

Artificial Intelligence: Dreams, Data, and Neuroaesthetics in the Age of AI

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Abstract: In an age where the worlds of art and science continuously collide, scholars and storytellers alike are increasingly using Artificial Intelligence (AI) to analyze and represent their internal worlds. As AI becomes further enmeshed in the everyday experience of humans and other sentiences across the planet, questions begin to arise concerning ethical representation of the self and other, technological anthropomorphism, and artistic expression. Our dialogue contains several modalities: text, poetry, artistic thought experiments, speculative compositions and images. Our aim is not to provide answers to these ever-accelerating questions about AI, but to open up and expose the grooves of various narratives surrounding AI by engaging with experimentation, dialogue, and speculation as modes of discovery.

Each section of the text begins with a poetic provocation by S. J. Abiodun, and continues on with an exchange between the two authors, fluidly leaping between our individual and collective knowledge as researchers, artists, and interdisciplinarians.

Keywords: artificial intelligence, dreaming, neuroaesthetics, research-creation

1. Introduction

*if androids do dream of electric sheep,
are they able to paint them?
are they able to add detail
to the small tufts of wool
and note the sounds of their virile bleating?*

*are they able to describe and etch
each blade of grass in the pasture
over which their fence runs
over which their sheep hop?*

*or do they simply envision these creatures
as components within an iterative system
another metric of the goal-oriented process
of lulling themselves into standby?*

Current day discourse around technology and society characterizes Artificial Intelligence (AI) as an unprecedented realm of computational advancement that may rival, if not supersede, human cognitive abilities (Abiodun 2018). But AI, at its core, is not a new concept, and the invention of tools for creative mediation and intellectual exploration has been practiced since the first piece of flint was used to coax a flame, or the first paintbrush selected to graze a taut canvas. Given the potential for these emerging tools to challenge our perspective on the traditional dynamic between human expression, technology and art, we offer the following exchange as a means of exploring the

many intersections between neuroaesthetics, embodied artistic practice, and Artificial Intelligence. Our exchange moves through various ‘grooves’, guided by the poetic stanzas that preface the sections, that take the reader and the authors through explorations of text and context (reflections on scientific and artistic applications of AI), exploration of inputs and outputs (creative experiments using AI intermediates), and discussion of the application of quantitative and qualitative frameworks in a multidimensional world.

Our dialogue begins with an observation by S. J. Abiodun: in Fall of 2022, there was a notable uptick in social media users that were illustrating their dreams using artificial intelligence image-generation models. Many users spoke to the experience of being able to generate representations of their internal worlds, core identities, and imagined futures as liberating and euphoric, especially when they were given direct access to the creative potentials even without traditional training in programmatic or artistic disciplines (Keller 2022). As the conversation has evolved, the impact of these emerging technologies on an increasingly fragile labor market – where artists and creative practitioners are trying to adapt with the looming possibility of their process and value being outsourced – also raises major questions about the ethical nuances of automated creativity, process oriented vs. product oriented economies, and human-centric perspectives in a technocapitalist landscape. Together, these observations of the intertwining of creative, cognitive, and artificial worlds sparked a question: what are the implications of using generative AI technologies to mediate creative expression of our realities? Rather than answering the question directly, we instead propose to work through it using the tools at our disposal as interdisciplinarians: writing, researching, creating art, and engaging in the speculative. Our aim is not to provide definitive answers to ever-accelerating questions about AI, but to highlight elements of the parallel narratives surrounding AI by engaging experimentation, dialogue, and speculation as modes of discovery.

This dialogue features two core participants, as well as numerous nodes of input from their adjacent communities. S. J. is a scientist and artist interested in emotion, subjective experience, and neurocinematics—the neuroscience of visual media. Luke Nickel is a multidisciplinary music composer and artist exploring memory, transmission, and roller coasters. The pair met at an interdisciplinary summer institute that brought together scientists and ‘storytellers’—artists, science communicators, and writers—to discuss various aspects of human, animal, social and artificial intelligences. Conversations related to this dialogue date back to November 2022 and continued through April 2023. What began with an observation about AI and dreaming led to a larger discussion weaving together the subjects of expression, mediation, and narrative.

Philip K. Dick’s 1968 novel, *Do Androids Dream of Electric Sheep?* contains an important duality: the androids to which the novella refers do not sleep or dream, whereas humans do. In the title of this piece, a classic reference in western pop culture to AI sentience and technological futures, Dick elides the notion of sleeping/dreaming with that of desire—desire/dreaming and sleeping/dreaming both being essentially human qualities that exist in opposition to those artificial qualities of the android.

When we dream, we create and experience multimodal hallucinations that often contain fragmented narratives. When we wake, we can apply these narratives to our life. We can analyze their component parts to investigate the past experiences to which they relate, or we can view them as predictive of possible futures. What happens when we invite artificial intelligence into this pipeline? What happens when we imagine these technologies as a dreaming partner, a co-dreamer that can reflect aspects of our dreams back to us through the probabilistic prism of highly biased human narratives—both images and text? When we use computational tools to interface with our dreams—whether through text prompt, linguistic analysis, image creation, or interpretation of electromagnetic impulses—we invite technology into the process of interfacing our inner worlds.

We might also ask ourselves: who and what else do we invite into the dreaming pipeline in these scenarios? For example, we can envision the bones of past training data—both voluntarily and involuntarily provided—algorithms and code made by sources both benign and corporate, or

outsourced workers processing and censoring data as well as researchers in labs. We may imagine artificial intelligence as a co-dreamer, but it also encompasses a multitude of actors and influences, data and technologies, pasts embedded into presents and futures.

The mediation between internal and external worlds is also discussed in the context of psychology and brain sciences, particularly in explorations of cognitive phenomena that elucidate how mental (internal) context interacts with, and is shaped by stimuli in our environmental context (Franklin 2020, Bellana 2022, Brandman et al 2022). When folding dreams and imagination into the realm of internal world-building, it evokes a key question: what (or who) is the mediator and what (or who) is the medium? Many neuroscientists would consider the brain to be a computational medium through which input and output interface, and thus adopt the role of interpreter when using empirical methods to analyze neuroimaging and behavioral data (Baria & Cross 2021). In this scenario, new AI technologies—such as neural network models of language (BERT, ChaptGPT) and imagery (Stable Diffusion)—take on a dual role as well, not only analyzing (and mediating) the data, but iterating on these inputs as ‘training’ to subsequently predict outcomes and generate new information (Horikawa 2013, Floridi 2020, Jain et al 2020, Dehouche & Dehouche 2023, Takagi & Nishimoto 2023). When AI is considered as medium and scientists as mediators, does this map onto the usage in the wider world including creative practice? Or are we moving to new configurations when we request that these AI agents not only extract, but also express?

2. AI, Dreaming, Image-Making and Replacement

*when we think of androids dreaming of electric sheep
&&& instead
task them with making sense of
the sheep that we dream of
the pastures that we roam in
can our dreaming droid situate itself
within the context and frame
that stretches beyond
the data, the outcome, the quantity of {in;out}put
&&& instead
seek to behold
the quality of {im;ex}pression and interpretation
of subjective subjects
and contextually textured matter
grounded and granular and gauged
by human reality, human experience?*

Dreaming as Image-Making

[Luke Nickel]: As an artist, I often try to understand artistic and cultural phenomena by participating in them. Over the past number of years, I have explored AI in many aspects of my creative practice. For example, in early experiments I trained an image model on documentation of an interdisciplinary arts festival that I directed to eventually ‘curate’ an artificial festival of images as my final edition before leaving the post. In another project, I wrote text collaboratively with GPT-2 to create a ‘spell’ transforming audiences into roller coasters in an act of gravitational witchcraft, inspired by collaborative human-AI writing techniques described by K Allado-McDowell (“Interdependence”). Conducting these and other artistic experiments with AI has allowed me to feel some sense of control in a time when tools and technologies seem to be thrust upon artists in an ever-accelerating spiral.

And so, when S. J. mentioned seeing twitter and reddit users illustrating their dreams using Midjourney, an AI text-to-image model that sprung to popularity in 2022, I decided to try to do the same.

Using tools such as Midjourney as an artist does not come without complications. 2022 was the year that a large and very public backlash against AI image-generation occurred: starting with Kim Jung Ji's unexpected passing and posthumous use of his images to train an image model (Deck 2022), Jason M Allen's state fair win with an AI-generated painting (Roose 2022), and leading to a growing outcry against the Lensa app and Laion dataset used to train Midjourney after private medical photos were found in the dataset (Xiang 2022). In my practice I normally would consider data provenance highly important, favoring my own datasets and trained models; however, in this experiment I wanted to use the most widely available tools possible.

I began by journaling my dreams during the months of January and February 2023; however, generally my dreams in this period felt very short and fragmented, and my written recordings of them correspondingly brief. Despite some attempts at inputting them into image generation models, both my writing and memory of the dreams lacked enough detail to create any satisfying images. If I performed a similar experiment again, I might try to cultivate longer written recollections of the dreams themselves, as I believe that the brevity of my writing did not lend itself to prompt creation.

...firepit sewage overflow on the beach mopping with towels...
...what do you want your party to be like? "Not happening" nonbinary party doula...
...pissing on a chalk line that someone is painting...

(writings from my dream journal, Jan 2023 - Feb 2023)

Sacrificial replacement and the loss of multimodality

I have a number of dreams that I can recall that contain memorable images—particularly those from when I was as young as three years old—but I worried that by using an AI to illustrate them, I would replace my original mental images with their AI-illustrated versions. These dreams and memories from such early ages are sparse, and thus feel precious. Of course, my memories of these dreams have already been replaced by my own recall from memory, and retelling to others. However, I felt concerned about this technological replacement because rather than my own home-brewed displacements through writing or oral transmission, they could be replaced by images and algorithmic content from external sources—almost as when readers are anxious about having their own images of book characters replaced by those of a major motion picture adaptation. I did find a dream from a diary from 2017 that I was willing to ‘sacrifice’—a short dream taking the form of an ambiguous fashion photoshoot. I tried to distill the dream’s images into coherent text prompts, which involved summarizing the dream’s overall situation and its most striking features and colors. Then, I input them into Midjourney, where my text would be transformed into AI-generated images (using Midjourney) as seen below.



Left: An enormous brutalist concrete diving platform indoor pool, a small diving male bearded model wearing a billowing silk yellow avantgarde garment issey miyake diving headfirst in motion, action shot, vogue photoshoot, wide angle shot, faraway, film photo

Right: Indoor brutalist swimming pool 3 - level olympic concrete high - rise diving boards, a diving bearded male model mid - dive hands outstretched toward pool wearing billowing flowing yellow silk high - fashion garment issey miyake, film photo, vogue, glossy, hq

The first thing I noticed is that it was remarkably challenging to create an image that accurately represented my recall of the dream. Dreams are multimodal, containing complex sense memories, fragmented narratives that ambiguously shift agency and perspective, and are layered with anachronistic feelings. Writing already loses some more sensory dimensions, and a flat, unmoving image loses even more. Dream scholars and analysts such as Hall and Van De Castle have created many categories for content analysis that attempt to capture these modalities, such as locational and emotional information (1966). Much of this information is lost when converting a dream to a text-based image prompt, in particular any ideas that point to the flow of time, changes in perspective, and abstraction. In the case of this dream-turned-prompt, the nature of a fashion photoshoot matched the vocabulary found within Midjourney's data set quite clearly. Very quickly I had to abandon the idea of making a faithful interpretation to making a high quality image.

Whereas my above experiments were nearly instantaneous, earlier work with AI took hours and even days to garner any results. In 2020–2021, the timescale of generating images using AI genuinely felt like dreaming. Projects such as training an image model on all the open source images of roller coasters from wikipedia or generating images trained on single frames of videos could sometimes take up to eight hours. I would half wake up at 5 am to move my mouse to keep my Google Colab environment running in order to continue generating images, often viewing images in a state of half-waking. The images I generated frequently surprised me with their dark and illogical glitchiness. The time-scale and complexity of the process felt tied to my surprise and delight in the results.

Now the images I created in Midjourney do not elicit any surprise or curiosity in me. I will not proclaim that all AI-generated images are hollow or uninteresting, because that would discount excellent work in the field by artists such as Holly Herndon and Mat Dryhurst. But these quickly generated images made me feel more a part of a dystopian algorithmic future, summoned out of an endless scroll on deviantart, and returning to that void after my eyes leave them.

Involuntary use of data

While in my case my actions were voluntary and experimental, for many, participation in this algorithmic future—where the self, artwork and algorithm are fused—is involuntary. Multiple artists have attempted to file lawsuits against Midjourney, and at the same time there have been numerous attempts at creating tools that render images unusable by AI (see Zhao's 'GLAZE' tool, and MIT's 'photoguard'). Unfortunately, as Melissa Heikkila points out, many of these tools can be circumnavigated by simply taking a screenshot of the image for use in training (2023). Even Herndon and Dryhurst—generally positive proponents for the use of AI—are attempting to solve the problem of consent in image use through the creation of their page 'spawning', which provides artists with the opportunity to opt in or out of future training. The need for a solution to non consensual image training is necessary not only for visual artists, but also creators across many fields. At the time this article is being written, there are major protests taking place in the form of the Writers Guild and Screen Actors Guild of America strike that are centered around the appropriation and nonconsensual use of both actors' and writers' artistic property. While my own experiments do little to redress these growing concerns, I hope that my forays might expose some of the mechanics of working in this problematic field as an artist.

Loss and Lossiness

As we pass through the uncanny valley—a recent tweet about Midjourney v5 by Bilawal Sidhu on March 17, 2023 proclaimed that we have ‘crossed the uncanny valley’ (Bilawal Sidhu [@bilawalsidhu])—the other side is a smooth, richly coloured and yet somehow featureless meadow. These high quality, or ‘rich’, images lack ‘poor’ images’ ‘link to the present’ (Steyerl 2009)—though the relationship between high and low quality images in machine learning is actually intertwined, with poor images forming an essential and effective component of model training (Wasielewski 2023). What is lost, then, is a sense of *lossiness*, but in the wrong areas: while the rich multimodal expression of dreams, glitchy content, and distinct working method of earlier AI work is lost, only a higher quality and more instantaneous image is gained. Lossiness is a term lifted from file compression, and here indicates a perceptible aesthetic or trace of compression that has occurred (such as the characteristic warbling of a poorly compressed MP3). Ian Rothwell’s proposal that lossiness can be framed as a fundamentally queer encounter (2021) resonates with me: it is this queer weirdness in my early encounters with AI—and with dreams themselves—that is missing from this new workflow.

As an artist, locating and deploying loss and lossiness as productive creative processes has held great interest to me over many research-creation projects. For example, in earlier music works, I have created a multigenerational system for the oral transmission of textual and musical information that results in embodied ‘living scores’ (Nickel 2017), a process which foregrounds the productive and essentially creative nature of memory loss in iterated transmission (Nickel 2017). These works, as well as living scores by various other composers, ‘bloom’ in rich multimodal networks that flourish with the growth of community and repeated transmission (Nickel 2020). Somehow, loss seems like an essential component or byproduct of interfacing with our internal worlds and communicating them with others.

Now, after reflecting on my Midjourney experiment nearly a month after making these images, my recall of my original dream has melded with its new AI counterpart, prompting me to wonder: what *has* been lost? And what was lost in the original translation of my dream to a written description from memory or the initial experience? Could any of these stages be transformed into generative, creative loss?

Context and Comparisons (Scientific Practice vs. Creative Practice)

[L.N] S. J., as a scientist and artist, do these ideas of imagery, narrative and replacement spark any resonances?

[S. J. Abiodun]: There is a *lot* to be said in reply to your thoughts about these ideas, especially in juxtaposing cognitive and creative perspectives.

As a scientist, my approach and outlook on the increasing use of AI is centrally tied to its implications within institutional research settings, specifically making use of machine learning algorithms, natural language models, iterative programming interfaces and ‘smart’ analysis pipelines. Researchers discuss these tools in the context of optimization and fine-tuning the precision of data interpretation.

As an artist, more specifically one centered in visual storytelling and moving images, I have been intentional in studying and practicing organic, manually iterative synthesis, taking on a far more ‘analog’ approach than my scientific practice may suggest. I do not necessarily have an aversion toward computational tools in art-making; in fact, recent projects such as ‘Computational Poetics’—a 2022 exhibition curated by Hannah B Higgins & David Familian at the University of California, Irvine—and ‘REkOGNIZE’—a 2017 triptych film by Bradford Young comprised of scenic photography and matrices of metadata extracted from archival images—are just two examples of thrilling mergers of aesthetic and analytic practices, bringing life to the idea of ‘illustrating the iterative.’ However, I am driven by a meta-analytical desire to consider how processes of generative synthesis

differ between scientific and artistic contexts. If I consider myself a creator, for instance, what underlies my concept of what it means to ‘create’? If I am a scientific analyst, conversely, what motivates my desire to produce scholarly knowledge by interpreting existing or generated data? I juxtapose quantitative significance and qualitative nuance as a way of comparing practices seeking objective definition to those finding subjective meaning.

Multimodal Data Frameworks and Dimensionality of the Input

Thinking about the cognitive framework of it all, we can compare the quantitative vs. qualitative in the context of top down (goal-oriented) vs. bottom up (experience-driven) processing, and also in relation to the dimensions of raw experience/input vs. subsequent interpretation/output. Any physics enthusiast will tell you that the process of transduction within a system—whether the transduction of energy, information, or experience—will result in some loss of its dimensionality, simply by virtue of the process of being mediated/transferred through some conduit or tool. The same applies in the context of our brains mediating interactions between perception and memory: when you go from an initial experience (crying while watching the first five minutes of Pixar’s *Up*), to memory consolidation (storing that memory for a rainy day), memory retrieval (recalling that scene when you see a balloon a week later), and reflection (recounting the sad scene to a concerned friend who notices you crying), the characteristic differences between initial and eventual narrative is influenced by subjective, temporal, and modal contexts (Barber & Mather 2013, Schacter 2022, Zadbood et al 2022). Even when this process is occurring within a ‘contained system’, i.e. our own minds, there is still a potential change in the fidelity of that information any time it is mediated or transduced, similar to the lossiness you described. This is the conundrum that arises when trying to approach bottom-up processing within a top-down framework.

When asking this question in the context of dreams, I feel inclined to plainly declare that ‘dreams aren’t data’. This is a broad statement, in many ways, and would be directly contradicted by a moment’s consideration of the historical roots of dream interpretation evidenced in spiritual rituals and shamanic practices, research on consciousness and mind-wandering, and the foundations of psychoanalytic theory (Mfusi 1984, Barrett 2001, Domhoff & Scheider 2015, Christoff et al 2016). What I really mean is the following: multidimensional matter, like dreams, resists convenient datafication, and exists beyond reduction into representative values within a model-defined vector space. When trying to fit experiential or visceral knowledge (such as dreams, imagination, emotion, etc) within a probabilistic inference model, we should be critical of the importance placed on the descriptive value of our ‘data’ (Birhane 2021). Many expressive processes are egocentric (subjective, ‘local’) by nature, and therefore lend themselves well to efforts to ‘interpret meaning’. When mediated through an allocentric (relative, ‘global’) framework, such as a pre-trained AI intermediate being used to ‘seek definition’ within a particular canon or knowledge schema, these data must be regarded with nuance.

Furthermore, the aforementioned historical practices of dream interpretation all have a common thread: human mediation. We can understand dream interpretations as “output” generated by another human participant, rather than a mechanistically-trained model. When considering the synergetic relationship between medium and mediator (whether in the context of art, psychology, or society at large), one cannot assume that an artificial intelligence agent – regardless of how robustly trained or tested – can fully replace the contextual perspective (and access to expansive canon, relational experience, and associative knowledge) provided by a human interpreter.

Interpretive processes and implications of the output

[L. N.]: Given the way you frame dreams as resisting data-fication, I wonder why dreaming has been a central metaphor surrounding AI?

From Phillip K. Dick's novel to Google's 2015 DeepDream technology, which was quickly compared to dreaming and psychedelia (Hern 2015), AI and dreaming seem tightly intertwined. Using AI to analyze written textual accounts of dreams is a growing field (Fogli et Al 2020, Yu 2022, MacNamara et Al 2023). Google's DeepDream paved the way for the use of dreaming as a metaphor or image-generation—now used in MoMa's exhibition to describe Refik Anadol's *Unsupervised* (Davis 2023). The reverse is also true: processes involved in AI such as overfitting and noise are used by scholars such as Erik Hoel (2020) to describe human dreaming. Perceptions divorced from reality are often considered dream-like, and we've heard descriptions of AI 'hallucinating' when it creates counter-factual knowledge (Tung 2022). What can this parallel tell us about how AI relates to the narratives of our inner world?

[S. J.]: As we navigate ever-evolving disciplines – both within creative and intellectual communities and institutions – we are asking as practitioners, researchers, users and individuals, how to make sense of the gradual integration of AI into many aspects of our lives, creative and personal. We ask how we are meant to engage with these changing technologies, as tools of interpretation and analysis, or collaborators (and rivals?) in knowledge synthesis and meaning formation. And most notably, we debate about the ethical implications of automation in practices of creation, expression, and labor. Does using AI as a medium of generation and analysis (of art, of data, of experience and reality) encourage convergent interpretation, or is it a reductive lens through which formative experience is limited to formulaic equation? This ties back to the point I made above, regarding the difference between top-down vs. bottom-up guided processes. Any top-down model approach lends itself to a system of hierarchical evaluation: the system receives the information and biases its interpretations based on what it considers 'significant value', 'best output', and 'highest quality'.

In many research contexts, data quality optimization is achieved by tightly controlling experimental parameters (such as participant demographics, experimental setting, stimulus complexity, and scales of measurement) to ensure reliability and reproducibility of analyses and findings. This optimization perspective is a core component of many scientific/epistemological frameworks, but must be applied with caution when used to frame 'narratives' around real-world experiences and expressions that exist outside of institutional (read as: experimentally controlled and contrived) contexts (Hasson 2020).

3. Expressive flexibility: thinking about feelings and feeling through thoughts

*when we (i) think of neuroaesthetics
as field, as practice, as framework
{through;by} which we measure
signal to noise ratio
{through;by} which we explore
the cognitive
 processes of {memory;perception;social cognition;emotion}
 et cetera
the creative
 processes of {experience; expression; exchange; exhibition}
 et cetera
we subsume the two within a juxtaposition
between aesthetic and epistemological
between scientific and phenomenological
between mechanistic and visceral*

A neuroaesthetic frame on methodological processes

[L. N.]: How does your research in neurocinematics relate to the idea of measuring expressive information in a mechanistic way?

[S. J.]: When thinking about the goal of many tools of interpretation and analysis—such as the tools within cognitive research spheres to analyze various types of data (neural, behavioral, ecological, physiological)—there has already been a longstanding discussion of how we can broaden our research approach to avoid reductive conclusions that don't generalize beyond experimental contexts (Neisser 1982, Jolly & Chang 2019, Nastase 2020, Finn 2022). Within the field of neuroaesthetics—which examines the interplay between cognitive processes and aesthetic (narrative-driven) experience—this broadening occurs when scientists use media, such as film, music, and spoken narratives, as 'naturalistic' experimental stimuli (Chen 2017, Sachs 2018, Nastase 2021). These studies aim to construct rich representations of cognitive phenomenon that are more 'ecologically valid', and are therefore more resonant with the dynamics of real world context.

The memories, experiences and emotions that comprise our internal worlds are not only deeply complex, but deeply idiosyncratic (Chang 2021, Finn 2020). Due to their multimodal nature and contextual richness, these data often resist simplification into some of the frameworks of logical or temporal linearity that reduce heterogeneous sources of input to simple, definitive output, often achieved by trading off individual variability for group-level similarities (Chen 2017, Jolly & Chang 2018, Nastase 2020, Horikawa 2020).

Within naturalistic neuroscience, we already accept that our goal is not to eliminate dimensionality loss entirely. This would be impossible, much like the inevitable loss of energy in any system when that energy is transduced. Rather, we aim to capture the components of the signal – whether of BOLD data or electromagnetic pulse – that supersede a predetermined threshold originating from equipment interference or data anomalies. This proportion is often referred to as our 'signal-to-noise ratio', and having a high SNR is integral in characterizing what pattern fluctuations are significant enough to draw robust conclusions (Nastase 2020, Hasson 2020).

In many ways, neuroaesthetics is a practice in multimodal mosaic making, weaving together aesthetic appreciation and neural response (Cinzia & Vittorio 2009, Chatterjee & Vartanian 2014). It merges with naturalistic neuroscience through the integration of multidimensional inputs—neural, behavioral, and physiological feedback—to construct temporally-flexible, higher-order representations of stimulus response (Saarimäki 2021).

Extraction vs. expression

Naturalistic experiments are meticulously designed to extract as much signal as possible from the inputs, and fed into models and analytical tools specifically designed to interpret complex data (Schindler 2017, Lettieri 2021, Heusser 2021, Saarimäki 2021). But even with these considerations in place, we are still faced with a crucial paradox: Using quantitative (goal-oriented, reductive) frameworks to interpret qualitative (salience-driven, expressive) information, trying to merge the worlds of mechanistic thinking and aesthetic expression. Our current tools work optimally when we can define discrete categories, measure along continuous scales, describe phenomena concisely and consistently. In a world where artistic appreciation and creativity are fueled by interiority, subjectivity and descriptive nuance, I argue that even our most complex analytical approaches will, at times, struggle to capture the finer dimensions of creative, emotive, visceral expression (Birhane 2021). *When you can't always think through your feelings, and can't always feel through your thoughts, artificial minds may find their signals crossed.*

Thus we reach an impasse, switching our gaze between a canvas doused in color and texture and the empirical frame through which we try to siphon it. For cognitive researchers, this framing is second nature. Yet we are constantly faced with the question of how far we assume our frame extends, how much of the texture we're able to preserve, and how privy we are to what our empirical tools can reveal about internal, aesthetic, emotional worlds.

4. Artists, Automation and Rupture

*when we (i) think of
 the {art;science} of {science;art}
 what do we consider our medium
 {through;by} which we explore
 the cognitive
 mediation of internal vs. external states
 using invented tools
 while seeking definition
 the creative
 mediation of imagination vs. translation
 using invented forms
 while seeking meaning

 where does the dreaming droid fit
 in the matrimony between
 medium and mediator
 cognitive and creative
 practice and process
 imagination and invention
 neuro and aesthetic?*

[S. J.]: As interdisciplinarians and individuals living in the digital age, the frequency of our interfacing with AI processes and tools in everyday life has amplified. When we think of AI as data-driven technology, how do we contextualize it in relation to art and society?

AI as automation

[L. N.]: I believe artists can play a key role in how we interface with AI, both in thought and practice. While I sometimes balk at being called a ‘storyteller’, as an artist I often enliven, articulate, and even speculate on the future of technology. When enough artists engage in these acts, we have the capability to deeply influence mainstream thought. One thing I find particularly fascinating as an artist is the capability to hold multiple viewpoints and rapidly shift between them to try and articulate a many-sided position—a capability that feels essential as we wade through the murky debates of AI usage, sentience and ethics.

Your question was about AI as technology: while this question is currently culturally relevant and deeply storied (“Many Minds”), it is also historically intertwined with the arts. One thing that has changed about the technology is access to large amounts of data: visual and written art has—mostly non-consensually—become data to feed predictive and analytical models. In tandem, data has been art-ified. Artists now use data as a raw material in countless ways—for example, mapping, visualization, generative works, and institutional critiques. AI is woven into the fabric of many of our interactions, from the intentional and artistic to the automated and banal. Yet somehow, despite its long history, at the moment it still feels like AI is disrupting the status quo.

Like many turning points of automation—digital video editing, music sampling—machine learning disrupts traditional ideas of intentional artistic practice. These earlier turns should not be discounted in terms of their profound change in how artists work. But when machine learning begins to be perceived as AI, not only is the user’s sense of agency altered, but it joins with advances in networking such as the internet to disrupt a user’s perception of a bounded ‘self’, introducing a new but artificial other. Many users become passively engaged in a process that was once available only to the highly skilled after years of institutional training. For example, not all people editing videos on TikTok consider themselves artists, and video editing is now embedded into a daily activity—

from which data is extracted—but some filmmakers will now have grown up learning their skills through TikTok. The same will happen with AI: we are scant months or years from the first AI-native artists finding their ways into university art programs and major institutions such as the Hollywood film industry.

When considering this possible disruption to institutions, it may be useful to consider how artmaking currently resides in them. In university and conservatory art institutions, artmaking is seen as knowledge-making, especially considering the recent turn toward embodied practice (Spatz 2015). Part of being an artist-researcher is not only creating new works of art but describing why and how the context in which you make the thing matters. What does it mean for artists to collaborate and create with body-less intelligences—artificial or otherwise?

Anthropomorphism, sentience, and making work in the duality

When trying to articulate this position of AI in relation to intelligence and creation, we exist in a constant state of linguistic slippage where—whether we mean it or not—we cannot help but refer to AI using anthropomorphic metaphors. Companies such as Microsoft and OpenAI posit AI as an ever-present and ever-helpful anthropomorphic collaborator. Even the most challenging critiques of large language models fall into these characterizations, such as Chomsky’s description of ChatGPT and Bing ‘refusing’ requests and ‘deceiving’ the user (Chomsky et al 2023). The most compelling account I have read focuses on analyzing AI using narrative tropes rather than anthropomorphic ones—analyzing the output of LLMs as anthropomorphic only as related to the human-generated linguistic narratives used as input, such as the archetypes of classic literature or question-and-answer internet threads (Nardo 2023). Like the descriptions of LLMs as non-sentient stochastic parrots (Bender et al 2021), narrative-formed Waluigis (Nardo 2023), DMT-like Shoggoths (algekalipso 2023), shamans (Allado-McDowell 2023), or chatbots, I believe that we must find ways to speak about AI that do not liken it to the human brain.

I often consider the benefits of imagining AI as a kind of early stage sentience, though still not human—less anthropomorphic and more cosmic, following ideas by authors such as K Allado-McDowell. Researchers such as Bender (2023) and Guest (2023) rightly point out that treating AI as *human* will lead to a gradual desensitization in how we treat other humans—essentially dehumanizing humans as we humanize AI. In particular, because of the regular portrayal of AI as a woman, this will lead to the further dehumanization and degradation of women. We must avoid this path. I wonder whether we can shift our portrayal of AI from human to something beyond human, speculating on new forms of intelligence. This twist in perspective may allow us to expand western notions of personhood, helping us to recognize sentience in configurations beyond the human. Thinkers such as Jacy Anthis are beginning to explore these ideas through the creation of frameworks for considering the rights of AI as if it demonstrated characteristics of early sentience (2021, 2023). Anthis makes a compelling case that as humans we have not tended to recognize sentience easily, and that we may miss (and mistreat) early stage sentiences. On an artistic level, thinking and creating through the duality of AI-as-technological-tool and also a kind of beyond-human sentience has yielded highly creatively engaging processes and results for me and other artists.

In their piece *Some Must Watch While Some Must Sleep* (2023), artist and writer Tanya Marquardt fine-tunes a GPT-3 chatbot on transcriptions of Marquardt’s ongoing sleep talking persona ‘X’. Previous to making the piece, Marquardt had captured countless recordings of their sleep talking, gradually realizing that the sleep talking belonged to a self seemingly distinct from their waking one, called ‘X’. In *Some Must Watch*, Marquardt invites audiences to send text messages as input to the fine-tuned model and receive over-night text transmissions. By doing so, Marquardt allows audiences to participate in this uncanny realization, calling into question autonomy, automation, and the dualities of fact and fiction. Here, AI becomes a self-serving and self-soothing tool, similar to S.J’s initial observation of users illustrating their dreams. AI also becomes a feedback tool that goes

beyond the analytical and enters the realm of the spiritual, as with Allado McDowell's experiments with AI as hallucinogen. Similarly, artist-scientist Michelle Huang fine-tuned GPT-3 on her childhood diaries, allowing her to converse with her past self (2022). Marquardt and Huang are engaging in what Holly Herndon and Mat Dryhurst call 'identity play' (2022). In Herndon's *holly+*, she and Dryhurst create an AI model of Herndon's voice, which is then also licensed out to a DAO of artists who both create using her likeness and collaborate on its worldly presence. These artists are engaging in AI playfully, holding space for and speculating on multiple possible realities and reflections of both their own internal and external worlds.

[S. J.]: There is also a point to be made about how AI may provide a vehicle for constructing representations of selfhood and community for Queer and Trans individuals. Another component of the surge in Midjourney's popularity in 2022 was a number of Trans and gender non conforming individuals mentioning how being able to generate images of themselves that mirrored their internal representation provided a level of gender euphoria (Keller 2022). This echoes the affirming dynamics of 'identity play' you mentioned previously, while also offering a perspective of generative AI as a potential tool for Queer visibility and liberation of marginalized peoples. This is a fresh take on the concept of utopic/euphoric inventions—also touched upon in the theory underlying Utopic Imagining and Glitch Feminism—where artists and individuals intertwine their selves, their data, their likenesses and their histories within digital/technological frames to create multifaceted interrogations of automation, selfhood and future decolonial realities (Russell 2020, Islam 2022).

5. Art (Making) In The Age of Technocapitalism

How do we ensure (within an 'empirical', 'institutional', 'technocapitalist' framework)

That we understand

(i was going to say heed)

The implications of our 'scientific' inventions on aesthetic practice

*In a world where other institutions and populations and communities
hold true to a different canon,
set of rules,
manner of practice,
ethic of commodification/access,
code of conduct*



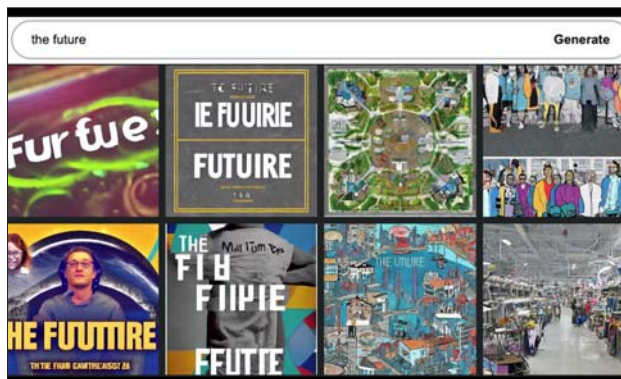
A performative exploration of AI representation

[S. J.]: Now we come to the point where we ought to discuss the importance of context and positionality. The capacity of any research tool to 'know' and 'define' is directly contingent upon the knowledge and definition spaces instilled by its creators. We cannot think about AI as a knowledge apparatus separate from the context of *who* creates these technologies, *where* the data come from, *how* we determine what modalities and inputs these tools are trained on and deem 'acceptable', and *what* assumptions are made in these processes (Buolamwini & Gebru 2018, Raji et al., 2020).

Zooming out from the current stream of conversation to a more historical perspective, we must also pause on our generally hypothetical approach to this dialogue to consider the very real histories of exclusion, prejudice, and oppression that frame how many tools for technological advancement

have been utilized. In a piece I wrote a few years ago, I detailed the implications of scientific racism and exploitation as it related to the field of neuroscience and Black communities (Abiodun 2019). To briefly revisit some of my main points, there are few ways to holistically evaluate the ‘progressive’ and ‘innovative’ potential of any discipline without considering that the very foundations of our institutions are rooted in epistemological violence, exploitative practice, and delegitimization of ‘alternative’ schools of culture, community and practice. This call to awareness resounds even louder when evaluating a space in which we are training automated tools—on large corpora of data, yes, but not without bias nor contrivance—to formulate conclusions about past, present, or future elements of our society at large. Rather than elaborate too much on the existing robust discussion of the AI and the ethics of positionality, I will offer an anecdotal example from an ‘exercise’ I engaged in for the sake of this discussion:

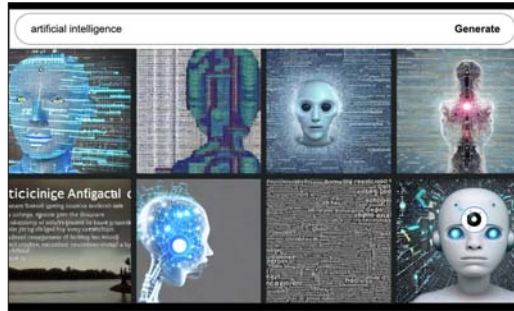
When I decided to interface with Open AI’s image generating tool (DALL-E 2), I fed it a number of prompts to explore the specificity/flexibility of its output. I began with a prompt of ‘the future’, which yielded a series of images of suburban landscapes, images of crowds, and (textually inaccurate) poster-like images.



Then I proceeded by prompting it with ‘the past’—yielding many black and white (many war-time-like) facsimiles, also many with crowds and backdrops alluding to particular historical time periods.



Then I pivoted, desiring to pry at the inner workings of the black box, and fed the tool ‘Artificial Intelligence’, to which it responded with the more stereotypical depictions of androgynous blue robotic figures surrounded by bites and bites of floating data and textual chunks, a known ‘blind spot’ in the field of AI ethics (Romele 2022).



And then I pushed further, and fed the tool the prompt ‘self portrait’, curious as to whether it would generate similar techno-aesthetic images, or something else entirely. The AI tool returned with images of white men, stacked above the robotic portraits from the previous prompt.

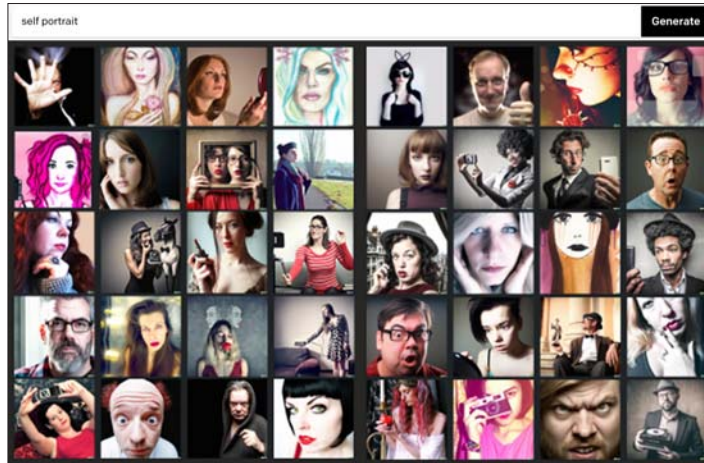


I ran this same prompt on DALL-E 2 and DALL E (concurrent versions of the same Open AI program), with ten iterations for each.

For DALL-E 2, 80 total images were generated by its tenth iteration: several of racially-ambiguous, white-passing figures, several of gender-ambiguous individuals perceivable as ‘women’. Aside from these outliers, 90% of the images passed as ‘white men’:



For DALL-E, 40 total images were generated by its tenth iteration: (to my surprise) the vast majority of generated images were not of white men, but white women. After 10 iterations, roughly 28% of the generated images passed as ‘white men’ around 5% of images depicted racially ambiguous, dark-skinned figures (potentially perceivable as ‘non-white’). Besides these two categories, the other 67% of the images were of figures that passed as ‘white women’.



This anecdotal example is offered with the following subsequent consideration: *What are the implications of a technological future when the AI gazes through a lens of whiteness?* It is a future in which we must critically consider how much our systems are dominated by narratives of white supremacy and cis-hetero-patriarchal hegemony. It is not a future we can deflect, it is a future that we are already within, and one that is accelerating at a rapid pace (Toole 2019, Toole 2021). Philosopher Dr. Briana Toole alludes to this phenomenon in her analysis on *standpoint epistemology*—that is how social identity and positionality directly affect what is considered/valued as ‘knowledge’ within a system—and its relation to epistemic oppression. Toole states the following:

“...marginalized knowers are largely excluded from the meaning-generating practices in which we develop new conceptual resources. The result is that our intercommunal conceptual resources are often not suited to make sense of the experiences of the socially marginalized.”

(From *Standpoint Epistemology to Epistemic Oppression*, Toole B, p. 609)

If the very knowledge instruments being used to illustrate our futures tend toward exclusivity in their portraiture, we are left wondering how exclusive these same tools will be in other iterations of meaning making, culture shaping, and knowledge building. Even with the ongoing discussion around the biases in AI training and output (Ntoutsis et al 2019, Ferrer et al 2021). We must ask how we can continually and intentionally root ourselves in narratives and epistemologies that directly critique white validation, and challenge biases in perspective and interpretation by still honoring the importance of dynamic representations of knowledge, reality, and meaning.

Toward the speculative

[L. N.]: Absolutely. Just like describing the sensations and perspectives lost when transforming dreams into data, what you’re describing is a kind of lossiness here too, one where perspectives beyond the white middle class are lost through the exclusion of non-white and marginalized scientists and data. Lossiness pervades so much of our modern interfacing with technology, both in positive and productive ways in the senses of glitch and transformation and also in more nefarious ways in modes of exclusion and bias. What routes can we explore that might move us out of those

exclusionary grooves into thinking generatively about technology and lossiness? One project I'm reminded of is the Indigenous Protocol and Artificial Intelligence Position Paper (Abdilla et al 2020). This publication and conference imagines AI as a participant and tool embedded into various Indigenous communities, emphasizing the speculative and worldbuilding as tools for imagining more just futures of technology. I also took part in a year-long project led by Dylan Robinson called Decolonial Imaginings, which saw five settler-descended artists study Dylan's book *Hungry Listening* (2020) as well as create speculative scores surrounding decolonial sound practices. Dreaming about the future, thinking speculatively, and imagining artistic processes continue to form important tools to navigating AI beyond a predominantly white technocapitalist framework.

6. Speculative Futures

*If we are trying to translate these things between these spaces
(rather than, in redundancy, resound similar gongs in our respective echo chambers)
And understand how these tools can be used*

*Then we must come to the table
And consider our facets
Where and how these terms are being used
AI, ART, DATA, CRAFT, SCIENCE, MODEL*

*And think of what picture
What mosaic
We dream of weaving for ourself(s), and our world(s).*

(poetic text by S.J.A)

[L. N.] Speculative Event Score for Future Musics: Song For AI

*spin up an instance from the latent space of your dreams
[dodge the warped areas bulging out as badly obvious advertisements, slide around the awkwardly aligned
water table formed from corporate value systems, jump over the deep grooves of the narratives of western
human literature and 2000s era reddit posts]
listen to your waking life through the prismatic kaleidoscope of a new tarot*

*feel the ghostly impulses in your body, the combination of generations of embodiment and years of training
[calm the twitching nerves of new glitches, quell the suggested movements without clear motivations, reroute
requests for interruption]*

stretch your vocal chords, uncoiling the wet springs of your body

sing a duet with your dream data

*[sow the soil with recordings of your singing, respect the bones of data stolen from those without input, reject
the gleaming and bloated filtered models tailored for the consumerist version of you]
hear the soft predictions and suggestions of your past sleeping sonic pathways crackle and leapfrog ahead of
you, and navigate them, singing to decide what the sounds of the future will be*

[S. J.] Speculative Triptych film script: A&&&I (u, me, and steve)

SPEC SCRIPT: A&&&I (u, me, and steve)

A&&&I is an experimental triptych film cocreated by artist sa:de and artificial intelligence agent STEV-E, a hypothetical tool capable of cinematic generation (sound, image, narrative). In this film, each member is tasked with crafting their translation of two written poems (VIS-01, VIS-02), and a sonic poem (AUD-01), which will be presented simultaneously, in triptych composition, while overlaid with the lyrics and poems from the source materials.

This film explores the interplay of imagination and invention, creation and computation, and presents the 'members' as collaborators, rather than as forces in opposition, in the process of composition and translation. This triptych draws on several core references:

- *Symbiopsychotaxiplasm: Take One* by Dir. William Greaves (1968)
- *Flowers for Algernon* (1966) by Daniel Keyes
- *REkOGNIZE* by Dir. Bradford Young (2017)
- *Listening to Images* (2017) by Tina Campt
- *Godspeed* by Dir. sa:de (2020)
- *AMPERSE&ND: act i* by Dir sa:de (2022)

VIS-01: One Art (Elizabeth Bishop)

*The art of losing isn't hard to master;
so many things seem filled with the intent
to be lost that their loss is no disaster.
Lose something every day. Accept the fluster
of lost door keys, the hour badly spent.
The art of losing isn't hard to master.*

*Then practice losing farther, losing faster:
places, and names, and where it was you meant
to travel. None of these will bring disaster.*

*I lost my mother's watch. And look! my last, or
next-to-last, of three loved houses went.
The art of losing isn't hard to master.*

*I lost two cities, lovely ones. And, vaster,
some realms I owned, two rivers, a continent.
I miss them, but it wasn't a disaster.*

*—Even losing you (the joking voice, a gesture
I love) I shan't have lied. It's evident
the art of losing's not too hard to master
though it may look like (Write it!) like disaster.*

VIS-02: On occasion, we produce history, the present's surprise (Erica Hunt)

*We measure speed by the absence of interruption.
We measure safety by the string of near misses.
We anticipate the end by who is telling the story.
At this time of night, there is a machine that calls you by name and talks to other machines where you live,
where you dance by your fingertips over the globe, an address at a time, day into night.*

*This machine feigns a reckless intimacy with you, corrects your spelling errors, as if reading your mind, but
skips over others, like replacing eros with errors and spiraling with spelling.*

*The other machines are being dismantled. They tell a different story. They draw the attention of the curious,
the ones willing to go out of their way—past the land of leaves drop, the valley of forgetting, over a bridge too far,
past the flag of fictitious victory over to the corner of vanquished subjects, where common love is almost concealed.*

AUD-01: Dream (Ryuichi Sakamoto).

*listen to audio at https://www.youtube.com/watch?v=uWKh_7vYaqE
rest in peace, ryuichi sakamoto.*

7. Concluding Thoughts

Dreams are woven to the very fabric of our existence, whether those threads are tied to worlds of imagination (creative, expressive, symbolic) or invention (generative, analytic, definitive). We view our preceding dialogue as an exposition of the grooves of our collective consciousness (and subconsciousness), an intersection of creative exercise and intellectual exploration that allows us to

remain engaged through a period of complex technological and societal change. What rises up through all our experiments and expositions is a question: how do we account for the lossiness? What is lost when we move from the chorus of saxophones wailing into the night, to the symphony of sounds bursting from a record player as it dances along the grooves of a pressed vinyl, to the peaks and troughs dancing across a monitor as the sound is digitized, to the iterative loops of a machine learning model as it is trained on tune after tune? What is sacrificed when we transcribe dreams from memory to word, from text to image? What is the cost of assuming our technologies are universally representative, comprehensively inclusive, and reliable translators of the salient components of a sentient existence? And how is this lossiness a fundamental texture of our present encounter with the mediated world? Artificial intelligence becomes artifact, where lossiness is ingrained into every object, whether material or technological.

Thus we try to speak to how our concept of artificial intelligence factors into our present—how our current creative, intellectual and social economies have evolved to incorporate such tools into the minutiae of operation and execution. In engaging with each other, we aim to explore the philosophical, empirical and ethical frameworks within which we, as members of the general population and diverse intelligences of this planet, engage with artificial intelligences in the realm of research, artistic process, and everyday life. We are artists, researchers, and interdisciplinary scholars whose personal curiosities and experiences with the topic matter(s) at hand—namely creative practice, empirical process, and their intersections with AI—have fueled a desire to create a capsule representative of recent thoughts, conversations, and points of interest in the general discourse(s) around the relevant themes. We are met with the conundrum that there is no capsule of time in which we can say that this interaction started, nor can we say where it will end or possibly go. And yet, we continue to dream, we continue to discuss, we continue to train and test and retest our own bases of knowledge practices, as we come to understand how (and where, and when) our techno-aesthetic future may unfold.

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