Media Farm: Reinventing the Tetrad for AI-driven Reinterpretation and Generation of Media Art

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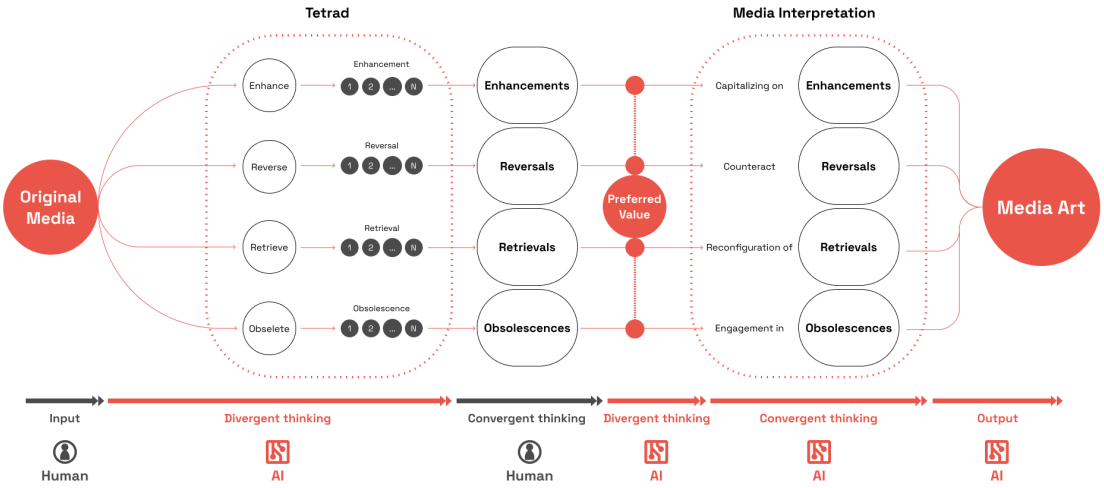

Fig. 1. Human AI Co-creation using Media Farm

This paper presents Media Farm, a framework for AI-based reinterpretation and generation of media art, inspired by Marshall McLuhan's *Tetrad* and the practices of Ant Farm. Our approach revitalizes McLuhan's media theory by integrating it with Ant Farm's critique of media culture, providing a systematic methodology for AI and human co-creative processes. We explore the effectiveness of this method in a practical educational setting, revealing both the potential and the challenges of integrating AI into creative media practices. This research demonstrates the potential of Large Language Models in redefining artistic creativity and education for computational media art.

CCS Concepts: • **Applied computing** → **Media arts**; • **Computing methodologies** → **Philosophical/theoretical foundations of artificial intelligence**; *Language resources.*

Additional Key Words and Phrases: Tetrad, Marshall McLuhan, Ant Farm, Media Art, Media Interpretation, Generative AI, LLMs

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1 INTRODUCTION

The evolution of AI has transformed our interactions with various forms of content and redefined the boundaries of art and creativity. Techniques such as style transfer [11], Generative Adversarial Networks (GANs) [36], CLIP [30], and diffusion models [29] have demonstrated significant potential in generative art. Researchers have further explored AI-based tools to support artists in the creative process [29, 30] and in human-machine co-creation [3, 12, 14, 27]. However, recent AI-generated content in art has primarily focused on generating images and videos, with relatively little attention given to conceptual media art.

Conceptual media art goes beyond using media as a medium for creating works; it also critiques media, often engaging with how technology shapes society, culture, and perception [16]. To generate conceptual media art, AI needs to understand the medium and reinterpret it into a representation of an artwork through reasoning and interpretation.

Large Language Models (LLMs) [1, 34] introduce a context-based interaction paradigm that enables reasoning and interpretation, facilitating more intuitive interactions between humans and machines [10]. Frameworks such as Chain-of-Thought reasoning [15, 35] and dataset-specific training [18] present new opportunities to overcome the limitations of AI-driven artistic creation by integrating interpretive depth into generative processes.

Despite recent advancements, wwo major gaps remain in AI generative art:

<1> Superficial replication of styles: AI-generated artworks often mimic only the surface-level aesthetics of existing works without engaging with the deeper conceptual frameworks or creative processes that underlie them. There is a lack of research on developing structured methodological frameworks to guide AI's creative processes.

<2> Lack of structured creativity: Current interactions between humans and AI in art generation tend to involve arbitrary cycles of trial and error. These processes lack the structured divergent (generation of ideas) and convergent (evaluation and refinement) thinking crucial for effective interpretive and creative development.

To address these gaps, we introduce Media Farm, an AI-based media art reinterpretation and generation framework, building on our previous research into the connection between Marshall McLuhan's theory and Ant Farm's practices [17]. Ant Farm, a pioneering media art group from the 1960s, created works that critiqued the pervasive media of their time [16]. Marshall McLuhan, a media theorist, expanded our understanding of media's influence on a broader cultural and societal scale. Media Farm is developed on a methodology that bridges Ant Farm's work with McLuhan's "Four Laws of Media," introduced by McLuhan and his son Eric. The Tetrad, a visual representation of these laws, focuses awareness on hidden or unobserved qualities in culture and technology.

By synthesizing Ant Farm's artistic practices with McLuhan's theories, we construct a systematic methodology that guides AI's learning process in media art reinterpretation and generation [17]. This methodology emphasizes a structured approach to reasoning and interpretation, allowing the AI to engage in a creative process that mirrors human cognitive approaches—divergent (generation) and convergent (evaluation) thinking. The evaluated and selected outcomes are iteratively refined and added back into the database, enhancing AI's ability to reinterpret and generate media art, revealing hidden qualities in culture and technology as outlined by the Tetrad [24].

Our contributions can be summarized as follows:

<1> We develop a systematic approach that utilizes AI to assist artists, educators, and students in reinterpreting media artworks. This approach helps elucidate the contextual aspects of media art and articulates how and why specific media characteristics are utilized by artists.

<2> This approach functions as a generative system capable of inspiring new concepts in art through media interpretation. It shows potential as an educational tool for computational media art education.

2 RELATED WORK

2.1 Generative Art

The exploration of computational methods for generating design and artwork has a rich history, starting with early experiments such as Harold Cohen's AARON program [21], applying shape grammar to capture the essence of Richard Diehenkorn and Joan Miró's work [13], employing geometrical techniques to replicate Piet Mondrian's abstract paintings [8], and using fractal analysis to model the distinctive style of Jackson Pollock's drip paintings [33]. Procedural modeling approaches have also incorporated art theories, such as Wassily Kandinsky's, to generate Kandinsky-inspired artworks [37]. These methods, largely mathematical in nature, focused primarily on reproducing the visual form of artworks.

Recent developments in artificial intelligence have significantly expanded the toolkit available to designers and researchers and reshaping artistic practices [32]. Generative Adversarial Networks (GANs) have shown promising results in transferring artistic styles [36]. Additionally, text-to-image models like Stable Diffusion [30] and DALL-E [29] enable the generation of images from prompts that reference specific artists. Despite these advancements, the majority of AI-generated creative work tends to mimic only the superficial aspects of styles, often missing the deeper creative processes and interpretative depth.

The recent surge in the success of large language models (LLMs) [1, 34] has further pushed the boundaries of generative AI across various creative fields, promoting innovation and creativity [6]. Researchers have also introduced prompting frameworks to enhance the reasoning capabilities of LLMs. These frameworks encourage step-by-step task decomposition and solution generation through general-purpose prompting techniques, such as the Chain-of-Thought approach [15, 35]. While these methods have been successfully applied in other domains, they have yet to be widely adopted for the generation of conceptual media artwork.

2.2 AI And Co-creativity

AI, while offering new creative possibilities, often serves more effectively as a collaborative partner rather than an independent creator [31]. For some artists, AI alone has not unlocked new levels of creativity, but it has created exciting opportunities for exploration and experimentation. As Chung argues, "collaboration is the key to creating space for both human and machine" [4].

Early rule-based generative systems allowed for dynamic outputs but were constrained by rigid, predefined rules, limiting their capacity for genuine creativity [8]. In contrast, recent advances in text-to-image technology enable image generation from natural language prompts, although this process still often requires careful prompt engineering and trial-and-error cycles to achieve optimal results.

With the development of LLMs, more intuitive human-AI communication has become possible [1]. Researchers have combined LLMs with text-to-image models, using LLMs to generate highly detailed prompts, thereby improving the quality of AI-generated art [20]. Human-AI co-creation has been explored across a wide array of fields including art [6],

design [12], gaming [14], storytelling [3], screenplays and theater scripts [26] and even in the generation of research questions [18].

Our work seeks to address these gaps by emphasizing a method for reasoning and interpretation in the context of media art, enabling the AI to engage in a creative process that mirrors the divergent (generation) and convergent (evaluation) phases inherent in the human creative process.

3 MEDIA FARM

3.1 Marshall McLuhan and Ant Farm

Media and technology are integral to shaping our perceptions and experiences of society and the built environment. Revisiting the works of Ant Farm and Marshall McLuhan sheds light on contemporary challenges and speculates on our potential future. Situated in the technological surge of the last century, Ant Farm critiqued the media of their era, expressing a desire for alternative ways of living and interacting with the environment [16]. Marshall McLuhan expanded our understanding of the roles of media technologies in human life [22] through seminal works such as *Understanding Media: The Extensions of Man* and *The Medium is the Massage* [23]. Their contributions, deeply rooted in their time, offer essential insights into the relationships among technology, media, and space, making their studies highly relevant to today's emerging technologies.

Although McLuhan and Ant Farm did not formally collaborate, their work shared significant thematic overlaps, particularly in relation to media and technology [5]. Both were strongly influenced by the countercultural movements of the 1960s and 1970s, which challenged dominant social, cultural, and technological paradigms [16]. This spirit of questioning and reimagining is reflected in McLuhan's critiques of traditional media studies and Ant Farm's radical architectural practices.

McLuhan's theories serve as a tool to understand how media and technology shape human perception and experience. His concepts, such as the "Four Laws of Media [25]," "the medium is the message" [23], fundamentally shifted how society views media, information, and communication. These ideas broke from traditional frameworks and aligned with the countercultural focus on decentralized communication and experiential knowledge. Ant Farm's architectural projects, such as *Inflatocookbook*, *Media Van*, *Truckstop Network*, *Media Burn*, and *Cadillac Ranch*, can be seen as both critiques and real-world applications of McLuhan's ideas [16]. For example, the *Media Van*, a mobile media station, challenged the static nature of traditional media outlets, offering a more democratic and decentralized model for information dissemination [7]. Ant Farm's projects were deeply engaged with the media and technological innovations of their time, pushing back against conventional architectural practices [9].

Their shared interest in media and technology was evident in both their experimental and participatory approaches. The *Media Van*, equipped with video recording and playback devices, enabled real-time documentation and sharing of their work [2]. This initiative reflected McLuhan's ideas about the transformative potential of media in reshaping human communication and social interaction [19].

The *Tetrad*, a conceptual framework introduced by McLuhan and his son Eric, serves as a tool for analyzing the effects of technology on society. It comprises four key questions that can be applied to any medium or technology: What does it enhance? What does it make obsolete? What does it retrieve that had been obsolesced earlier? What does it flip into when pushed to extremes? [25]. This model offers a holistic approach to understanding the broader implications of media beyond mere utility, examining its environmental and societal impacts.

The *Tetrad* and McLuhan's theories provide a valuable framework for understanding Ant Farm's work, especially their critique of media and its societal effects. Ant Farm's installations and performances can be seen as embodiments of McLuhan's ideas [17], using media as both a tool for artistic expression and a subject of critique, reflecting on how media shapes human experiences and societal values.

3.2 Practice as the Embodiment of Theory

Existing literature, including our previous works like *Media Interpretation* [17], establishes connections between Ant Farm's installations and McLuhan's theories. McLuhan argued that the nature of media fundamentally shapes society, a perspective encapsulated in his collaborations, such as with David Carson in *The Book of Probes*. He suggested that once a new technology enters society, it continues to permeate until it saturates every institution. Thus, *Tetrad* analysis aims to uncover the subtle, often overlooked effects of media on culture and technology [24].

Ant Farm's works can be seen as embodiments of the interpretive outcomes of *Tetrad* analysis. Reintroducing Ant Farm's works through the *Tetrad* framework forms an iterative loop that further reveals unobserved qualities in culture and technology [17].

McLuhan famously stated, "the 'content' of any medium is always another medium," highlighting the layered complexity of media [23]. This insight is central to our project, *Media Farm*, which advances these concepts by utilizing the capabilities of Large Language Models and a human-AI co-creative framework to establish a text-based media art interpretation mechanism. This approach facilitates deeper engagements with media theory and enhances our understanding of the interplay between technology, culture, and design. Through *Media Farm*, we embody McLuhan's vision, exploring and revealing the hidden dimensions of media as they interact and transform within a digital age.

3.3 Reinventing Tetard into Media Farm

By building the connection between Ant Farm's methodology of media art and the framework of McLuhan's *Tetrad*, we adapt it into a dynamic, creative process we refer to as *Media Farm*. This approach systematically engages with each of McLuhan's four Laws of Media to analyze and reinterpret media artifacts creatively. The process is detailed as follows:

- **Enhancement**: leverage the attributes that the media enhances. This step involves pinpointing features that are intensified by current media forms, which sets the foundation for the subsequent interpretive layers.
- **Reversal**: Oppose potential reversals by rejecting what the medium might become if pushed to its limits. This step encourages a speculative analysis of what the medium might become if its development is pushed to extremes, providing insight into possible future evolutions.
- **Retrieval**: Promote what the media retrieves from the past. By revisiting these revived components, we draw inspiration for new creative interpretations, integrating past influences with contemporary relevance.
- **Obsolescence**: integrate elements that the media reverses or renders obsolete. This requires a critical analysis of what current advancements are phasing out, offering a contrasting view to the enhancements and providing a complete cycle of media transformation.

3.4 Reinterpreting Ant Farm's Artworks

We apply this framework to reinterpret Ant Farm's counter-cultural media artworks into a Media Art Canvas, a structured tool designed to reinterpret Ant Farm's. It also serves to guide the creative process of interpreting existing media through the lens of Marshall McLuhan's *Tetrad* framework and the innovative practices of Ant Farm. The canvas

organizes the critical elements needed for media analysis and transformation into a coherent, visual format Fig.2 and Fig.3.

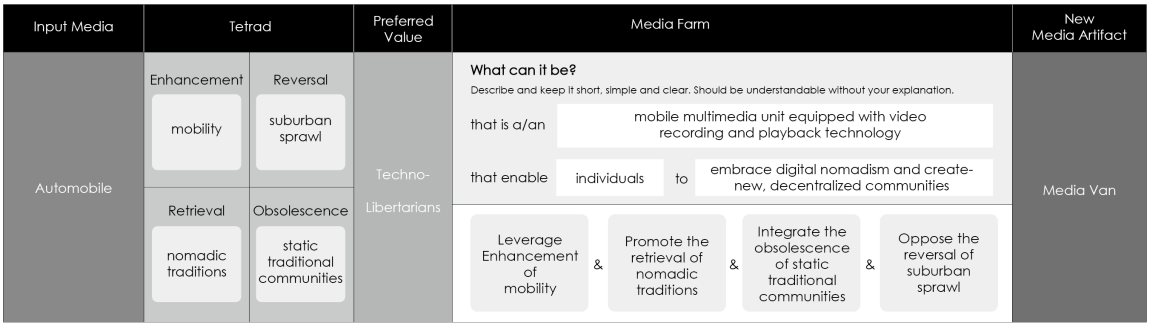

Fig. 2. Reinterpreting Media Van Using the Media Art Canvas

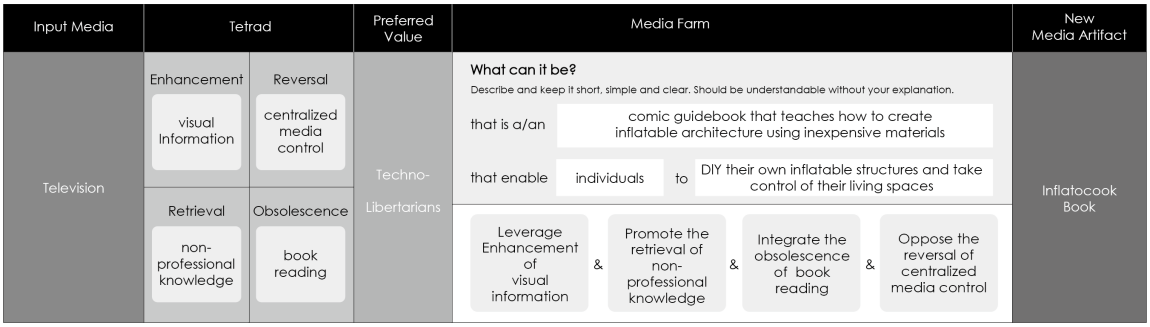

Fig. 3. Reinterpreting Inflatocookbook Using the Media Art Canvas

The Media Art Canvas contains five sections:

Input Media: This section identifies the original medium being analyzed and reinterpreted. **Tetrad Analysis**: This section is divided into four quadrants, each representing one of McLuhan's *Tetrad* questions. **Preferred Value**: This column indicates the guiding principle or value that shapes the reinterpretation. **Media Farm**: This section is used to articulate a clear and concise description of the new media artifact. **Integration of Tetrad Elements**: This part of the canvas illustrates how the *Tetrad* analysis informs the new media artifact. **New media artifact**: This section identifies the name of the output new media artifact.

The reinterpretion and generation is also documented in a wrap sheet, designed to synthesize and articulate the media art concept clearly and concisely. The wrap sheet follows the format:

> "[Artist's name], a/an [artist's value], interprets [input media] into [media art] that is a/an [brief description], which enables [recipient (human or non-human)] to achieve [desired outcome], by leveraging the enhancement of [preferred enhancement], promoting the retrieval of [preferred retrieval], integrating the obsolescence of [preferred obsolescence], and opposing the reversal of [preferred reversal]."

3.5 Prompting GPT

The Media Art Canvas and the wrap sheet serve as effective tools to teach the LLMs this methodology. Since McLuhan's *Tetrad* and Ant Farm's work are already in GPT's knowledge base, our goal is to use minimal information to articulate how to use *Media Farm* to create new media artifacts.

Our process is as follows, including the reinterpretation of new media art and the interpretation of original media into new media art (a detailed version is in the supplementary material):

> The author: [Action] Upload the Media Art Canvas that decompose Ant Farm's work, "Media Van" into GPT-4; [Prompt] "*The Media Art Canvas is designed to guide the creative process of reinterpreting media art into its original media through the lens of the Tetrad.*"
>
> GPT 4o: (Detailed response is in the supplementary material)
>
> The author: [Action] Upload the wrap sheets that document Ant Farm's work, "Media Van" into GPT-4; [Prompt] "*Follow the wrap sheet to articulate the reinterpretation of the new media art.*"
>
> GPT 4o: (Detailed response is in the supplementary material)
>
> The author: [Action] Upload the Media Art Canvas that decompose Ant Farm's work, "Inflatocookbook" into GPT-4; [Prompt] "*The Media Art Canvas is also designed to guide the creative process of reinterpreting existing media into new media art through the lens of the Tetrad.*"
>
> GPT 4o: (Detailed response is in the supplementary material)

This structured approach ensures that GPT-4 can effectively learn and apply the *Media Farm* methodology to reinterpret media art and create media artifacts from existing media.

3.6 Designing Human AI Co-creation

The human-AI co-creative process (Fig.1) begins by selecting a medium for critique. Using the *Tetrad*'s four laws, the analysis unfolds as a divergent thinking process, broadened and enriched by the deployment of LLMs. These models amplify the scope of analysis by generating a diverse array of interpretations and possibilities, providing a comprehensive view of each law's impact on the selected medium.

After exploring these expansive possibilities, the process shifts to convergent thinking, wherein the most coherent and impactful insights are selected through human preferred value types. The chosen insights are used to reinterpret the initial medium, transforming it into a new form.

We also designed a Value Compass and a Media Compass (Fig.4) to serve as an input database for users in the creative process. The Value Compass features an X-axis ranging from Left to Right, representing a spectrum of political or ideological orientations, and a Y-axis from Libertarian to Authoritarian, representing the degree of individual freedom versus centralized control. The Value Compass is inspired by United Micro Kingdoms [28]. The Media Compass features an X-axis from low-tech to high-tech, categorizing media based on technological sophistication and a Y-axis from cold to hot media, a concept inspired by McLuhan [23] that categorizes media based on the level of audience participation and sensory engagement.

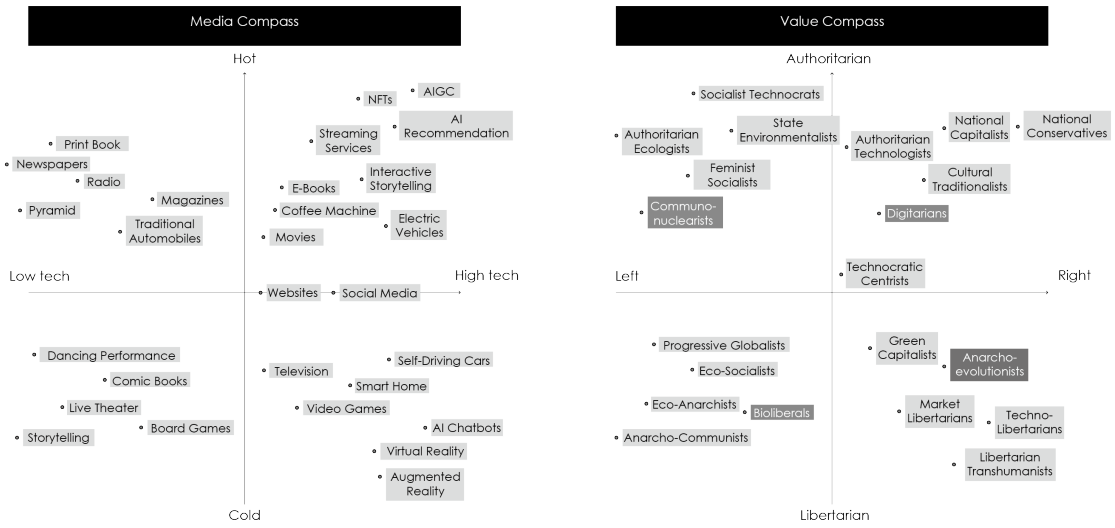

Fig. 4. Value compass and media compass

Our process is as follows (a detailed version is in the supplementary material):

The author: [Prompt] "*Use Tetrad to analyze (input media). Provide 4 options in each quadrant.*"

GPT 4o: Generates diverse options for each *Tetrad* quadrant (detailed responses are in the supplementary material).

The author: [Prompt] "*Interpret (input media) into a new media art as a (preferred value). The new media artifact leverages the enhancement of (preferred enhancement), promotes the retrieval of (preferred retrieval), integrates the obsolescence of [preferred obsolescence], and opposes the reversal of (preferred reversal). The new media art could be something totally different from the input media. Follow the format of the wrap sheet.*"

GPT 4o: Articulates the new media artifact based on the provided wrap sheet (detailed responses are in the supplementary material).

4 WORKSHOP OF MEDIA FARM

We conducted a 2-hour workshop with 20 undergraduate students in computational art and 2 experienced instructors. Additionally, we held open discussions with the students and instructors at the end of the workshop. During the workshop, we used the creative Media Art Canvas with Ant Farm's cases as instructions and asked the students to document their output media artifacts using the wrap sheet. Students found the Creative Media Canvas easy to understand, taking only 20 minutes to explain the concepts before they got hands-on.

Students were free to select media from the Media Compass and values from the Value Compass. They were also allowed to design their own input media and values. The database grows as more users participate in the creative process.

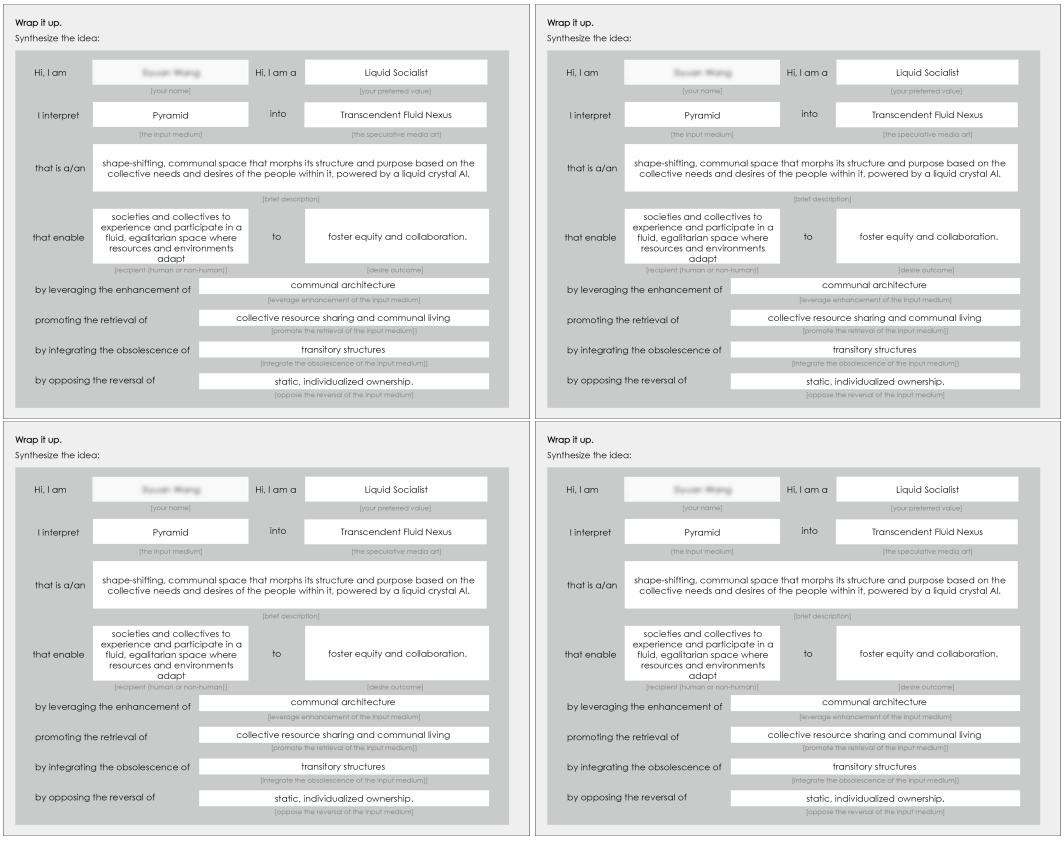

Fig. 5. Selected results from the workshop

Students followed the human-AI co-creation process as articulated in Section 4.4. We demonstrate some surprising results in this paper, show in figure.5, while all results are available in the supplementary material.

4.1 Discussion and Findings

Most students found the *Tetrad* challenging to use, particularly as it was their first time knowing this tool. They noted that without the help of GPT, applying the *Tetrad* would have been even more difficult. One student mentioned, "For low-tech media, it is relatively intuitive to apply the *Tetrad*, but for high-tech media, it sometimes feels overwhelming. GPT can generate many analytical results in seconds." Many students found brainstorming with GPT to be interesting and inspirational. One student remarked, "With the Tetrad and GPT, we revisited media we took for granted, and it was very inspiring to uncover hidden perspectives." While some students quickly produced intriguing results, a small portion initially felt frustrated as their outcomes were not engaging, leading them to fall back into a trial-and-error loop.

One instructor, who is also a creative technologist, highlighted AI's potential in critical art and design. He likened this method to applying style transfer technology to concept transfer but emphasized the reinterpretation aspect of the method. "It is very helpful in educational scenarios. It helps students articulate a media art concept and a medium." However, he noted a disadvantage: "the interpreting results often lack humor and sharpness."

Another instructor, who is also an artist, shared his concerns. He acknowledged that AI generated some highly potential conceptual art prototypes. However, he emphasized that students need more training in critical and creative thinking, rather than relying solely on AI for creation. This way, students will be better equipped to refine and complete these promising conceptual art prototypes into finished works.

Our key findings are:

- **AI's Potential in Art Creation**: AI has shown significant potential in reinterpreting media art and following clear creative methodologies to generate initial art concepts with promise. However, human intervention is still necessary to enhance aspects such as humor and sharpness.
- **Effectiveness of the Creative Canvas**: The Creative Canvas is an effective tool for guiding students through a structured method to create artwork. It also serves as an effective tool for training AI in understanding and applying creative processes.
- **Need for Balanced Training**: From the students' perspective, there is a need for balanced training. Students must develop their critical and creative thinking skills to further develop and refine the ideas co-created with AI into complete artworks.
- **Challenges with the Tetrad Framework**: While the Tetrad framework is a powerful analytical tool, the method needs to be updated to better address the emerging media today.

5 CONCLUSION

This paper introduces *Media Farm*, a framework leveraging AI to reinterpret and generate media art by reinventing the Tetrad model. This approach bridges the gap between AI-generated artworks and human-AI co-creation, enhancing the understanding of media's cultural impacts. Our workshops demonstrate its effectiveness in computational media art education.

While *Media Farm* shows promise in transforming media into artistic concepts, our findings underscore that a balanced approach with human-led critical and creative thinking is crucial. This balance is essential for realizing AI's full potential in creative production and arts education.

Our future work includes:

Longitudinal Studies on Educational Impact: Conducting long-term studies to evaluate the impact of *Media Farm* on learning outcomes within media art education will be crucial.

Establishment of a Media Art Database: Using *Media Farm* to reinterpret media art in a uniform format to establish a comprehensive database of media artworks.

Exploration of Additional Interpretative Methods: Extending the scope of our study to include other interpretative methods could provide new insights and enhance the framework's applicability.

By addressing these areas, *Media Farm* can continue to evolve as an influential tool in the field of media art, enhancing both the theoretical and practical aspects of AI integration into the creative process.

REFERENCES

[1] Josh Achiam, Steven Adler, Sandhini Agarwal, Lama Ahmad, Ilge Akkaya, Florencia Leoni Aleman, Diogo Almeida, Janko Altenschmidt, Sam Altman, Shyamal Anadkat, et al. 2023. Gpt-4 technical report. *arXiv preprint arXiv:2303.08774* (2023).

[2] Manuel Castells. 2004. *The network society.* Edward Elgar Londres.

[3] Taehyun Cho. 2023. *A Study on Dramaturgy for AI Screenplays: Writing Alternative Narratives Using GPT.* Ph. D. Dissertation. State University of New York at Buffalo.

[4] Sougwen Chung. 2020. Why I Draw with Robots. *URL: https://www. ted. com/talks/sougwen_chung_why_i_draw_with_robots (15.04. 2021)* (2020).

[5] Richard Coyne. 1999. *Technoromanticism: digital narrative, holism, and the romance of the real.* MIT Press.

[6] Ziv Epstein, Aaron Hertzmann, Investigators of Human Creativity, Memo Akten, Hany Farid, Jessica Fjeld, Morgan R Frank, Matthew Groh, Laura Herman, Neil Leach, et al. 2023. Art and the science of generative AI. *Science* 380, 6650 (2023), 1110–1111.

[7] Ant Farm. 1973. Inflatocookbook. 1971. *Reprint, San Francisco: Ant Corp* (1973).

[8] M Fogleman. 2011. Procedurally generating images in the style of Piet Mondrian.

[9] Steve Graham and Simon Marvin. 2002. *Splintering urbanism: networked infrastructures, technological mobilities and the urban condition.* Routledge.

[10] Mohd Javaid, Abid Haleem, and Ravi Pratap Singh. 2023. A study on ChatGPT for Industry 4.0: Background, potentials, challenges, and eventualities. *Journal of Economy and Technology* 1 (2023), 127–143.

[11] Yongcheng Jing, Yezhou Yang, Zunlei Feng, Jingwen Ye, Yizhou Yu, and Mingli Song. 2019. Neural style transfer: A review. *IEEE transactions on visualization and computer graphics* 26, 11 (2019), 3365–3385.

[12] Pegah Karimi, Jeba Rezwana, Safat Siddiqui, Mary Lou Maher, and Nasrin Dehbozorgi. 2020. Creative sketching partner: an analysis of human-AI co-creativity. In *Proceedings of the 25th international conference on intelligent user interfaces*. 221–230.

[13] Joan L Kirsch and Russell A Kirsch. 1988. The anatomy of painting style: Description with computer rules. *Leonardo* (1988), 437–444.

[14] Tinea Larsson, Jose Font, and Alberto Alvarez. 2022. Towards ai as a creative colleague in game level design. In *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, Vol. 18. 137–145.

[15] Mina Lee, Percy Liang, and Qian Yang. 2022. Coauthor: Designing a human-ai collaborative writing dataset for exploring language model capabilities. In *Proceedings of the 2022 CHI conference on human factors in computing systems*. 1–19.

[16] Constance Lewallen, Steve Seid, and Chip Lord. 2004. *Ant Farm, 1968-1978.* Univ of California Press.

[17] Rem Rungu Lin and Kang Zhang. 2023. Media Interpretation: Revisiting McLuhans' Laws of Media and Ant Farm. In *SIGGRAPH Asia 2023 Art Papers*. 1–6.

[18] Yiren Liu, Si Chen, Haocong Cheng, Mengxia Yu, Xiao Ran, Andrew Mo, Yiliu Tang, and Yun Huang. 2024. How ai processing delays foster creativity: Exploring research question co-creation with an llm-based agent. In *Proceedings of the CHI Conference on Human Factors in Computing Systems*. 1–25.

[19] Robert K Logan. 2010. *Understanding new media: extending Marshall McLuhan.* Peter Lang.

[20] Yue Lu, Chao Guo, Yong Dou, Xingyuan Dai, and Fei-Yue Wang. 2023. Could ChatGPT Imagine: Content Control for Artistic Painting Generation Via Large Language Models. *Journal of Intelligent & Robotic Systems* 109, 2 (2023), 39.

[21] Roger F Malina. 1991. Aaron's Code: Meta-Art, Artificial Intelligence and the Work of Harold Cohen by Pamela McCorduck. *Leonardo* 24, 5 (1991), 628–629.

[22] Janine Marchessault. 2004. *Marshall McLuhan.* Sage.

[23] Marshall McLuhan. 1964. Understanding Media. Corte Madera.

[24] Marshall McLuhan, David Carson, Eric McLuhan, William Kuhns, and Mo Cohen. 2003. The book of probes. *(No Title)* (2003).

[25] Marshall McLuhan and Eric McLuhan. 1988. Laws of media: The new science. toronto; buffalo.

[26] Piotr Mirowski, Kory W Mathewson, Jaylen Pittman, and Richard Evans. 2023. Co-writing screenplays and theatre scripts with language models: Evaluation by industry professionals. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–34.

[27] Xingang Pan, Ayush Tewari, Thomas Leimkühler, Lingjie Liu, Abhimitra Meka, and Christian Theobalt. 2023. Drag your gan: Interactive point-based manipulation on the generative image manifold. In *ACM SIGGRAPH 2023 Conference Proceedings*. 1–11.

[28] Dunne Raby. 2023. *United Micro Kingdoms.* https://unitedmicrokingdoms.org/

[29] Aditya Ramesh, Prafulla Dhariwal, Alex Nichol, Casey Chu, and Mark Chen. 2022. Hierarchical text-conditional image generation with clip latents. *arXiv preprint arXiv:2204.06125* 1, 2 (2022), 3.

[30] Robin Rombach, Andreas Blattmann, Dominik Lorenz, Patrick Esser, and Björn Ommer. 2022. High-resolution image synthesis with latent diffusion models. In *Proceedings of the IEEE/CVF conference on computer vision and pattern recognition*. 10684–10695.

[31] Guido Salimbeni, Steve Benford, Stuart Reeves, and Sarah Martindale. 2024. Decoding AI in Contemporary Art: A Five-Trope Classification for Understanding and Categorization. *Leonardo* (2024), 420–426.

[32] Kivanç Tatar, Petter Ericson, Kelsey Cotton, Paola Torres Núñez Del Prado, Roser Batlle-Roca, Beatriz Cabrero-Daniel, Sara Ljungblad, Georgios Diapoulis, and Jabbar Hussain. 2024. A Shift in Artistic Practices through Artificial Intelligence. *Leonardo* 57, 3 (2024), 293–297.

[33] Richard P Taylor, Adam P Micolich, and David Jonas. 2002. The construction of Jackson Pollock's fractal drip paintings. *Leonardo* 35, 2 (2002), 203–207.

[34] Hugo Touvron, Thibaut Lavril, Gautier Izacard, Xavier Martinet, Marie-Anne Lachaux, Timothée Lacroix, Baptiste Rozière, Naman Goyal, Eric Hambro, Faisal Azhar, et al. 2023. Llama: Open and efficient foundation language models. *arXiv preprint arXiv:2302.13971* (2023).

[35] Jason Wei, Xuezhi Wang, Dale Schuurmans, Maarten Bosma, Fei Xia, Ed Chi, Quoc V Le, Denny Zhou, et al. 2022. Chain-of-thought prompting elicits reasoning in large language models. *Advances in neural information processing systems* 35 (2022), 24824–24837.

[36] Wenju Xu, Chengjiang Long, Ruisheng Wang, and Guanghui Wang. 2021. Drb-gan: A dynamic resblock generative adversarial network for artistic style transfer. In *Proceedings of the IEEE/CVF international conference on computer vision*. 6383–6392.

[37] Kang Zhang and Jinhui Yu. 2016. Generation of Kandinsky art. *Leonardo* 49, 1 (2016), 48–54.