Wherefore Art Thou:
Mapping Public Debates about Image-Generative AI

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Abstract

With the mainstreaming of image-generative AI in 2023, debates over the value, ethics, and legality of these technologies significantly engaged both public and scholarly communities. However, the current empirical examination of these debates on naturalistic data is sparse. This study fills this gap by offering a descriptive, longitudinal account of public online debates about AI art. Inductive analysis identified ten themes in these debates, addressing not only law and ethics, but also nuanced debates about technology, labor, art, and learning. Longitudinal analysis revealed most discussion themes are stable over time. Although most external events don't generally elevate related discussions, debates about Fair Use and Competing Interests are more responsive to law or policy events, and themes such as Human versus Machine Learning and Tech Philosophies are more reactive to technology development events.

Keywords: AI art, Ethics, Copyright, Online Discussion, Longitudinal

1. Introduction

Since image-generative forms of AI emerged *en force* in 2023, debates about their lawfulness and ethics have unfolded in popular and academic circles. Fan conventions constrained sale of AI-generated art, the U.S. Copyright Office ruled against copyrighting AI-generated images, analog formats have forbidden the use of generated images, and the debate has been covered in niche and mainstream media alike. Despite popular media coverage and address by critical, ethics, and philosophy scholars, little empirical attention has been paid to understanding these debates and how they unfold among various stakeholders. This study bridges that gap by offering a descriptive account of public online debates around AI-generated art and evaluating how those debates shift over time.

1.1. Defining AI and Art

The heart of many debates around image-generative AI (genAI) is a complex definitional question—what is "art?" Although a full accounting of this complex literature is beyond our scope here (see Jerrentrup, 2024 for a review), it is useful to acknowledge some contenders: Art may be some artifact that has been conferred an appreciable status (Dickie, 1969), an entity that is multiply constituted by perspectives on its meaning (Kolev, 2023), a multiplex category characterized by elicited emotion, subjective interpretation, and skilled production (Dutton, 2006). Others say art is undefinable since there are no necessary and sufficient conditions (Weitz, 1956).

Image-generative AI advances this question to consider whether "AI art" is, in fact, *art.* Manovich (2019) lays the groundwork by proposing a definition that goes beyond merely considering it to be the output of a computer (since computer-art has been around since the 1960s). That framework positions AI art as artifacts or experiences manifested by high-autonomy computing technologies, with varied degrees and natures of machine (versus human) control (e.g., in selection of training data or of specific generated material). Use of machine learning and neural networks manifest the unique capabilities of genAI to transcend human physical and cognitive limits such that art's boundaries are expanded, though without intentional meaning (see Kraaijeveld, 2024).

1.2 Mainstream AI Art Debates

Principle among mainstream debates about AI art are three types of challenges (as outlined by Shaibu, 2023). Arguably the most visible are debates around **authorship and ownership**, emphasizing the strengths and problematics of using massive sets of copyrighted content to train AI models. AI can be viewed as a *tool* in image generation and/or as a generative *agent* that, in either case, relies on the work of technology developers, creators of training content,

practitioners conducting training work, and users who input data to instigate generation (Epstein et al., 2020). For instance, Stable Diffusion is purported to have been trained on nearly 6 billion image-text pairs including celebrity likenesses, photographs, paintings, and other AI-generated visuals. Developers and many users say this training is beneficial as it allows people to produce images effectively and quickly for commercial purposes, fosters radically new ways of visualizing the world, and democratizes art by allowing creation by people with no artistic aptitude (see Schröter, 2019). Conversely, artists and critics say works are being cannibalized and exploited, amounting to labor theft (see Goetze, 2024) and are concerned genAI is leveraging their work for quick effect while jeopardizing careers are harming reputations (see Jiang et al., 2023). These debates are complicated since some artists support using genAI as assistive resources, e.g., to support brainstorming, configure metaphors, and break creative blocks (see Zhou & Lee, 2024).

The second class attends to **transparency and accountability**. Some have called genAI "black box creativity" in that it can only be understood—by developers, users, and observers alike—according to the information that is input and output (Tredinnick & Laybats, 2023). Ethical dilemmas arise when there is a lack of accountability when images depict illegal or harmful content. There are problematics that emerge when an image purports to depict something "really real" but is entirely generated (including deepfakes and support for conspiracy theories). GenAI defenders sometimes argue human minds are black boxes and the two forms of generation are the same—learning, synthesizing, identifying patterns, and reproducing them in expression or behavior (see Tredinnick & Laybats, 2023). Philosophers, engineers, and scientists in the explainable AI movement argue to have a full understanding of how AI and its outputs can (not) and should (not) influence human life, we must all understand its machinations (e.g., Minh et al., 2022).

Finally, there are debates about genAI's **influence on human life and culture**. Detractors say genAI will lead to job loss as creative work is automated; defenders say any jobs that can be automated should be considered mechanistic by nature and will simply be reconfigured (see Briggs & Kodnani, 2023). Regarding AI bias, critics argue genAI draws from mainstreamed content such that common biases are encoded into models; as a result, generated images are reincarnations of reductive or otherwise problematic ideas. Others argue the key to minimizing bias is in the technology itself, as open and transparent models help to identify opportunities to mitigate bias through higher-quality training data (Nicoletti & Bass, 2023). Regarding the nature of humanity broadly, opponents suggest genAI devalues soul-, spirit-, heart-, or mind-driven creativity—for instance, by asking Midjourney to "imagine."

1.3 Empirical Attention to AI Art Debates

Limited empirical work has attended to debates around AI-generated art. One study (Wan & Huang, 2024) considered social-media sentiment, using machine-learning methods to identify topics among Weibo users mentioning "AI art" between August 2022 and August 2023. They found sentiment in that corpus to be mostly positive; positive posts tended to mention creation processes, model details, positive emotions, and commercial considerations while negative posts mention replacement of human creatives, human creative processes, copyright problems, and negative emotions. Beyond this, most current understandings of public opinion focus on mechanisms that influence opinions of AI art, such as a person's greater legal or technical knowledge diminishing creativity evaluations (Mitrani & Gu, 2024), technology-news and science-fiction consumption predicting both positive and negative attitudes (Brewer et al., 2024), and cultural context influencing implicit and explicit evaluations of generated images (Wu et al., 2020). Others focused specifically on artists' concerns, observing calls for training-data transparency and preventing image ownership by model owners, with concerns for worker welfare and corporate profit (Lovato et al., 2024).

Although useful, the prevalence of survey-based and experimental studies highlights a gap in current understandings of public opinion around AI art—the nature of the debates when varied, interested parties engage in extended discussions. Understanding these debates and their evolutions has implications for the future of individual and professional creative practice, as well as the social norms, policies, and governing law around the technologies and the content. They may further impact individual and shared perceptions of what content has creative, semantic, social, and financial value in society. Indeed, people's ethical and moral considerations of AI can be significantly influenced by how its capabilities are framed and valued in social contexts (Lima et al., 2021), so in addition to mainstream media coverage of the debates those considerations may also be shaped by the ways stakeholders debate the topic *among themselves.*

Debates that naturally emerge when AI-art supporters and detractors are co-situated in discursive spaces together may be different than what researchers decide *a priori* are important opinions to understand and different than what media outlets present: (RQ1)

What are the debates around AI art that emerge in public social media debates? Additionally, most existing research focuses on acute reactions rather than longitudinal dynamics, indicating a need for studies that examine changes in attitudes over time. For instance, AI art's evolution may mean people's orientations toward it also evolve, and incremental positive experiences could also influence attitudes toward using AI in artistic practice (see Latikka et al., 2023). These potentials considered, we ask (RQ2): (How) do debates about AI art shift over time?

2. Method

To address the posed research questions, our investigation comprises a two-stage analysis of 14 months' worth of public posts to an online forum dedicated to debating issues of AI art. In the first stage, we leverage semantic network analysis to identify the most prominent debates; in the second, we evaluate the prominence of those debates over time. All processed data and analysis details are in this project's online supplements: https://osf.io/qm5cv/.

2.1. Research Context and Data Collection

The context for this inquiry is the Reddit platform, specifically the subreddit "r/aiwars"—a forum with 35,000 registered followers (top 3% in size) dedicated to "all sides of the AI art debate." Forum rules allow both pro- and anti-AI posts and users may "Debate at will. The floor is open." This space was selected for this inquiry because of its explicit invitation for debate, the norms/format allowing extended discussions, and its presence on a platform allowing comprehensive data scraping. We collected activity from December 18, 2022 (the forum's inception) to February 4, 2024. Collection was performed via Pushshift files (see Baumgartner et al., 2020) along with the Reddit API to fill some field and time gaps. This produced a corpus of 106,067 text entries.

2.2. Data Cleaning

Naturalistic data often requires standardization and cleaning to be suitable for automated analysis. We performed a systematic process to prepare the corpus for analysis. We removed entries the analysis tool cannot process and system-generated messages, and adjusted misspellings. We also formatted text so the tool would recognize each entry (post or comment) as a single data unit. See the online supplements for details. This process resulted in a corpus of 100,337 text entries retained for stage 1 analysis. For stage 2, we additionally removed successively posted, identical entries (i.e., repeat posts) to avoid artificially inflating their frequency over time; this resulted in a corpus of 999,962 entries analyzed in that stage.

2.3. Analytic Approach

In the first stage, the corpus was inductively explored by the first-listed author using semantic network analysis techniques. The corpus was loaded into Leximancer—a natural-language processing tool that identifies latent concepts from unstructured textual data sets (Smith & Humphreys, 2006). This induction is executed through a combination of a topical algorithm that identifies commonly occurring terms, learns how those words are associated with other terms, and develops a catalog of terms that maximally predict the presence of a latent concept in a data unit. These concepts are non-exclusive—a given data chunk may associate with more than one theme, and themes may carry some overlap. The output of this process is a concept-map visualization whose content and structure are iteratively interpreted in relation to the grounding data. See the online supplements for a narrative of the analytic process. Finally, a hierarchical schema was constructed of the themes, constitutive concepts, and the highest-weighted predictive terms; that schema guided the second stage of analysis.

In the second stage, the second-listed author determined the prevalence of themes in the corpus over time by (a) identifying whether each forum entry featured each theme and (b) mapping each theme's relative frequency over time. To identify themes within entries, a script was written to determine whether each entry met a term-frequency threshold for containing co-occurring predictive terms for a given theme, accounting for the frequency of themes in the overall corpus. The theme-classification approach was validated using gold-standard data from the initial Leximancer interpretation. Additionally, we calculated both the Jaccard (1912) and Dice (1945) coefficients for each theme to examine the extent of overlap between them, ensuring the quality and distinctiveness of the outputs from the first stage. See the online supplements for complete details and outcomes of this process.

With each entry tagged for the presence of one or more themes, we determined the relative frequency with which theme-tagged entries appeared over time—that is, the "theme traffic" in the forum relative to the overall traffic, day by day. To do this, we aggregated daily data for overall traffic and theme-specific traffic, then applied a right-aligned three-week moving window; the moving mean and standard

deviation of traffic were calculated by moving the window in one-day increments. *Z* scores were computed to denote daily deviations from moving averages in the window. This process produced normalized scores representing daily traffic compared to typical traffic over the prior three weeks, to detect anomalies in the time-series data (see Ljung, 1993).

To evaluate specific theme traffic relative to overall subreddit activity, neither comparison between overall and theme-specific *z* scores nor directly using theme-specific *z* scores as metrics would reflect real user-engagement level for a theme. Since theme traffic constitutes portions of the overall traffic, their scales differ when overall traffic changes. As Özkent (2022) explains, various factors impact social media traffic, further complicating direct comparisons of *z* scores. To address this, we developed a theme engagement score (TES) to measure the weighted difference between overall and theme-specific *z* scores. This is done by adjusting *z* scores with weights inversely proportional to the logarithm of their respective standard deviations and with weights based on specific theme-debate volumes. The initial TES is calculated by subtracting the weighted overall *z* score from the weighted theme *z* score and further normalizing it to -1 and 1 using the hyperbolic tangent function to improve interpretability and better outlier handling (Jain et al., 2005). We evaluated the volume of theme discussions before and after each event type using the Wilcoxon signed-rank test (Woolson, 2005) on average TES scores calculated within a moving five-day window around the event dates, assessing if specific themes respond notably to event-induced traffic fluctuations.

3. Results

3.1. Key Debate Themes

The semantic network analysis induced 10 themes (i.e., concept clusters), each arising from four to 12 concepts (Figure 1). To assess content overlap among themes, we evaluated Jaccard and Dice coefficients (ranging from 0.00 to 1.00) for each theme pair. Across the pairs, Jaccard coefficients ranged from 0.00 to 0.12, $M = .04$; Dice coefficients ranged from 0.01 to 0.22, $M = .11$. The most overlap (22%) was between 'Art-Ontological Schema' and 'Human versus Machine Learning.' Values indicate although some overlap exists, the themes are generally distinct. The themes are described below, in order of prevalence within the dataset. Each theme is named and characterized, with the number of "hits" (frequencies of predictive words within the corpus) and the identified concepts that constitute the theme. Where data excerpts are provided, predictor terms are

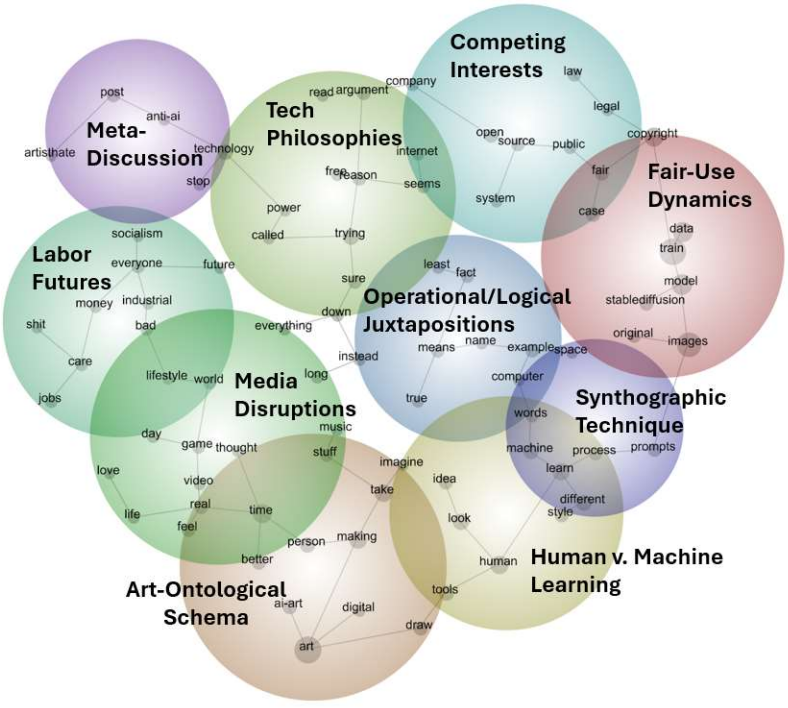

Figure 1. r/Aiwars Corpus concept map. Large circles are themes. Network nodes are concepts and ties are concept co-occurrence patterns.

identified in *italics*. Here, data excerpts have been slightly edited for readability and to mitigate direct identification through search on the source platform. From most to least prevalent in the corpus, themes are interpreted to represent:

Art-Ontological Schema: 73,675 hits (concepts: art, time, making, take, person, ai-art, draw, better, feel, stuff, digital). These discussions compare processes, requirements, purposes, and outcomes of traditional (i.e., human-generated) art compared to AI art. In other words, these debates represent comparative frameworks for who/what makes works of art, how, and to what ends. There are broad discussions of what constitutes art and AI art alongside the relative (dis)advantages of each. One thread argues for considering AI art separately from traditional arts: "AI art is its own thing, in its own niche. The only things kinda similar are outcomes… *AI art* is *AI art*. *Drawing* is *drawing*… AI doesn't let you be *better* in anything but AI." Others argue AI art is a new thing offering more or less benefit—a kind of interaction requiring different skills, taking and giving more or less, and being more or less valid. Many entries associated with this theme discuss the time requirements of traditional art, either as something inherently valuable or that AI efficiencies help to eliminate: "You go into a war zone with an iphone and immediately publish the images. Film suffers from arduous chemical processes that *takes time* and effort to produce results… Should we outlaw *digital* photography because it threatened film?" Such comparisons against other digital art tools are frequent. Frequent, too, are discussions around acts of making—the ease, techniques, experience, risk, skill, accessibility, and value of making art through traditional and AI approaches. Among these, entries draw contrasts between purists and pragmatists, using the notion of drawing as a contested benchmark—is drawing (as an act) something an AI can do? Notions of whether AI is "better" abound—whether artists are better off, feeling better about the situation, getting better at adapting, becoming better at analog crafts, and emotions around AI being better than humans.

Fair-Use Dynamics: 53,716 hits (train, images, model, data, copyright, case, stablediffusion, fair, original). Entries representing this theme are part of discussions at the intersection of the technical operation of diffusion-driven genAI and intellectual-property law. Discussions tend to focus on whether training a model counts as "use" or as copyright infringement, and whether the transformative nature of the outputs means any use falls within parameters of fair use. For instance: "I'm not a lawyer but I don't believe the creation and *training* of the *model* likely constitutes *copyright* infringement because it's probably covered by transformative *use*. Now, what could be *copyright* infringement is if a *Stable Diffusion* user reconstructs a *copyrighted image* from the *original* dataset precisely enough and reposts it under either the public domain or their own license." References to images distinguish between originals and generated outputs, where they are used or stored (especially debates over whether they function as data *in* the model or are distinct from the model), whether they are paywalled or freely visible, and whether particular outputs under particular conditions and similarities would count as copyright infringement. One poster argues, as part of a lengthy legal discussion: "A properly *trained* AI is a bunch of numerical weights that don't contain a substantial representation of any single work that the AI was trained on. Yes, numbers represent a given work (such as a jpeg file) can violate *copyright*, but in that *case* the jpeg file contains a meaningful, substantial representation of the *original image*," referencing the 1984 Litchfield v. Spielberg case. Other posters detail recent cases pertaining to suits against Google and Stable Diffusion. Although most references to "fair" engage notions of fair use, some engage judgments of fairness as moral appropriateness.

Human versus Machine Learning: 53,475 hits (human, learn, look, different, tools, machine, idea, style, imagine). Entries featuring these concepts debate how machine learning can be said to align with or deviate from human learning. Learning is discussed as an authentic doing-of something (versus mimicry) and in art learning starts with looking as a way of acquiring information about the thing to be learned. The ability of AI to learn is discounted when the tech is framed as mere tools rather than agents, as well as when differentiated from human learners in terms of who/what people may find to be acceptable learners. For instance, one notes: It's "different because writers consent to have a *human learn* from their writing, but not to have a matching word calculator remix and steal." The distinctiveness of human learning is sometimes discounted based on a lack of evidence that AI cannot learn: "... if we *look* at things deterministically, we have no evidence to suggest that an AI *looking* at an [image] is functionally *different* from a *human* doing the same." Ideas and styles are said to be something originating in a real creator and owned by or attributable to the creator, though entries differ in whether or not that can be only manifested by a traditional artist or can also by an AI prompter.

Technology Philosophies: 52,714 hits (trying, technology, sure, reason, argument, down, free, seems, read, internet, called, power). These discussions argue for varied natures, purposes, and effects of technology and technocentric philosophies. Some of them are

specific arguments while others are meta-arguments that evaluate patterns in broader discussions. The prominence of the concept "trying" signals the difficulty in this argumentation, indicating some are working to argue but are unsure of their efficacy while others signal perceived failures in others' arguments. Argument evaluations consider causal logics, the reasonableness of positions, breaking down arguments, personal interpretations of what seems to be argued, or rather frequently calling someone out for parroting something read online. For instance: "... you *read* something on the *Internet* you didn't like and try to shout it *down*… at no point have you bothered to present an *argument*." The predictive term "power" features in discussions of democracy and capitalism and the role of technology therein. Entries sometimes invoke principles of theorists, artists, or philosophers (e.g., Marinetti, Galt, Dada, Duchamp) or paradigms (e.g., accelerationism, techno-optimism, luddism, fascism) to support or diminish a pro-AI or anti-AI position. Often discussions consider ways to address equity and personal freedoms (e.g., "My *arguments* focus on ways to mitigate the *power* gained by the oligopoly by ensuring the public has access to the same basic tools for *free*."

Media Disruptions: 35,861 hits (world, real, game, long, everything, video, day, life, thought, music, love). Entries representing this theme are multiplex as the root term "world" denotes what people do in physical and digital spaces, the scope of events, spaces tied to "real life," narratives of AI taking over the world, and imaginations of others' subjective worlds. The theme is best characterized as commentary on the disruption of and by traditional media forms and norms. Often, commenters discuss how other media (principally video games, videos, and live music) are influencing or influenced by genAI and related dynamics—they are things that are crafted, consumed, played, pirated, appreciated, and disrupted as part of everyday life. Media (inclusive of AI art) are discussed as things that give color to life, are reflective of or apart from real life, and are intrinsic to one's experiences. Debates frequently address how technologies—in parallel to genAI—disrupt norms for other media performance arts; others consider how those arts had persisted or grown: "Before recorded *music*, most people rarely heard music performed by professional musicians… Nothing got lost. Something got added." In turn, discourses of work-reconfiguration unfold: "Nobody wants to make trees in a *video game*, background *music* for commercials, or write shitty clickbait… creatives should never be replaced by AI." More generally, the physical and semantic boundaries of spaces, times, experiences, values, and processes are considered mutable—and these are juxtaposed against varied presentations of an "ideal *world*."

Labor Futures: 32,721 hits (everyone, bad, jobs, money, care, future, industrial, shit, lifestyle, socialism). Entries falling into this theme are generally debating frameworks and values associated with ideal and dystopian futures, in particular emphasizing the dynamics of labor, life, health, and death. These are often generalizations or dramatizations attending to how genAI currently or potentially influencing the loss, shift, or problematics of jobs (e.g., "… major companies already shipping *jobs* offshore to save *money* don't *care* and *everyone* screams about a revolution…"). Most entries consider how current technological, corporate, political, or social changes will manifest some ideal or dystopic future in a local sense (one person's vision), a conceptual sense (creativity is reduced to activity and art to product), or a global sense (fundamental changes to humanity). Framings of these futures are most often negative. They are sometimes couched in discussions of socialism versus (late-stage) capitalism, often with respect to healthcare and financial safety nets but sometimes in relation to craft. Discussions sometimes boil down to money—questions of having it or not, needing it for survival, where it comes from and at what cost, and whether or not it is a motivation for creating art. Some are grounded in debates over the nature of the human condition: "... *everyone*, no matter their *job*, deserves to live in dignity" versus "*Everyone* deserves to live in dignity, but the world doesn't owe everyone the ability to make *money* how you want."

Operational/Logical Juxtapositions: 30,462 hits (example, means, fact, least, instead, true, computer, name). Entries juxtapose claims, evidence, perspectives, processes, or possibilities. In this way, the theme represents meta-argumentation, as posters deliver evidence or examples, offer interpretations, consider thresholds or boundary conditions, and consider the veracity of claims. Entries often attend to definitions and roles of rationality, science, truth, and evidence, while some question the value of inspiration, awe, and magic. Some critique positions and pose counterpoints. In response to another entry, for example, one poster notes: "Given… the *fact* that up until recently, we were the only beings on this planet that we know of capable of [creativity], I don't see how 'something created by humans as a *means* of expression' is needlessly constricting… If you can provide an *example* of art that doesn't fit those three criteria… I'm all ears." Some debates revolve around the natures of computers and differing perspectives on what they are or can do. For instance: "… realize that *computers* are basically magic. Even the simple act of typing text to send to people across the planet is

complicated sorcery, depending on perspective." Some entries point to the name of the hosting subreddit as warrant for the debate-driven juxtaposition.

Competing Interests: 26,054 hits (open, source, law, company, public, legal, system). These entries discuss the networks and boundaries of different actors—public, individuals, corporations, artists, rightsholders, policymakers, investors, developers—and their vested, competing interests in dimension of AI art systems. Often, these discussions emphasize how such interests influence ownership and access, especially given how general and financial law constrain or expand those interests. For instance, one post considers how lawsuits benefit corporations while limiting public access: "... big firms encumber AI research in heaps of expensive *legal* fuckery and drive it underground. Then *companies* with big *legal* teams can have AI, and people willing to break the *law* will have it." Entries vary in engagement with different models or paradigms for ownership or access (e.g., open source, creative commons), with tensions among open-access models and copyright law. Notions of public goods or "the public" feature prominently as posters debated how the non-corporate, tax-paying public should (not) benefit from AI, especially when public funds advance development and public workers shoulder related burdens: We need "compromises on both sides… architecting a *system* that is 'radioactively' *open source*, and free for all." Some see AI-interestedness as symptomatic of "the nature of closed-source enterprise. Use academic resources to find a cure for cancer, and then charge the public to use it. The problem itself is far deeper than just AI."

Meta-Discussion: 17,255 hits (post, stop, anti-ai, artisthate [including downvoting, echochamber, dissenting]). These entries comprise meta-discussions about the dynamics and quality of debates in the form, especially compared to an adjacent forum (r/ArtistHate, a pro-human artist subreddit). Entries often critiqued specific posts, posters, or posting techniques as the discussion referenced itself. For instance: "Ah it's once again that one from *artisthate* that harasses people on this sub but constantly posts on *artisthate* that pro-ai people 'always harass *anti-ai*'." Posters make observations about shifted patterns in opinion representation, of faction tendencies, about backgrounds of problematic posters, and of instances when they feel people are not arguing in good faith. Observations often appear directed at holding people accountable for reasonable discussion and maintaining rigorous debate through forum mechanisms: "Do we have a *downvoting* problem? There are some good *anti-AI posts* that receive a good amount of upvotes. What we seem to have a problem with is that there is a lot of low-quality commentary."

Synthography: 15,759 hits (prompts [outpainting, cfg, controlnets, segmentation, hypernetworks], process, words, space). Entries in this theme focus on experiences, natures, procedures, skills, and permissions inherent to writing prompts to generate AI art and processes that follow. Many focus on processes involved in image generation and how they bridge the input and the output: "The AI locates the *prompt* in vector *space* and *processes* it into a corresponding image. It can locate the intersection of both 'child' and 'pornography' in that *space*. You would be able to train a model to negatively reward any image in that *space* so it would always steer clear of it." Many compare the crafting process in genAI to that in more traditional arts, for instance in relation to photography: "... a photographer takes a machine and aims it at a region of physical *space* and then uses light to create an image. A synthographer... takes a machine and aims it at a region of virtual *space* and uses *words* and code… From the point of view of intention, these are indistinguishable *processes*."

3.2. Relative Prevalence of Themes over Time

Eight of the 10 themes were mapped over time, since two (Meta-Discussion and Juxtaposition) are more structural/argumentation features rather than discussion topics. Visual inspection of Figure 2 indicates all eight persisted over the entire observation period—no new theme appeared and no existing theme disappeared. The scaled 3-week moving mean of theme presences appears to be largely constrained with only occasional fluctuations.

To consider whether specific themes may be impacted by specific event types and dynamics of the theme engagement pattern, events were categorized as either law/policy/business (e.g., a new lawsuit, $n = 12$) or technical developments (e.g., a new model release, $n = 10$). We then evaluated the relative traffic of theme discussions before and after each event type by using average TES calculated within a time window (three to five days) similar to the approach applied for analyzing the overall z scores. Overall, patterns indicate, for some themes, engagement increases around relevant events. Fair Use Dynamics and Competing Interests discussions appear more responsive to legal, partnership, and policy related events and less responsive to tech development. Art-Ontological Schemas, Human versus Machine Learning, Tech Philosophies, Labor Future, Media Disruptions, and Synthography are more responsive to tech development compared to law/policy/business events. Moreover, we observed, in a -1 to +3 five-day window, the TES for Fair-User Dynamics and Competing Interests is significantly different from

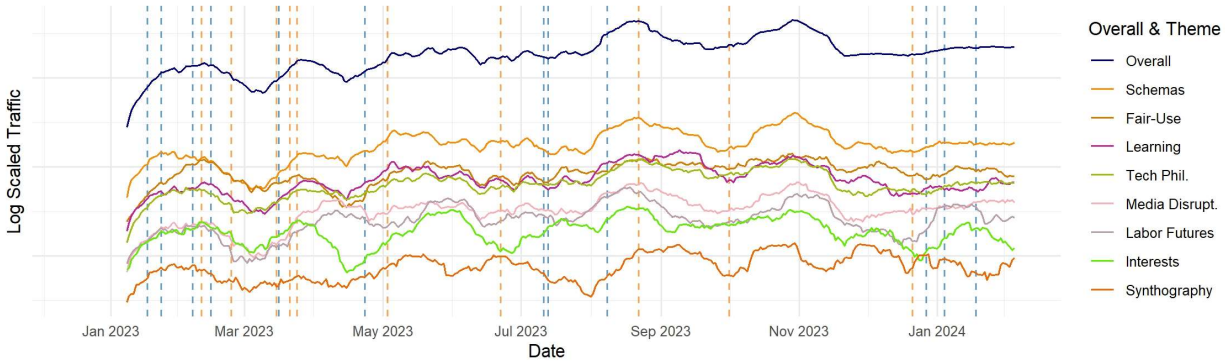

Figure 2. 21-day moving window mean of theme traffic on Log2 scale. Blue dashed lines are law/policy/business-related events and orange dashed lines are tech-development events.

average engagement level for law/policy/business type of news (+.195 ± 0.17, p = .003; +.13 ± .13 p = .009). This pattern could imply news relating to law/policy/business tends to peak the user engagement slightly after the events themselves.

Although tech development news does not show significant differences in the TES, it tends to engage users slightly before events occur, particularly in the -3 to +1 five-day window (e.g., Human vs. Machine Learning and Art Schemas: 0.14 ± .18 and 0.14 ± 0.17; p = 0.16 and 0.23). However, scores lacking significant difference from zero suggest though there may be observable trends in how themes react to various external events, the overall engagement levels do not deviate substantially from the mean engagement level. The wide confidence intervals (Figure 3) for most engagement scores indicate substantial variability; it could be most observed engagement patterns are not significantly different from zero due to the limited sample size (number of events) and traffic (especially for the lower-traffic "Competing Interests" and "Synthography").

4. Discussion

This descriptive analysis of online debates around image-generative AI induced eight topical themes: Ontological Schemas for traditional versus artificial art, Fair Use Dynamics, Human versus Machine Learning, Technology Philosophies, Media Disruption, Competing Interests, and Synthography mechanisms and techniques. Two others addressed Meta-discursive and Juxtaposition structures in varied discussions. Topic themes were relatively stable over the 14-month period, though there were indications that theme-specific discussions rose immediately before and fell shortly after relevant events.

Some of the identified themes correspond with mainstream debates around AI art (as described above): Art-Ontological Schemas are effectively debates around whether and how AI art may be counted as art. Fair Use Dynamics and Competing Interests fall squarely into debates over authorship and ownership. Comparisons of Human versus Machine Learning are a slice of the transparency debates. Labor

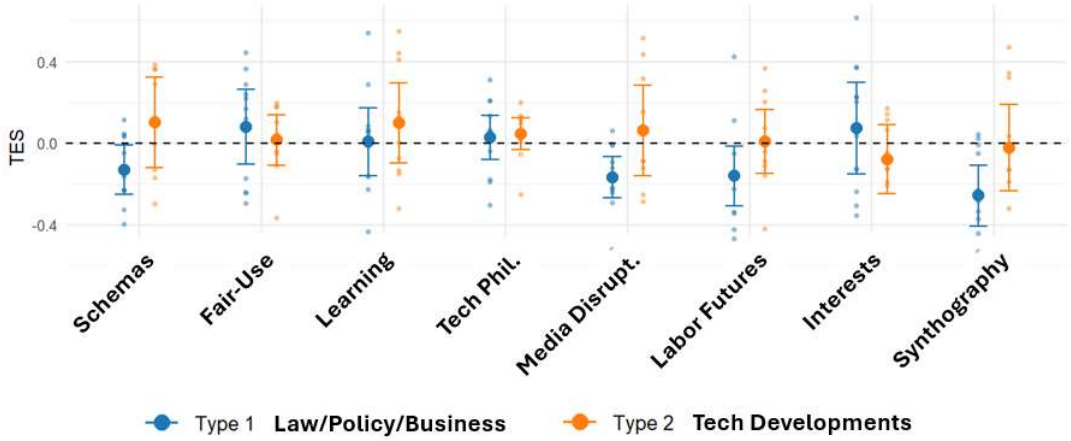

Figure 3. Event-type correspondence with theme engagement scores (TES) in 5-day (-2 to +2 days) window.

Futures align with mainstreamed discussions of job loss. Notably, however, many of these exchanges were far more nuanced than we see in popular media. For instance, Labor Futures leaned heavily into labor and economic theories and considerations of who benefits from whose labor, along with broader issues of public good and who counts as that benefiting public. Similarly, Competing Interests discussions often tracked networks of influence, gain, and loss and how boundaries are constructed around fields of interest.

Two themes, though, are not represented in mainstream discussions reviewed in Section 1.2. Media Disruption debates whether "everything is a remix" (see Ferguson, 2023) and positions genAI's emergence in historical contexts to consider how *all* media forms have been in some way disrupted by the next form, as the new is invented and then institutionalized (Stöber, 2004). Synthography most often attended to strategies and technicalities of genAI in explaining the technologies' machinations but also in contributing to other philosophical discussions. Both of these themes are permutations of and expansions on creation processes and model details common to "pro" perspectives in past work (Wan & Huang, 2024). They may suggest those supporting the genAI advancement may see it as a natural progression in human creativity and/or a technical puzzle to be solved such that image generation constitutes a craft in itself (see, in part, O'Toole & Horvát, 2024).

Considering longitudinal trends, we cannot necessarily suggest anticipated events are driving discussion, although hype around technological events and news coverage of legal/regulatory issues render it reasonable that current events may set online discussion agendas. Similar rise-and-fall patterns have been observed in other domains and interpreted through the lens of agenda-setting (e.g., Neuman et al., 2014). Perhaps more interesting, though, is the relative stability of debate volume over time. It is somewhat surprising that genAI's rapid evolution and adoption was not paired with a rise or fall in any thematic traffic. This may speak to issues' non-resolution or perhaps they are driven more by persistent human values and interests rather than by technological change.

The patterns in theme traffic in response to relevant events show many events *don't* trigger theme engagement. Through a complex adaptive systems lens, our observations align with Holland's (1992): Big news relating to themes might not always drive engagement in relevant discussions, while other factors (e.g., a novel post that unusually resonates with the community) can get many reactions and replies. For example, the post with most comments in corpus is titled "Is AI art being "theft" the worst straw man take ever?" Comments suggest the post is not directly related to an external event, but rather to the broader ongoing debate about the role of AI in art and its potential impact on artists. This instance demonstrates the non-linearity of complex adaptive systems—such as online discussion communities—where small inputs or changes within the system can lead to disproportionate outputs. These discussions are not isolated; they feed back into the system, which may influence future discussion and shift the community's collective understanding and sentiment towards AI art.

In considering these observations and possibilities, this inquiry is subject to the usual limitations of the method: Messy, naturalistic English-language data were collected from a single forum, subjected to analysis by a single interpreter, during a finite period, and compared against a curated list of events. Given the complexity of the corpus and the single interpreter, it is possible some finer discussion topics were not identified, and there may be some meaningful domain events that were not considered. Indeed, AI art enthusiasts participating in online forums may be primarily technical and creative professionals using these AI for recreational purposes, to the exclusion of other use cases (Sanchez, 2023).

Future research should consider whether other platforms are host to different discussions—especially in other language cultures—and continue to evaluate how discussions evolve as technologies mature, are regulated, and are more widely used. Other issues may emerge in future discussions (e.g., problematic labor practices and environmental effects; Tacheva & Ramasubramanian, 2023) that warrant attention. Nuanced discussions observed suggest developers, policymakers, and scholars alike may benefit from engaging novel arguments presented in these spaces as they consider how to move forward with genAI. Open issues include engagement of philosophical and legal theory to help non-experts evaluate genAI's ethical issues, how people morally weigh self-beneficial technology outcomes against the disadvantaging of others, and fundamental questions around definitions of art, who gets to make it, and how it is valued.

7. References

Baumgartner, J., Zannettou, S., Keegan, B., Squire, M., & Blackburn, J. (2020). The Pushshift Reddit dataset. *Proceedings of the International AAAI Conference on Web and Social Media, 14*(1), 830-839.

Brewer, P.R., Cuddy, L., Dawnson, W., & Stise, R. (2024). Artists or art thieves? Media use, media messages, and public opinion about artificial intelligence image generators. *AI & Society* [online first].

Briggs, J., & Kodnani, D. (2023). The potentially large effects of artificial intelligence on economic growth [report]. Goldman Sachs.

Dice, L. R. (1945). Measures of the amount of ecologic association between species. *Ecology, 26*(3), 297–302.
Dickie, G. (1969). Defining art. *American Philosophical Quarterly, 6*(3), 253-256.
Dutton, D. (2006). A naturalist definition of art. *The Journal of Aesthetics and Art criticism, 64*(3), 367-377.
Epstein, Z., Levine, S., Rand, D.G., & Rahwan, I. (2020). Who gets credit for AI-generated art? *iScience, 23*, 101515.
Ferguson, K. (2023). Everything is a remix [video]. https://youtu.be/X9RYuvPCQUA
Goetze, T.S. (2024). AI art is theft: Labour, extraction, and exploitation: Or, on the dangers of stochastic Pollacks. In *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency* [online first]. ACM. https://arxiv.org/abs/2401.06178
Holland, J.H. (1992). Complex adaptive systems. *Daedalus, 121*, 17–30.
Jaccard, P. (1912). The distribution of the flora in the alpine zone. *New Phytologist, 11*(2), 37-50.
Jain, A., Nandakumar, K., & Ross, A. (2005). Score normalization in multimodal biometric systems. *Pattern Recognition, 38*(12), 2270-2285.
Jerrentrup, M. (2024). Imagine art: The status of works generated by artificial intelligence. *International Journal of Cultural Studies* [online first]. https://doi.org/10.1177/13678779241252664
Jiang, H.H., Brown, L., Cheng, J., Khan, M., Gupta, A. … Gebru, T. (2023). AI art and its impact on artists. *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society* (pp. 363-374). ACM.
Kolev, I. (2023). Defining art as phenomenal being. *Arts, 12*(3), 100.
Kraaijeveld, S.R. (2024). AI-generated art and fiction: Signifying everything, meaning nothing? *AI & Society* [online]. https://doi.org/10.1007/s00146-023-01829-4
Latikka, R., Bergdahl, J., Savela, N., & Oksanen, A. (2023). AI as an artist? A two-wave survey study on attitudes toward using artificial intelligence in art. *Poetics, 101*, 101839.
Lima, G., Zhunis, A., Manovich, L., & Cha, M. (2021). On the social-relational moral standing of AI: An empirical study using AI-generated art. *Frontiers in Robotics and AI*, *8*, 719944.
Ljung, G.M. (1993). On Outlier Detection in Time Series. Journal of the Royal Statistical Society. Series B (Methodological), 55(2), 559-567.
Lovato, J., Zimmerman, J., Smith, I., Dodds, P., & Karson, J.L. (2024). Foregrounding artist opinions: A survey study on transparency, ownership, and fairness in AI generative art. https://arxiv.org/pdf/2401.15497
Manovich, L. (2019). Defining AI arts: Three proposals. *AI and Dialog of Cultures, exhibition catalog.* Hermitage Museum, Saint-Petersburg.
Minh, D., Wang, H.W., Li, Y.F., & Nguyen, T.N. (2022). Explainable artificial intelligence: A comprehensive review. *Artificial Intelligence Review, 55*, 3503-3568.
Mitrani, A., & Gu, G. (2024). Ethics of a new frontier: Understanding the link between knowledge and opinions of AI art. https://hdl.handle.net/1969.1/200840
Neuman, W.R., Guggenheim, L., Jang, S.M., & Bae, S.U. (2014). The dynamics of public attention: Agenda-Setting Theory meets big data. *Journal of Communication, 64*, 193-214.
Nicoletti, L., & Bass, D. (2023, June 9). Humans are biased. Generative AI is even worse. *Bloomberg.* https://www.bloomberg.com/graphics/2023-generative-ai-bias/
O'Toole, K., & Horvát, E.-A. (2024). Extending human creativity with AI. *Journal of Creativity, 34*(2), 100080.
Özkent, Y. (2022) Social media usage to share information in communication journals: An analysis of social media activity and article citations. *PLoS ONE, 17*(2), e0263725.
Sanchez, T. (2023). Examining the text-to-image community of practice: Why and how do people prompt generative AIs? In *Creativity and Cognition* (pp. 43-61). ACM.
Schröter, J. (2019). Artificial intelligence and the democratization of art. In A. Sudmann (Ed.), *The democratization of artificial intelligence: Net politics in the era of learning algorithms* (pp. 297-311). Transcript Verlag.
Shaibu, S. (2023). AI-generated art: The ethical implications and debates. *Becoming human* [blog]. https://becominghuman.ai/ai-generated-art-the-ethical-implications-and-debates-6f0132d158c7
Smith, A.E., & Humphreys, M.S. (2006). Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behavior Research Methods*, *38*, 262–279.
Stöber, R. (2004). What media evolution is: A theoretical approach to the history of new media. *European Journal of Communication, 19*(4), 483-505.
Tacheva, J., & Ramasubramanian, S. (2023). AI Empire: Unraveling the interlocking systems of oppression in generative AI's global order. *Big Data & Society, 10*(2).
Tredinnick, L., & Laybats, C. (2023). Black-box creativity and generative artificial intelligence. *Business Information Review, 40*(3), 98-102.
Wan, W., & Huang, R. (2024). Deep learning-driven public opinion analysis on the Weibo Topic about AI art. *Applied Sciences, 14,* 3674.
Weitz, M. (1956). The role of theory in aesthetics. *The Journal of Aesthetics and Art Criticism, 15*, 27-35.
Woolson, R. F. (2005). Wilcoxon signed‐rank test. Encyclopedia of Biostatistics, 8.
Wu, Y., Mou, Y., Li, Z., & Xu, K. (2020). Investigating American and Chinese subjects explicit and implicit perceptions of AI-generated artistic work. *Computers in Human Behavior, 104*, 106186.
Zhou, E., & Lee, D. (2024). Generative artificial intelligence, human creativity, and art. *PNAS Nexus, 3*(3), pgae052.

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