Artificial intelligence, racialization, and art resistance.*

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[ABSTRACT]

Contemporary culture is shaped by information technology, in particular, artificial inte-lligence applications. One of the goals of this paper is to analyze how artistic practices could use machine learning algorithms as racial resistance. In addition, to remove from the black box how these applications work by relating the technical process that artists face. It will analyze the aesthetic and narrative perception around artificial intelligence, racism in the creation of data sets to train these algorithms and the possibilities that artificial intelligence opens to rethink concepts such as intelligence and imagination. This research is framed from the posthumanist subjectivity that uses critical imagina-tion to question the classic and Eurocentric definition of human as a measure of what surrounds us. Finally, I will describe the work of the contemporary artist Linda Dounia and her interest in incorporating her experience as a Senegalese woman in the training of Generative Adversarial Networks models to reflect on her identity.

Key words: Artificial Intelligence, Critical Imagination, Generative art, Afrofuturism.

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Inteligencia artificial, racialización y resistencia a través del arte

Inteligência artificial, racialização e resistência da arte

[RESUMEN]

La cultura contemporánea está moldeada por las tecnologías de la información y, en particular, por las aplicaciones de la inteligencia artificial. Uno de los objetivos de este trabajo es analizar cómo las prácticas artísticas podrían utilizar los algoritmos de aprendizaje automático como resistencia racial. Además, busca sacar de la "caja negra" cómo funcionan estas aplicaciones relatando el proceso técnico al que se enfrentan los artistas. Se analizará la percepción estética y narrativa en torno a la inteligencia artificial, el racismo en la creación de conjuntos de datos para entrenar estos algoritmos y las posibilidades que abre la inteligencia artificial para repensar conceptos como inteligencia e imaginación. Esta investigación se enmarca desde la subjetividad posthumanista que utiliza la imaginación crítica para cuestionar la definición clásica y eurocéntrica de lo humano como medida de lo que nos rodea. Por último, describiré el trabajo de la artista contemporánea Linda Dounia y su interés por incorporar su experiencia como mujer senegalesa en el entrenamiento de modelos de Redes Generativas Adversariales para reflexionar sobre su identidad.

Palabras clave: Inteligencia artificial, imaginación crítica, arte generativo, afrofuturismo.

[RESUMO]

A cultura contemporânea é moldada pela tecnologia da informação, em particular, pelas aplicações de inteligência artificial. Uno dos objetivos deste artigo é analisar como as práticas artísticas podem usar algoritmos de aprendizado de máquina como formas de resistência racial. Além disso, tirar da caixa preta o funcionamento desses aplicativos, relacionando o processo técnico que os artistas enfrentam. Analisar-se-á a percepção estética e narrativa em torno da inteligência artificial, o racismo na criação de conjuntos de dados para treinar esses algoritmos e as possibilidades que a inteligência artificial abre para repensar conceitos como inteligência e imaginação. Esta pesquisa enquadra-se a partir da subjetividade pós-humanista que utiliza a imaginação crítica para questionar a definição clássica e eurocêntrica do humano como medida do que nos rodeia. Por fim, descreverei o trabalho da artista contemporânea Linda Dounia e o seu interesse em incorporar a sua experiência como mulher senegalesa na formação de modelos de Redes Adversariais Generativas para refletir sobre a sua identidade.

Palavras-chave: Inteligência Artificial, Imaginação Crítica, Arte Gerativa, Afrofuturismo.

INTRODUCTION

> When you look up the internet for images for search terms such as 'artificial intelligence' or 'AI,' you will likely receive a flurry of pictures including robots, humanoids, brains made of silicon, and the 'Creation of Adam'-style imagery showing *man* and machine enjoined in "mutually programming harmony".[1] If anything, the pictures are laden with a strong anthropomorphic aesthetic. However, associating artificial intelligence (AI) with these imaginary is far from what this field really is. Due to the fast popularization and increasing accessibility to AI algorithms, it has become a trending topic not only in academic or specialized spaces, but also as part of popular culture. Daily an incredible number of news and social media content give rise to a fictional scenery where AI is a non-human being that is going to subdue or extinct humanity.

As it was science fiction portraying Strong AI characters (Brauner et al. 2023, 2), the narrative that acknowledges the drawbacks of AI has been reduced to the warning that someday it could make humans disappear; in other words, existential risk. According to a study of AI risk perception that analyzed Tweets[2] from 2007 to 2018, around 88% of the threats were linked to the end of humanity or the dominance of AI over humans. Second, the study revealed the significance of experts in creating or sharing messages that increase existential risk perception. Finally, the study concluded that Tweets echoing existential risk were based on counterfactual scenarios (Neri et al. 2020, 671).

Before delving further, I am going to establish some key definitions for a clearer understanding. Firstly, it is important to remember that artificial intelligence is not synonymous with humanoid robots. However, AI can serve as a component within the broader framework of a robot. The field that deals with the utilization of computer systems to store and manipulate data is known as information technology. With the rapid advancement of computer processing power, subfields within computer science, such as artificial intelligence, have had the potential for a notable expansion. Artificial intelligence contains a wide array of areas, and one of these branches is machine learning, which, as Meredith Broussard aptly describes, is:

> a subfield of AI that is currently in vogue, along with its own subfields, deep learning, and neural networks. However, these names can be misleading, as they might suggest that there is a human-like brain inside the computer, which is not the case. Machine learning essentially entails computational statistics. Neural networks derive their name from the neural processes in the human brain, but they do not replicate brain functions. In deep learning, the computer does not 'learn' in the way organic beings do; it essentially identifies patterns within data. (2023, 12)

Nowadays, several headlines of the most influential worldwide press combine *human extinction* with *experts warn.*[3] The ambiguous knowledge and biased perception about the benefits and harms of AI applications influence people's experiences and decision-making process, then it is

vital to contribute to critical thinking about this technology. To do so, some of the questions that motivate my research are: How do people believe that artificial intelligence exerts power? What are the power relations instances and race biases that developers bring into AI? Who should be discussing, analyzing, and questioning these biases? How could art practice contribute to being critical of AI? The myriad intersections in current art practices require a contemporary perspective where humanities play a crucial role. In the Anthropocene, bridging fields to produce knowledge has become mandatory, mainly to have a broader vision of critical issues and to reflect on the power relationships that have shaped human experiences differently.

For this study, I started by identifying artists whose work intersects the realms of identity and information. Subsequently, I selected those who adopt critical approaches to addressing issues of racialized identity. Another factor considered was the use of information technology[4] in their artworks. As a result, the two cases of study selected were the artist Cecilia Vicuña, who self-identifies as an indigenous eco-feminist woman, and Linda Dounia, who identifies as a black Senegalese woman. It is crucial to emphasize that both of these artists intricately interweave digital and material elements within their creative processes.

End users of AI algorithms should have easy access to information that contributes to developing critical thinking about its usage. In this article, I aim to provide an understanding of how the AI field has perpetuated racial disparities. Additionally, I will explore the potential of art in addressing AI-related racism, examining how female artists have raised questions about the nexus between information and identity. To initiate this exploration, I will examine Cecilia Vicuña's piece titled *Brain Forest Quipu* to set the stage for an analysis of information systems as a form of cultural expression. Following this, I will delve into the artwork of Linda Dounia, who explores the capacity of AI algorithms to reflect on self-representation. Dounia employs metaphors to unlock the aesthetic and narrative possibilities of elements that embody her subjectivity as an Afrikaan woman. Both artists delve into their subjectivity to ponder the role of information in shaping how collective identity is portrayed.

In the following sections I will analyze the artwork of Linda Dounia who explores the potential of AI algorithms to reflect on self-representation. Furthermore, she creates metaphors by exploring the aesthetic and narrative potential of elements that represent her subjectivity as an Afrikaan woman. The artist works with Generative Adversarial Networks (GANs) to question the role of technology in systems of inequity and technocapitalism. Illustrated by her recent artworks, she employed AI algorithms to produce images trained by her subjectivity. To show how a dataset and a GANs model could express the artist's subject perspective I will study Dounia's *Behind Glass* and *Practicing Stillness* (2023), *Once upon a Garden* (2022) and *Spannungsbogen* (2022).

ARTIFICIAL INTELLIGENCE AND RACISM

To begin with, it is vital to question the narrative and aesthetics of AI. For instance, not only focusing on future issues, but also on the current planetary effects of IT. Secondly, it is indispensable to question how AI algorithms output replicate social inequity biases and what can be done against it. Currently there are several institutions, researchers and IT companies working in AI ethics, as well as independent groups, activists and creators. In addition, to include humanities' perspective can provide important insight and other methods to question AI biases. On the whole, with the increasing use of AI applications it is mandatory to spotlight biases, lack of information and problems that frame its development. My proposal is to address these issues from the perspective of humanities.

AI applications are commonly perceived as non-human or neutral from the end user's perspective. However, the reality is quite the opposite; numerous instances demonstrate its role

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in perpetuating power structures and profoundly shaping the human experience. It is crucial to acknowledge that human experiences are not uniform, and persistent inequalities, particularly affecting marginalized racial and ethnic groups, have been exacerbated by various power dynamics. Knowledge production is an example of a power system. It is through the application of scientific knowledge that novel technologies have been conceived and manufactured. This relationship, however, is not unidirectional; the development of IT has also contributed significantly to knowledge production and accessibility. In essence, knowledge production is attached to subjectivity. In other words, as Haraway notes, "Social constructionists make clear that official ideologies about objectivity and scientific method are particularly bad guides to how scientific knowledge is actually made." (Haraway 1988, 576) Notably, the IT sector has predominantly flourished in the Global North, specifically in countries historically associated with racist, colonialist, and imperialist actions. For instance, some of the most influential companies responsible for developing AI algorithms have headquarters in the United States, Canada, and Western Europe.

The persistent inequalities of marginalized racial and ethnic groups have been exacerbated by several schemes of power. By problematizing information as a capital, people could contribute to anti-capitalist and anti-racist practices. Neda Atanasoski and Kalindi Vora assert that "technoliberalism is the political alibi of present-day racial capitalism that posits humanity as an aspirational figuration in a relation to technological transformation, obscuring the uneven racial and gendered relations of labor, power, and social relations that underlie the contemporary conditions of capitalist production." (2019, 4) Furthermore, they articulate the influence of historical racial and gender logic on the development of technological objects, thereby shaping our understanding of technological innovation. As a consequence, overgeneralization segregates and ignores some human experiences. Therefore, engineering imaginaries are highly composed of biased perspectives of human experience. Thus, it is mandatory to increase diverse perspectives in the AI field to reflect deeply on the consequences of its development.

Precisely, this situation makes relevant the aim of questioning how artificial intelligence is affecting the human experience of those who historically have been perceived as *other*. The relationship between race and IT development has been explored to question the fairness and sustainability of AI and robot production. Indeed, researchers have found that several machine learning algorithms perpetuate racial disparities. Due to the lack of fair datasets to train AI algorithms, some application outcomes reinforce biased stereotypes. For instance, in 2020 Automated Speech Recognition systems developed by companies such as Amazon, Apple, Google, IBM, and Microsoft presented a higher error rate for black speakers versus white speakers (Koenecke et al. 2020, 7684). Another AI application that shows the pernicious consequences of racial bias are algorithms that could classify if a defendant waiting for trial could be a risk to public safety, whereas black defendants have more probability of being wrongly classified as high risk (Corbett-Davies et al. 2017, 7).

To develop critical questions about AI ethics it is crucial to incorporate subjectivity into the analysis of social disparities. This is particularly significant when questioning the process of constructing identity through AI use in artistic practice, as it can actively contribute to the resistance against social inequalities, such as racism. To delve into the complex concept of identity, I will start by dissecting the definition of "human," a construct that has evolved in response to varying temporal, contextual, and purposive factors. For instance, the Classical definition of "human" is centered around the philosophical notion of "man," inherited by philosophers such as Protagoras. Later, during the Italian Renaissance, Leonardo da Vinci portrayed "man" as a universal archetype in his famous Vitruvian Man drawing, an emblematic representation of humanism (Braidotti 2018, 13). Furthermore, this Eurocentric definition of "human" was disseminated and kept as a societal archetype, primarily through the influence of colonialist agendas. Consequently, as a result of this dissemination, "Humanism positioned only select individuals at the core of the universe, while marginalizing 'the woman,' 'the subaltern,' and 'the non-European' even more harshly than 'the animal'." (Bourke 2011, 3)

As a rejection of humanistic universality, I will use posthumanism's perspective as a lens to question identity, subjectivity, and its expression in post-contemporary art practice. Moreover, I will use the definition of posthumanism proposed by Rosi Braidotti as a frame to "help us re-think the basic tenets of our interaction with both human and non-human agents on a planetary scale." Furthermore, Braidotti uses the concept of posthuman subjectivity as a medium to propose new subject schemes. The author presents "[...] the posthuman predicament as an opportunity to empower the pursuit of alternative schemes of thought, knowledge, and self-representation. The posthuman condition urges us to think critically and creatively about who and what we are actually in the process of becoming." (Braidotti 2018, 12) What I found interesting about this definition of posthumanism is its focus on knowledge and self-representation embodied in posthumanist subjectivity. One of my goals is to deepen the posthumanist reflection on information and knowledge production and how it has enhanced relations of power in IT.

INFORMATION AND POSTHUMAN SUBJECTIVITY

The interconnected concepts of data, information, and knowledge represent different stages of understanding. In this case, all of them are trying to provide an output for the request of assigning symbolical representation to phenomena. To begin with, I will employ the definition of data as giving a symbolic value to a qualitative or quantitative feature that can be observed or measured. In other words, if *it* is observable or measurable, then *it* has the potential to exist in the IT world. Specifically, that potential to exist in this field describes the promise of existing to address clear-cut challenges and having the capability to act in the IT field.

Secondly, information is an organized set of data that comes from a specific context and could tell a story. Therefore, information displays narrative attributes that can be studied from diverse frames of reference. Thus, information is part of a cognitive assemblage to understand a concrete or abstract concept, and this assimilation culminates in knowledge acquisition. Moreover, creating tools that help us to make informed decisions is an age-old exercise of knowledge. Historically, humans have developed technologies that help to obtain information from data. For instance, the khipus were a system made by the Incas to register information related to the administration of their empire; it continued later during the colonial and republic periods (Curatola 2013, 119-120). Furthermore, the khipus not only served as a repository for data such as inventories, demographic statistics, rituals, and tributes but also contained historical facts, biographies, and even poetry (Hayland 2023, 139).

While certain structural details of khipus could exhibit variations across different communities, periods, and locations, they generally collect data using threads derived from animals or plants. The central core holds together the dangled ropes that contain information. Incas and other inhabitants of the Andean region employed this knot system to document data and to represent important information for governance. Notably, these khipus featured diverse color patterns, fibers, and ply directions, sometimes accompanied by pendants, as well as kaytes that functioned as reading instructions of the khipu encoded information (Hayland 2020, 141). The complexity of this system and its relevance for Andean societies are great examples of how technology development has been employed to convey information. In this case, the extraction of fibers and its use as a symbolic representation built shareable knowledge that set common ground for culture and politics. Furthermore, it served as tangible evidence of collective identity and subjective perspective. In essence, the output information stood as knowledge, thanks to cognitive processes, and played a vital role in the Inca's decision-making process.

Undoubtedly, knowledge is framed in context, it is a manifestation of inherited norms with systemic dynamics. Knowledge can be interpreted as a cognitive assemblage, as Katherine Hayles wrote:

> In particular, a cognitive assemblage emphasizes the flow of information through a system and the choices and decisions that create, modify, and interpret the flow. While a cognitive assemblage may include material agents and forces (and almost always does so), it is the cognizers within the assemblage that enlist these affordances and direct their powers to act in complex situations. (2017,115)

To integrate posthumanist subjectivity in the analysis of the khipus in the construction of society and identity, I will briefly comment on Chilean Indigenous artist Cecilia Vicuñas's artworks. According to the exhibition guide made by TATE gallery for the Hyundai Commision 2022, she uses this system to reflect on the interconnections between ancient Andean traditions and contemporary culture. In the TATE film *Cecilia Vicuña – 'Your Rage is Your Gold',* the artist explained:

> I suppose when I met the quipu I was flabbergasted at the notion that this incredible system existed and it had been taken away from us. Erased from our cultural memory. A knot is a gathering of energy and if you extend that to the history of five thousand years of quipu making, everybody who has ever been connected to the quipu is connected to a field of knowledge, a field of love and understanding. (2023)[5]

In 2022 the eco-feminist artist exhibited the sculpture *Brain Forest Quipu*, a hanging 27-meter khipu, a multi-media installation that enacts dialogue between sound and video, such as short films and music from other artists and her voice, with "different materials including found objects, unspun wool, plant fibres, rope, and cardboard."[6,7] Moreover, the sound is an output of a system that senses the movement in the space, which means that it was the audience movement that activated the 'Sound Quipu'. The artist wanted to address the consequences of climate change and the hostility against Andean Indigenous communities. Additionally, the gallery describes her art practice as "[...] an opportunity to create a space for new voices and forms of knowledge to be heard and understood, as we take responsibility for our part in the destruction."[8] Also, they describe the knots of Vicuña's khipu as a representation of body entanglement, territory, and nature, as well as "the hive-mind of technology that connects us with each other, while isolating us in new and often uncertain ways."[9] In short, Vicuña explored khipus as a platform to reflect on the ancestral knowledge that she inherited from her identity as an Indigenous mestizo artist. In addition, she uses this system to contribute to the global reflection on climate change and her insight as an eco-feminist creator.

Technology and data have always held hands. A system made with fiber knots is technology, as well as machine learning. The increase in the capacity to store and operate data is directly proportional to the growth of the computational force of the machines. Since computers are powerful enough to do operations with gigantic datasets, the capacity to predict, classify, and generate new information is higher and more manageable than ever before. With the increasing use of AI, the question of how data management, information communication, and knowledge production shape our experience as humans must be part of the discussion. The evolution of the science field and culture demands questioning earlier certainties related to human identity (Bourke 2011, 19). Characteristics such as intelligence and creativity are mainly associated with being human, and both have been vital for the growth of the IT field.

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CRITICAL IMAGINATION AND AI ART

Andrea Lavazza and Mirko Farina claim that

> [...] the problem of artificial intelligence is only that of making a machine act in ways that would be called intelligent if a human being behaved in the same way. Thus, there is no issue of comparison between human intelligence and machine intelligence. The only relevant issue is to perform a task successfully, such that the result is as good or better than human intelligence would be able to achieve. (2023, 843)

According to the scholar Ulysse Carrière, one reaction to the AI evolution is the necessity to reconceptualize intelligence and creativity. During the XXXV Coloquio Internacional *Imaginación Crítica,* Carrière delved into the ties between reason, AI, and capitalism. Through her conceptualization of reasoning as non-biological and outside the human, she proposes perspectives of imagination, intelligence, technology, and culture. Moreover, this framework prompts a reevaluation of reason, challenging Kantian notions by incorporating tensions from the AI panorama. She argues that AI allows us to think about reason outside the subject, thereby dismantling the Cartesian Subject and prompting an exploration of how definitions of reasoning have been constructed (2023).

In the comparative analysis of AI and human intelligence, Carrière characterized AI as an automated binary process, reliant on an input to generate an output. To put it differently, AI requires data to produce any response. On the other hand, Carrière explained that human imagination is not determined by the data from past experiences, within the subject imagination capability, human reasoning creates something that did not exist before. Subsequently, the philosopher further developed her argument by drawing upon Kantian notions of imagination, thereby distinguishing between two distinct forms: the reproductive and the productive. Then, the reproductive imagination is entwined with memory and identity, giving rise to reconsider the essence of the self and the query of "who am I."

Secondly, productive imagination creates representations that give rise to sensitive experiences. Carrière argued that, since AI operates as an automated process, it lacks the potential for emancipatory thought, while it is *imagination* that holds the power to liberate. Therefore, Carrière describes art practice as an instance of critical imagination, a form of sensitive reasoning that can provide reflection and knowledge. Thus, I employed this conceptual framework to understand how artists might articulate critical imagination while collaborating with AI. In essence, artists working with AI algorithms can utilize the Kantian categorization of imagination to engage in critical thought through sensitive reasoning, for instance, addressing questions regarding identity and subjectivity. To sum up, the artist's productive imagination can envision what has not been reproduced by AI algorithms, while the reproductive imagination reflects upon what AI has reproduced.

The urgency of employing critical imagination to dissect the role of AI in contemporary society is underscored by the fact that we inhabit an era defined by the cognitive-cultural economy, where the accumulation of data and the production of information is capital. Therefore, the information mediated by the power of dominant IT entities tends to exclude perspectives, erasing the subjectivity of marginalized voices, the voice of the otherness. Besides, the

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prevailing narrative surrounding AI algorithms keeps this technology mysterious or incomprehensible for a significant number of individuals. To mitigate the irrational extinction risk beliefs and provide adequate evaluation of the benefits and potential drawbacks of this technology it is necessary to increase literacy and promote access to knowledge related to AI (Brauner et al. 2023, 8). Furthermore, efforts towards expanding AI literacy hold the potential to build up a more constructive and well-informed public debate on this technology.

In the light of arts, creators can explore the complexities of designing and using AI algorithms. Questioning the social imaginary about AI, appropriating AI applications for art practices, and intervening in the algorithms could support the efforts to boost critical thinking and education in dealing with the burden of AI. Due to the call to reexamine the mythos about AI as a more-than-human intelligence, it is crucial to reflect on biases in AI development. In the video *AI Art: How artists are using and confronting machine learning | HOW TO SEE LIKE A MACHINE,* published by MOMA, Kate Crawford talks about the wrong idea about the neutrality and objectivity of AI systems: "there is this assumption that AI systems are somehow highly scientifically objective that they are presenting a view on the world that is somehow unmediated. But of course the opposite is true" (2023). Moreover, in her book *Atlas of AI*, she puts on center stage the materiality and planetary effects of this IT development and its relation with disparity. Such as the supply chains tangled in its production and how it "[...]requires looking for patterns in a global sweep, a sensitivity to the ways in which the histories and specific harms are different from place to place and yet are deeply interconnected by the multiple forces of extraction." (Crawford 2021, 38)

Artists could address underlying principles of AI production as an instance of their reproductive imagination expressed through machine learning, neural networks, or data processing. Also creating representations that shed light on the cultural connotations of AI, for example, in terms of privacy rights, social bias, and human-computer interaction (HCI). In this way, art practice becomes the way to use critical imagination to expand the appraisement of AI capabilities, limitations, and present and future implications in the human experience. For example, to represent the experience of racialized communities that have been victims of racist representations in the datasets training AI applications. An antiracist practice is to apply critical imagination to suggest unexplored forms to represent those who have been missed or wrongly stereotyped. I consider this an instance of "response-ability", a concept defined by Haraway as a way to stay with the trouble in an entangled world, "[...] passing patterns back and forth, giving and receiving, patterning, holding the unasked-for pattern in one's hands, response-ability; that is core to what I mean by staying with the trouble in serious multispecies worlds" (Haraway 2016, 12). In other words, to actively engage with contemporary culture, one must possess a sense of response-ability. Today, AI artists are working with it not only to appropriate a tool but also to propose critical perspectives about it.

Artists and creators have discovered in AI not only a technique to appropriate but also a set of issues to address through their critical imagination. The artist Linda Dounia is a digital Senegalese artist and designer working with Generative Adversarial Networks (GANs) to question the role of technology in systems of inequity and techno-capitalism. In order to gain a deeper insight into how she problematizes AI through critical imagination, it is helpful to have a general understanding of the employed tools. GANs are machine learning algorithms, which means that in each iteration, the model will acquire more information to learn. In other words, the AI model generates an output based on the provided data, which is subsequently evaluated. Depending on the results, the model will make necessary adjustments to minimize errors in its following iterations. Thanks to the evaluation and the accumulation of information, the model will make better decisions to accomplish the programmed task. GANs use deep learning architectures to aid the models to compete with each other. The generator model produces an image that the discriminator classifies as true or fake. Then, if the generator model cannot beat the discriminator, it loses (Shahriar 2022, 2). The generator and the discriminator are trained

with a relevant dataset to the model's success. This dataset is created by humans, thereby reflecting the subjective viewpoints and biases of those individuals involved in this endeavor.

Creating a dataset is similar to creating a universe. Therefore, it could be considered an instance of productive imagination. Hence, what the artist decides to include in this archive has a strong symbolic meaning as much as what she excludes. In Dounia's artwork, through her methodology she bridges materiality and immateriality by using digitized fabrics patterns, herbarium pages or images of her own acrylics to build up the dataset that will work as an input for the GAN models she uses. Her work comes from reproductive imagination as she includes subjectivity and reflects on her identity and memory. To show how a dataset could express the subjective perspective of an artist, I will describe and analyze some of the recent works of Dounia: *Liminal Space* (2023), *Once Upon a Garden* (2022), and *Spannungsbogen* (2022). These pieces represent how generative art practice blends thoughts about her identity in the posthuman frame, her imagination, and her critical reflection on AI. Moreover, in an interview for Whitewall Magazine, the artist shared some of the vital questions that motivate her work:

> When I stepped into the NFT world, it was clear to me that it didn't exist in a vacuum and was actually thriving in response the how the traditional art world operated. I became curious with art from a systemic lens. How did it come to be as we know it? What were its canons? What conversations were currently happening in response to its challenges? It helps that I get to experience some of the answers to these questions firsthand.[10]

To begin with, *Once Upon a Garden* (Dounia, 2022) is a digital garden of 28 flowers made by the artist through AI applications. She trained the AI model with images of some West African indigenous flora, particularly samples from the Sahel region, a place profoundly affected by climate change and the loss of several species (Bognini et al. 2023, 18). During the production process, the artist had to source herbarium pages dating back to the colonial era due to the scarcity of images of extinct species, later incorporating these herbarium images to augment the dataset. Also, Dounia used DALL.E to generate pictures of extinct species. As published in the virtual catalog of her exhibition in the international art fair ART X LAGOS, the fundamental questions of the artist are the following: "what has been the impact of contemplating nature, particularly flowers, in Africa? Where does the contemplation of nature fit in the broader context of industrialized societies, given the correlation between development and hedonism? Can our contemplation of art restore our collective ability to introspect on our sense of responsibility towards preserving it?".

The artist explained how the dataset was associated with her memory, the territory her family inhabits, and her subjective experience:

> [...] during this process, it downed on me that a majority of the plants I used in this project were completely new to me and that, in general, I grew up seeing less than half of the plant species my grandmother grew up seeing. I also realized that while some of the extinct plant species I worked with survive in their digital embodiment on the internet, the ones that weren't recorded and digitized are entirely lost to both human and digital consciousness.[11]

Moreover, Dounia shared that the flora selected for the training process not only were extinct breeds, but also endangered species listed by the IUCN (International Union for Conservation of Nature). The artist established a correlation between materiality and digitality. To train the AI algorithm, she transformed the physical territory and flora into the dataset needed to create her digital garden. Furthermore, her work delves into the evolution of human experiences over

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time. She carefully captured and represented the memory of past landscapes, ones irrevocably altered by the forces of climate change. Dounia's critical imagination explored the AI algorithm's potentialities and drawbacks. Then, the output of the model represents a layer of her subjectivity. Simultaneously, through her art practice, she challenged the AI field and the lack of participation of people who suffer the impact of racism and other social disparities. Finally, the output of her model came up with a vision of the future, an afrofuture that portrays "a dystopian projection of a likely outcome of global warming." (Dounia, 2022)

Spannungsbogen (Dounia, 2022) was "[...] meant to be a conversation between artist and machine, a dialectical search for meaning between a thinking mind and a feeling one, and an ode to the quietly brewing resistances within us and throughout the universe"[12] as the artist explained in an interview. This artwork comprises a series of generated animations composed using a GAN. The algorithm's training dataset consisted of 2000 images of the artist's own handmade paintings. These paintings were systematically categorized based on form, color, and texture. Through this process, the artist generated a convergence point between the physical and digital mediums, thereby establishing an aesthetic framework. The resulting images represent a fusion of analog creative production techniques with AI algorithms, preserving the tactile qualities of the original acrylic textures in the digital version. Thus, the materiality behind the AI output is still evident instead of being erased. Dounia trained the algorithm with bright colors that fill the square canvas, juxtaposed with moving organic shapes in white or black. This collection of animations is an instance of critical imagination, where the audience is engaged through a sensitive experience.

In the online group exhibition Liminal Space presented by the Unit London Web 3 Dounia displayed two NFTs artworks, *Behind Glass* and *Practicing Stillness* (2023). Once again, she trained the AI model with her analog production such as acrylic paintings, and charcoal or ink marker drawings. In general, her memory serves as a source for new images; the Unit London Web 3 gallery described her art practice as a feedback loop where the artist "[...] feeds back to past and imagined versions of herself as reflected in each output."[13] In an interview for the gallery, Dounia explained how she brought her experiences as a Senegalese woman into art and how she navigated and perceived the world as part of her practice: "The freedom to tell my story in my own words, to choose my partners, to present and price my work myself was a comfortable starting point as I began to professionalize as an artist. Discrepancies in the visibility and appraisal of works by black women are evident in the traditional art world and the web3, but I can feel the tide slowly turning." Moreover, she describes her work as a loop where joy, trauma or ecstasy coexist, the materiality becomes immaterial, just to be manipulated to be material again.

Integrating AI into her creative process has particular challenges and questions, such as dealing with magnitude, as she related: "Negotiating magnitude is an integral part of my practice now, whether I am physically producing thousands of drawings to feed to a GAN, or sorting through thousands of evidence of the GAN's learning. It's a humbling experience that forces me to remain honest and find comfort in subjectivity."[14] Her subjectivity builds up a path to explore the potentiality of AI to represent otherness stories. Hence, Dounia is contributing to developing alternative possibilities to represent contemporary Senegalese aesthetics.

Dounia also participated in the exhibition *AFROFUTURISM* for the art fair Art Dubai, in the edition FOREVER. FEMALE. FORWARD (2023). According to their catalog, one of the goals of this exhibition is to create an image of Afrofuturism, with a particular focus on the African future. For this exhibition, she presented *Ndiaga Rhythm* (2021) and *Basang Maam* (2023), two video paintings made with a model trained with "the weaving patterns of rabaal fabric, typically used in Senegal for weddings and baptisms. The fabric covers a bride as she leaves her parents' home to join her husband or to cover a mother and her newborn"[15]. As it can be concluded, the artist ties memory and subjectivity. Her art practice interconnects past and present to envision

the future. The motion of the image suggests the gradual changes in cultural identity over time and how the representation of subjectivity finds an aesthetic in the use of repetitive patterns. Moreover, the artist employs fabrics traditionally associated with femininity as a deliberate strategy to include a gendered perspective into Afrofuturism, both as an artistic and cultural movement. However, her attitude is not only adopting symbolic inheritance but also questioning the dominant narrative present in the intersection between race, gender, and technology. Therefore, the use of GANs became a tool to examine the narrative of women's participation in building knowledge and culture. Her decisions put the spotlight on the experiences and culture of African women, expanding the possibilities of AI and transforming her art practice into a resistance scenery.

Quantum, an NFT platform, remarks that her work "is the first large scale AI drop by an African woman in the history of crypto art."[16] To enrich the area of cross-cultural critical imagination, it becomes crucial to broaden access to the creations of African artists. This is precisely why Dounia is also committed to promoting the visibility of African digital artists engaged in Web3. In the curator role, she formed the platform "Cyber Baat", adhering to the decentralized autonomous organization (DAO) framework. This platform provides a space for considering essential questions, such as "who has the privilege of participating in the digital art revolution enabled by the blockchain, and whether the monolithic category of 'African art' has a place in this revolution."[17] Consequently, aesthetic and narrative values can contribute to a global discussion on the relationship between racism and AI. To sum up, Dounia's work contributes to the critical imagination about the construction of identity. In particular, the relevance of her work lies in the goal of reclaiming spaces that have served to perpetuate racism and colonialism.

CONCLUSIONS

Aesthetic and narrative elements have been widely circulated regarding AI, significantly shaping users' perceptions of its advantages and disadvantages. The prevalence of misinformation obstructs the development of critical thinking concerning AI's applications, which is particularly problematic given AI's profound impact on the evolution of culture, politics, and knowledge. AI is an expression of human subjectivity, which means that social biases and inequalities are present throughout the entire lifecycle of these algorithms. However, by being aware of this, it is possible to propose actions that make this field a more ethical one. For example, intervene in the algorithm to give visibility to different human experiences, especially those that have been made invisible. The use of art as a platform for critical imagination around the use of AI derives from questions about subjectivity, the construction of identity, and the meaning of being human.

Creators employing AI not only face a technical challenge to control the tools but also to rethink concepts associated with human intelligence such as reasoning, imagination, and knowledge. AI artists can contribute from their critical imagination to pointing out racism in the IT field. Linda Dounia's works illustrate how creating a dataset to train a machine can be an action of racial resistance, in which she appropriates a practice to give prominence and re-signify aesthetic expressions of her cultural heritage. In particular, the artworks analyzed in this paper blend identity, memory, and AI. She uses GANs to represent her subjective perspective while establishing a network between information and sensitive experience. Raising visibility to the work of artists like Dounia can demystify the use of AI and promote the use of these resources for critical imagination, as well as accentuate the need for accessibility to the literature on AI. The accelerated development of AI and its widespread use requires a humanities approach to develop critical thinking. Future research and artistic works could focus on evaluating how the perception of AI can change when used in the arts. On the other hand, it is vital to collect the processes and results of other artists using these tools to continue to explore how AI can be used in art.

[MAVAE]

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Finally, incorporating AI into artistic practice requires artists to remain cognizant of the potential risks associated with AI, including issues like algorithmic racism. By analyzing artistic practices at the intersection of identity and information through the frameworks of critical imagination and posthumanist subjectivity, we gain insight into how art can serve as a tool for resistance and critique.

[NOTES]

1. The line "mutually programming harmony" is from Richard Brautigan's 1967 poem, All Watched Over by Machines of Loving Grace

2. Messages shared on the X platform, formerly known as Twitter.

3. For example titles such as"A.I. Poses 'Risk of Extinction,' Industry Leaders Warn" (2023) published by New York Times, "Experts are warning AI could lead to human extinction. Are we taking it seriously enough? (2023) published by CNN or "Artificial intelligence could lead to extinction, experts warn" (2023) published by BBC.

4. In this research, IT is not limited to digital-electronic applications. Instead, I assume IT is a conceptual framework enclosing any information system that employs algorithmic processes to transform data into meaningful information.

5. Tate. n.d. "Cecilia Vicuña - 'Your Rage Is Your Gold.'" Tate. Accessed July 10, 2023. https://www.tate.org.uk/art/artists/cecilia-vicuna-21412/cecilia-vicuna-your-rage-is-your-gold.

6. The materials used in the sculpture were collected by Latin American women on the shores of river Thames.

7. Tate. "Hyundai Commission: Cecilia Vicuña Exhibition Guide." Tate. Accessed July 10, 2023. https://www.tate.org.uk/whats-on/tate-modern/cecilia-vicu%C3%B1a/exhibition-guide.

8. Ibid.

9. Ibid.

10. Linda Dounia, "How Linda Dounia Created a Supportive Space for African Digital Artists with Cyber Baat." Interviewed by Eliza Jordan. Accessed July 13, 2023. https://whitewall.art/art/how-linda-dounia-created-a-supportive-space-for-african-digital-artists-with-cyber-baat.

11. Linda Dounia. "Once upon a Garden — Artxlagos." n.d. Accessed November 20, 2023. https://artxlagos.com/once-upon-a-garden.

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13. "Liminal Space." n.d. Unit London. Accessed July 4, 2023. https://unitlondon.com/exhibitions/liminal-space-online-group-exhibition/.

14. Ibid.

15. "AFROFUTOURISM: FOREVER. FEMALE. FORWARD." n.d. AFROFUTOURISM. Accessed November 20, 2023. https://www.afrofutourism.com/foreverfemaleforward.

16. "Linda Dounia." n.d. Quantum Art. Accessed November 20, 2023. https://quantum.art/artist/linda-dounia.

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