Choreographing Shadows

Interdisciplinary Collaboration to Orchestrate Ethical AI Image-Making

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Religious and art history depict countless interactions between humans and a myriad array of non-human intelligences, such as angels, bodhisattvas, and similar entities. These stories and their interpretation by artists have profoundly shaped cultures and religions. Today, we speculate about the potential to bring into being new kinds of non-human intelligence through Artificial Intelligence (AI) technologies.

Figure 1: Still image of an animated depiction of "Seraphim" [1]

What shape will this intelligence take, and can religious and art history shed light on how we can develop an ethic surrounding the use of these technologies?

In her 2019 lecture "The Language of Broken Glass"[2] German media artist Hito Steyerl compares medieval scholasticism discussing angelic intelligences to modern speculation about hypothetical artificial intelligence. Steyerl points out that the medieval artistic convention was to refrain from painting the shadows of angels to emphasize their non-human nature, whereas artificial intelligence is like an invisible object that can only be discerned by its shadow: *the human effort, creativity, and infrastructure that builds towards*

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[1] Click on the link to see an animated depiction of "Seraphim," built using Deforum StableDiffusion, a web-based AI platform, and Dreambooth, a web-based tool which allows users to custom tailor training data for use in StableDiffusion, in this case specializing in depictions of St. Francis's Seraphim.

[2] HKW – Haus der Kulturen der Welt. "Hito Steyerl: The Language of Broken Glass." Feb 26, 2019. *YouTube*. https://www.youtube.com/watch?v=iyyM4vDg0xw

the intelligence. While this shadow resulted from economic, military, and political interests, it is evolving so rapidly that it seems to encompass everything it touches. It is imminent, unpredictable, and inevitable.

Steyerl argues that as this shadow precedes the forthcoming object, we have an unprecedented opportunity to cultivate the groundwork and products of AI technologies that best support humanity. By actively taking part in shaping the shadow of the invisible object, we can define the non-human intelligence that may yet manifest.

Popular media attention suggests that the shadow of our current generation of AI tools may be the end of creative labor as we currently know it, such that Hollywood's writers' and actors' guilds have made the use of AI technologies a central debate in the 2023 labor strikes.[3]

Furthermore, direct experience with AI technologies can elicit emotions much like the powerful awe and existential fear evoked by stories of encounters with the Divine. Take, for example, the *New York Times* reporter whose interactions with the Bing AI chatbot led to sleepless nights,[4] or an arts educator colleague who says she cried for two days after being shown how the Stable Diffusion text-to-image generator responded to her class assignment and created works uncannily similar to her own students' artworks.

We hope to show that revelatory opportunities do exist within the AI art space. "Noo Icons" is an ongoing media arts project comprising images, video, animation, and installation, exploring how AI art generators, such as Stable Diffusion and Midjourney, engage with and transform how the religious sacred has been interpreted. By reviewing primary source materials, curating historical depictions, and using AI art technologies to re-interpret encounters between witnesses and "non-human intelligence," we hope to simulate the sense of awe, wonder, and introspection suggested by the historical tradition of religious iconography.

"Noo" in the title refers to the Noosphere, a proposed evolutionary biosphere representing humanity's collective consciousness, posited by French scientist and Catholic priest Pierre Teilhard de Chardin.[5] Concepts such as transhumanism, and technologies such as the internet and artificial intelligence are said to represent the Noosphere.[6]

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[3] Dalton, Andrew. "Writers strike: Why A.I. is such a hot-button issue in Hollywood's labor battle with SAG-AFTRA." *Fortune.* July 24, 2023. https://fortune.com/2023/07/24/sag-aftra-writers-strike-explained-artificial-intelligence/

[4] Roose, Kevin. "A Conversation With Bing's Chatbot Left Me Deeply Unsettled." *New York Times.* Feb 16, 2023. https://www.nytimes.com/2023/02/16/technology/bing-chatbot-microsoft-chatgpt.html

[5] Teilhard de Chardin, Pierre. *The Vision of the Past.* Translated by J.M. Cohen. London: Collins, 1966, 63. https://archive.org/details/visionofpast0000teil

[6] Delio, Ilia. "Religion and Posthuman Life: A Note on Teilhard de Chardin's Vision." *Toronto Journal of Theology,* 36, no. 2, (Fall 2020): 223-234.

This collaboration between an artist and a scholar of religious studies shows how diverse academic fields can work to refine these tools for productive research initiatives and to help forge an ethic of AI art.

Religious and AI Art: Prohibition and Responsibility

Depictions of the sacred have always been controversial, either prohibited outright, as in the case of Islam or Judaism, or marked by specific protocols, as in the Eastern Orthodox tradition. One such artistic tradition, Acheiropoieta (literally, "made without hand") maintains that certain images (ikons) come into being via miraculous means.[7] While it is understood that human beings hold the paintbrushes, they are agents of the divine, and it is believed that God creates the painting.

When producing an AI-generated image, the question arises, what hand is doing the creation? The interfaces of many text-to-image AI art generators suggest an invocation, where specific prompting formulas crowdsourced from internet communities or blind experimentation are used to conjure digital assets into reality.

Stable Diffusion and Midjourney generate their images via a subset of the LAION training set, a collection of over 2 billion images and their alt-text metadata, which is an embedded descriptor of the image's contents intended to describe and provide context.

While intended for accessibility for those who use screen reader software, alt-text best practices and compliance standards largely don't apply to the open internet, where a single noun or verb often does the heavy lifting of describing an image. Most images have no alt-text at all, limiting their usability and accuracy within these massive training sets.

These images, alongside their alt-text, are dredged from across the internet, almost always without the permission of the copyright owners.[8] These types of diffusion models work by first understanding how an image-text pairing can be deconstructed into digital noise. With enough knowledge of how this deconstruction works, the process can then be reversed and data can seemingly emerge from nothingness.[9] It is important to note, however, that no new data is being generated. We are merely recontextualizing very large amounts of this internet-based data into new assemblages.

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[7] Esparza, Daniel. "Without Human Hands: What is an Acheiropoeieton." *Aleteia.* Feb 21, 2023. https://aleteia.org/2023/04/01/without-human-hands-what-is-an-acheiropoieton/

[8] Ashe, Matthew. "DALL-E 2, Stable Diffusion, Midjourney: How do AI art generators work, and should artists fear them?" *Euronews.* Dec 30, 2022. https://www.euronews.com/next/2022/12/30/dalle-2-stable-diffusion-midjourney-how-do-ai-art-generators-work-and-should-artists-fear-

[9] Wiggers, Kyle. "A brief history of diffusion, the tech at the heart of modern image-generating AI." *TechCrunch.* Dec 22, 2022. https://techcrunch.com/2022/12/22/a-brief-history-of-diffusion-the-tech-at-the-heart-of-modern-image-generating-ai/?guccounter=1

This technique of manufacturing composites from the metadata of a few billion images produces what Steyerl calls a "mean image," a play on words referring to both a statistically average image representative of the "data populism" of the internet, as well as suggesting the common, exploitative, or even crass manner in which these images are constructed.[10]

Eryk Salvaggio, an interdisciplinary design researcher and new media artist, uses the output of AI images as a comparative analysis tool, describing these images as "infographics for their datasets."[11]

Put more simply, an AI image *sees as the internet sees.*

Both Steyerl and Salvaggio proceed with their image-making acknowledging that these tools are built on a foundation of questionable ethics, most notably the data exploitation that brought them into being. This new medium is unique because its very existence challenges researchers and artists to analyze the building blocks of their compositions, to reveal the hidden power structures and refine the fallible training data that give rise to these images, and to build on the open-source models that enable new and better technology.

Steyerl says that it is significant that when angels appear in medieval art, they often do so in numbers, and in ways that connote a kind of "choreography." She uses the term choreography to suggest not only numbers of angelic entities, but the idea that there is a process at work, an *engagement.* She suggests that AI presents an opportunity, even an invitation, to choreograph its social impacts. It invites us to this process.

Lessons from the Toolkit of Religious Studies

One of the most popular and widely depicted angelic encounter experiences in the Western art tradition is the appearance of a "Seraphim," a specific type of angel, to St. Francis of Assisi, which allegedly produced the stigmata, or wounds of Christ, on his body. This historical event of the 13th century is recorded in oral tradition and primary sources, which reveal a very specific representation of this alleged encounter:

> "While he was staying in that hermitage called La Verna… He saw in the vision of God a man, having six wings like a Seraph, standing over him, arms extended and feet joined, affixed to a cross. Two of his wings were raised up, two were stretched out over his head as if for flight, and two covered his whole body… The Seraph's beauty was beyond comprehension, but the fact that the Seraph was fixed to the cross and the bitter suffering of that passion thoroughly frightened him."[12]

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[10] Steyerl, Hito. "Mean Images." *New Left Review, 140/141.* Mar/June 2023.
https://newleftreview.org/issues/ii140/articles/hito-steyerl-mean-images
[11] Salvaggio, Eryk. "How To Read An AI Image." *Cybernetic Forests.* Oct 2nd, 2022.
https://cyberneticforests.substack.com/p/how-to-read-an-ai-image
[12] Quoted in Regis, Armstrong. "Francis of Assisi, Early Documents: Vol. 1, The Saint." Oct 25, 2002. *New City Press.* Hyde Park, NY.
https://franciscantradition.org/francis-of-assisi-early-documents/the-saint/the-life-of-saint-francis-by-thomas-of-celano/704-fa-ed-1-page-263

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When artists attempted to render these testimonies into images, they used prevailing artistic conventions to do so. These conventions changed the descriptions significantly. Various factors, including low literacy rates and the impetus to use paintings and art to teach about religion, created the conditions whereby the original angelic contact event appeared to look like the art and not the original testimonies.

AI Art exponentially compounds this problem. Any attempt to depict a Seraphim angel using tools such as Stable Diffusion or Midjourney will produce a composite image of what exists on the internet with any name or alt-text description mentioning "Seraphim."

Tools now exist, such as the website "Have I Been Trained," which enable users to explore the LAION training set, revealing that the metadata tag for Seraphim is associated with an incredibly large amount of variation and stereotypes associated with different types of angelic-appearing beings (Figure 2).
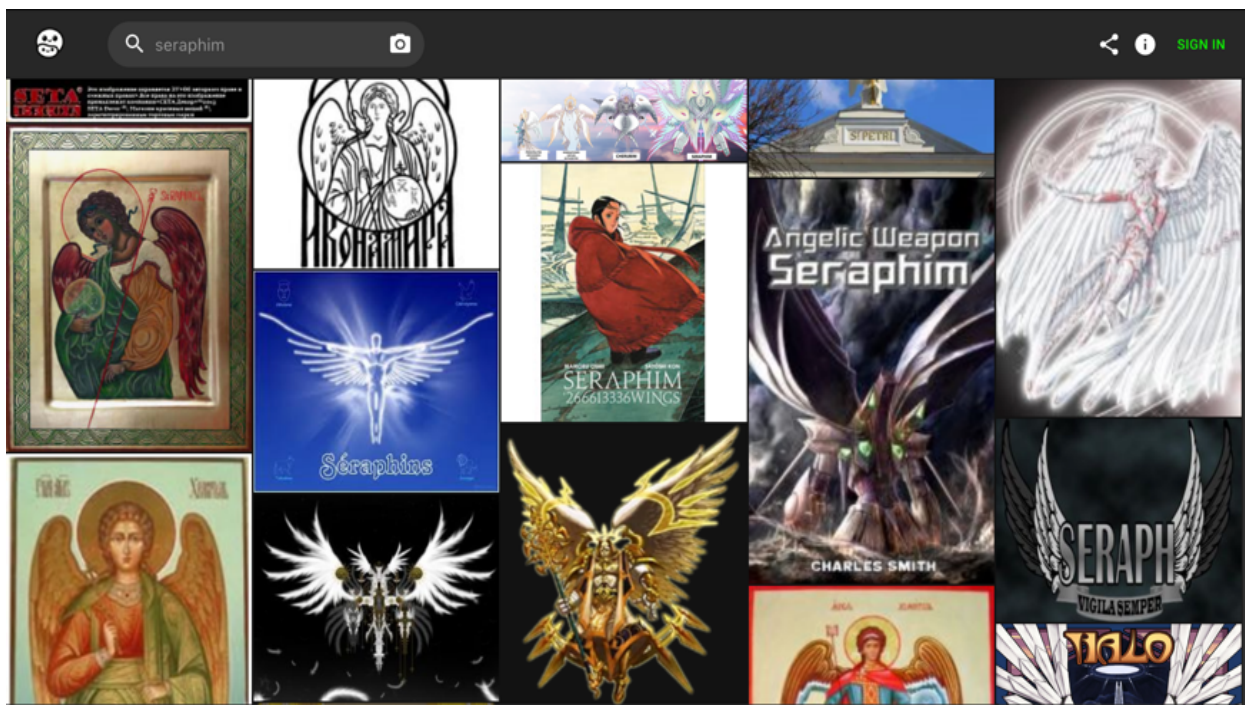

Figure 2

This change in the original testimony of a witness to a divine encounter, to its cultural representation in art, is called the process of redaction. Redaction and its correlate, redaction criticism, or an attempt to counter the processes of redaction, are two foundational theoretical methods within the discipline of religious studies.

Artists have much to gain from the study of redaction criticism, whereby investigations into training set data can reveal that what is present is just as important as what is absent. Neither the massive amounts of images sitting in public and private collections around the world waiting to be digitized are represented, nor is the "snapshot" of the internet captured by the LAION training set fully comprehensive of all digital assets which exist.
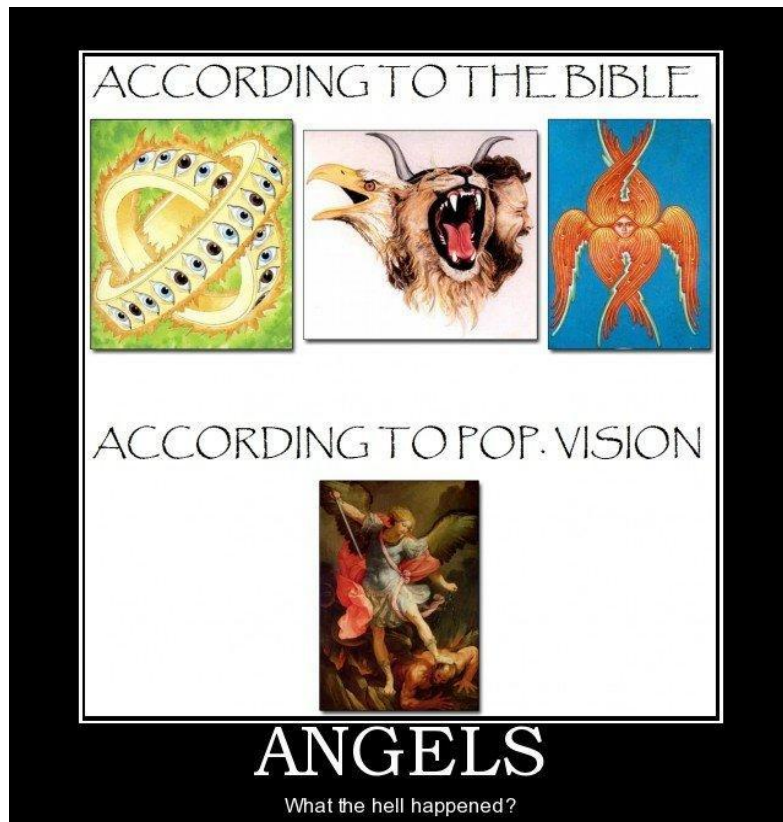
Figure 3. A "biblically accurate angels" meme, comparing popularly understood angel depictions against those described in biblical texts.

When applying redaction criticism to "Noo Icons," we hope to illustrate how artists can engage and transform how the sacred has heretofore been interpreted. We must proceed with caution, as there is always a danger in recapitulating stereotypes, but also the prospect of innovation. This opportunity only presents itself through interdisciplinary engagement with other academic fields, assisting in the artist process via the sharing and exploration of historical data and information about how these traditions have been shaped. This will bring into focus a new and profound relationship to that which we understand as transcendent.

In order to accurately represent St. Francis's Seraphim encounter using these tools would require a textual analysis of the earliest, original documentation of his encounter experience, alongside the creation of a wholly unique dataset specializing in accurate, curated depictions of this encounter.

Open-source tools such as Dreambooth and ControlNet allow users to further fine-tune existing Stable Diffusion models, effectively "teaching" the model new concepts or visual styles. As StabilityAI, the maker of Stable Diffusion, responds to pressure and litigation from artists wishing to opt out of having their copyrighted artworks included in the training set of

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[13] "Biblically Accurate Angels." 2021. *Know Your Meme*.
https://knowyourmeme.com/memes/biblically-accurate-angels-be-not-afraid

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future Stable Diffusion releases,[14] these new open-source tools will allow users to refine the dataset in more ethical ways.

 One notable exception to the issue of copyright is the introduction of Adobe's proprietary AI model named Firefly, which is now embedded in the 2024 release of Photoshop through tools such as generative fill. Adobe has trained these models on its library of stock images, as well as open license and public domain content, ensuring that users will not violate any copyright and will be able to use their images for commercial use.[15] However, this limited training set also hinders the "creativity" of the end product, only capable of producing images reminiscent of commercial stock imagery.

To produce unredacted, composite images reminiscent of the art historical content we were inspired by, the open-source tools of Stable Diffusion remain the most customizable. We began by searching for copyright-free, high-resolution scans of artworks that most match the description of the angel given in the primary source texts (Figure 4).

Figure 4. Examples of historical artworks depicting "The Ecstasy of St. Francis," which highlight his encounter with a Seraphim angel and his receiving of the stigmata, or wounds of Christ. Many of these depictions do not accurately portray what is referenced in the primary source material.

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[14] Kemper, Jonathan. "Artists remove 80 million images from Stable Diffusion 3 training data." *The Decoder. Mar 8th, 2023.* https://the-decoder.com/artists-remove-80-million-images-from-stable-diffusion-3-training-data/
[15] "Adobe Unveils Firefly, a Family of new Creative Generative AI." Adobe. Mar. 21, 2023. https://news.adobe.com/news/news-details/2023/Adobe-Unveils-Firefly-a-Family-of-new-Creative-Generative-AI/default.aspx

We then went through and gave each image detailed alt-text, written in such a way as to accurately reflect the unredacted material the images are sourcing from. This process effectively engineers what the machine learning algorithm "sees," citing foreground and background elements and differentiation between subjects. The most important factor here was training the algorithm on what we want our Seraphim to look like, favoring our curated sources and minimizing those from the LAION training set.

Finally, to highlight the underlying aesthetics of artists we have curated and those that may already exist in the training set data, we make our prompt reflective of those visual styles that have already approached the topic, taking care to avoid language that would intentionally pull from copyrighted material. One such example would be generating work "in the style of Giotto di Bondone," a late medieval Italian artist whose frescoes are reliably found in training set data and who is attributed to several St. Francis depictions.

In doing so, we can create new composite images and animation sequences of Seraphim which push past the redacted materials and fallacies of the internet eye and serve the function of offering new kinds of visual aids to explore this historical topic. Figure 1, at the beginning of this article, includes a link to the animated sequence.

Responsible Creation

Much concern has been placed on the production of photorealistic "Deepfake" AI images for their political and propagandistic purposes. While doctored images have played a role in previous election cycles, the threat of such images will only be compounded with the arrival of easy-to-use AI technologies. Already in the 2024 election cycle, the Republican National Convention has published a 30-second attack ad featuring AI-generated images of Joe Biden and Kamala Harris winning the election, followed by images of China invading Taiwan and the US border being overwhelmed with migrants.[16]

Although a subtle watermark informs the viewer that the ad was "built entirely with AI imagery," it's the advertisement's use of alarming narration and eerie music that heighten the drama and cements an "imagined reality" within the viewer's mind. These techniques pose risks.

Artists must acknowledge that AI-generated images have the power to influence susceptible viewers when fact and fiction are blurred. Such images, presented without acknowledgment that they are AI-generated or where powerful post-production techniques manipulate emotional response, suggest the need for a strict code of ethics surrounding their presentation and use.

Research into cognitive science reveals that even when viewers consciously disbelieve in the media they consume, parts of their brains believe the media represents reality. This process involves the formation of memories and the creation of conscious frameworks that form the

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[16] GOP. "Beat Biden." April 25, 2023. *YouTube*.
https://www.youtube.com/watch?v=kLMMxgtxQ1Y

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basis of belief.[17] The more immersive the media, the more intensive the realism-producing effects.

This is one of the reasons why Deepfake imagery poses disturbing social effects, but there are also degrees of belief in various non-realistic media, such that even images from anime-style media produce belief.[18] AI-imagined photographs shine a light on concerns that have been with the medium since its invention. For example, we find that within early war photography, the staging of scenes was used to heighten drama and to influence public opinion.[19] Returning to Steyerl's point—an ethical intervention at this formative stage is possible.

One ethical use case study from the "Noo Icons" project shows how interdisciplinary collaboration, alongside the vetting of text and image sources, can produce "imagined" historical photographs from twentieth-century visitations of the Virgin Mary. From May to October 1917, Mary was alleged to have appeared to a group of young peasant children in Fatima, Portugal. As the visitations continued throughout the year, news began to spread and crowds amassed to several thousands of people, culminating in the October 13th "Miracle of the Sun," in which the attendees claimed to have watched the Sun "dance in the sky."

Newspaper agencies that covered the event recorded not only eyewitness testimony from the day but also photographed the expectation and wonder of the crowds watching the skies.[20] It is through the captivating testimony from thousands of witnesses that the Vatican has given this event one of its rare seals of approval, deeming the apparition "Our Lady of Fatima."[21]

By using Midjourney's image-to-image tool, we can produce "imagined" photographs that appear to have the same stylistic and photorealistic aspects as the original images taken during the 1917 event. We can use these tools as visual aids to explore other aspects of the event which are recorded in the primary source testimony, but for which we do not have photographic evidence. For example, many witnesses allege that objects appearing to be flower blossoms or rose petals descended from the sky during the apparitions, but disappeared before coming in contact with the ground (Figure 6):

> "Before or after seeing the luminous globe, but certainly on the same day, myself and some others... began to see something fall, as if the petals of roses or flowers of snow

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[17] Zacks, Jeffrey. "*Flickr: Your Brain on Movies.*" 2014. Oxford University Press. New York, NY.
[18] Pasulka, Diana. "American Cosmic: Religion, Technology, UFOs." 2019. *Oxford University Press.* New York, NY.
https://www.loc.gov/collections/civil-war-glass-negatives/articles-and-essays/does-the-camera-ever-lie/the-case-of-the-moved-body/
[19] "The Case of the Moved Body." *Library of Congress.*
https://commons.wikimedia.org/wiki/File:Newspaper_fatima_353.jpg
[20] De Almeia, Avelino. "O Milagre de Fatima." *Ilustração Portuguesa*, No. 610. Oct 29, 1917.
https://commons.wikimedia.org/wiki/File:Newspaper_fatima_353.jpg
[21] Encyclopaedia Britannica. "Lucia Dos Santos." Britannica. June 7, 2023.
https://www.britannica.com/biography/Lucia-dos-Santos

were coming from the heights and disappearing just a little over our heads, with us being unable to touch them."[22]

Figure 6: The image on the left shows an actual photograph from the October 13th, 1917 Fatima Marian Apparition. The image is then uploaded to Midjourney with a prompt detailing "falling rose petals" to produce the "imagined" image on the right.

Although numerous photos were taken at the Fatima apparition site during the alleged "Miracle of the Sun," none document the light phenomenon or other miraculous occurrences said to have taken place. These original photos capture the ethos and gravitas of the day, a representation of hope and austere devotion during the height of the First World War.

With our AI-generated photographs of Fatima, "Noo Icons" seeks to provide an additional imaginative layer capable of expressing the psychology of the day. They are companion pieces, understood only in conjunction with their source material and with the context that they are AI-generated, revealing that which could not be rendered on physical media.

The production of such images not only requires careful research when vetting the primary source material but also consultation with subject matter experts who can bolster these "imagined realities," such as removing anachronistic elements that often appear when using unreliable training set data. Furthermore, attention must be paid to not infringe on the creativity and authorship of the original images; Can these AI works be made derivative enough to satisfy Fair Use clauses of transformative works?

A major question still stands. How might someone less scrupulous repurpose these AI-generated images for their own devices? What tools do we have at the moment to control the narrative of the presentation of these images? We have already noted that providing a caption alongside the image stating that it is "AI-Generated," may not be enough. Even watermarks, which muddy the aesthetic of an image, can be edited out using readily available tools, many of which are now easily AI-assisted. Although they too can be edited, we may also consider that alt-text descriptions emphasize that images are AI-generated.

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[22] Quoted from Fernandes, Joaquim and Fina D'Armada. "Heavenly Lights." 2007. *Anomalist Books.* San Antonio, TX.

Certain AI image-making platforms, including Midjourney and Dall.E 2, default to public-facing profiles where any individual's image production can be traced back to their unique accounts. Such practices discourage bad behavior and can serve as a model for how other companies can reduce unethical use.

Tech companies are currently working on solutions for the detection of AI images,[23] and until such tools exist, we must meet the challenge with a mix of increased regulation across all sectors: governmental policy, self-regulation on behalf of the tech companies, and increased moderation among public forums in which such images will be shared. This should take place alongside investments in media literacy across our education and media landscapes.

Looking Past the Mirror

At the genesis of the Noo Icons project, our initial goal was to see how these encounter experiences with non-human intelligence would be depicted by a technology whose capacity for intelligence we are currently speculating about. It was only through "looking under the hood" and understanding how these technologies worked that a greater concern for ethics, internet biases, and artists' rights began to emerge. The project has also provoked questions about how AI art challenges our definitions of intelligence and creativity, which will require further investigation among other academic disciplines.

Steyerl's assertion that AI is an invitation therefore becomes unavoidable, an object whose shadow is so large and looming that it seems to cover all manner of society. And yet, in this shadow, we find solidarity. It is up to us to define the intelligence yet to come. As creatives, we can do so by recognizing that popular AI art technologies are like a mirror, only capable of reproducing what we input and how we address them.

This new medium challenges us to address foundational and existential questions:

Is AI image-making the natural end product of our human tendency towards endless copy and derivation in the hopes of creating transformative works?

Are we capable of fixing a system founded on exploitation and could that tool ever be used for productive and enriching purposes?

And should we accept AI technologies as an *inevitability?*[24]

In the fifth century, a highly influential, pseudonymously written theological text emerged called "On the Celestial Hierarchy," which sought to describe and categorize the different

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[23] Korn, Jennifer. "'We no longer know what reality is.' How tech companies are working to help detect AI-generated images." *CNN*. June 8, 2023. https://www.cnn.com/2023/06/08/tech/ai-image-detection/index.html

[24] Artist and Researcher Serife Wong's "The Origin of Clouds" touches on this topic beautifully: https://logicmag.io/supa-dupa-skies/the-origin-of-clouds/.

types of non-human intelligence depicted in the Biblical texts and the personal experiences of early Christian saints and mystics.

The author argues that it is appropriate to portray celestial beings using "ugly" and "unseemly images" that are unlike the divine realities they represent because they "arouse the upward-turning part of the soul," and remind us to transcend "earthly things."[25] The author argues that although we should not idolize images, there is an inspirational element in their production and the evaluation of their faults because this process points us towards greater realities.

Our hope is that Noo Icons can serve as a case study for how ethical collaboration across academic disciplines can help define AI's shadow: the foundations upon which future iterations of artificial intelligence may be built.

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[25] "On The Celestial Hierarchy." *Christian Classics Ethereal Library*. Grand Rapids, MI. https://ccel.org/ccel/d/dionysius/celestial/cache/celestial.pdf

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