentrated sources of power and authority that auction houses, gallerists, and dealers have when they determine which artworks to sign, display, and sell. Instead of keeping the power to determine representation limited to a few organizations and corporations throughout the world, the power is now less concentrated and more widely distributed to individual users regardless of their status or standing in the art world. These aspects of decentralization serve to benefit female-identifying artists in particular as they now have the ability to represent themselves and determine the price of their works directly. NFTs also have the potential to solve, in a direct manner, the lack of representation in gallery spaces and the exclusion from capital that women artists face when working within auction houses.

On the surface, this two-pronged approach appears to offer fast-acting and direct solutions to issues that women artists encounter within the status quo. Accessibility barriers found in needing gallery representation or an art dealer are eliminated with a platform that allows anyone with an email address to upload and sell their art. Inherent gender biases are combatted using online anonymity to help promote marketability and artist sales. Unregulated crypto platforms remain algorithmically free, making no discernment for art market trends, popularity, or aesthetic preferences, thus equalizing the buying and selling field for art mediums and closing the inherent bias gap that is still prevalent in the

traditional art world. Furthermore, women artists no longer have to work with galleries and auction houses on setting adequate prices and reserves for their works, nor do they have to fight the bleak representation statistics that galleries are still contending with. The decentralized nature of NFT marketplaces allows female-identifying artists to become their own agents, dealers, and gallerists whilst simultaneously providing them equal, non-discriminatory access to the same selling platforms available to their male counterparts. These proposed solutions to gender issues in the status quo largely account for the rise in NFT popularity amongst women artists (Thaddeus-Johns 2022). The crypto world has promised a more feminist alternative to the status quo and touted the strides that NFTs have made to equalize the art world for women artists. Additionally, these purported benefits of combatting the sexism found in traditional art spaces continue to act as a beacon of hope and a viable alternative for many practicing artists.

3. Exploring the Origins of NFT Proposed Solutions

This two-pronged approach of accessibility and decentralization is not novel in its solution to solving gender discrepancies in the art world. In the late 1990s, with the introduction of a widely accessible internet-space, feminist artists began using the early emergence of the internet to help explore and deconstruct the gendered biases found in their profession. Known as the Cyberfeminist Net Art Movement, feminist artists quickly explored cyberspace's potential for gender anonymity and, in some cases, gender masquerading via online personas in a decentralized digital landscape (Kolko et al. 2000).

3.1. *The History of Cyberfeminism in the Net Art Movement*

Emerging from the introduction of the world wide web, the field of cyberfeminism came to fruition around the same time as the internet in August 1991 (Scott 2016). Prior to the increased accessibility to the internet, computer technology of the 1980s was largely seen as a male-dominated area. Computer technology was a tool made by men, for men to utilize until the early 1990s. Following its introduction into mainstream usage, cyberfeminists began postulating whether technology was the key to patriarchal upheaval, while exploring the idea of being able to escape gender through an online platform.

The roots of cyberfeminism go back slightly earlier to the early 1980s with works like Donna Haraway's *A Cyborg Manifesto* (1983) creating the foundation for a blend of a part-human-part-machine cyborg that was capable of eradicating solely human-ingrained racial and patriarchal biases. Haraway states, "The cyborg is a kind of disassembled and reassembled, postmodern collective and personal self. This is the self feminists must code" (Haraway 2017). The cyberfeminists used this as a rallying cry, writing their own homage to Haraway for the new cyber-age titled, *Cyberfeminist Manifesto for the 21st Century* (1991). Female artists, coders, and gamers began working in unison to reconfigure gender in a digital age, exploring the ways in which anonymity, gender masquerading, and an untapped technological landscape could help them shed the ingrained biases in their respective practices, envisioning the digital future as a non-gendered utopia (Wilding 1998).

3.2. *A Cyberfeminist Approach to Gender Bias*

Cyberfeminist Net Art artists of the late 1990s and early 2000s served as the precursors to NFTs' promise and ability to obfuscate gender online if one chooses. The idea of inventing your own person online, untethered to one's "real" existence, for the benefit of subverting gender biases was the subject of several artworks created by cyberfeminist artists.

Yael Kanarek's (2000) Net Art piece, *World of Awe*, follows a genderless, anonymous traveler through a desolate digital landscape. Known simply as "The Traveler", Kanarek takes the user on a parallel-world journey to discover unmapped territory through the lens of an old computer that The Traveler has built out of spare electronic scrap parts for the sake of exploring personhood and narratives through a new art medium. Created in the form of a computer-programed game walkthrough, Kanarek explores the internet as a metaphorical space to construct new identities alongside new worlds in a setting detached

from gender (Kanarek 2000). The desert, acting as a stand-in for the new and vast digital landscape that has now become so accessible to the masses, serves as the backdrop for exploring gender obfuscation and identity within *The Traveler*, as well as within the users of the program, who are now, regardless of their gender identity, acting as a genderless person. In turn, Kanarek uses technology to play with gender and identity roles in her art, showcasing and highlighting the fact that *The Traveler* is allowed to be genderless and nameless in the vast world of the digital landscape and, furthermore, so is the user.

Another example of a cyberfeminist artist working to subvert gender can be found in artist Shu Lea Cheang's 1998 work, *Brandon*. Cheang's work takes on the identity of a transgender man named Brandon, as viewers navigate his life through a series of chat rooms, internet pop-ups, and video live-stream conferences (Jones 1998). Through depictions of the graphic moving images of the disembodied human form and colorful chat textboxes, Cheang utilizes the ever-evolving "skin" of the internet to break down gender assumptions using a technological medium. The technological environment allows the users of Cheang's artwork to assume different identities, gender roles, and characters that may not coincide with their gender or identity outside of the technological space as they play as different characters from Brandon's life, including Brandon himself. Once again, this work explores a central theme of the Cyberfeminist Net Art Movement of employing technology to obfuscate or hide gendered identifiers or, in some cases, masquerade as a different gender entirely.

Both artworks explore an individual's ability to investigate and alter different gender roles and identities from their own within a digital landscape. Supporters and practitioners of cyberfeminism like Nourai-Simone, an Iranian activist and historian, speak to internet technology's subversiveness in a way that mimics the language surrounding the current NFT technology. Simone equated liberation from gender oppression to the anonymity of the internet by stating, "The absence of the physical body in electronic space and the anonymity this offers have a liberating effect on repressed social identity, as 'electronic technology' becomes a tool for the design of freely chosen identities", (Nourai-Simone 2014). The cyberfeminist movement of the late 1990s and early 2000s served as a catalyst for using budding technological advancements to subvert the societal expectations of gender presentation and identity. These ideas and art practices continue today, as technology continues to evolve after the COVID-19 pandemic with the post-Cyberfeminist art movement. The "Dgtl fmnsn Hot Mess" program took place online in March 2020 for cyberfeminist artists to display their extensive digital performance and display art, "A Traversal Network of Feminist Servers (ATNOFS)", a post-cyberfeminist artist radio broadcast took place in six separate events from March–October of 2020, and "TransHackFeminist Convergence 2022: Feminist Infrastructure" took place in Barcelona in August 2022 (Dusan 2024). Artists interested in using evolving technology as a tool for equalizing liberation continue to utilize previous cyberfeminist art practices to advance their goals.

However, the cyberfeminist movement was short-lived, and the post-cyberfeminist movement is lacking in popularity as a feminist art practice. For all the aims of gender subversion and decentralization that the Cyberfeminist Net Art Movement sought from a new technological landscape, the digital sphere quickly came to reflect the same gendered social conditions of the "real world" due to the lack of distinction between the cybersphere and the world that exists outside of the internet space. Just as race and gender play pivotal roles in an individual's "real-world identity", the shaped knowledge, experiences, and values that race and gender precipitate bleed into the cybersphere and cannot be forgotten upon the switch to a digital platform (Kolko et al. 2000). The sharp delineation between "online" and "offline" experiences makes it so that they do not exist independently of one another; however, the delineation is not fully actualized, leaving the lingering traces of one's "real world identity" to shape the previously uncharted digital landscape. Wilding claims the internet "is already socially inscribed with regard to bodies, sex, age, economics, social class, and race" (Wilding 1998). This realization effectively ended the cyberfeminists' vision of liberation through a technological medium as the internet proved not to be

the genderless, equalizing utopia that the cyberfeminists had once hoped it would be. While the post-cyberfeminists attempted to revive the movement by updating the issues that cyberfeminism initially tackled for the modern age of feminine representation in cyberspace, Helen Hester, gender, technology, and cultural politics professor, stated that, in the wake of a new digital age, cyberfeminism is not able to address the surmounting gender discrepancies. Technological advancement was happening too rapidly for the movement to adjust in time (Hester 2017). In lieu of this, post-cyberfeminist artist Cornelia Sollfrank stated, “Now we know more about the downsides of networked technologies; we had to learn how they are being abused by corporate and governmental interests in order to surveil and control users and citizens; This situation continuously needs to be confronted with feminist methodologies” (Elbaor 2017).

4. NFTs as the Next Logical Progression

While the Cyberfeminist Net Art Movement has lost its initial momentum, the movement’s methodologies continue to resound in line with Sollfrank’s call as technology rapidly advances. With the introduction of NFTs to the mainstream population, questions of gender subversion, accessibility, and decentralization arise for female-identifying artists once more. How can this new, unmarked digital landscape work to subvert the status quo? Will the promise of a decentralized market to display and showcase artists’ works without the need for middleman representation lend itself towards machine-like pragmatism free from human manipulation and built-in biases? Is a genderless utopia, at least in the new age of buying, selling, and creating NFTs, possible? Additionally, if so, how will the ever-evolving art world shift?

4.1. A Feminist Take-Over of NFTs

One artist attempting to answer these questions through her work is Barbara Finck-Beccafico. A self-described “Eco-Feminist-Queer-Nft Artist”, Finck-Beccafico’s art predominantly focuses on humankind’s relationship with the surrounding environment (Finck-Beccafico 2022). Her latest non-NFT work from 2016, *Conscience*, blends topics such as ecology, feminism, consumption, and interconnected relationships. In this audio-visual space, four projected screens were placed on the four walls of a room, playing a story told in six chapters on a loop. Each chapter described an alternate near-distant future in which the effects of climate change were reversed due to human intervention. These alternate imaginings explore the effect that saving the planet has on catalyzing a feminist and gender-equal utopia that is “beautiful” and “peaceful” (Finck-Beccafico 2023a).

Following the introduction of NFTs into the art world, Finck-Beccafico began working on translating these themes into the world of crypto art. With the creation of a collective art project known as DNA NFT Art, Finck-Beccafico joins art, science, and esotericism through NFT works created solely by women and gender non-conforming artists (Finck-Beccafico 2023b). In this project, Finck-Beccafico constructed audio-visual portraits by reading a subject’s energy, aura, and chakras to map the body’s consciousness. Then, using the information from the reading, Finck-Beccafico composed a soundtrack set to an application she created to generate visual material based on the DNA data reports of subjects who took a DNA test. The result is a unique, personalized self-portrait that combines both audio and visual media, as well as esotericism and biotechnology to produce an artwork similar to a music video (Finck-Beccafico 2023b). Throughout this process, Finck-Beccafico aims to highlight that while a scientifically strict DNA mapping of a subject provides a partial and objective view of data, it is not a holistic view of an individual. Furthermore, Finck-Beccafico stated that “the individual cannot be reduced to a scientific and factual definition of his or her body” in the hopes that her work will call into question the reductive vision of the status quo as influenced by the patriarchal society (as the idea that science dominates the natural world and imposes order stemming from patriarchal concepts). These personalized portraits based on an individual’s genetics were then minted as NFTs in the form of a fifteen-second video on the blockchain and launched on NFT

marketplaces during the second quarter of 2022. Using NFTs as a medium to actively imagine the possibility of a gender-liberated world through environmental liberation, Finck-Beccafico uses technology to challenge the status quo and to encourage conversations on the revolutionary aspects that the new crypto technology inspires.

Finck-Beccafico is aware of the criticisms that NFTs pose to her environmental feminist art practices as well. Previously, the majority of NFTs were created on the Ethereum blockchain, which utilized a consensus mechanism called proof-of-work (PoW) that is compute-intensive and thus harmful to the environment (Tabuchi 2021). This consensus mechanism is a program that is implemented in a network system that replaces the need for human verification and auditors for each transaction and creation of NFT art. The PoW mechanism works by solving long cryptographic puzzles over a myriad of computers that generate numbers in a frenzied trial-and-error attempt to make a unique and irreplicable strand of code. This code is then stored on the blockchain and contains a record of data structures, time stamps, and transactions that are unable to be altered (Murtazashvili et al. 2022). However, while the PoW mechanism saves time, eliminates error, and allows for incorruptible data storage, the computational power required to run the mechanism is extensive. There have been several scientific peer-reviewed studies that conservatively estimate the carbon footprint of minting an NFT to be anywhere between 33.4 kg CO₂ and 40.8 kg CO₂ (Qui 2021). For reference, this carbon footprint is more than 14 times higher than mailing an art print, which is estimated to produce 2.3 kg of CO₂ on average (Qui 2021). It is important to note that these carbon emissions are produced each time an NFT is minted or sold. Some scientists have estimated that after averaging the number of times a singular NFT has been bought and resold after minting, the carbon emission can be as high as 200 kg CO₂ or the equivalent of driving roughly 500 miles in an average American gasoline-powered car (Tabuchi 2021).

However, this does not mean that there are not viable alternatives to the energy expending PoW mechanisms. In response to environmentally conscious critic's refusals to engage with NFTs, several crypto platforms began working on a more sustainable alternative to the proof-of-work system known as proof-of-stake. This mechanism is less onerous than the complex crypto-solving computer system of proof-of-work, as it requires fewer computers and cuts carbon emissions almost in half (Bruner 2021). Furthermore, StarkWare, a company co-founded by engineers Eli Ben-Sasson and Uri Kolodny, is working on packing more information per transaction into the blockchain to offset the environmental impacts (Lindrea 2022). As of 2022, Ethereum has switched to a proof-of-stake mechanism, significantly reducing the environmental damage that the prior PoW system caused (Wackerow 2024).

In order to offset the energy expenditure of NFTs, Finck-Beccafico mints and sells her works on platforms that utilize proof-of-stake systems and marketplaces. Furthermore, more carbon-neutral NFT marketplaces are emerging that are available to environmentally concerned artists while other marketplaces are making the switch to PoS systems (e.g., Avalanche, OpenSea, Bubblehouse, and Binance). The constant development of the new technology allows crypto marketplaces and systems to adapt to better fit the needs of artists for the benefit of the general population. In doing so, Finck-Beccafico is able to ethically sustain her ecofeminist art practices while shifting to a new platform that permits her anonymity, decentralization, and a more equitable market.

Another female artist making strides in the world of crypto art and technology is Afro-Caribbean creator Itzel Yard, better known as IX Shells. In 2021, Yard became the top-selling female NFT artist with her work *Dreaming at Dusk* selling for two million dollars, or 500 ETH (Shrivastava 2021). While Yard first began selling her NFT works at 0.5 ETH (USD 800), she now sells each work at a minimum price of 3 ETH (USD 8000), which is a price increase of 900% in just a few years. Since making her foray into NFT art, Yard has had her works offered and sold at auction houses including Sotheby's, as well as being featured in gallery shows such as "Somewhere Ethereal", the first physical NFT exhibition at Fotografiska in Stockholm (Mutual Art 2022). Yard's art focuses on a blend

of the digital world with the physical one by translating architectural patterns, computer glitches, and soundwaves of her voice reading poetry into complex abstract works of art. In addition to this, Yard's work is steeped with her own emotions, stemming from relationship cycles, difficult life experiences such as her move from Panama to Toronto, Canada, that left her with nothing, and socio-political views of being Afro-Caribbean and living in a non-inclusive world (Maidan 2022).

In the world of crypto art and technology, Yard has managed to carve out a place for herself amongst the top-selling NFT artists of her time. Assuming the genderless username of IX Shells that the crypto platform allows her, Yard is able to successfully create and generate artworks that depict female emotion and feminist concepts such as intersectionality and sell them alongside her male counterparts with no gendered distinction. This freedom of the cryptoverse opened up new avenues of creation for Yard to explore her stories artistically and afforded her the anonymity of a gender-neutral artist profile to help facilitate the distribution of her works.

For women artists, and more specifically feminist artists, participation in the creation and distribution of NFTs has opened new avenues to distribute their artworks and afforded them more autonomy over their own creations. Neither Finck-Beccafico nor Yard has gallery or dealer representation as artists. Their works are uploaded to the NFT marketplace of their choice with prices they can set themselves under names they can pick for themselves. These two specific examples highlight what is happening on a much larger scale. NFT artist collective groups such as World of Women, Baddie Babes NFTs, and Encryptas by CyberCHK, have formed to empower women artists through NFTs and to carve out a place for female-identifying artists in the crypto space. Many of these collective groups further their feminist practices by donating a portion of all their sales to organizations like Girl Up, The Malala Fund, and Female Strong in the hopes of encouraging the next generation of female leaders and scholars (Crypto Altruism 2024). Much like the Net Art Movement of the 1990s, women artists are seeing the potential that this new unmapped digital landscape offers and are attempting to use it to bridge the gender divides in not only art but the world at large, too.

4.2. COVID-19 as a Catalyst

Wide-spread access to NFT technology for female-identifying artists largely took place after the COVID-19 global pandemic. Previously, access to NFT technology, and even cryptocurrency, had been confined to those in technology industries with the knowledge of and access to crypto platforms. According to the updated NFT statistics, NFT usage dropped in 2017 from 0.12 users (in millions) to 0.08 users (in millions) by 2018 (Statista 2024). The transition from a hyper-connected world to a quarantined, isolated one in the wake of COVID-19 forced the art world to adapt to a new era of digital normalcy. Artists and galleries alike began to utilize new technological advancements to continue their practices in a socially distanced, lockdown friendly manner. In 2020, New York Frieze took their fair completely virtual and converted their show into a virtual viewing room (Khemsurov 2020). This was then followed by Frieze LA going virtual. Then, in 2021, the LA Art Show was anchored by NFT-backed digital art with its theme: Tech. This art show predominately featured NFT art made in the height of the pandemic, making sure to keep the show diverse and featuring women NFT artists such as Claudia Hart, Luna Ikuta, Blake Kathryn, Ana Marcos, IX Shells, and Nicole Ruggiero (Riefe 2021). In the wake of COVID-19, NFT usage increased exponentially, going from 0.08 users (in millions) in 2018 to 0.41 users (in millions) by the end of 2019. By the end of 2020, NFT usage rose to 0.79 users (in millions), and, by the end of 2021, the number of NFT users burgeoned to 5.39 (in millions) (Statista 2024).

The digitization of the world during and post-pandemic allowed for a more diverse user base in the world of crypto art and technology. In the wake of COVID-19, the online digital landscape shifted once more, effectively allowing an influx of artists and creatives to utilize the new technology to their benefit. In the case of practicing feminist artists, the new technology provided an unmapped digital landscape that they could confront and shape

with feminist methodologies as previous cyberfeminist practitioners had done before them. In 2021, women NFT participation accounted for 16% of the digital market (Barratt 2022). This number has since risen to 28% in 2024 based on current NFT marketplace statistics (Elad 2024). Post-pandemic interest in NFTs has skyrocketed, and, while the initial NFT boom has since leveled-out, there is still a steady increase in NFT users each year (Statista 2024). This increase in accessibility brought on by COVID-19 allowed women artists to express their artistic ideologies in new formats on a global scale. With auction houses, Frieze shows, and galleries forced to adapt to a digital platform during the pandemic, NFT feminist artists exploring subversive art tactics such as gender masquerading and decentralization were allowed to take center stage in the art world in a way that was unprecedented pre-pandemic.

5. The Shortcomings of Decentralized Technology

Based on the previous examples, it is clear that the equalizing groundwork and potential for NFTs to disrupt the art world has been laid. While female-identifying artists are attempting to utilize NFT technology for their feminist practices, new artistic and creative outlets beget the same intended hopes and desires of the preceding cyberfeminist movement. However, much like the prior 1990s Net Art Movement, the full disruptive potential of NFTs has yet to be actualized.

5.1. *Persistent Inequality in the Crypto Age*

One is likely to assume that a machine-like crypto sphere, designed to be pragmatic and free from human manipulation, would also be free from the innate human biases that are reflected in the traditional art world. Unfortunately, as NFT technology continues to integrate itself into the mainstream world of contemporary art, statistics are showing that this is not the case. As of March 2022, NFT works created by female-identifying artists make up 5–15% of the NFT market's multi-billion-dollar industry (Shaw 2022). This means that NFT works that are being bought and sold are predominantly created by male artists. Zillah Eisenstein, a feminist activist and professor at Ithaca College in New York, believes that NFT art and technology are concentrated in the hands of male power and stated that, "If you're encouraging excessive wealth, you're also encouraging excessive inequality" (Naraharisetty 2022). This exacerbation of inequality, as Eisenstein states, appears to be true when looking at the statistics of the more traditional mediums of the art world. Women comprise just 28% of the NFT art market, a marked decline from the 48% of women who are visual artists, according to a new Diversity in Arts report by the WorldMetrics database (Lindner 2024). Furthermore, with newer forms of media, such as video and performance art, women make up 40% and 41% of these sectors, respectively. Additionally, female-identifying artists make up 29% of digital artists in the art world (Shaw 2022). The correlation between the gender and choice of medium is interesting to note, with most women working within newer forms of art mediums. This is perhaps due to the fact that newer art mediums are more pervasive and provide room for experimentation in their novelty, thus making them more accessible (Leuzzi 2023). With NFT technology being one of the newest art forms, the low statistics of female representation appear disheartening, exclusionary, and call into question what about the new technology lends itself to male domination.

Claudia Hart, a professor in film, video, new media, and animation at the School of the Art Institute in Chicago and a digital artist herself, provides one answer to this question. In a term coined as "bro culture", Hart explicates that the NFT tie to currency, and specifically cryptocurrency, confines the buyers and investors to a male-dominated demographic (Hirshhorn 2021). As NFTs require the attainment of cryptocurrency and at least a basic knowledge of complex minting and mining systems, Hart argues that the buyer audience is limited to the tech market and financial technology (FinTech) industry giants that have created and regularly work with cryptocurrency (Hart 2021).

It is no secret that NFTs were first a product of the technological and finance sectors at conception before their introduction into the art world. Blockchain technology, first developed in Silicon Valley, has long been obscured by the complex computer-science-oriented processes of minting and mining cryptocurrency, crypto wallets, and computational power. In its early days, NFT technology was only able to be used by those within the tech industry who had played a role in creating it (Whitaker 2019). With the development of an NFT art marketplace, which operates strictly within the crypto sphere, the Silicon Valley tech giants and hedge fund managers who had previously been less active in the traditional art world now found themselves in a unique position to dominate a new crypto art market (O'Dwyer 2018). As an example, statistics from the sale of digital artist Beeple's NFT work titled, *The First 5000 Days*, indicated that 80% of interested buyers were first-time art buyers, largely from FinTech sectors (Hirshhorn 2021). These two sectors continue to remain largely dominated by white men. A report conducted by the Equal Employment Opportunity Commission found that men make up 83.3% of tech executives and that 80% of all tech executives are men (Daileda 2021). Furthermore, men make up over 70% of all FinTech industries and only 10% of women are involved in FinTech leadership positions (FinTech Global 2024). This means that those who worked on constructing NFT technology, and those that had preliminary access to the crypto metaverse, crypto art, and their benefits, were predominately white men. Hart adamantly maintains that while these disparaging statistics remain unchanged, the world of NFT art cannot reach its full potential for increasing accessibility (Hirshhorn 2021).

Senior art critic for New York Magazine and 2018 Pulitzer Prize winner Jerry Saltz raises concerns along the same line. Saltz takes Claudia Harts' argument one step further and supposes that the artworks that sell and garner high prices are works that lack artistic diversity and are traditionally created by men because the buyer demographic is confined to white, male, tech industry giants (Catlin 2021). One only has to look at the top-selling NFTs created by artists such as Beeple, Kevin Abosch, and Steve Aoki to see the common pattern: They are all men. This has led to an aesthetic decline of art in Saltz's opinion as he described the male-dominated NFT art that sells as "conventional" and "computer screensaver art" (Hirshhorn 2021). Saltz argues that while the NFT platform has the potential to diversify the art world even further, careful examination of the buyers and the artists of the works purchased have proven that the world of crypto art is still highly dominated by men. As men in the finance and tech industries continue to hold the crypto purchasing power, then it is male artists who find the most success selling their works on NFT platforms. From the mining of cryptocurrency to the NFT markets, those with the technological knowledge and know-how stand to influence the type of NFT art that is bought and sold. While both Hart and Saltz agree that the disruptive potential for NFT art and technology is there, it appears that the newfound accessibility of NFTs has only encouraged an influx of male tech giants and venture capitalists to inflame gender disparities and a decline of aesthetics in a new digital art market.

5.2. An NFT Digital Plundering and Colonial Takeover

While NFTs hold the promise of greater accessibility for practicing women artists, it is important to look further into the geographical makeup of NFT usage to determine, on a non-westernized scale, the reach of this accessibility advantage and the underlying colonialist nature of the world of crypto.

NFTs are already dominating the digital space with a hyper-masculine, westernized nature that threatens to circumvent feminist art practices. The creation of the metaverse introduced a new space, one conducted entirely online, where individuals could coalesce and interact just as they would in the "real" world. The metaverse allows individuals to purchase digital clothes for digital renderings of themselves, digital food to keep their digital pantries stocked, and ultimately allows for the digitization of reality, thus creating an alternate, entirely virtual world (Lastowka and Hunter 2004). NFT technology exists as a facet of this virtual world where music, videos, GIFs, art, and other art forms can be

created, bought, and sold for profit with virtual (crypto) currency. In turn, this creates a digital landscape that can now be mined for profit, with NFT art acting as digital resources. With the digitization and creation of the metaverse mirroring present reality, it is not hard to imagine that soon every aspect of digital existence will be commodified and mined for profit with digital resources being abused and plundered in the same way natural resources are. These NFT artworks now create a new space to store value and allow for the tokenization of the digital commons, as an individual can stake ownership in a portion of the crypto sphere by purchasing an NFT work. The creation of NFTs and blockchain technology now encloses a previously free virtual space, just as land, water, and soil were enclosed before it (Naraharisetty 2022). It appears that NFT technology has only further encouraged colonialist ideas of ownership and privatization for individual wealth as it turns the previously free and open digital landscape into an unmarked territory that can belong to an individual and be mined for digital resources and profit.

In her work, *A Cyborg Manifesto*, Donna Haraway discusses and analyses this blend of human life and technology in order to calculate the social impact and potential abuse of technological innovation. Haraway claims that there is no neutrality in tech and that there will never be neutrality in tech as long as there is a “continued intense sexual and racial division of labor” in the industry. Furthermore, Haraway calls for the development of technology that breaks down barriers and encourages openness and the dissolution of boundaries rather than technology that clearly delineates boundaries and builds up barriers even further. She argues that there will always be a gendered divide in tech as long as patriarchal ideals of domination and oppression are favored over community and connectivity (Haraway 2017). As it currently stands, NFT technology and NFTs as an art medium seem to only further the gender divide as they encourage privatization and ownership over community and connectivity. While it is true that NFTs provide an alternate market and medium for marginalized groups that may have been exploited or “starved out” of more traditional markets, the economic models behind blockchain technology and the unequal labor sectors that the technology was founded in only reinforce colonialist practices and structures rather than dissolve them (Ali 2016). In fact, recent data show that the countries that benefit at large from NFTs are still predominately westernized ones. The top five countries seeing the most revenue from NFT sales since 2018 are the United States, Germany, the United Kingdom, Canada, and Japan (Statista 2024). This is despite countries such as China, Singapore, and Nigeria showing the most consumer interest in NFT technology (Statista 2024). As NFTs present digital space and digital art as something to be owned and commodified, and as they integrate themselves as a new resource promising wealth in a new digital landscape, ideas of digital scarcity, digital territorialization (claiming an object in a digital space), and ownership drive the appeal of NFTs. As westernized NFT and FinTech industries tokenize and colonize the internet space, they leave women and marginalized artists, lured by the idea of a decentralized and equalizing new-age art space, to deal with the remnants of their plundered empire.

In their most neutral state, it appears that the consequences of NFTs have led to a crypto market that mirrors the problems of female exclusion and underrepresentation found in the traditional system of galleries, auction houses, and art dealers, instead of correcting them. The power and profit remain concentrated in the hands of male artists and buyers. Additionally, the western domination of the crypto sphere continues to mirror the harmful colonial practices of commodification and plundering, which are detrimental to feminist practices. With westernized countries and artists reaping all the benefits and profits that the crypto sphere promised, non-westernized artists continue to struggle accessing the same benefits and representation.

6. Conclusions

With these findings in mind, it is necessary to touch on what the future of feminist art practices could look like alongside NFT technology. For better or worse, NFTs have integrated themselves thoroughly into the art world. As of December 2021, NFTs consti-

tuted nearly 16% of the global art market, and, in 2022, though not growing at the rapid rate of the previous year, NFT transactions continued to surpass previous records than that of the year before (Gaskin 2022). NFT art galleries and museums have now been cropping up in multitudes in both the digital and physical realms in NFT-curated exhibitions with the intent of giving NFT artists more exposure (e.g., Superchief, Seattle NFT Museum, Frankfurt B.20 Gallery, and KnownOrigin Gallery). Additionally, museums and galleries such as the British Museum and the Uffizi Gallery have taken to minting their own NFTs in conjunction with the world's largest auction houses (Cuseum 2022).

In lieu of this development, it is a wonder if NFT art will further exacerbate the gender discrepancies that the technology aims to solve. NFTs pose a real disruptive potential to the current status quo for the better. Carbon-neutral marketplaces and energy-efficient alternatives to proof-of-work systems are already being developed to be more environmentally conscious in congruence with eco-feminist practices. Anonymity and gender masquerading are tools that artists are utilizing to their advantage. Real work would need to be done in order to address the current gender imbalance in the tech and business labor industries, and a dismantling of the current Silicon-Valley-backed systems would be necessary to actualize NFTs' full accessibility and decentralizing potential. However, this does not mean that the benefits of NFT technology, as previously discussed, cannot be fully realized on a large scale with restructuring. Some feminist artists such as Finck-Beccafico are still choosing to work within the world of crypto art, finding that NFTs' accessibility, free from algorithmic ordering, outweighs the gender discrepancies in the crypto art market. In doing so, Finck-Beccafico adds her name to a list of women artists pushing back against the male-dominated space of crypto art and, furthermore, supports the development of energy-efficient NFT alternatives by selling her artwork on these environmentally conscious NFT platforms.

At present, corrective responses to the NFTs' exacerbation of feminist issues continue to remain reactive rather than proactive, but these issues can be remedied, especially in the early stages of NFT integration in the art world. Instead of repeating the short-lived goals of the 1990s Cyberfeminist Net Art Movement, NFT technology has the capacity to build upon the movement's foundational principles and pose disruption to the status quo. As more women and artist collectives crop up to support the female-identifying artists joining the world of crypto, the NFT markets can adapt to be better suited to feminist art practices and issues. Already, feminist artists are integrating NFT technology into their art practices to widen their audience, skirt representation bias, and equalize their professional playing field. On an individual level, the disruptive potential that NFT technology poses to the status quo is tangible. However, when extended to a larger scale, this equalizing, equitable, and decentralizing answer is not yet fully actualized. Instead of using these statistics as a discouraging call to abandon the technological advancements or to write NFTs off as a repeat of the past, artists and art-world professionals can build upon this newfound potential and look towards the cryptotechnological advancements as a tool to be utilized in eliminating gender bias in their professions.

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Notes

- ¹ Here, the traditional art world is defined as the systems, institutions, and individuals that have historically been dedicated to maintaining a network for creating, buying, selling, displaying, and interpreting art.

References

- Abrol, Ayushi. 2023. What is an NFT Marketplace and How Do You Create Your Own? *Blockchain Council*, May 12. Available online: <https://www.blockchain-council.org/nft/nft-marketplace/> (accessed on 13 August 2023).
- Ali, Mustafa Syed. 2016. A Brief Introduction to Decolonial Computing. *XRDS* 22: 16–21. [CrossRef]

- Barratt, Bianca. 2022. How Female Creators Can Encourage More Women to Invest in Nfts. *Forbes*, May 23. Available online: <https://www.forbes.com/sites/biancabarratt/2022/05/20/how-female-creators-can-encourage-more-women-to-invest-in-nfts/> (accessed on 1 July 2024).
- Bein, Kat. 2024. The 20 Top-Selling NFT Artists to Collect Right Now. *Gotham*, May 7. Available online: <https://gothammag.com/top-selling-nft-artists> (accessed on 1 July 2024).
- Boroff, Philip. 2015. Art World Bias by the Numbers. *Artnet News*, April 27.
- Bruner, Raisa. 2021. Are Environmentally-Friendly Nfts Possible? *Time Magazine*, November 18. Available online: <https://time.com/6120237/nfts-environmental-impact/> (accessed on 1 July 2024).
- Cascone, Sarah. 2022. Here are the 10 Most Expensive NFT Artworks, from Beeple's \$69 Million Opus to an 18-Year-Old's \$500,000 Vampire Queen. *Artnet News*, February 2. Available online: [https://news.artnet.com/market/most-expensive-nfts-1952597#:~:text=In%20fact,%20since%20first%20venturing,Beeple%20NFT%20is%20work%20\\$121,422](https://news.artnet.com/market/most-expensive-nfts-1952597#:~:text=In%20fact,%20since%20first%20venturing,Beeple%20NFT%20is%20work%20$121,422) (accessed on 1 July 2024).
- Catlin, Roger. 2021. Art NFTs an Art World Fad or Its Future? *Smithsonian*, May 26. Available online: <https://www.smithsonianmag.com/smithsonian-institution/hirshhorn-hosts-panel-experts-hash-out-brave-new-world-non-fungible-tokens-180977812/> (accessed on 1 July 2024).
- Crypto Altruism. 2024. Celebrating International Women's Day-Highlighting 40 Women-Led web3 Projects, Collectives, and DAOs. *Crypto Altruism*, March 8. Available online: <https://www.cryptoaltruism.org/blog/40-women-led-projects-collectives-and-daos> (accessed on 1 July 2024).
- Cuseum. 2022. How 21 Museums & Cultural Organizations Engaged with NFTs in 2021. *Cuseum*, November 22. Available online: <https://cuseum.com/blog/2021/11/16/how-21-museums-amp-cultural-organizations-engaged-with-nfts-in-2021> (accessed on 1 July 2024).
- Daileda, Colin. 2021. Tech Is Dominated by Even More White Dudes than the Rest of the Private Sector. *Mashable*, October 29. Available online: <https://mashable.com/article/diversity-report-silicon-valley-white-men> (accessed on 1 July 2024).
- Dusan. 2024. Cyberfeminsm: Exhibitions, Festivals, Conferences, Symposia, Discussions. *Monoskop*, April 23. Available online: <https://monoskop.org/Cyberfeminism> (accessed on 1 July 2024).
- Elad, Barry. 2024. NFT Statistics 2024 By Top Marketplaces, Collectors, Country, Gender, Art Segment, Traffic Source AND Website Traffic. *Enterprise*, January 21. Available online: <https://www.enterpriseappstoday.com/stats/nft-statistics.html> (accessed on 1 July 2024).
- Elbaor, Caroline. 2017. What Is Post-Cyberfeminism? Here's a Primer on the Latest Big Idea to Storm Contemporary Art. *ArtNet*, November 29. Available online: <https://news.artnet.com/art-world/an-introduction-to-post-cyberfeminism-1156271> (accessed on 1 July 2024).
- Finck-Beccafico, Barbara. 2023a. *Installations*. Barba06 Wix. Available online: <https://barba06.wixsite.com/barbarafinckbeccafic/installations> (accessed on 19 June 2023).
- Finck-Beccafico, Barbara. 2023b. *NFT DNA Poetry*. Poésie de l'AND. Available online: <https://barba06.wixsite.com/poesiedeladn/concept> (accessed on 19 June 2023).
- Finck-Beccafico, Barbara. [DNArtNFT]. 2022. Barbara (She/Them). I Am an Artivist Intersectional-Eco-Feminist-Vegan-Queer nft Artist-Energy Worker DNA Art Project Joining Art, Science, & Esoterism. [Twitter Bio]. *Twitter*, January 15. Available online: <https://twitter.com/dnartnft?s=11&t=IxVI2FD7ApXWd7PEHnwYbQ> (accessed on 15 March 2023).
- FinTech Global. 2024. IWD 2024: What Are the Biggest Challenges for Women in FinTech? *FinTech Global*, March 8. Available online: <https://fintech.global/2024/03/08/iwd-2024-what-are-the-biggest-challenges-for-women-in-fintech/#:~:text=In%20addition,%20women%20still%20make,over%2010%25%20of%20the%20leadership> (accessed on 12 July 2024).
- Gaskin, Sam. 2022. Out of Nowhere, Nfts Now Constitute 16% of the Global Art Market: News. *Ocula the Best in Contemporary Art Icon*, June 20. Available online: <https://ocula.com/magazine/art-news/nfts-now-constitute-16-percent-of-the-art-market/> (accessed on 1 July 2024).
- Halperin, Julia, and Charlotte Burns. 2019. Museums Claim They're Paying More Attention to Female Artists. That's an Illusion. *Artnet News*, October 28. Available online: <https://news.artnet.com/womens-place-in-the-art-world/womens-place-art-world-museums-1654714> (accessed on 1 July 2024).
- Haraway, Donna. 2017. *A Cyborg Manifesto*, 1st ed. Minneapolis: University of Minnesota Press, pp. 3–68.
- Hart, Claudia. 2021. Why We Need a Feminist Manifesta of the Blockchain. *Hyperallergic*, April 20. Available online: <https://hyperallergic.com/639180/a-feminist-manifesta-of-the-blockchain/> (accessed on 1 July 2024).
- Hester, Helen. 2017. After the Future: n Hypotheses of Post-Cyber Feminism. *Beingres*, June 30. Available online: <http://beingres.org/2017/06/30/afterthefuture-helenhester/> (accessed on 1 July 2024).
- Hirshhorn. 2021. NFTs: Fad or the Future of Art? [Video]. *YouTube*, May 7. Available online: <https://www.youtube.com/watch?v=MLBf3orYtkY> (accessed on 1 July 2024).
- Hoffmann, Robert, and Bronwyn Coate. 2022. Fame, What's Your Name? Quasi and Statistical Gender Discrimination in an Art Valuation Experiment. *Journal of Economic Behavior Organization* 202: 184–97. [CrossRef]
- Jones, Caitlin. 1998. *Shu Lea Chang: Brandon*. New York: Guggenheim Museum. Available online: <https://www.guggenheim.org/artwork/15337> (accessed on 1 July 2024).
- Kanarek, Yael. 2000. World of Awe: The Traveler's Journal (Chapter 1: Forever). *Net Art Anthology*. Available online: <https://anthology.rhizome.org/world-of-awe> (accessed on 1 July 2024).

- Khemsurov, Monica. 2020. Our Favorite Finds From the First-Ever Virtual Frieze Art Fair. *Sight Unseen*, May 8. Available online: <https://www.sightunseen.com/2020/05/virtual-frieze-art-fair-2020-online-viewing-room-digital-art-fairs/> (accessed on 1 July 2024).
- Kinsella, Eileen. 2021. Some of the World's Top Artists Are Trying Their Hand at NFTs. The World's Top Galleries Are a Bit More Skeptical. *Artnet News*, May 7. Available online: <https://news.artnet.com/market/galleries-give-green-light-nfts-artists-real-winners-1956422> (accessed on 1 July 2024).
- Kolko, Beth, Lisa Nakamura, and Gilbert Rodman. 2000. *Race in Cyberspace*, 1st ed. New York: Routledge.
- Lastowka, F. Gregory, and Dan Hunter. 2004. The Laws of Virtual Worlds. *California Law Review* 92. [CrossRef]
- Lesser, Casey. 2024. The Women Artists Market Report 2024. *Artsy*, March 7. Available online: <https://www.artsy.net/article/artsy-editorial-women-artists-market-report-2024> (accessed on 1 July 2024).
- Leuzzi, Laura. 2023. Representation and Identity in Contemporary Women Artists' Video. *Arts* 12: 42. [CrossRef]
- Lindner, Jannik. 2024. Diversity in Art Statistics. *WorldMetrics*, June 17. Available online: <https://worldmetrics.org/diversity-in-art-statistics/> (accessed on 1 July 2024).
- Lindrea, Brayden. 2022. 60 Million NFTs Could Be Minted in a Single Transaction—Starkware Co-Founder. *Cointelegraph*, August 8. Available online: <https://cointelegraph.com/news/60-million-nfts-could-be-minted-in-a-single-transaction-starkware-founder> (accessed on 1 July 2024).
- Maidan, Laila. 2022. A 31-year-old whose NFTs earned over \$3 million went from being a high-rise window washer to one of the highest-selling female artists. She breaks down the inspiration behind her work, her journey, and the tools she used to design her pieces. *Business Insider*, January 18. Available online: <https://www.businessinsider.com/how-to-make-sell-nfts-artist-earned-millions-explains-process-2022-1> (accessed on 1 July 2024).
- Murtazashvili, Iliia, Jennifer Brick Murtazashvili, Martin B. H. Weiss, and Michael J. Madison. 2022. Blockchain Networks as Knowledge Commons. *International Journal of the Commons* 16: 108–19. Available online: <https://www.jstor.org/stable/48712057> (accessed on 1 July 2024). [CrossRef]
- Mutual Art. 2022. *Itzel Yard: Biography*. London: Mutual Art.
- Naraharisetty, Rohitha. 2022. Blockchain Ideology Is Rooted in Exclusion. A Feminist Lens Shows Why. *The Swaddle*, April 27. Available online: <https://theswaddle.com/blockchain-ideology-is-rooted-in-exclusion-a-feminist-lens-shows-why/> (accessed on 1 July 2024).
- Nouraie-Simone, Fereshteh. 2014. Wings of Freedom: Iranian Women, Identity, and Cyberspace. Essay. In *On Shifting Ground: Muslim Women in the Global Era*. New York: The Feminist Press, pp. 61–62. Available online: <https://www.mutualart.com/Artist/Itzel-Yard/C4C6E85F5E91FC6D/Biography> (accessed on 1 July 2024).
- O'Dwyer, Rachel. 2018. A Celestial Cyberdimension: Art Tokens and the Artwork as Derivative. *Circa Art Magazine*, December 3, 1–18. Available online: <https://www.jstor.org/stable/27029628> (accessed on 1 July 2024).
- Qui, Jiahui. 2021. What Are NFTs, and What Is Their Environmental Impact? *Earth.org*. April 20. Available online: https://earth.org/nfts-environmental-impact/?gclid=Cj0KCQjw8eOLBhC1ARIsAOzx5cF_IYNPxyHY_91bgRN-hsK9ek6_y2D_XA3Ex_rmlnzwbSFupGXCTbQaAIDjEALw_wcB (accessed on 1 July 2024).
- Riefe, Jordan. 2021. The LA Art Show Returns: NFTs, Tradition, & the Impacts of COVID. *Art and Object*, July 30. Available online: <https://www.artandobject.com/news/la-art-show-returns-nfts-tradition-impacts-covid> (accessed on 1 July 2024).
- Schneps, Oriana. 2022. Anonymity on the NFT Blockchain: Friend or Foe? *Medium*, March 13. Available online: <https://blog.cryptostars.is/anonymity-on-the-nft-blockchain-friend-or-foe-69d5146bcfb6> (accessed on 1 July 2024).
- School of Visual Arts. 2021. Kenny Schachter on NFTs in the Art World. [Video]. *YouTube*, April 1. Available online: <https://www.youtube.com/watch?v=3jNvBSBy2Ws&t=4450s> (accessed on 1 July 2024).
- Scott, Izabella. 2016. A Brief History of Cyberfeminism. *Artsy*, October 13. Available online: <https://www.artsy.net/article/artsy-editorial-how-the-cyberfeminists-worked-to-liberate-women-through-the-internet> (accessed on 1 July 2024).
- Shaw, Amy. 2022. 'Men Still Own the World, and It's Not Cute': NFT Projects and Daos Lead the Way during Women's History Month. *The Art Newspaper—International Art News and Events*, March 8. Available online: <https://www.theartnewspaper.com/2022/03/08/men-still-own-the-world-and-its-not-cute-nft-projects-and-daos-lead-the-way-during-womens-history-month> (accessed on 1 July 2024).
- Shrivastava, Rashi. 2021. Lost In the Metaverse: Meet Itzel Yard AKA IX Shells, The Highest-Selling NFT Artist. *Forbes*, June 18. Available online: <https://www.forbes.com/sites/rashishrivastava/2021/06/18/lost-in-the-metaverse-meet-itzel-yard-aka-ix-shells-the-highest-selling-female-nft-artist/?sh=6afb21a4a2d8> (accessed on 1 July 2024).
- Statista. 2024. NFT Statistics Revealed: Painting the Portrait of a Digital Revolution. *DoIt Software*, January 21. Available online: <https://doit.software/blog/nft-statistics#screen1> (accessed on 1 July 2024).
- Tabuchi, Hiroko. 2021. NFTs Are Shaking up the Art World. They May Be Warming the Planet, Too. *The New York Times*, April 13. Available online: <https://www.nytimes.com/2021/04/13/climate/nft-climate-change.html> (accessed on 1 July 2024).
- Thaddeus-Johns, Josie. 2022. Women and Nonbinary Artists Are Breaking New Ground Through Generative Art NFTs. *Artsy*, March 23. Available online: <https://www.artsy.net/article/artsy-editorial-women-nonbinary-artists-breaking-new-ground-generative-art-nfts> (accessed on 1 July 2024).
- Wackerow, Paul. 2024. Proof-Of-Stake (PoS). *Ethereum.org*, March 29. Available online: <https://ethereum.org/en/developers/docs/consensus-mechanisms/poS/> (accessed on 1 July 2024).

- Whiddington, Richard. 2023. Sotheby's Has Launched a Secondary Marketplace for NFTS, Allowing Artists to Sell Digital Works Directly to Collectors. *Artnet News*, May 4. Available online: <https://news.artnet.com/market/sothebys-secondary-marketplace-2294615> (accessed on 1 July 2024).
- Whitaker, Amy. 2019. Art and Blockchain: A Primer, History, and Taxonomy of Blockchain Use Cases in the Arts. *A Journal of Entrepreneurship in the Arts* 8: 21–46. [CrossRef]
- Whitaker, Amy, and Nora Burnett Abrams. 2023. *The Story of Nfts: Artists, Technology, and Democracy*, 1st ed. New York: Rizzoli Electa.
- Wilding, Faith. 1998. *Where Is the Feminism in Cyberfeminsim?* 1st ed. London: N. Paradoxa, vol. 2, pp. 7–9.

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