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AI in the posthuman art classroom

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Article abstract

This article explores the use of AI-generated art as a way to educate visual art students and teachers about ethical concerns related to artificial intelligence. For example, gender and racial bias in the data sets that artificial intelligence trains on remains a significant concern. Art educators can proactively address these issues by supporting their students in understanding the ethical issues surrounding AI that will continue to arise. We advocate for a posthuman approach to AI, treating it not as a mere tool but as a collaborator in the creative process. Through an examination of AI-artists who critique AI, we show that AI-artmaking has the potential to be a valuable addition to the art classroom, allowing both students and teachers to explore and grapple with the ethical challenges associated with AI.

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AI in the posthuman art classroom

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This article explores the use of AI-generated art as a way to educate visual art students and teachers about ethical concerns related to artificial intelligence. For example, gender and racial bias in the data sets that artificial intelligence trains on remains a significant concern. Art educators can proactively address these issues by supporting their students in understanding the ethical issues surrounding AI that will continue to arise. We advocate for a posthuman approach to AI, treating it not as a mere tool but as a collaborator in the creative process. Through an examination of AI-artists who critique AI, we show that AI-artmaking has the potential to be a valuable addition to the art classroom, allowing both students and teachers to explore and grapple with the ethical challenges associated with AI.

"Justice requires that we prevent AI from being used by those with power to increase their absolute level of control, particularly where it would automate long-standing patterns of injustice such as racial profiling in law enforcement, gender bias in hiring and overpolicing of immigrant communities."
(Algorithmic Justice League, n.d.)

The explosion of ethical issues brought about by the intersection of AI innovation, weak government oversight, and unfettered capitalism poses a significant challenge for art education. Unsurprisingly, educational institutions, school districts and individual teachers struggle to keep up with the rapid pace of AI deployment and the host of new ethical questions being raised. For example, gender and racial bias in the data sets that AI trains on remains a significant concern. Art educators can proactively address these issues by supporting their students in understanding the ethical concerns surrounding AI that will continue to arise. Through a posthuman lens this article presents the work of AI artists who critique the technoethics of AI through their collaborations *with* AI: Joy Buolamwini (n.d.), and Kate Crawford and Trevor Paglen (2019). We identify these artists to show creative collaborative approaches with AI, and relevant technoethical issues exposed through their work. We note that the rapid onset of AI-generated programs will continue to unsettle the ways art educators develop research and consider their pedagogical approaches. The implications for art education are discussed as a means of addressing these complex challenges.

Artificial Intelligence

Artificial intelligence (AI) refers to any computing system that can perform a variety of functions associated with human intelligence such as

responding in a conversation or driving a car. AI is driven by the autonomous decision-making capabilities of machine learning (ML) such as neural networks trained on vast datasets or intelligent agents exploring and exploiting their environment via reinforcement learning. Reckoning with AI as part of an ongoing evolutionary extension and co-constitution of our creative and cognitive selves involves building a new understanding of ourselves as human-AI hybrid beings or posthumans.

Art Education and the Digital

The use of the digital in any of its myriad forms in the art classroom comes with both benefits and hindrances. As digital reproduction of art has developed it has become clear that the potential for implementing creative activities and/or simply creating digital artwork instead of physical pieces has created a viewing platform that can enhance art education. As Bayne and Ross (2009) note, the digital space can afford "[i]nstantaneous access, customizability and shareability of material, social connection via an always-on, highly-mediated 'web' of contacts, and the ability to forge complex connections between domains of knowledge across multiple, volatile media" (p. 116). Furthermore, the continuing endorsement of art education to include out-of-school learning in the classroom makes good pedagogical sense: given that most students have active lives online, art educators cannot ignore or ban the potential that the online bank of ideas and images provides as inspiration (Castro, 2012; Duncum, 2018). Art education has a strong tradition of investigating the effects of technology on creative processes, and the opportunities from within digital spaces are plentiful and relevant to the interests of today's students (Black & Browning, 2011; Taylor & Carpenter, 2007).

However, a host of ethical issues require attention, including algorithmic racial and gender bias, deep fakes, loss of privacy, ubiquitous surveillance, technological unemployment, and even robot rights. In education specifically, data privacy, bias and transparency in the use of AI are some examples of concern (Adams et al., 2022; Holmes & Tuomi, 2022). For example, AI-based search algorithms can produce biased results (Noble, 2018); thus, it is important for teachers and their students to be cognisant of automatic but hidden activity in AI technologies (Selwyn

et al., 2023). Within art education, the digital, described variously as new media art, media art, digital art, computer art and most recently AI art has triggered ethical concerns over decades. Art education scholars have identified several ethical issues related to technology in art education, including the need for greater equity in access (Francis, 1997), and representation of diverse cultures and genders in technology (Morbey, 1997; Suarez, 2000). More recently, exposure to social media has created the need for caution about data-harvesting that jeopardizes student privacy, and monetization of students whose posts become fodder for large aggregations of information then sold to advertisers (Duncum, 2018). Also, there is a strong need for greater critical awareness of the ways in which social media and AI shape behavior and learning (Patton, 2023). This is crucial in order to build contemporary art education curricula that embraces digital literacy. Art and art education are in a unique position to address these issues creatively and to support an ontological shift in education toward a critical posthuman stance as AI continues to gain momentum. To better comprehend the influence of AI in contemporary life, it is important to acknowledge that AI represents a progression of technology that began with our ancestors' use of tools to amplify their abilities (Steigler, 2018). Following this trend, embracing human identities as hybrid human-AI beings, or posthumans may lead to a more nuanced understanding of the self in relation to technology. Additionally, this perspective may offer development of new learning pedagogies in art classrooms that can accommodate the diversity and complexity of posthuman relationships.

Critical Posthumanism

For well over a decade, humanities and social science researchers have explored theoretical stances of multiple scholars under the umbrella of posthumanism. As a philosophical and cultural movement, it challenges the traditional human-centered view of the world and emphasizes the interconnection and interdependence of humans, animals, machines, and the environment (Braidotti, 2019). Critical post-humanism sees human beings as co-constituted with other entities in complex assemblages of entwined human-AI encounters and it calls for a new ethics and politics that can accommodate the diversity and complexity of these relationships.

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In the context of education and AI, critical posthumanism poses both challenges and opportunities. On the one hand, it challenges the anthropocentric assumptions within our educational institutions and raises questions about the role of humans in a world that is increasingly mediated by intelligent machines (Snaza & Weaver, 2015). On the other hand, it offers opportunities to rethink education in more inclusive, ethical, and sustainable ways that reflect the interconnectedness of all life forms and systems.

Key is this recognition of neoliberal humanism that has consistently undergirded public education and has resulted in negative impacts on diversity, equality, and opportunity for all students (Herbrechter, 2023; jagodzinski, 2020; Springgay, et al., 2020). Acknowledging Herbrechter's (2023) suggestion of the need to "unlearn" before an ontological shift from humanism to critical posthumanism develops identifies a starting point for education. The ramifications of such an adjustment include locating entanglements of human-AI associations and co-agencies with respect to AI that may lead to a transformation in thinking about the distribution of agency and how AI-human relations affect institutions, including art education (Braidotti, 2019; Leonard, 2020). However, critical posthumanist frameworks also acknowledge the ways that power structures can inadvertently be reproduced, thus ignoring the multiple populations that still seek to be seen as human, let alone moving to a posthuman subjectivity (Dernikos et al., 2020). As Rosi Braidotti (2019) affirms,

> A focus on posthuman subjectivity entails also addressing issues of inequality, discrimination and exclusion. In order to complete a framework of defining posthuman knowledge, it is important to stress the inhuman(e) and the dehumanized aspects of this predicament, as well as the perpetuation of structural injustices on dispossessed people. (p.114)

The divide between academic writing and the lives of often racialized groups can result in dismissal of ethical inclusive practices, so posthuman research requires a mindful awareness of potential normalized inequities (Dernikos et al., 2020; Zembylas, 2018). Thus, the colonial histories that have been built on humanism and are the basis of institutions such as education require acknowledgement of our privilege as it shapes the research (Shannon & Truman, 2020).

AI Art: Joy Buolamwini, Kate Crawford and Trevor Paglen

Contemporary art reflects multiple avenues for creative AI-human collaboration where new forms of art have emerged, from glitch art (Pente, 2018; Sweeney, 2023), to video performance to virtual reality (Wilkinson, 2022). We focus on AI artists whose work is about ethical issues surrounding AI. Specifically, the work of Joy Buolamwini, Kate Crawford, and Trevor Paglen addresses the issues of data bias and control. Although there are other pressing issues surrounding the ethical use of AI throughout society, these artists are effective examples of critiquing artificial intelligence in creative artistic ways through the exploration of the technology.

It is understandable that the data set upon which the AI trains is vital to the process. It is here that AI artists have successfully critiqued and/or revealed hidden bias within the data.

Joy Buolamwini cleverly raises awareness about this issue through her creative use of AI. She founded a non-profit group called the Algorithmic Justice League to further awareness about gender bias within the data set (Buolamwini, 2019). Her research also created ground-breaking awareness of the ways that AI facial recognition software was unable to recognize all skin colors, particularly darker skinned people (Buolamwini & Gebru, 2019). As a poet and computer scientist, through her performances, videos, and documentaries she educates about AI by using the AI. For example, through documentaries like *Coded Bias*, and within her poetry and other creative media, Buolamwini (n.d.) calls for changes toward greater accountability in AI. As an artist, Buolamwini disseminates her creative messages via social media and websites that are entertaining, informative and accessible. We note Knochel's (2023) point that, "[e]ducators must involve students in understanding the ubiquity of these impacts of algorithmic bias, as they are impossible to avoid, and silence is another form of denial" (p. 110). Introducing the work of Buolamwini into the art classroom can enrich students' understanding of the ways that their social media feeds function, but can also inform about ways that poetry and/or video can be both artistic and a social critique.

In other critical AI-art, Kate Crawford and Trevor Paglen explore the training of AI and the ethical implications of such use. Their project "Training Humans" is an exhibition where a series of photographic prints asks, "where are the boundaries between science, history, politics, prejudice and ideology in artificial intelligence? And who has the power to build and benefit from these systems?" (Crawford & Paglen, 2019-20). Within their research they create hybrid physical and virtual spaces to critique the political and historical developments of AI and the political power structures entwined within the technology (Crawford & Paglen, 2020). In another project, the duo created an app, *Image Roulette*, that labeled images of people, revealing bias within the large data set, using *ImageNet*, one of the largest training datasets for machine learning (Crawford & Paglen, 2019). This highlighted the flaws of misidentification for various racialized groups, revealing the dangers within AI due to the insidious bias within the data set (Crawford and Paglen, 2019; Keats, 2021). As Crawford and Paglen (2019, para 67) warn, "There is much at stake in the architecture and contents of the training sets used in AI. They can promote or discriminate, approve or reject, render visible or invisible, judge or enforce. And so we need to examine them—because they are already used to examine us…". Their research and artistic production stems in part from a quest for equity within a capitalist system that advances alongside AI developments. Additionally, their exhibitions are testaments to long histories of control and power within representation.

Implications for Art Education

"Making artworks and scholarship…serve as a way of living life; occupying the world; giving form to one's experiences, one's curiosities, and one's desires; shifting focus; and calling the world into appearance differently. Making art, teaching alongside it, writing about it, and studying it becomes a way of producing the world." (O'Donoghue, 2021, p. 109)

The view expressed by O'Donoghue touches on the unique possibilities that exist for learners as they explore AI within art education. As an expansion to the traditional materials used in the creation of art, AI can function alongside and with these possible ways of learning about the self, about the world, and about possible futures. Approaching the incorporation of AI technology into the classroom requires a playful imaginative perspective, and students do need time to explore the technology to nurture their creativity (Black et al., 2015). To this we would add that exploration is also needed to nurture students' criticality. By engaging students in critical and playful engagement with AI technologies, they can develop an informed, ethical stance regarding these powerful technologies, and create new knowledge that is arresting and unique. Thus, we echo Graeme Sullivan (2021) on the extensive possibilities within art education when he points out, "[t]he multitude of instrumental ends art education serves, such as the crucial place of art in the politics of voice, the power of artistic pedagogies of change, and the importance of creative and critical practices of collaboration and collectivity" (p. 418).

Much AI art uses a form of AI called a Generative Adversarial Network (GAN). This process, which is done with computational speed, is a form of machine learning whereby two competing architectures—a generator and a discriminator—create and then compare an image to those in a data set (Cetinic & She, 2022). Each time the discriminator calls the generator's image fake, the generator returns to the data set and tries again to create an iteration that more closely aligns. Both architectures are continually improving with respect to the data set that is at the heart of this process (Brownlee, 2019).

Recently, advances in image generation include text-to-image generation whereby a textual prompt input by a human will generate a series of images that the AI gleans from vast data sets. Programs such as *Dall-E, Midjourney, Stable Diffusion*, and *Text2art* are available for free trials and they could completely bypass the user's creation of an image. As more of these programs circulate, we question what exactly is or should art education's future become? Our answer begins with the adage that the generation of artistic problems and solutions reflecting the student's individual interests and perspectives is first and foremost key to a strong art education. That, coupled with opportunities for extensive collaboration with human and non-human entities can expand curriculum to reflect current realities within student life. AI is both a material and a collaborator, and is unique in this regard if viewed through a posthuman lens.

"By engaging students in critical and playful engagement with AI technologies, they can develop an informed, ethical stance regarding these powerful technologies, and create new knowledge that is arresting and unique".

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The introduction of the artists in this article serves as an invitation to add AI-art to the pedagogical conversation in the classroom, linking school art and AI-art experiences. Art produced with AI can be part of students' expression of their ideas and may potentially challenge normative assumptions about AI-human relations. For example, AI can be used to create glitches in social media or interactive art that highlight social issues around the technology itself (Pente, 2018; Sweeney, 2020, 2023). In another example, AI art images can be created and then reworked as mash-ups, digitally or with more traditional art materials as a method of exploring ethical issues. It is important to incorporate discussions about ethics and to use a creative, posthuman collaborative approach to the process of digital and material investigations to enhance students' learning experiences. Significantly, the move toward a posthuman perspective can aid in the preparation of the next generation to endorse more responsible, ethical AI development. Ideas about posthumanism can be taught in conjunction with exposure to AI artists.

Conclusion

Our investigations into AI-art highlights the work of artists incorporating AI to bring attention to ethical concerns related to the technology, such as the negative impacts of algorithmic bias. By using AI to create and engage with such issues, art educators and students can explore the ethical challenges posed by AI from a posthumanist perspective. Including AI in art education can also help students better understand their developing identities in relation to their technologies. As young people increasingly interact with AI applications online, it is important for educators to consider appropriate approaches for teaching within human-AI connections. By treating AI not as a tool but as a collaborator, art educators can foster a deeper understanding of the relationship between humans and technology.

Resources:

The following list is partial and subject to change as AI continues to expand and develop.

AI Artists.org is a comprehensive site where you can access work by AI artists, learn about current technologies and try out tools for your own exploration.
https://aiartists.org/

AICAN (AI Creative Adversarial Network) produces novel pieces within an existing genre's framework.
https://www.aican.io/

Joy Buolamwini website:
https://www.poetofcode.com/

Crawford, K. & Paglen, T.: "Training Humans" exhibition
https://www.fondazioneprada.org/ project/traininghumans/?lang=en#:~: text=%E2%80%9CTraining%20Humans %E2%80%9D%20explores%20two%20 fundamental,label%20and%20use%20 this%20material.

Dall-E 2, Midjourney, Stable Diffusion and text2art are programs that generate images when short segments of text are used as a prompt. Free trials available.
https://openai.com/dall-e-2/
https://text2art.com/
https://www.midjourney.com/ home/?callbackUrl=%2Fapp%2F
https://stablediffusionweb.com/

Trevor Paglen (website) *https://paglen.studio/*

Runway is a program that offers tools for text to art generations and the creation and sophisticated manipulation of video content. Free trial available.
https://runwayml.com/

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