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**CREATIVITY IN ART AND ACADEMIA:
ANALYZING THE EFFECTS OF AI TECHNOLOGY THROUGH THE LENS OF
CHATGPT**

**A thesis submitted to
Regis College
The Honors Program
in partial fulfillment of the requirements
for Graduation with Honors**

by

Emma Saurini

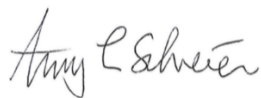
December 2023

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ABSTRACT

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Major/Minor: Biology/Chemistry

Creativity in Art and Academia:

Analyzing the Effects of AI Technology Through the Lens of ChatGPT

Advisor: Trudi Wright Ph.D.

Reader: Becky Vartabedian Ph.D.

Technological advances occur at a rapid pace and evolve unceasingly. This is exemplified by artificial intelligence (AI), technology that is able to analyze external data to perform tasks that are usually completed by humans. This technology, for better or worse, irrevocably changes how society functions and, most importantly, deeply affects the way humans live, act, and think. With the advent of Chat Generative Pre-Trained Transformer (ChatGPT), a chatbot technology that provides human-like answers to any prompt, powerful AI technology lies at the fingertips of anyone who can access it. In this thesis, I argue that a fundamental property of being human—creativity—is threatened by ChatGPT and its inevitable by-products. Creativity is essential in the process of creating art and, less commonly thought of but equally important, in the academic setting. I explore the importance of human created art by first discussing how art can inform us about history and culture and then analyzing the two-fold beneficial effect creating art has on its creator and perceiver. Subsequently, I debate whether ChatGPT should be implemented in educational spaces. I suggest ways in which it can be used productively and how it could be detrimental. For instance, while ChatGPT can be used for assistance on homework, projects, math problems, proofreading, and essay outlines, using this technology to complete assignments for which the student does not have a proper baseline unequivocally hinders their educational development. Ultimately, this thesis serves to discuss the value of creativity in art

and academia and postulate the consequences of becoming increasingly dependent on artificial intelligence to be creative for us.

Chapter I: A Brief Introduction to Creativity and Artificial Intelligence

I.I What is Creativity?

Creativity is a concept that is difficult to define due to its lack of objectiveness. It is almost unjust to reduce a word that is used in so many capacities down to one meaning, which is why I will provide a few definitions. Creativity researcher Dr. James Melvin Rhodes succinctly states that creativity is “the phenomenon in which a person communicates a new concept” (Rhodes). Author Julia Cameron believes that because we were created in the Creator’s image, creativity is inherent to humans and should be pursued (16). Creativity is not only an intellectual concept; it is also a product of the person’s “motivation and emotion, and is closely linked to cultural context and personality factors” (Boden). The main commonality of these definitions is that creativity is being utilized by a person, making it an ability unique to humans. Despite this, with artificial intelligence becoming increasingly ingrained in our society, are these definitions antiquated if creativity is no longer strictly reserved for humans?

Human creativity can present itself in many forms. Most notably, when people think of creativity, they see it as an integral component to producing forms of art. Academia, however, is another prominent space where creativity is essential to producing out-of-the-box ideas and innovative research. Now that artificial intelligence (AI) can also generate any form of art and serve as a research tool, an important question arises: Can AI be creative? Today’s artificial intelligence regurgitates the information that is coded within it to produce a calculated output. Theoretically, there would inherently be nothing new produced if AI is expressing different variations of all the data used to program it. Likewise, if humans are also just restructuring past information, literature, or images that they have consumed to put forth their own ideas, what makes this different than AI generated products? I will discuss these questions of creativity

through the lens of OpenAI's products ChatGPT and DALL-E due to their recent integration into society and their global accessibility.

I.II The History of AI

In the modern world, artificial intelligence takes many forms. From navigation systems used on daily commutes, to innumerable applications on computers, to facial recognition in smartphones, AI is integrated into nearly every facet of the industrial world. The average person may possess a general understanding of AI from consuming popular books and movies, but for some, it is difficult to pinpoint what differentiates artificial intelligence from other technology. When we think of intelligence, it is an attribute usually used to describe humans, or even nonhuman animals. The Merriam-Webster dictionary defines intelligence as, “the ability to learn or understand or to deal with new or trying situations” and “the ability to apply knowledge to manipulate one's environment or to think abstractly as measured by objective criteria” (“Intelligence Definition & Meaning”). Artificial intelligence, however, is unique in that it is a type of intelligence displayed by nonliving entities, like machines. In our society, AI is primarily responsible for completing tasks by utilizing human qualities, such as emotional, social, and cognitive intelligence (Haenlein and Kaplan).

Because AI is deeply interwoven within our society, it can be difficult to determine a time when it existed simply as a fascinating idea. Contrary to the perception that only inventors, mathematicians, or scientists have pondered the possibility of AI, the concept of artificial intelligence, or, simply, intelligence displayed by something other than human, has been widely contemplated for thousands of years by poets, authors, and philosophers (Buchanan). In the book *AI Narratives: A History of Imaginative Thinking about Intelligent Machines*, authors Genevieve Liveley and Sam Thomas discuss one of the oldest and well-known accounts of any notion of

artificial intelligence, the Greek epic poems *The Iliad* and *The Odyssey*. Written around 800 B.C., the author, Homer, describes many tools and appliances having fantastical qualities that replace the need for a human worker. These include bellows and gates that operate on their own, self-navigating ships taking passengers to their destinations without being told, or metallic guard dogs protecting palaces with their minds (Cave et al. 25-6). In the modern day, these objects are no longer fiction (e.g., motion sensed gates and self-driving cars now exist), and their qualities are not fantastical, but are those of mechanical objects that have very general AI programming. Homer, however, makes it clear that these objects are not simply working like our modern-day machines, which are set on a timer or motion activated, but his inventions possess a certain level of intelligence because the gates or bellows *know* when they need to be used and thus will start doing their job. A stronger level of artificial intelligence is reflected in the slaves crafted from gold who “not only possess human form but have the power of movement, of speech, and of thought... voices, physical strength, and... intelligent *minds*” (Cave et al. 26). These slaves that wait on the god Hephaestus display a greater level of intelligence— their own intelligence —and mimic modern-day robots. We see that this transfer of human intelligence onto inanimate objects or the anthropomorphizing of machines does not stop in the mind of Homer, but continued into thousands of other literary works and has become its own genre of entertainment, science fiction.

A more concrete place to begin exploring the rise of AI within society is around the 1940s and 1950s with notable figures Drs. Alan Turing and John McCarthy. During World War II, Turing, an English mathematician, was tasked with building a machine that could break the German’s Enigma code (Haenlein and Kaplan). After its success, Turing began pondering the power of the machine as it had done something mathematicians could not accomplish, and in that moment, it displayed more intelligence than a human. This gave rise to the “Turing Test,” which

is a method of knowing if a machine is more intelligent than a human (Haenlein and Kaplan). If a human cannot distinguish whether the response was elicited by man or machine, then the machine is deemed to be able to “think” like a human. This was a pivotal moment as people began to question if the line between man and machine could be blurred by this technology. Then, around 1955, computer scientist John McCarthy coined the term “Artificial Intelligence” and different professors from various disciplines and institutions came together to study this new field (Buchanan).

I.III AI Today: Open AI

Fast forward sixty years and AI no longer exists simply as a fantastical plot in a novel but is now a tangible reality. Companies rely on this technology to run their business, and many are investing in AI research. For instance, the e-commerce site Amazon tracks each user's data to tailor product recommendations to specific individuals, and Apple, the globally popular technology company, uses AI based technology for its FaceID feature and voice assistant Siri (Marr). Currently, Microsoft is the leading investor in OpenAI, having invested \$1 billion and planning to invest more (Duggan). OpenAI is a company that is currently at the forefront of creating ingenious artificial intelligence-based technology. Founded in 2015 by Elon Musk, Sam Altman, and others, this “research and development” company’s mission is to “ensure that artificial general intelligence benefits all of humanity” (OpenAI). They have created models accessible to anyone with features that have astonished the public, including two of the more notable and well-known, Chat Generative Pre-Trained Transformer (ChatGPT) and DALL-E. The former can understand a variety of prompts and respond with specific answers, while the latter, creatively named after the endearing cartoon robot WALL-E and Spanish artist Salvador Dalí, can conjure an image from a description (Figure 1) (OpenAI).

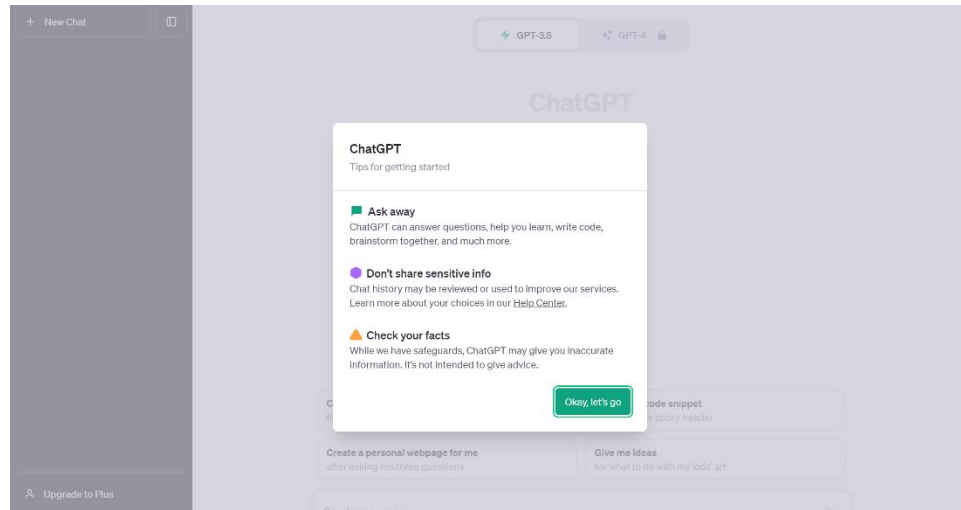


Figure 1. A DALL-E produced hyperrealistic image of an astronaut riding a horse.

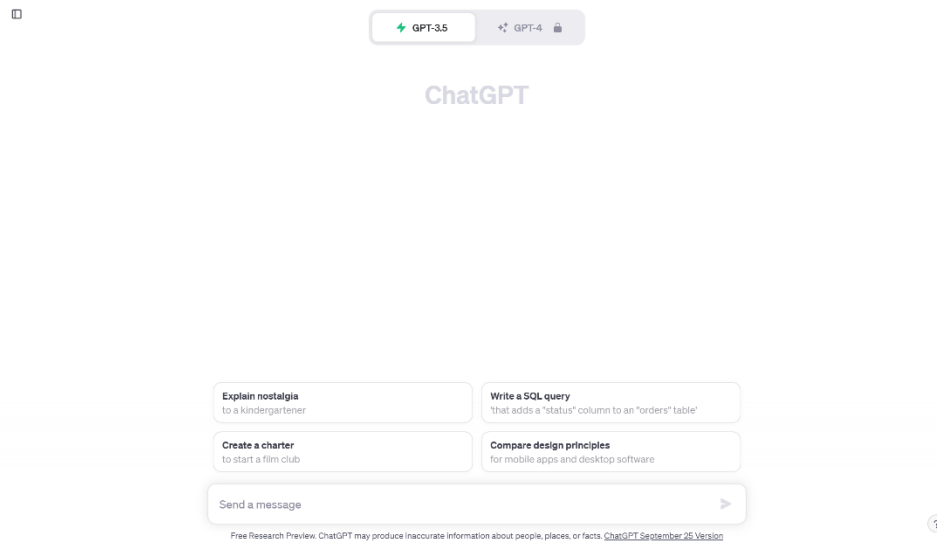
The main feature of ChatGPT is that it can take a prompt, either written or image based, parse it, scan a multitude of texts to generate an accurate and human-like response, and finally format it in the requested manner (OpenAI). This ultimately allows ChatGPT to produce movie scripts, lesson plans, short stories, songs, and recipes amongst many other things. For as advanced as these AI systems are, generating a response does not always happen in the blink of an eye. When their servers are flooded with users, a response can take minutes or even hours. Regardless, with new updates, the response time could be reduced to milliseconds. Similarly, the image generator DALL-E can produce almost any image from text. This AI uses the model CLIP (Contrastive Language–Image Pre-training) and is trained to analyze images and associate them with their correct names (Radford et al.). For example, if analyzing a picture of a dog, CLIP would need to correctly be able to categorize it as “dog.” Thus, when one wants an image to be generated, they simply type in a description and DALL-E scans its library of pictures and matches up key words to generate the final product. The main question I will be analyzing is if indulging in this powerful technology has irreversible effects on humanity’s creativity.

Many have heard of ChatGPT technology, but not all have used it. I will describe how ChatGPT works by explaining the interface and including examples of generated answers in

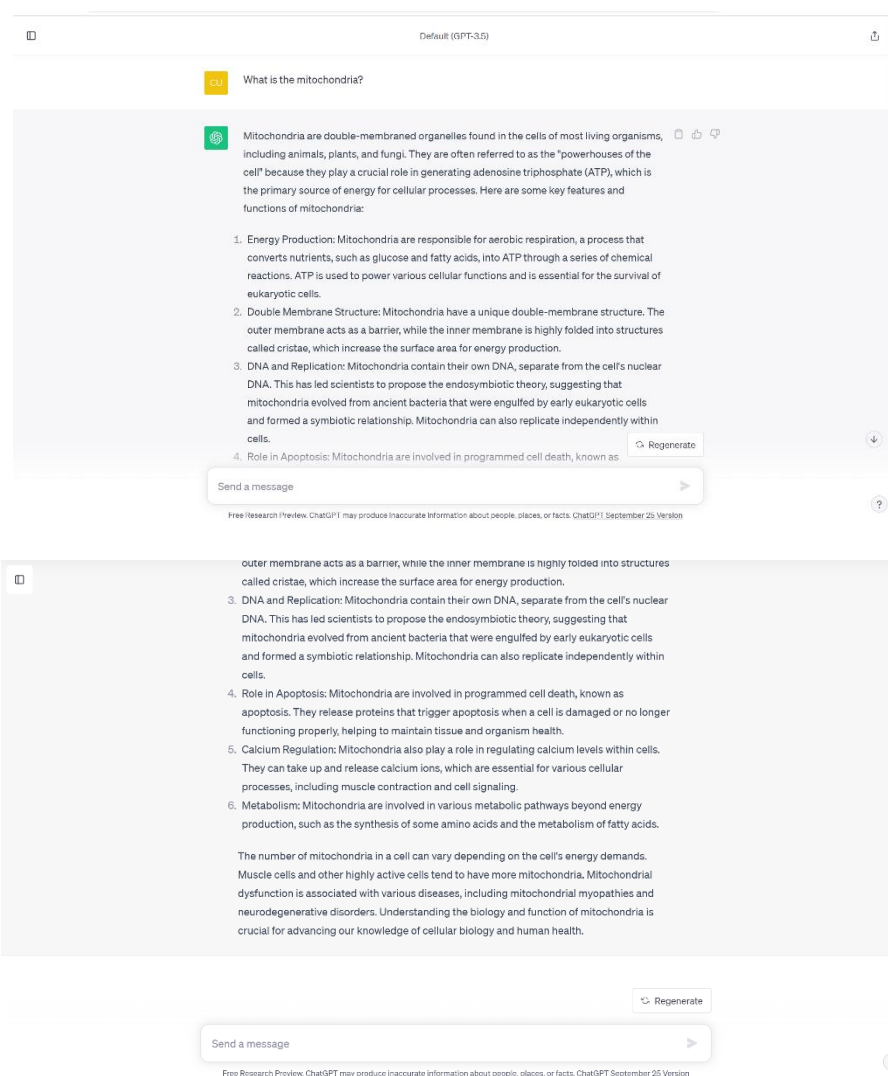
hopes of providing basic foundational knowledge for the remaining chapters. It is important to note that all information discussed about ChatGPT, DALL-E, and the field of artificial intelligence is current through November 2023. Upon creating an account, the user is shown a disclaimer that tells them how to use ChatGPT, not to share personal information, and a notice that its generated answers might not provide accurate information.



The interface includes a text bar with example prompts above it. In fine print below the search bar, it reads, “ChatGPT may produce inaccurate information about people, places, or facts.”



After prompting it to answer the question, “What is the mitochondria?,” it provided an in-depth response in a matter of seconds. If the user clicks the export button on the top right, s/he can send a shared link to others who can access the chat. Additionally, there is a clipboard icon where the response can be copied and a thumbs up and thumbs down icon where one can provide feedback about the response. If the user presses the “regeneration” button, ChatGPT will provide another response, slightly reworded and asks for feedback inquiring if the new response was better, worse, or equal in quality.



As AI becomes more integrated within our society, scholars, researchers, and many others in varying disciplines are debating its benefits and costs. Pew Research Center, a nonpartisan think tank, conducted a survey of 10,000 U.S. adults in 2021 about their opinions on artificial intelligence. Generally, about 37% are more concerned than excited, 45% are equally concerned and excited, and 18% are more excited than concerned (Rainie et al.). Those who were more worried cited the possibility of losing jobs to AI, security concerns, misuse, and potentially blurring the line between humans and artificial intelligence. On the other hand, many were hopeful that AI could bring about societal improvements and be used as a helpful tool in everyday life. While some are welcoming the benefits that come from these technological advancements, most Americans remain wary of the many ways in which AI can alter society (Funk & Rainie).

This debate was especially amplified with the release of ChatGPT-3.5 in November 2022. The public's concerns are not unwarranted as there are many limitations as to what ChatGPT can do and, more worrying, the biases that are deeply embedded within its responses. A general concern is that the generated answers can sometimes be incorrect or formatted in a low-quality manner (Ray). The accuracy or structure of an answer, however, is only the tip of the iceberg when it comes to this AI's responses. An integral facet of ChatGPT that is important to consider when analyzing its responses is the data used to train the model, namely, billions of books, articles, and webpages. The biases of the authors are inherent to these data, implying that there will be gender, racial, linguistic, and ideological biases hidden in a response (Ray). Since ChatGPT is an incredibly complex artificial intelligence model, those who utilize it most likely do not know how it functions, making it difficult to catch potential errors or biases (Ray). There

are other apprehensions about ChatGPT, such as privacy concerns and overreliance, that have swayed some individuals to avoid using it.

To elaborate, about 60% of the U.S. population has heard of ChatGPT, yet only 14% have used it, according to a survey that Pew Research Center conducted in March of 2023 (Vogels). Those who have used it did so primarily for entertainment purposes (19%) rather than education or work (14% and 12%, respectively) (Vogels). But do these figures reflect apprehension or indifference? The study was once more conducted in July 2023 and the percentage of individuals who use ChatGPT for work increased from 12% to 16% and its use as a learning tool climbed from 14% to 19% (Park). Although ChatGPT made headlines, instantly gaining the attention of many, it has yet to become a household resource.

While there are plenty of justifiable reasons some might not use ChatGPT, such as its limitations and biases, part of this hesitation could also be due to the underlying anxieties about AI that stem from the science fiction genre. While these books and movies can instill excitement and awe for the future of technology, many have storylines with a more negative, dystopian disposition. It is critical to consider media representation because the portrayal of AI in stories can subconsciously dictate one's opinions. In fact, "In order to understand what kinds of technologies are being developed, those outside the professional AI field rely on narratives that mediate between the technology world and the public sphere" (Cave et al. 9). These fictional depictions of AI are often incorrect or exaggerated, making it important to inform oneself on what technology is being developed and how it functions (Cave et al. 7).

Nonetheless, ChatGPT is slowly gaining traction, and I predict that these AI chatbots will be accepted into society. The reason for this expectation is because I believe it will parallel the internet: a tool deeply ingrained in our lives, one we appreciate and from which we greatly

benefit, while in the back of our minds we are aware of the serious drawbacks and consequences that come with its use.

Chapter II: The Importance of Human-Produced Art

While some people might deny that AI models such as ChatGPT or DALL-E can be creative, can we confidently say that AI will never be creative? Centuries ago, it would have been unimaginable to think that machine could mimic man. But with modern technology improving at what seems to be an exponential rate, will there come a day where we concede that AI is creative? This may not be an improbable reality as the fields of neuroscience and artificial intelligence are starting to intertwine. Dr. Luis De Garrido, a multidisciplinary researcher in artificial intelligence and cognitive neuroscience, dives into the neuroscience of creativity by explaining how human creativity is measured and how those results can be used to design AI that emulates human creativity. One example of this is programming algorithms to parallel preconscious thoughts that occur when being creative (De Garrido). Extensively studying neural networks and using that information to code AI might be a start to achieving creativity in a machine. Yet, what do we have to lose, if anything, if artificial intelligence becomes creative for us?

II.I How Does Art Benefit Humanity?

For centuries, art has held an important role in humanity. Art reflects the ever-evolving history, religion, tradition, and everyday life of the many past and present cultures of the world. We are able to study, understand, and immerse ourselves in the way our ancestors lived by analyzing their artwork, novels, poems, music, drama, etc. Art has an undeniable influence on culture, but possibly debatable is the even greater impact it has on the individual. Dr. Susanne K. Langer, a philosopher more notable for studying art's influence on humans, defines art as "the practice of creating perceptible forms expressive of human feeling" (6). Thus, the significance of art is two-fold: the effect it has on the creator and the effect it has on its perceiver. In this section,

I will first discuss how art has a large-scale impact on culture and society, then I will provide examples on how and why it has a specific connection with both the creator and its viewer, reader, or listener.

Before discussing art on the individual scale, we must understand how art has been and will forever be inherent to culture and society. Yes, art is a source of enjoyment, entertainment, relaxation, and inspiration that can take the form of enthralling novels, emotional dramas, soothing sounds, and aesthetic pictures. Art, however, is also a product of the period in which the artist is living; thus, it has an inherent cultural context. Because of this, art does not exist solely for viewing pleasure or consumption. It is also meant to challenge and propel new ideas forward. This is a phenomenon seen all throughout history across many different art forms. To explain my point, I will discuss this mainly in terms of artwork and by briefly analyzing a specific music genre.

Art provides us with knowledge about a specific period and the human experience during that time. Some of the more well-known art pieces are paintings from the Italian Renaissance. *The Last Supper*, painted by Leonardo Da Vinci in 1498, will elucidate this point because this art piece is a strong representation of how art is a product of culture (Figure 2). Depicted are the twelve apostles reacting to Jesus who is saying that one of them will betray him. In Fifteenth-century Italy, it was common for artists to be commissioned to paint religious scenes, this one being commissioned by Ludovico Sforza, the Duke of Milan. Not only does this amazing painting provide profound insight into Italian Renaissance history and the Christian religion, but it also exemplifies a great artistic feat at the time: using linear perspective to create a three-dimensional image on a flat surface (Zelazao).



Figure 2. *The Last Supper* by Leonardo Da Vinci.

The Last Supper exemplifies art that reflects the cultural significance of Christianity in Renaissance Italy. Because it was commissioned and ultimately created to represent a biblical passage, there was small room for artistic expression specifically based on personal experience (Cartwright). This was due to the detailed contracts that specified what, when, and how the piece was to be produced. Besides the art itself, there is meaning in this relationship between the patron and artist. It represented a specific period during which art reflected the patron's wealth and status while exhibiting the artist's talent. Moreover, it provides insight into how greatly a culture valued art and how citizens interacted and negotiated with each other. This simply will not exist if DALL-E, or any other image generator, becomes the normal method of producing art because human to human interaction would be replaced with human to machine interaction. Images would no longer be rich in historical significance but would rather exist solely for viewing pleasure.

Not only does art act as a time machine, allowing us to step into a moment of the past and learn about old cultures, but it can be a powerful tool for social and political change. Striking and surprising images can elicit strong feelings in a viewer to drive the artist's point home. A lesser known, yet controversial example of this is *The Raft of the Medusa* painted by Théodore Géricault (Figure 3). This painting was chosen because it exemplifies how a painter's artistic

techniques, emotions, and opinions combine to become the catalyst for societal uproar. The Medusa was a French naval ship that crashed into a sandbar off the coast of Mauritania, Africa in 1816. Its numerous passengers were moved to smaller boats, consequentially over boarding the last raft. During the time it took for them to get rescued, the lack of space and supplies turned them against one another, resulting in fights, people throwing others or themselves overboard, and ultimately, cannibalism. This story horrified the French public and, in response, Théodore Géricault turned to the canvas to paint this calamity in 1819. The scene displays a group of people on a quasi-sunken, dilapidated raft who are either panicking, attempting to flag down help, or have already died. Upon viewing this work, the sufferings of these people are palpable for many reasons. For instance, Géricault employs the chiaroscuro technique, contrasting light and dark colors, to further emphasize the figures. In addition, the lifelike state of the passengers is a result of Géricault's ample amount of time spent studying cadavers ("The Raft of the Medusa"). Unsurprisingly, *The Raft of the Medusa* became a controversial painting. This tragedy horrified the French population and reflected poorly on their monarchy. To elaborate, this painting became a representation of the monarchy's indifference to their people, which sparked anti-authority sentiment (Brandt 131).



Figure 3. *The Raft of the Medusa* by Théodore Géricault.

A more famous example of politicized art created in the aftermath of tragedy is Pablo Picasso's *Guernica* painted in 1937 (Figure 4). This is an important painting to discuss because it was created more recently, is generally relatable to the public, and is a rather well-known emblem of protest. At first glance, the viewer is trying to make sense of the abstract shapes, but as the eyes continually sweep from one side of the painting to the other, the unsettling images make themselves known. This scene depicts the bombing of the Spanish town Guernica in 1937 by Hitler's German air force. About 1600 civilians died and more than two-thirds of the city was in ruins, fueling Picasso's depiction of the tragedy that took place in his home country. At the right of the painting is a panicking woman trapped in a burning building, a dismembered man is seen along the bottom, and a screaming mother holding her dead son are shown on the left edge. While the bull, representing death and brutality, according to Picasso, is unscathed, the yelling horse is pierced and in pain. The devastation that Picasso painted is not the only reason he is able to evoke horror and sympathy from the viewers. At 11 feet tall and 20 feet wide, the mere size of the canvas engulfs the viewer, transporting them into that moment in time (Robinson). Picasso famously refused to explain the symbolism behind *Guernica*, stating that if he had to elucidate the images, he might as well have written down his thoughts (Robinson). Ultimately, Picasso states that it is up to the viewer to determine the meaning.



Figure 4. *Guernica* by Pablo Picasso.

Unlike Picasso's *Guernica*, Géricault had every intention for *The Raft of the Medusa* to send a message about France's current state of government, and ultimately succeeded. Nonetheless, *Guernica* has strong anti-war sentiments within it. It was not intended to be a political piece; rather, its original purpose was to protest acts of violence. This is interesting to note because *Guernica*, as we know it today, is globally renowned as a political piece commonly used to protest, which leads us to question how this occurred. Dr. Akos Kopper who studies visuals in relation to politics, explains: "As artists and protesters repeatedly use *Guernica* to express their political discontent, *Guernica* is reinforced as a political icon, with its meaning increasingly crystallized" (454). Those groups using *Guernica* in their protests include but are not limited to Thailand civilians protesting brutality from security forces, in criticism of wars in Iraq, and recreations of *Guernica* in hopes to stop the civil war in Syria (Kopper 450). Ultimately, both artworks are a product of tragedy that evoked intense emotional responses and represent concepts bigger than what is depicted on the canvases.

Similar to artwork, for over hundreds of years, each culture has created its own form of music as a component of rituals and festivals, to show nationality, and above all, as a way to bring its people together. Thus, this provides us with another means of gaining cultural insight. Aside from strictly visual forms of art, political change can also be driven through linguistic and melodic means, specifically in the form of songs or even entire music genres. One might passively listen to music, perhaps during their morning commute to relieve stress, but understanding the lyrics and the historical and societal significance provides a whole new meaning to songs. For instance, music can double as a second voice to underrepresented groups, bringing attention to overlooked issues, and can be used as a subtle method to fight against an oppressive system (Shelemay 352).

Music as a means of protesting is unique in that “[musical styles] can begin within a soundscape as an emblem of resistance, then move to broader audiences as vehicles of popular entertainment” (Shelemay 352). This is heard in reggae, a genre of music that is intertwined with both culture and politics. Due to this duality, many might only be aware of the history of reggae within the entertainment industry. Therefore, it is important to discuss why reggae as a music genre was rooted in protest and how it evolved over time and with different social contexts. The emergence of reggae can be traced back to the 1930s when Ras Tafari was coronated as the emperor of Ethiopia and became known as Haile Selassie I. This accension to the throne acted as a catalyst for black people to regain their culture after slavery and imperialism. Ultimately, Rastafarianism is the religious and political movement from which reggae developed. To elaborate, around the 1970s, reggae was more notably influenced by the musician Peter Tosh. He used music to protest inequality, as evidenced by his song “Get Up, Stand Up” in which the lyrics repeatedly urge the listeners to fight for their freedom and rights instead of waiting for change to occur. Just as the lyrics hold significance, so do the rhythms of reggae songs, something for which the genre is famously known. The unique rhythms, characterized as offbeat and syncopated, act as metaphors that carry the contempt for authoritative figures (Shelemay 360-1). Over time, reggae has been internationally influential both in the entertainment industry and political sphere. Specifically, underrepresented communities in Great Britain have molded this genre into a new style of music to address their own political strife (Shelemay 365). Reggae is a perfect example of how music is a product of the human experience, which is shaped by societal and political climates, that can then influence a myriad of lives around the world.

As we have seen, art is astoundingly multifaceted in that it can reflect history or be an ever-evolving form of protest that sparks social or political change. Will this form of

communication and expression be completely stripped from us if we rely on AI to produce the art? It is fair to mention that generating this art using ChatGPT or DALL-E can be done on behalf of the individual as long as there is intention behind it. Within a matter of seconds, a touching song or a shocking art piece can be created and just as quickly be distributed for all to see. But it does not necessarily follow that the same *intention* can be mimicked. Physically creating art is different than inputting one's ideas into a computer and waiting for a response to be spit out. Consequentially, the generated outcome feels materialistic and belonging only to serve consumerist values, like pressing buttons to start up a machine that will turn its gears and pop out a gadget. Those interacting with the art become more similar to a consumer than an engager. Removing the act of creating the art from the artist results in a vast disconnect between the idea and the creation. To elaborate, when using these chatbot technologies, the component that is missing is the effect that creating the art has on the artist. This effect is important because it is implicitly embedded into their work and affects how the perceiver listens, reads, or views the art. Ultimately, this unspoken component is something that cannot be coded into a machine because it is a fundamental aspect of art that solely depends on human experience.

An example of this in the literary world is evident in the novel *The Things They Carried* because it perfectly embodies how art has an effect on the artist and the perceiver. The author, Tim O'Brien, faces questions about the human condition and meaning of life as he fights in the Vietnam War. His experience was incredibly difficult to comprehend, especially in the context of something as traumatic as war. O'Brien, who at first denies that writing this novel helped him, ultimately copes through storytelling. He writes, "I did not look on my work as therapy, and still don't. Yet... it occurred to me that the act of writing had led me through a swirl of memories that might otherwise have ended in paralysis or worse" (O'Brien 101). In the last sentence of the

novel, he leaves the readers by confessing that he was indeed trying to save his life with a story. O'Brien's storytelling shows how art has an effect on the artist and the perceiver. First, O'Brien fabricated a world of war stories as a form of communication to explain his experiences at war, and it inadvertently served as a method of therapy. Second, reading this novel allows the reader to learn about a significant moment in history and understand the human perspective of soldiers during this war because they are able to sympathize with the author.

Similarly, in the field of drama, Greek tragedy is another way in which engaging with art can be therapeutic. During the ancient Greek period, it was common to visit the theatre to watch these dramas. The purpose, however, was, as Aristotle noted, for the sake of catharsis, the process of purging one's emotion through art (Headlam). To elaborate, the audience used the experiences of the characters to help manage their own emotions. This is an incredibly powerful concept, so much so that it has been used to aid veterans who have returned from Afghanistan and Iraq to deal with their depression and post-traumatic stress disorder (Headlam). *Ajax* is among these Greek tragedies and was written by Sophocles who was part of the Athenian army and lived during the time of the Peloponnesian War (Headlam). *Ajax* tells the story of a soldier who struggles with his rage as he returns from war and, after a series of events, is driven to commit suicide even after his comrades plead with him not to and Tecmessa, his wife, reminds him to think of his son. It becomes clear now why Greek tragedy and much subsequent drama is key to catharsis. *Ajax* is a play that is often recited by veterans who, along with their wives, relate deeply with the characters. The veterans have been in the same situations, felt the same emotions, and struggled with the same problems as the play's characters.

The concept that the audience feels what the onstage characters experience can also be understood through the lens of "mimesis." According to Dr. Paul Woodruff, a professor of

philosophy at The University of Texas, mimesis is “an activity by which one thing produces at least part of the effect that another thing would naturally produce.” In the example of theatre, watching the characters act will elicit an autonomic response from the viewer. Interestingly enough, this concept was reinforced by a study conducted by two UCLA neuroscientists. Istvan Molnar-Szakacs and Katie Overy observed neuronal activity as humans watched other human activity (Byrne). In watching their movements, the neurons needed for the specific action were activated in the observer, hence, mirroring the neuronal activity of the performer. This is translational to emotions. Not only do the neurons responsible for smiling activate when watching someone else smile, but the neurons associated with those emotions fire too (Byrne). It can be better understood now why the audience has such strong reactions to a performance. Actor Ethan Hawke who, in a TED Talk entitled, “Give Yourself Permission to Be Creative,” explains how expressing oneself through their creativity provides them with the power to connect with others on deeper level. He says creativity is “vital. It’s the way we heal each other” (Hawke 7:08). Essentially, sharing thoughts and emotions through creative means opens dialogue between the artist and the perceiver. Through the analysis of the works of O’Brien and Sophocles, Hawke is unequivocally correct.

In light of OpenAI’s witty name for its image generator, DALL-E, and the ability this artist possesses to evoke feelings from the viewer with art that reflects his subconscious, we turn to the famous Twentieth century surrealist painter Salvador Dalí. His most famous work, *The Persistence of Memory*, painted in 1931, is set on the coast of Catalonia where three clocks are draped softly over surfaces and appear to be melting (Figure 5). In this painting, Dalí provides the viewers with a terrifying peek into his perspective of time as he depicts a world in which time does not exist, but also represents death and decay. This is evidenced by the congregation of ants

crawling on the pocket watch as if it were rotting (Richman-Abdou). From *The Persistence of Memory*, we see that art reflects the creator's subjective view of the world. The artist expresses their feelings and experiences through a piece of art, making their inner-self tangible for all to see. Likewise, the viewers are urged to ponder their own perception of time and compare it to Dalí's. The uniqueness of these displays lies in the creative style that each artist adopts. One who is acquainted with famous art can differentiate a Dalí, from a Picasso, from a Da Vinci. These artists were all part of monumental art movements, Surrealism, Cubism, and the Italian Renaissance, respectively. Nevertheless, they still incorporated their own personal touch, making their art *theirs*. AI generated art simply does not have the ability to do this. It cannot be the leader of a new art movement or use its experience to make art in response to the world in which it lives but can only take from previously inputted data to form an image.



Figure 5. *The Persistence of Memory* by Salvador Dalí.

To further reinforce my rejection of the belief that machine can make the same art as man, I will explore the concept of the “genius.” Giorgio Vasari, Italian Renaissance painter, architect, and writer, introduced the notion of the genius in his book *The Lives of the Artists*. First published around 1550, Vasari details the lives of many Italian painters, such as Da Vinci, Raphael, Donatello, Brunelleschi, and Boticelli, and articulately critiques and praises their most famous works. “Genius” was a defining quality Vasari used to describe artists that showed

certain characteristics. While most artists during the Italian Renaissance were trained in guilds, received extensive art lessons, and had apprenticeships, the genius is described to have *innate* talent. To elaborate, one would possess this innate artistic knowledge at a very young age, and this incredibly unique gift would set the artist apart from others. When recounting the childhood of Cimabue, a painter whose novel artistic style helped propel the Italian Renaissance (Bondanella x), Vasari wrote about Cimabue's sharp mind and attraction to art, drawing everything around him (7). As Cimabue began art school, his "continuous practice so greatly enhanced his natural talent that in a short time he far surpassed in both design and colouring the style of the masters who taught him" (Vasari 8). This combination of inherent skill and fervent passion simply cannot be taught, but rather visualized in great masterpieces.

However, this was not a trait with which one was merely born; Vasari specifically describes the genius having a God-given talent. This is exemplified by Vasari's writings on Leonardo Da Vinci:

The greatest gifts often rain down upon human bodies through celestial influences as a natural process, and sometimes in a supernatural fashion a single body is lavishly supplied with such beauty, grace, and ability that wherever the individual turns, each of his actions is so divine that he leaves behind all other men and clearly makes himself known as a genius endowed by God (which he is) rather than created by human artifice.(284)

Furthermore, this notion is also implied through his deliberate word choice. Throughout his writing, Vasari does not use the Italian word for artist, but describes these people as "artificers." This term comes from the Latin word "artifex," which is used to reference "God the Creator" in religious works (Bondanella xii). Thus, Vasari explains the concept of the *divine* genius, in

which he so clearly illustrates that the talent can be traced back to a gift instilled in the artist by God. He implies that the painting or sculpture is not just an earthly, manmade creation but is inextricably tied to a greater spiritual being.

Some may dispute Vasari's view because he wrote *The Lives of the Artists* during a time in which Roman Catholicism was prominent. Many aspects of life revolved around religion, making it obvious why Vasari saw such divine talent in specific artists. Yet, the notion that there is a spiritual aspect to creating art should not be disregarded. Some modern-day artists, such as Julia Cameron, firmly believe that art has a significant divine component. In her creativity recovery book, *The Artist's Way*, Cameron guides her readers to retrieve, embrace, and practice using their creative mind. In doing so, one becomes closer to God. She elaborates on this concept in her spiritual principles where she explains how exploring one's creativity will put them on a path towards God because if we are created by a *Creator*, we then must inherently be creative and should use our creativity (Cameron 17). Cameron and Vasari both sense a deeper connection that humans have with art, yet her thinking is more nuanced. While Vasari states certain people have a God given artistic talent, Cameron would say this does not exclude laypeople from having a spiritual experience when *creating* art.

Art is meant to influence both the creator and the consumer, which we saw when analyzing the works of O'Brien, Greek poets, and Dalí. Traditionally, we think of art primarily as a means to enrich culture, and then to benefit the artist. But what if these were reversed? What if art was created with the purpose of enriching the soul? Contrary to this widely held notion that artists only strive to create impressive and timeless works is the concept of art therapy. According to the American Art Therapy Association, art therapy is a form of treatment that utilizes the creative process of artmaking in combination with psychology theories and

therapeutic techniques to “improve cognitive and sensorimotor functions, foster self-esteem and self-awareness, cultivate emotional resilience, promote insight, enhance social skills, reduce and resolve conflicts and distress.” Art therapy was first introduced around the 1970s and has been used as a treatment method for a variety of clinical areas with notable beneficial outcomes.

In 2006, Deirdre Heenan conducted a study on a group of individuals living in Northern Ireland who were doing art therapy. The researchers selected Northern Ireland because the population on average has the lowest mental health in the UK (Heenan). They chose to take a more holistic, nonpharmacological approach since treatment costs for mental health patients are high in the UK. As the participants continued with their art therapy, they also went to discussion groups held by the researchers who analyzed their responses. Many were in accord by feeling they had improved self-esteem and confidence and reduced anxiety and depression (Heenan). A similar study was conducted in Australia with the same research methods. Overall, participants felt that they were able to better express thoughts and emotions, use art as an outlet during challenging times, and accept their mental illness and current situation (Lloyd). The responses were divided into themes, one of which was “spirituality.” The researchers stated that if participants found meaning and purpose for their lives during this process, they were said to have a spiritual experience as they created art. Art therapy does not only serve as a recovery method for mental health patients, but it can also benefit those in the workforce by alleviating stress, reducing anxiety, and avoiding burnout (Regev & Cohen-Yatziv).

While the field of art therapy is relatively new, and more research on the definitive effects should be carried out, the testimonials in these studies emphasize how instrumental creating art is to one’s recovery. Moreover, it proves that just the *process* of creating art without worrying about aesthetics or audience has implicit benefits to society. To further emphasize this

phenomenon, using creative expression in the context of medical and societal change is not just seen in the Western world. For instance, in South Africa, art therapy can take the form of art, theatre, dance, and music; in Taiwan, art therapy uses a mixture of psychology and psychotherapy for mental health and psychological growth; Israel created a nonprofit organization to support and regulate the practice (Global Art Therapy). The practice of art therapy is not limited to countries that might place a greater emphasis on art or are comprised of more artistically inclined individuals. Rather, we see that some form of art therapy is practiced in numerous countries around the world, indicating that art is inherent to the individual, and by tapping into one's creativity, it can enrich the soul.

These examples show that art has been and forever will be an inextricable component of the human experience. It is a door to the history and culture of those that came before us. Its widescale cultural and social influence, whether due to political protest or media consumption, paired with the effects it elicits from the creator and perceiver proves how powerful art can be. At the core of art lies creativity and the process of creating art. These two facets are a strictly human phenomenon. I have exemplified this by providing examples of how both are rooted in personal experience and are products of a spiritual essence. I am very skeptical that artificial intelligence can produce this level of art if it has not lived and experienced the world as a human.

II.II What is the Difference Between AI Art and Human Art?

Now that the technology exists for machine-made art, whether in the form of novels, artwork, poems, etc., it is only realistic to assume the inevitability that AI produced art will be on the rise. While some artists vehemently disapprove of machine-made art, others might ask what the harm might be if the art is artificially produced and still enjoyed by the consumer. Despite this, I argue that there is a stark difference between man-made and machine-made art and that

much is lost if art is not produced by humans as it reduces the creation to a superficial product instead of a high-value representation of a sentient human.

This sentiment is expressed by authors as well. In the podcast episode “Is AI Actually Creative? Are We?” from The Ezra Klein Show, American journalist Ezra Klein and author Adrian Tchaikovsky discuss creativity and AI through the lens of ChatGPT. They speculate how AI will change the world of literature as more writing will become automated and discuss the difference between human versus AI made art. They essentially conclude that AI generated art does not hold a candle to what humans can create. Klein states that AI’s regurgitation of information in the form of art lacks meaning: “I remember one of the Google systems gives a very, very good explanation of a zen koan, but it actually has no idea what it’s saying. And this idea that you could be saying something so sophisticated and so detailed and have no concept of why you’re saying it or what it is you’re saying, it’s very mind-bending” (Klein 27:58). Essentially, Klein is describing a disconnect between the “author” (the AI) and the novel. How can art have meaning without an author behind it? Equally as important was Tchaikovsky’s assertion that with the increasing implementation of AI in every facet of life comes the automation of art. He states that at the expense of high-quality art is the commercialization of these products where thousands of books or paintings can be created in a short amount of time (Klein 40:35).

It did not take long for Tchaikovsky’s prediction to become reality. At the end of 2022, product designer and creator Ammaar Reshi used ChatGPT, Midjourney, and other AI technologies to create and publish a children’s picture book within a matter of days (Popli). He was able to sell some copies on Amazon, making around \$200 in royalties (Popli). When posting about it on Twitter, it caused an uproar among authors who expressed obvious concerns over

their careers and the prospect of plagiarism. To elaborate, if AI is trained using a multitude of previously existing literary works, then the stories generated are an amalgamation of the storylines and creative styles of other authors. Using stolen art to produce cheap stories for the sake of financial gain dilutes the content of the artwork and strays from the purpose of writing. Nonetheless, some would argue that authors, artists, songwriters, and filmmakers also take from past works they have consumed to produce their own ideas. The difference is that this process is inherent when *humans* make art, and often acts as a source of inspiration. Dr. Akos Kopper, mentioned before, explains this by writing, “Every piece of art, any text or image is created in a cultural environment to which it makes conscious and unconscious references” (448). Since art is a product of cultural context and human experience, as we have explored, artists being inspired by other works is therefore different than AI reformatting data. This becomes especially true if the “author” (i.e., the person inputting prompts into ChatGPT) says that the generated outcome is completely his or her own.

Even if there is a shift in which AI-generated works dominate the literary realm potentially as a consequence of the economic benefit of the efficiency, it is simply impossible for artificial intelligence to create what humans can. Even with the emerging crossover between the fields of neuroscience and artificial intelligence, a machine can only mimic a human’s writing, but never be in the head of the author. David Means, English professor at Vassar College and published author, expresses his thoughts on artificial intelligence produced works as he drafts his own novel:

It [artificial intelligence] will never move through the emotional matrix of living a singular, individual life. Memory is filtered and turned around, examined and changed

through time, and no machine has felt the pain that sits at the center of the story I'm struggling to create, a story that involves the complexity of race and love and desire... Consequently, the purpose of producing a novel becomes blurred if it is written from the "perspective" of a machine rather than the mind of a human. But, if the consumer of the art does not know the art was generated by a machine and cannot tell the difference, is the creator of the art important? Can there be any harm in machine-made novels if the reader learns, enjoys, and appreciates it as if the work was traditionally made by a human?

Psychoanalytic criticism offers a counterargument to this notion because it serves as an important way to analyze literature. This theory proposes that the author of any literary work is seminal in understanding the content of the novel because the content written is rooted in the author's experiences, conscious, and subconscious thoughts ("Psychoanalytic Criticism"). Thus, to fully understand the meaning behind the plot, characters, and dialogue, it would be crucial to study the author's personal philosophies, life experiences, and the time during which they lived. Therefore, the author of the novel is the key to understanding *what* was written and *why* it was written. If AI is trained on previously written texts and does not possess the understanding as to why a novel is being generated, the literature becomes diluted. It ceases to lack the value it once held. If the reader cannot tell who wrote the novel, would the work's only purpose be to serve as a form of entertainment? While some authors certainly write with the purpose of entertaining their readers, there are always parts, either explicit or implicit, meant to instill a lesson in the reader, engage in dialogue with other authors, or serve as commentary on their society. A well-rounded novel cannot simply be created by AI without reducing it solely to a form of entertainment.

If we shift from discussing literary works to artwork, would this thinking still hold, or could AI be more capable of mimicking human artwork than writing a novel? As of now, those who are experimenting with OpenAI's image generator, DALL-E, have been using it to create visually appealing and humorous scenarios, such as anthropomorphizing avocados by depicting them at a party (Figure 6) (Rivero). Or, they have been taking previously existing photos of people, artwork, or famous locations and altering or adding to them, such as incorporating a pizza into an Italian Renaissance painting (Figure 7) (Rivero). Although these images can be undeniably amusing and interesting to the viewer, can they be considered art?



Figure 6. A DALL-E produced image of two avocados wearing sunglasses at a party.



Figure 7. A DALL-E produced image of Madonna and child eating pizza.

To elaborate, for every piece of art created, there stands an artist— a creator —behind it. In the case of AI-produced art, is it possible for technology to be considered the artist? Or would the person prompting the technology be the artist? When using DALL-E, an individual must think of what image they want produced, which requires a sense of creativity and planning. Yet, I would hesitate to deem that individual an artist. In our modern culture, a person inputting their ideas into DALL-E to receive a product is loosely analogous to the Renaissance patrons of the late thirteenth to early sixteenth century. This wealthy group of individuals would commission art to be painted by an artist. The patron would detail what was to be painted or sculpted and the artist would create. Even with the directions of the patron, it was always the artist who produced such truly remarkable and timeless art. *The Last Supper* will always be inextricably tied to Leonardo Da Vinci's ingenious creative abilities, not Ludovico Sforza's talent (Figure 2). Simply speaking, this is similar to possessing an idea for an art piece, but not having the ability to seamlessly translate that thought onto a canvas, for example. There still is significance in having these ideas, yet there lies a vast chasm between thinking and doing.

Even with technology always being on the cusp of improvement, there will not be a time in which AI art is equivalent to humanmade art. There will come a time, however, when we will not be able to distinguish if the creator was human or machine. We are arguably already living in this era. This leads me to one of the more important facets of our modern-day AI problems. If the perceiver enjoys a work of art and becomes connected to it so much so that, for instance, the book becomes their favorite or the artwork was so moving that they now display it in their house, does it matter if it was created by artificial intelligence? I have extensively analyzed the mutualistic relationship between the creator and perceiver and discussed the powerful benefits that come from absorbing human-made art. Thus, it should not come as a surprise that my

answer, unquestionably, will always be “yes.” Cultivating a connection with a work of art just to be informed after the fact that it was not created by a human but rather by a soulless, unempathetic artificial intelligence is what I can only describe as being deceived. This gut feeling of deception or trickery stems from believing the art one has enjoyed was skillfully crafted by someone like them, someone who also experiences the joys and pains of the world and uses that to craft a unique work of art.

While the idea of feeling deceived after consuming an AI generated product might sound ridiculous to some, I wholeheartedly do not believe I am alone. Take for example, Vanderbilt University’s ChatGPT scandal that happened in response to the shooting at Michigan State University on February 13, 2023, that took the lives of three students. Vanderbilt’s office of Equity, Diversity and Inclusion released a statement to the student body that had rather generic and surface level wording (Cerullo). At the bottom of the letter was a disclaimer in fine print informing readers that the letter was paraphrased from ChatGPT (Cerullo). This left many enraged by the university’s false sentiment towards the tragedy. Vanderbilt sophomore Samuel Lu expressed his disappointment: “It’s hard to take a message seriously when I know that the sender didn’t even take the time to put their genuine thoughts and feelings into words” (Perrotta). Joseph Sexton, another Vanderbilt student, conveyed his intuition, “This feels definitively wrong, whether ChatGPT provided a single word or the entire spiel” (Perrotta).

This gut feeling of deception when believing that a human produced something, but later becoming informed that it was not, is shared by most. When consuming art, it is possible for some to disregard the non-human creator and still enjoy the product. Many *connect* with art, however, because of what it offers beyond its entertainment value. Yet, we must be realistic and understand that this is just the beginning of AI generated products and the potential to profit from

this technology is grand. In fact, authors understand this and have compromised with Amazon, the largest e-book retailer, to update their policies (Italie). Now, if writers want to publish their work on the Kindle Direct Program, they must include a disclaimer stating if they used any text-generator (Italie). Furthermore, in hopes of decreasing AI generated works, authors are only able to upload three self-published books a day (Italie). Ultimately, I believe we all share an inherent understanding that artificial intelligence creations are drastically different than human made creations.

Chapter III: ChatGPT and Academia

III.I Creativity in Academia

As mentioned previously, creativity lacks a definitive definition as it can take numerous forms and be applied to many areas. I have explained why creativity is important within the arts and to the artist and explored the notion of machine-made versus humanmade art.

Stereotypically, we think of those who possess creative minds to be artists, filmmakers, poets, musicians, and others of the like. And while this is not a wrong assertion, we rarely envision a scientist in a lab or a businessperson in a cubicle even though creativity is undeniably present in these circumstances as well. In this chapter, I will discuss another area in which creativity is absolutely pertinent: academia.

Creativity drives innovation and problem solving and ultimately can strengthen critical thinking. To elaborate, Dr. Roberta Ness, whose research centers around maximizing creative thinking, states that “innovation is creativity with a purpose” (1201). Furthermore, in order to have innovation there must be ideation, or idea generation, and even more so, divergent thinking, which is the process wherein multiple different ideas are being thought of instead of one (Clapham 366). Thus, it becomes obvious why creativity is so closely linked to innovation; the more creative one is with conjuring up ideas or solutions, the more likely innovation will occur. These are all undeniably important skills for students to develop throughout their schooling and to take with them as they enter the professional world. In fact, specific industries such as professional, scientific, and technical services are the leading professions that look for creativity skills in employees (Boyles). The widely held belief that creativity is essential in the workforce has even led to the development of creativity training (Clapham 366).

Just as it sounds, creativity training is a program where people learn how to think creatively and practice applying the skill. Creativity training is usually geared towards high school, college, and business students, but since creativity is now a skill employers look for, its reach has significantly widened (Ness; Wiseman). Dr. Ness provides a succinct explanation of the skills this training strives to improve: “(1) divergent thinking (fluency, flexibility, originality, and elaboration), (2) problem solving (novel solution finding), and (3) performance (creative production)” (1201). This can look like teaching participants how to think of diverse ideas and problem-solving strategies and how to discern which ones are useful. This training can be done in the context of teaching an individual or a group that must collaborate. At the core of these programs lies the belief that creativity is not a static *trait*, but rather a *skill*, a “learned proficiency” that can be molded and enhanced (Clapham 367). The magnitude of positive results from these training courses certainly reflects this notion. Dr. Ness cited recent meta-analyses that found students (adolescent and college aged) who took divergent tests increased in originality, and employers similarly showed more originality, problem solving, and critical thinking (1202).

Critics of creativity training might point out how there could be a baseline for the “amount” of creativity one possesses and how much it can be developed. The purpose of creativity training, however, is not to increase everyone’s “amount” of creativity to the exact same level, but rather to instill a different type of critical thinking in an individual, one where problems are looked at from many perspectives and solutions come from outside of the box thinking. Possessing different *levels* of creativity is not a problem. The unique aspect of collaboration is that different *types* of creative minds are working together to achieve a main goal. Thus, fostering a student’s creativity during their formative years should not be brushed aside because the significant impacts are promising.

III.II ChatGPT in the Classroom: A Blessing or a Curse?

To briefly summarize, creativity is essential in academia as it is a skill one should learn during their schooling not only to bring with them into the professional world but also to help them navigate problems and decisions in their own lives. Nonetheless, many skills that encompass this type of creativity can easily be replaced by artificial intelligence in a matter of seconds. A widespread and valid concern over ChatGPT is its effect on academia. With the potential to produce essays on any topic, answer homework questions in accurate detail, and brainstorm clever project ideas, it is clear why educators of all areas are scrambling to find ways to prevent this technology from hindering the education of students. From a short-term perspective, students can use this AI to weasel their way out of assignments, undetected (for now) by their teachers. The long-term effect of not developing critical thinking skills or utilizing the creative muscle of their brain, however, can be detrimental to a young student.

First, it is pertinent to discuss an essential question that arose alongside the advent of this technology: is using ChatGPT plagiarism? On one hand, it could be acceptable to type an inquiry for the purpose of research, rendering the AI like a refined search engine. On the other hand, asking it to write a four-page paper on the Revolutionary War is akin to asking a classmate to write the essay. Yet again, the essay produced by ChatGPT is no one's intellectual property; it is simply a recollection and regurgitation of encoded information in the form of an essay. So, where do educational institutions stand? Many universities, such as Bryn Mawr College and Regis University, consider it plagiarism and are updating their academic code to reflect their new plagiarism criteria (Barnett). Using Regis University's academic integrity policy as a case study, the use of artificial intelligence to complete any type of assignment is both cited as a form of cheating *and* plagiarism ("Academic Integrity Policy"). Bryn Mawr College, like Regis

University, is also a private liberal arts school, making it interesting to compare administrator's points of view on the use of this technology. Carlee Warfield, head of Bryn Mawr College's honors department, explains that the intent behind using ChatGPT is what makes it similar to plagiarism (Barnett). This indicates that the definition of plagiarism will evolve alongside technology and implies that educational institutions do not believe using ChatGPT reflects a student's thoughts, hard work, and dedication.

Some professors assign their classes "take-home" exams, in which the students complete the exam outside of class over a specific period of time. These exams allow professors to ask more specific and complex, open-ended questions than what is possible in a more traditional in-class exam. A strong answer requires the student to practice searching through the content, thinking deeply and making connections between lectures and real-world situations, and providing a more in-depth response because of the lenient time constraints. Ultimately, the students are expected to think more critically. At Regis University, some professors are now rethinking the concept of take-home exams after the release of ChatGPT-3.5 in November 2022, when the new ChatGPT update was suddenly being discussed globally. Biology professor Dr. Bethany Lucas often gives take-home exams to her developmental biology class. After inputting one of her exams into ChatGPT, however, she was amazed by the accuracy of the answers. One example of a correct answer is shown below:

Question:

Deslorelin is a drug that prevents the release of gonadotropin-releasing hormone in animals. It is used to treat various diseases in animals, and it can also be used for chemical castration. After hearing reports of negative uterine changes in animals taking deslorelin, you decide to use organoids to study the effects of deslorelin in the lab. What are organoids, and why would you use them in this case?

ChatGPT generated answer:

Organoids are three-dimensional structures that mimic the organization and function of specific organs or tissues in the body. They are typically derived from stem cells or tissue samples and can be cultured in vitro to study various aspects of development, physiology, and disease.

In the case of studying the effects of deslorelin on the uterus, organoids could be used as an alternative to animal testing. Organoids can be derived from human or animal tissue samples and can be cultured in vitro to closely mimic the structure and function of the uterus. This allows for the study of the effects of deslorelin on the uterus in a controlled and ethical manner, without the need for live animals.

Using organoids also allows for more precise and detailed analysis of the effects of deslorelin on the uterus. Organoids can be examined at various stages of development, and changes in gene expression, morphology, and function can be analyzed at the cellular level. This can provide insights into the mechanisms underlying the effects of deslorelin on the uterus and can also help identify potential therapies to mitigate any negative effects.

While most of ChatGPT's generated answers were correct, some responses went beyond the scope of the content covered in her class or went in a different direction. Nonetheless, Dr. Lucas knew she would have to change the structure of her exams and hold more traditional in-class tests.

The first reaction to this unprecedented technology was to simply ban access to the chatbot on campus; but administrators are well aware that their attempts will be futile as students can simply use it at home (Gecker). While some schools are racing to invest in ChatGPT detection software or eagerly wait for OpenAI to put a watermark on anything their products generate, other educators are embracing its existence — not without difficulty, of course (Newton). With the knowledge that this technology is anything but transient with the possibility of infinite development, some teachers are implementing ChatGPT into their classes to be used in a productive manner. Grade school instructors, for example, are having students analyze and edit text that ChatGPT produces to practice critical thinking. Students with learning disabilities or those whose first language is not English, for example, can use it because it can quickly adjust

reading levels. In addition, when students need a burst of inspiration, ChatGPT can generate project ideas or story starters (Gecker; Claybourn). Ultimately, what these educators have in common is the understanding that with the integration of this technology into academia, and most likely life as well, students will have to learn how to use it as a tool, much like a calculator or spell-check.

Now that ChatGPT-3.5 has been around for almost a year, there are portions of the public that use it regularly. To see how ChatGPT has been incorporated in educational settings, Dr. Reza Hadi Mogavi, a Human-Computer Interaction researcher, and others compiled user experiences posted on X, Reddit, YouTube, and LinkedIn, and analyzed them in a study published in June 2023. They found that in the academic setting, it is used primarily amongst students in higher education, then in grade school education, and lastly, in skills training (Mogavi et al. 18). Almost 80% of those in higher education stated they have used ChatGPT for content creation and editing, but the chatbot was also helpful in summarizing content and proofreading. K-12 students used ChatGPT to enhance their language learning, such as reading and writing, and provide step by step guidance when solving math problems. Additionally, parents have used it to help their children with homework (Mogavi 21-2).

As shown, ChatGPT is implemented in educational settings regardless of the lack of extensive long-term analyses of the benefits and drawbacks. Therefore, it is important to analyze and weigh the numerous pros and cons of using this chatbot for academic purposes to understand whether this technology should or should not be incorporated into the classroom. The main benefits of using ChatGPT for educators include the ability to create lesson plans, assessments, rubrics, and interactive activities, all of which can be personalized and tailored to meet the needs of the teacher (Sok 4-5). Dr. Grant Cooper, who researches technology incorporation in science

education, published a journal article in which he analyzed ChatGPT's ability to create a renewable energy source lecture. ChatGPT provided him with a holistic lesson plan based on the 5Es model (engage, explore, explain, elaborate, and evaluate) along with a quiz and rubric (Cooper 447-9). Dr. Cooper found that the chatbot could serve as a great starting point for new teachers who then can refine the output based on the needs of the class, of course (448). In addition, students can use it as a "tutor," asking it for assistance on homework, projects, math problems, and outlines for essays (Sok 5). To receive a proper output from ChatGPT, however, one must know how to prompt it in the right manner. This could cause the students who are proficient with the technology to excel while those who lack understanding of the chatbot might lag behind. For this reason, if allowed in classrooms, each student should have the same baseline knowledge on what ChatGPT is, how it works, and its limitations.

The use of artificial intelligence in the classroom does have the potential to be productive, as exemplified above. Yet, some teachers might omit the technology from their classrooms all together due to the biases and limitations (mentioned in chapter 1) and the consequences of overreliance. To elaborate, using this technology to complete assignments for which the student does not have a proper baseline unequivocally hinders their educational development. I will explain this by using the calculator analogy. A calculator becomes a great tool for students when they are mastering the foundations of math (e.g., addition, subtraction, multiplication, and division) because it allows them to focus on doing higher level math problems without spending time doing calculations by hand. The calculator becomes a crutch, however, when they do not understand the fundamentals. Likewise, having ChatGPT create an outline for an essay could serve as a time saving resource for researchers who have been writing journal articles for their entire careers. A younger student who does not choose to practice

creating outlines for their essays will not develop the organizational skills that are so fundamental to crafting a logical essay. There is value in the repetitive nature of schooling; doing math problems and writing outlines over and over again may get monotonous to some students, but it constructs a baseline from which the student can then move onto higher levels of learning.

Equally as important to discuss is the student perspective on the use of ChatGPT and similar AI-based technology in classrooms. Two students from Rutgers University and Brown University, respectively, have differing viewpoints on ChatGPT in academia (Barnett). While one could never allow himself to turn in a ChatGPT produced essay in which the “phrasing was awkward and it lacked complexity,” the other student had no qualms using it as a refined search engine (Barnett). The point of view of these students might shed light on how classrooms will evolve alongside new technology. For example, it could be noted that with the advancements of technology come new ways of researching. At the same time, instilling a positive attitude towards learning, i.e., the student enjoys learning and strives to produce excellent classwork, could refrain students from using the technology as a crutch. To elaborate, at this point in time, it may be inappropriate for students to prompt these chatbots to produce entire essays. In the future, however, we might see the need to teach technological literacy when new technology develops, for example, using these chatbots for research, and define ways in which it should be used to aid and not hinder educational development.

To further this point, in a study conducted by Marrone and others, grade school students were tasked with building a Mars rover first without AI, then with the use of AI. For a week, the students worked solely with AI, then for the rest of the time, the AI functioned as a checkpoint for the students and only gave them feedback on their rover (Marrone et al. 3-4). There were no guidelines, and the students were only instructed to be creative. After the project, researchers

interviewed them and analyzed their answers to see how they viewed the relationship between AI and creativity. The students reported that AI could decrease social skills and never be able to replace human creativity even though throughout their project, the AI did further *their* creativity by allowing them more access to information and providing ideas (Marrone et al. 6).

In this circumstance, AI is a great tool for brainstorming. Numerous people who have been thinking about how ChatGPT can be used productively reiterated this. For example, Mogavi and others stated it “aids the ideation process by suggesting enhancements, pinpointing potential issues, and fostering creativity” (27). Thus, in an academic setting it can be used to think of project ideas or writing prompts. Though by “[aiding] in the ideation process,” would this not start to chip away at a student’s creativity development? We previously saw that ideation is the key to expanding one’s creativity and that creativity is essential in an academic and professional setting. While using ChatGPT to brainstorm can cut down on time spent planning the project and introduce students to new avenues of thought, what is the tradeoff?

This misuse or overreliance can lead to terrifying effects that have been expressed by Adolfo Nicolás, Spanish Jesuit priest and former Superior General of the Society of Jesus. In his speech concerning Jesuit education, he expresses his fears about “the globalization of superficiality,” the phenomenon which he believes severely affects students (Nicolás 2). For example, the ability to access information so quickly takes away the hard, but necessary work of critical thinking. He explains this observation with an experience he had when he was a provincial in Japan:

A couple of Jesuit professors from Sophia University told me, “The internet is wonderful.

You get so much information so quickly and so easily.” And at the same time, each said,

“But I have to confess that now I read less, I think less, and I spend less time discerning what to do.” If professors say this, what can we say of the students? (2)

Nicolás gave this speech in 2010 around the time when the internet became mobilized to the masses, increasing accessibility to all. If the critical thinking and creativity of students was of concern back then, certainly it must be exponentially increasing with the advent of ChatGPT and other artificial intelligence tools. While the internet serves as a shortcut for research because information is at the fingertips of students, ChatGPT takes the work out of the homework if the student can prompt the AI correctly. Nicolás urges the Jesuits to be aware of the effects this “globalization of superficiality” has on students and brings awareness to the fact that the Jesuit mission might need to be updated.

Of even greater concern regarding ChatGPT, is the likeliness that students—and adults as well—will not stop to think about the quality of an answer. Dr. Cooper warns us about this: “As it currently stands, ChatGPT runs the risk of positioning itself as the ultimate epistemic authority, where a single truth is assumed, without a proper grounding in evidence or presented with sufficient qualifications” (449). This is a major concern I have with ChatGPT, which is why I will discuss this in detail. ChatGPT certainly can be used as a search engine, potentially by more unmotivated students because it provides a summarized, simple and quick answer to a question. It erases the need to read through multiple websites to quickly find that specific piece of information. While this is an incredible feat in itself, this innovation is far from being perfect and even farther from being ideal. As emphasized repeatedly, ChatGPT’s responses are not always accurate and can provide false information, limit the data one finds, and dilute the quality of an answer. To elaborate, part of the research process includes visiting multiple websites in attempts to get a holistic view of the information present. Furthermore, as students climb in

grade levels, they are required to do higher levels of in-depth research. Because of this, they receive guidance on how to discern if a resource is reliable. For example, many were taught the CRAAP test (Currency, Relevance, Authority, Accuracy, and Purpose), in which students analyze the source for the credibility of the author, the quality of the included information, the time in which it was published, and many other ways a source can be scrutinized (Kurpiel). This process allows students to begin developing research skills and, hopefully, start to think critically about the information they digest.

Yes, this does take time, but quite frankly it should if one values the quality of the information they are taking in. This brings us back to Nicolás who would question what tradeoffs accompany this commodification. Nevertheless, OpenAI does regularly release new updates of ChatGPT, meaning it has the potential for providing more accurate information in the future. Moreover, I would like to revisit my prediction I asserted at the end of chapter 1: As ChatGPT becomes ingrained in our daily lives, it will likely be used as frequently as the internet, especially in regard to its search engine capabilities. Thus, I believe that Dr. Cooper is not exaggerating the notion of ChatGPT becoming the “ultimate epistemic authority.” How dangerous would it be to receive an answer that only encapsulates a fraction of the knowledge available and not know where or whom the information is coming from?

Ultimately, the incorporation of ChatGPT into the classroom is dependent upon the teacher’s discernment. In any case, whether it is or is not allowed, I urge teachers and administration to provide students with a lesson on ChatGPT, one that encompasses its pros and cons, provides instruction on its use, and warns them of its limitations and biases. This way, if a teacher excludes ChatGPT from the classroom, the students understand the reasoning behind the decision and do not default to thinking that the ban is only meant to restrict them. As we have

seen, however, some teachers do use ChatGPT in their lesson planning and teaching strategies, and loosely allow students to use it as well. What does this mean for the students who attend institutions where the use of ChatGPT is prohibited? What consequences will arise from this disparity? These are only a few of the important questions that should be included in these necessary conversations, which, at their core, should center around fostering the creativity of students.

Conclusion: Navigating Through an AI World

Who are we without our creativity? With the— what I predict to be inevitable — commercialization of AI art, what will come of the artist? Authors, artists, filmmakers, and musicians pour their heart and soul into learning and perfecting their craft. And through this, they develop a critical eye for their work. If it is not up to their standard, they will rewrite, repaint, refilm, etc. AI, on the other hand, generates a product with no second thought. The artistic journey does not simply take a couple years of schooling, but rather a lifetime of experience. Stripping artists from their craft eliminates part of their identity, a therapeutic outlet, and a way in which they can connect with others. At the same time, what will come of the student? School is a place where creativity, which can take the form of problem solving and critical thinking, is cultivated and developed from a young age. ChatGPT threatens to stunt a modern-day student's potential. This is especially evident in the more unmotivated students who disregard the importance of an education. Consequently, without creative development during these formative scholastic years, how will the future innovators of the world, such as scientists, engineers, architects, and businesspeople, change?

I have reiterated throughout my thesis the conjecture that ChatGPT, or any other similar chatbot technology, will become akin to the internet in that it will be constantly relied upon for quick access to information. It is because of this I will emphasize that, while I have discussed these types of artificial intelligence in a rather negative manner (and rightfully so as they do pose a threat to our creativity), I hold a realistic disposition towards this technology. These chatbots and image generators are incredible technological innovations, and it is evident why they are awe-inducing to the public. I will not shy away from the fact that ChatGPT can serve as a helpful

and productive tool whether used inside or outside the classroom. On the other hand, because this technology is so powerful, it can easily be used as a crutch.

Having only used ChatGPT to study the interface and its responses and versatility, I was alarmed by how easy it could be to have ChatGPT do most of my thinking for me. My time and effort spent researching an answer or writing emails, paper outlines, application essays, and other things of the sort would significantly decrease. I thought of how this thesis could have been written in half of the time and with less stress. The tradeoffs of doing this, however, would have been detrimental to my development as an academic. This new writing process was a learning curve that allowed me to expand my research skills, hold in-depth conversations about these important matters with professors of different disciplines, and be rewarded with delayed gratification. More importantly, I was able to find and develop my own voice to discuss a matter of great concern. Approaching this broad topic and large-scale project was daunting, but ultimately, I greatly enjoyed the many months of the research and writing process.

This is why I propose that one of the solutions to naturally limit ChatGPT use in the classroom is to instill in students a positive disposition towards learning. Teaching students from a young age the importance of having an education and the power behind creativity is imperative. Theoretically, those who understand the importance of developing these skills are less likely to turn to ChatGPT when assignments inevitably increase in difficulty. As stated, the decision to implement these types of artificial intelligence in the classroom belongs to either the administration or the teachers. I urge educators to consider its tradeoffs, boundaries of use, and the disparities that would arise between students who are allowed to use it and those who are not. Nevertheless, educators—and parents as well—have a responsibility to teach technological literacy, and this unprecedented technological innovation is not an exception, especially because

these chatbots are not transient. While this technology should be limited throughout early schooling, once the students have developed a fundamental understanding of math, reading, and writing, they should be taught how to use these chatbots wisely. It could be more detrimental to students to stumble upon these chatbots with no prior knowledge about them versus if they already knew how to navigate them and were taught their pros and cons. Furthermore, classroom structures will need to develop alongside the technology. If the use of ChatGPT becomes common to write essays, for example, the student might have to present the findings orally in class to demonstrate their knowledge on the subject.

Some might doubt the widespread use of these chatbot technologies and image generators, thinking that this innovation simply will have its “five minutes of fame,” and will not gain traction with the public. I argue that integration into society will happen slowly. Once the interaction between the user and the technology becomes seamless (e.g., talking to the technology and receiving a perfectly curated response instead of having to type a specific prompt to extract a certain answer), it will propel into mainstream use. As for those who believe that the use of ChatGPT will not affect them, I implore them to not let the commodity of its succinct responses and versatility atrophy their creativity. There is a reason my argument is not exclusively geared towards students. Creativity is inherent to our humanity. Through it, we create art, which is a mouthpiece for our history and culture and a way in which we connect with others. How grateful are we to have works such as *The Last Supper* to inform us of the past and songs such as “Get Up Stand Up” that help us understand human plight. But also, at the surface level, how wonderful is it to simply marvel at and enjoy these creations? Even more amazing is the powerful therapeutic effect that creativity gifts its creators and perceivers. Likewise, creativity fuels innovation, the key to driving our society forward. It is the starting point from

which problem-solving and critical thinking develops. It is a valued asset in individuals, which is why it should be fostered in students. For this, creativity should be cherished and protected when it is threatened.

“The refusal to be creative is self-will and is counter to our true nature.”

— Julia Cameron, *The Artist's Way*

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