UNPREDICTABLE MEMES:

Speculative Futures of Meme Creators' Ownership through the Lens of Disruptive Technologies

by
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ABSTRACT

Unpredictable Memes explores the impact of technological change on the creation and propagation of memes in contemporary digital culture and envisions a possible future for the meme creator's ownership. In this thesis, I begin with a historical and economic review to delve into technological movements and trends on social media in the attention economy, highlighting how Artificial Intelligence (AI) algorithms and Blockchain technologies disrupt the monetization of memes in ways that affect the ownership. Considering the legal and ethical segments of the potential future of meme monetization, the review of copyright and ownership of human and AI-created memes. I employ Economic Constructivism and Participatory Speculation as methodologies to collaboratively imagine both optimistic and dark future scenarios with experts from different fields related to memes, to create an interactive documentary that depicts the evolution of meme creators and the proposed vision of their future. Through this study, I speculate that in the future, AI algorithms will present new opportunities to catalyze human creativity for meme creators and to think of what creators should do to avoid homogenization of creativity, while Blockchain technologies will open up possibilities for emerging communities where meme creators can reshape ownership and scarcity in valuing creativity.

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CHAPTER 1: INTRODUCTION

ABOUT THE PROJECT

Meme culture refers to the cultural phenomenon that has emerged through the creation and propagation of internet memes. Memes are usually found in the form of humorous images, videos, or pieces of text that spread rapidly through social media and other digital platforms, often evolving and changing as they are shared and remixed by different users. The deconstruction or subversion of authority by internet memes allows everyone to participate in the creation and dissemination of content, liberating individuals from the limitations imposed from being an audience and enabling them to become their own creators and propagators.

Creating and sharing memes also brings people together through humor, irony and wit, fostering a sense of belonging and endorse self-expression in virtual communities. Saint Hoax, a prominent meme creator with three million Instagram followers argues that, “The power of a meme lies in its transmissibility and unique knack for being cross-cultural” (as cited in Benveniste, 2022). Memes can serve a variety of functions, from social commentary to cultural critique and political satire, and they have become a

significant part of contemporary digital culture. At the same time, they raise a bundle of issues related to authorship, copyright and ownership.

The nature of memes as a democratic source of collective creativity means that ownership is often diffuse and shared among many people. While some memes are created by individuals for commercial or branding purposes, many memes are created and shared freely and without any expectation of compensation. Additionally, because memes often rely on existing cultural references and images, it is difficult to determine who holds the copyright or intellectual property rights since there are various elements that make up a meme. With the advent of Blockchain technologies and AI algorithms, the creators' ownership of memes has become a topic of increasing interest, particularly in light of technological advancements that have disrupted traditional models of content creation and distribution. The research is presented in the form of an interactive documentary that invites the audience to explore the journey collaboratively.

This research project constructs a resemblance of meme creation. It will repackage the "two main mechanisms of meme creation - mimicry and remix" (Shifman, 2015, p. 20). Mimicry associates the practice of

“reconstruction”- through the exploration of the literature review, I intend to explore the potential for AI algorithms, AI meme generators and Non-Fungible Tokens (NFTs) to disrupt conventional models of meme monetization, reflecting on how the technological evolution intertwines with the economic model change in the evolution of memes, and implementing internet memes to become a cultural and economic force, with the potential to generate revenue and influence consumer behavior. Remixing involves group speculation through the Participatory Workshop, taking the collective imagination of the group and transforming it into an interactive documentary by blending different ideas, perspectives, and styles into one digital artifact.

By engaging in speculation regarding the potential futures of meme creators’ ownership within the context of technology and economics, this research provides a novel approach to discussing meme culture through a techno-economic lens. This approach necessitates an understanding of memes in relation to disruptive technologies, including Artificial Intelligence and NFT memes. Furthermore, this research assesses the impact of these technologies on the meme economy and the commodification of digital artifacts. By exploring the possibilities that disruptive innovations present for meme creators and digital content creators, this research considers new

opportunities for generating revenue and potential challenges that may arise in terms of preserving the diversity and freedom of meme creation.

PROJECT MOTIVATION

The emergence and development of each and every internet meme engages extensive participation from netizens (the users of the Internet), thus rendering individualism in internet culture appears devoid of footing in the process of meme propagation. Memes reflect a form of connectivity among groups, as netizens collaboratively push forward the dissemination of certain cultural elements. The viral spread resulting from such efforts cultivates a collective atmosphere, providing each participant involved in meme creation and dissemination with a sense of communal identity.

The rise of meme culture has revolutionized the way people interact and express themselves in the digital world. Memes are a powerful tool that enables anyone to participate in the creation and dissemination of content, breaking down traditional barriers to entry and moving to a new era of cultural expression. Due to the popularity of memes and the prevalence of social media, visual symbols such as images and videos have gradually taken over as the main medium of communication, displacing text. These features

of meme have provided a new avenue for advertisers and digital marketers to reach audiences and create engaging experiences, and open up commercial prospects for meme creators to monetize their work.

The motivation behind this thesis stems from the increasing prevalence of disruptive technologies, such as Blockchain and AI algorithms, and their potential impact on the monetization of memes. As both digital and cultural artifacts are created and shared online, memes are an excellent example of free expression and human creativity in the digital age. However, memes pose various challenges to the development of copyright law, and many of these issues remain unresolved. This demonstrates the fascinating and challenging nature of researching copyright law, and I aim to investigate how Blockchain technologies can provide solutions to these issues.

Additionally, the advent of these technologies and their intertwinement with economic models of memes raises questions about how this disruption may affect the possibilities for creators to monetize their work and maintain control over its copyright and ownership. This thesis will explore these potential impacts and consider the future problems related to human creativity in the context of disruptive technologies and the changes in value influenced by technological disruption. I seek to explore potential threats and value conflicts that may arise regarding the ownership of memes. Memes are known as a democratic source of collective creativity. However, when meme

creators begin to claim ownership over their creations, conflicts may arise. These conflicts could involve issues such as copyright infringement or disputes over creative control.

RESEARCH QUESTIONS

The project seeks to explore the following questions:

Primary Research Questions

How might technological changes on social media platforms impact a creator's ownership of memes?

Secondary Research Questions

How might disruptive technologies including Blockchain and AI algorithms impact the monetization of memes in ways that affect creators?

How can Participatory Speculation and interactive documentaries with experts be used to imagine the possible future of memes?

CHAPTER OVERVIEW

Following my exploration of the thesis's origin, this document continues with:

Chapter 2, a literature and contextual review which shapes the direction of speculation for possible futures of memes. It primarily examines historical evolution of meme, case studies on social media, economy of meme, Artificial Intelligence Algorithms, Blockchain technologies and NFTs, copyright and ownership of memes, Participatory Speculation and interactive documentary.

Chapter 3 covers the methodologies and research methods that inform this project. It begins with identifying Historical and Economic Constructivism and Participatory Speculation as key methodologies implemented through the research. Research methods that are applied include historical and Participatory Workshop, data collection and data analysis.

Chapter 4 provides an overview of the methodologies and methods, specifying the happenings of the workshops, the study findings, and the process and outputs of the thesis project.

Chapter 5 presents a summary of the thesis project, reflect on the literature review, methodologies and methods, thesis project, discuss the significance for future studies, and elaborate on future work and development.

CHAPTER 2: LITERATURE AND CONTEXTUAL REVIEW

In the following sections, I will review the literature pertinent to the research project with the intention to answer the primary research question. Firstly, I will address the “meme” concept, starting with a theoretical unit of cultural transmission and subsequent evolution to a digital artifact. This will be followed by a discussion of the case studies on social media in the framework of attention economy. The review will proceed with an overview of contemporary case studies of memes on social media and examine Artificial Intelligence created memes, NFT memes & Blockchain as well as the ownership and copyright of memes. It will also identify and define key concepts of Digital Participatory Culture relevant to research on meme studies.

HISTORICAL EVOLUTION OF MEMES

FROM CULTURAL UNIT TO DIGITAL ARTIFACTS

“Meme” is a term coined by biologist Richard Dawkins to describe the flow and flux of culture (Miler, 2016, p. 16). He defines the meme as "a unit of cultural transmission, or a unit of imitation” (Dawkins, 1976, p. 192) that carries

ideas, symbols, or practices that can be transmitted from one mind to another by copying or imitation. Analogous to genes, memes have the characteristics of replicators that experience variation, competition, selection and retention (Dawkins, 1976).

Scholarship on memes has historically relied on an “epidemiological model” (Weng, Flammini, Vespignani, & Menczer, 2012, p. 6). From an epidemiological stance, memetics is the cultural analogue to the study of how the virus spreads and diffuses through populations. One example is *Kilroy Was Here,* a meme that went viral and became popular during World War II, usually seen in graffiti. It depicted a man with an extended nose peeking over a wall, accompanied by the caption *Kilroy Was Here* (Shifman, 2014). Despite the contested origins of this meme, it proliferated throughout the places Allied forces were and beyond. The enigmatic nature and lack of a clear resolution allowed people to feel a sense of ownership over it, while also participating in a broader collective through sharing (Holm, 2021). *Kilroy Was Here* (Figure 1) also exemplifies the essence of participatory culture, which “encourages broad participation and grassroots creativity” (Jenkins, 2009). The simplicity of the drawing facilitated easy replication, as with Internet memes. Additionally, the meme's ambiguous meaning and interpretation contributed to its appeal and encouraged people's active involvement with it.

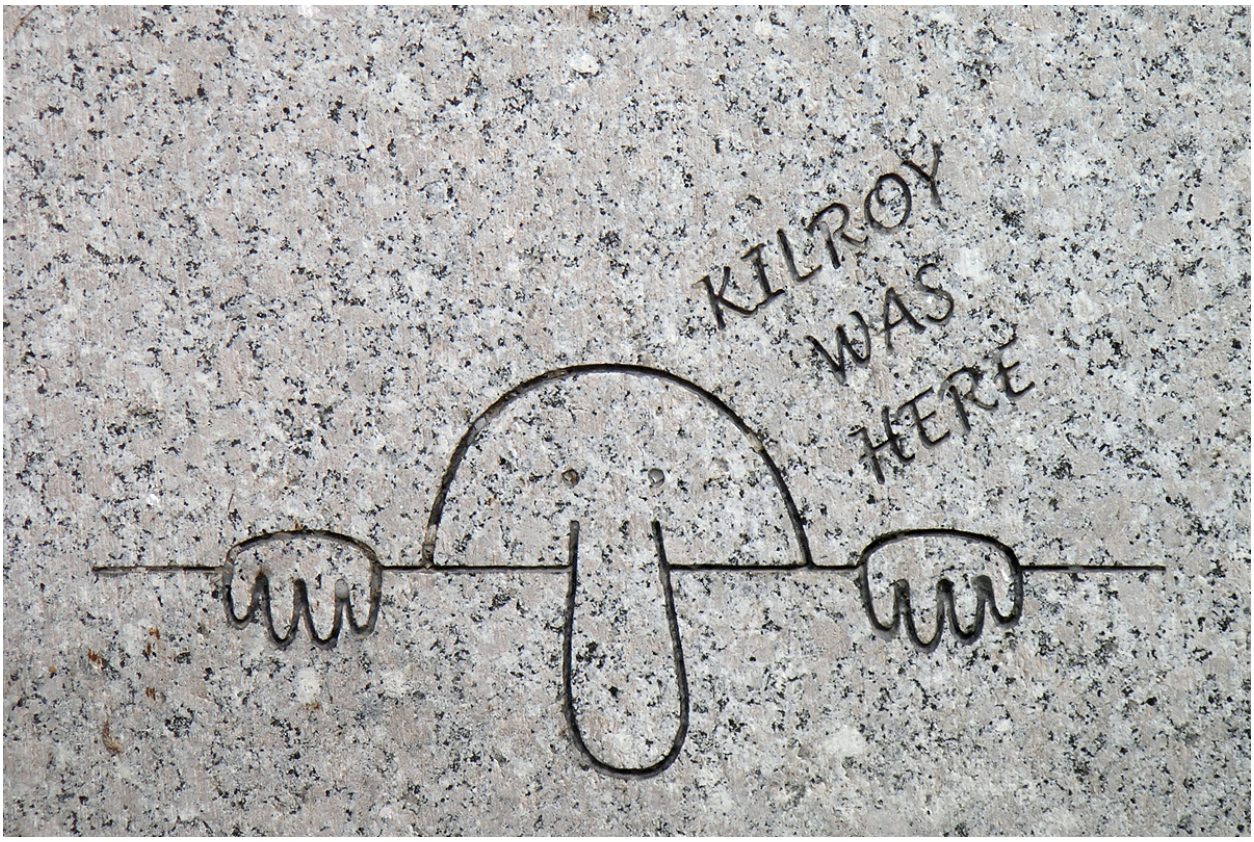

Figure 1. Engraving of Kilroy on the National World War II Memorial in Washington, D.C.

In the digital era, the Internet has enabled memes to rapidly disseminate across the world in a considerably short span. It is commonly understood that for a digital artifact to become an internet meme, it needs to go viral first (Shifman, 2015). With the evolution of Internet culture, the concept of the meme has undergone a semantic shift from its original definition, as individuals have adapted and modified the term to specifically reference online cultural artifacts (Chandler, 2013). The phrase “Internet meme” is commonly applied to describe “the propagation of content items such as jokes, rumors, videos, or websites from one person to others via the Internet”

(Shifman, 2013, p.362). The diffusion of an Internet meme not only occurs in its original manifestation but also generates user-created derivatives, making memes the “quintessential participatory artifact: open, collaborative, and adaptable” (Milner, 2012, p. 12). Shifman finds it useful to define Internet memes by highlighting their three distinct natures: (a) a group of digital items sharing common characteristics of content, form, and/or stance, which (b) were created with awareness of each other, and (c) were circulated, imitated, and/or transformed via the Internet by many users (Shifman, 2015, p.41).

Johnson asserts that memes may be of specific relevance for cultural analysis that focuses on interpreting the meaning of “seemingly superficial and trivial elements of popular culture” (Johnson, 2007, p. 27). He identifies and maps memetic dimensions of texts that have been labeled as successful Internet memes, with an eye toward examining whether Internet memes enrich our understanding of contemporary digital culture. Despite their seemingly facile presence, digital memes are rich with a variety of deep and broad meanings, serving as innovative forms of political and social expression. The use of memes on social media enables complex messages to be conveyed to large audiences. This phenomenon gives rise to what Shifman calls a “memeplex” (Shifman, 2015, p. 10).

The propagation of memes has been shifted into a ubiquitous process by the Internet, rather than any other communication medium, enabling the rapid, accurate, and widespread dissemination of memes through digital networks (Marshall, 1998). As a unique form of communication, memes possess a duality that encompasses individuality/collectivity and content (ideas and ideologies)/stance (the creator's position in reference to the message). (Nissenbaum & Shifman, 2018). With content that features a visual format of images, GIF, or short videos, memes infuse humor into the creation and produce an emotional context (Posey et al., 2010). The potential for dissemination in terms of symbol construction and visual communication enables participants to apply them as a significant method for conveying emotions and expressions on social media (Wang et al., 2019). Therefore, the incorporation of Internet memes into dialogues enhance their expressive force and vivid information, compared to solely text-based communication (Fei et al., 2022). The notion of emotions is important to consider in the operation of memes as well. As Milner (2016) indicates, the propagation of memes is partly driven by their potential to evoke resonance among different Internet users at both an individual and societal level. By utilizing a shared base of meme templates that directs the creation of unique instances (Segev, Nissenbaum, Stolero, & Shifman, 2015), individuals can deliver a unique message with a collectively created formation (Phillips & Milner, 2017).

The individuality/collectivity duality is also manifest in meme creation and sharing and is relevant to the key features of participatory digital cultures (Newton et al., 2020). Scholars highlight that values serve as the fundamental building blocks for constructing our individual identity in relation to others, allowing us to continually negotiate and redefine our collective identity over time (Knight, 2010). Memes are not simply a reflection of existing societal-cultural norms, they also serve as a medium for negotiating and constructing those values and norms (Gal et al., 2016), as well as shaping "the mindsets, forms of behavior, and actions of social groups" (Shifman, 2014, p. 18).

Memes are commonly understood as either a shared language among members of online communities or as a social practice that underpins the processes of cultural production (Newton et al., 2022). Their creation and sharing incorporate the continual negotiation of shared values and beliefs (Procházka, 2018; Zappavigna, 2020). Shifman (2014) posits that meme sharing encompasses both distribution and communication. Distribution refers to the mere act of copying, pasting, forwarding, etc., while communication refers to the purposeful delivery of a message through sharing. This process of replication, through which the original meme becomes a reference text that is quoted and altered during its dissemination, known as intertextuality (Wigger & Bowers, 2014). The intertextual referencing of original memes to other memes can create a sense of belonging to online

communities as users leverage subcultural knowledge for interpretation and reappropriation (Laineste and Voolaid, 2016).

CONTEMPORARY CASE STUDIES ON SOCIAL MEDIA

I utilize the concept of the attention economy to discuss the technological change in online space that affects the creation and propagation of memes, as well as the creators. The economic significance of memes is associated with the attention economy, which is a prevalent feature of many contemporary societies (Davenport and Beck, 2001). The attention economy is an economic system in which human attention or time is considered the most valuable resource as attention converts to advertisements and other revenue. Essentially, the success of memes in the attention economy is dependent on their ability to capture and maintain people's attention. Social media has become a significant site for directing human attention in the past decade, bringing together the mediation of everyday life with technology that organizes and values communication practices (Rheingold, 2009).

Fundamental values highlighted in the meme culture include creativity and freedom of information (Nissenbaum & Shiffman, 2018). In the realm of memes, creativity is a guiding principle of user participation and the concept of freedom of information is manifested not only in the vast array of topics

addressed by memes but also in the diverse genres of memes that transform personal acts into public information (John, 2016). The production of value on social media can be understood by examining the circulation of images and the management of participation and attention (Carah, 2014). In the context of the attention economy, visibility is considered a form of status (Marwick, 2015). It is imperative for creators and users who aspire to succeed in social media platforms to cultivate visibility (William, 2018). The way of achieving visibility is facilitated by technological development in digital space. It can be achieved through various means, including active participation in online communities, the creation and dissemination of content, and the cultivation of a personal brand. Such visibility is seen as a valuable asset, as it increases the chances of capturing and retaining people's attention, and can result in increased opportunities, exposure, and success for meme creators.

Memes perform important social functions in the web-based community such as “boundary policing, identity construction, and accumulation of cultural capital” (Literat & Van den Berg, 2017). Using the /b/board of 4chan (one of the original incubators for a huge number of memes) as an example, Nissenbaum and Shiffman assert that the connection between cultural capital and Internet memes is linked to the creative process and social dynamics surrounding memes on social media. "Meme literacy" affects a user's status in online communities and shows their membership. The use of

limited formulas to create memes is similar to Bourdieu's concept of "cultural capital," as determined by communal taste, which establishes acceptable forms of expression and results in social hierarchies among meme creators (Nissenbaum & Shiffman, 2015). In this case, the circulation of images on social media platforms is organized by users and their activities. Hashtags, tags, likes, and comments serve as quantitative markers of how web-based communities evaluate the worth of meme creation (Abisheva, Garcia, & Schweitzer, 2016).

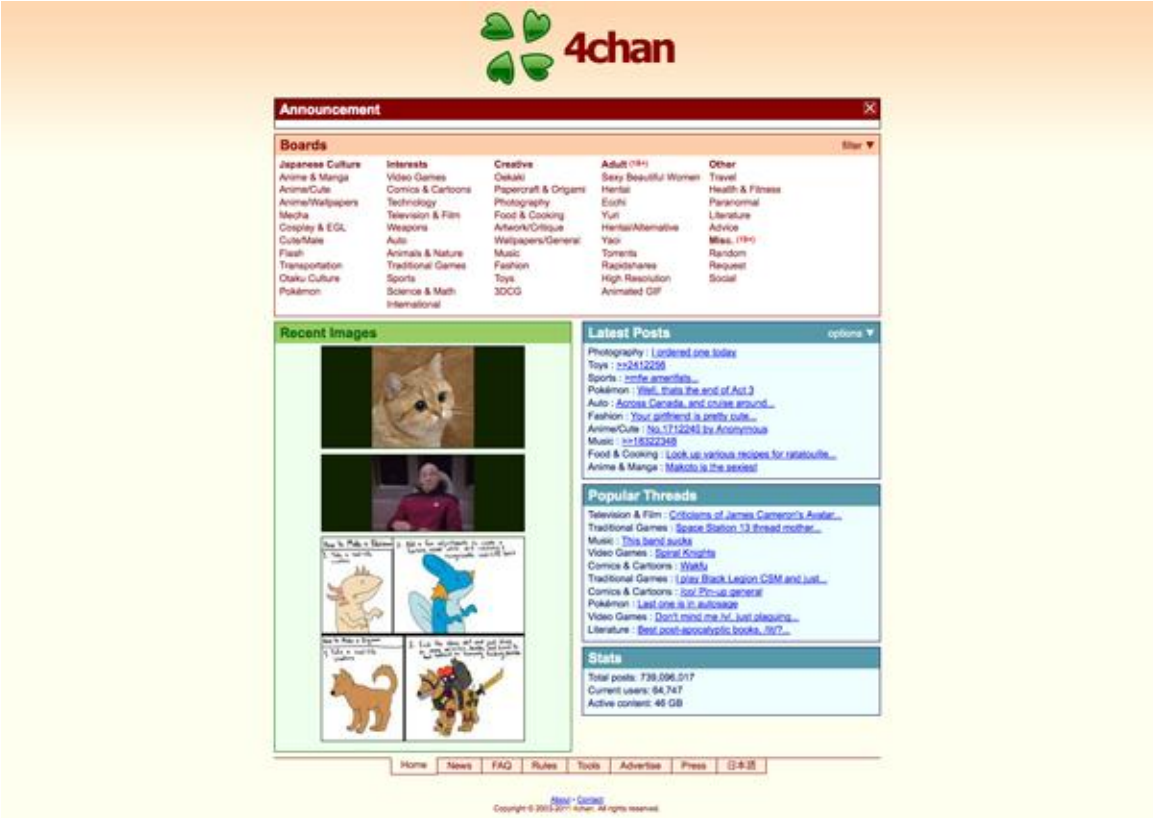

Figure 2. Main page of 4chan

The web-based community also manifests the process of construction of values and social structure that is moderated by users in the subculture community. By examining the MemeEconomy community on Reddit, where 'meme traders' appropriate stock market terminology to discuss and appraise memes as objects of cultural exchange, Literat and van der Berg (2017) state that meme valuing and trading impacts community social structure, forming users into three categories: "meme insiders (those with the most savvy and authoritative valuations of memes), newcomers (those open to acquiring inside knowledge), and normies (those who appear to insiders as oblivious to this specialized discourse on memes). The meme insiders are not merely meme creators, but also cultural intermediaries (Bourdieu, 1984, p. 101). In Bourdieu's notion, cultural intermediaries serve as mediators in the cultural production process and in shaping the tastes of consumers in a limited cultural arena (Maguire & Matthews, 2010). The attainment of taste in memes and expertise in discoursing about their value function as cultural capital in maintaining a standing within the subreddit community. The memes traded in the MemeEconomy can be viewed as objects of cultural consumption, and through this consumption 'fulfill a social function of legitimating differences' (Bourdieu, 1984, p. 7). Experienced meme creators/insiders are required to differentiate themselves from outsiders, also known as "normies," and to determine the value of memes within the imaginary meme economy. As Nissenbaum and Shifman (2017) put it, 'the

deep connection between memes and the culture of some online communities means that they function as cues of membership, distinguishing in-group members from mere passersby' (p. 485).

Additionally, algorithms on social media platforms use a set of predetermined rules to regulate the circulation of images (Carah, 2014). These rules are not visible to users, but users can gain a general understanding of them through observation of the flow of content on the network (Eslami et al., 2015; Rader et al., 2018). The algorithms utilized by social media platforms are designed to manipulate behavioral norms through 'constantly refining' the "collecting, storing and processing of data" (Packer, 2013, p. 298) to produce valuable formations of attention. By establishing the conditions by which users are seen, algorithms serve as "disciplinary apparatuses that prescribe participatory norms" (Bucher, 2012; Cotter, 2019).

In addition to evolving as a central hub for the dissemination of memes, algorithms on Youtube also made the diffusion, variation, and popularity of memes highly visible and transparent by consistently "aggregating and presenting the viewing habits, choices and responses generated by users" (Shifman, 2011). YouTube content creators are contributing to the platform's value, but they possess limited power compared to both the platform and its algorithms (Van Dijck, 2009). Shifman (2011) highlights that a video meme is

frequently a "popular clip that lures extensive creative user engagement in the form of parody, pastiche, mash-ups, or other derivative work" (p. 190). This "extensive user involvement" is usually overlooked when evaluating the counts of "likes, views, and shares", instead of taking into account the consideration of the "incredible amount of effort and labor that composes these cultural phenomena" (Soha & McDowell, 2016). Thus, "the path to professionalization and monetization" necessitates initially gaining popularity on the platform, which is partially determined by the algorithm (Cunningham et al., 2016). With this algorithmic power existing as a fundamental contradiction for creators, content producers have to perceive visibility as a privilege and learn about the algorithm structure and develop tactics to respond to it.

Through studying the content and users that achieve visibility, content creators also distinguish the participatory norms that algorithms 'reward' with visibility (Bucher, 2012). This opens up a broader space for meme diffusion as a "successful mode of marketing communication" (Malodia et al., 2022) in several ways such as self-branding (Khamis et al., 2017), authenticity (Audrezet et al., 2018), and consumer engagement (Hughes et al., 2019). The algorithms on Instagram prominently value engagement, looking at different metrics as "positive engagement" (Tafesse & Wood, 2021), which includes profile clicks, comments, likes, reach-to-like ratio, saves, shares, time spent on

the photo, etc. Users of Instagram are encouraged both digitally and socially to participate in the imitation process through their consumption or interaction with meme marketing content (such as liking and sharing it), thus forming “a shared experience” within a digital community, presenting a perspective that aligns with the concept of brand publics. Meanwhile, the influencers are perceived as “playing a game” (Cotter, 2019) that captures disciplinary normalization via algorithms and perpetuates existing digital inequalities by bringing into focus “winner” and “loser” in algorithmic architecture. Recalling that Instagram influencers are reliant upon high visibility on the platform, they started to incorporate memes into their posts to build affinity with the intended audience, for the purpose of digital marketing or soliciting the attention of more users. This reinforces the mediatory role of Internet memes between the public and participatory culture on social media that bolster “ephemeral brand relationships or associations” (Arvidsson & Caliandro, 2016). Paquette (2019) reported that using memes in online marketing generates a 30% engagement rate on social media. Influencers and brands that engage in the creation and sharing of internet memes on social media platforms, motivated by shared interests, are considered members of an "imagined community" as defined by Anderson (2006). This sense of belonging is derived from a perception of being part of the same group, the digital meme culture, despite potentially never having had personal interactions

Within Web 2.0 environments, memes effectively embody the dynamic remix culture (Burgess & Green, 2018). More specifically, users possess the capability to modify different elements of videos and recompose them to generate video mashups (Zulli & Zulli, 2020). This communicative process is rooted in the concept of “hyper-narrativity” (Wagener, 2019) and the “memefication of collective identities” (Ask & Abidin, 2017, p. 7), facilitating the “creation of discourse and content” on platforms such as TikTok, where the “humor, imitation, replication, and group affiliation” serve as dominant forces in these dynamics (Vizcaíno-Verdú & Abidin, 2021). Its content discovery centers on an algorithm recommender system that pushes trending videos, which shapes users’ practices surrounding visibility (Abidin, 2021). As this model of visibility is bound to proliferation through imitation, it shares the same memetic features with the way how memes propagate. The utilization of algorithmic analysis of user data within Tiktok has created a shift in the production and consumption of content on the platform, leading to potential ramifications for wider society (Zeng & Kaye, 2022). This step generates digital labels and recognizes digital modularity, encompassing elements such as memes, jokes, songs, and filters. The resultant data and forms derived from it are utilized by Tiktok to direct future consumption and production practices. This transformation challenges the traditional social media attention economy model, which has relied on human influencers as its primary attraction, by

instead prioritizing content that has been categorized by digital modularity and labels (Liang, 2022). TikTok has advanced the concept of Internet memes by incorporating memes into its platform infrastructure (Shifman, 2013). Through this integration, Zulli and Zulli (2020) analyze the formation of imitation publics on TikTok, where networks are established through processes of imitation and replication, rather than through “interpersonal connections, expressions of sentiment, or lived experiences"(p. 1875). This new decentralized model of TikTok offers a promising solution to the hierarchy between creators resulting from the algorithms and shed light to an emerging creator-centered economy to catalyze a new wave of transformation within the creative industry.

AI-CREATED MEMES

The development of AI-generated memes can be traced to the early stages of computer science and AI research. Pioneering work in computer vision and natural language processing laid the foundation for subsequent advancements in the field. During the 2010s, the integration of deep learning algorithms and enhanced computational power enabled AI systems to generate a wide range of content, including memes. Initially, these AI-

generated memes were simple combinations of text and images. Since then, AI-generated memes have become increasingly prevalent, with various companies and organizations utilizing this technology to create viral content and boost brand recognition. The growing popularity of AI-generated memes has also sparked important discussions about AI's role in society and its potential impact on cultural communication.

In his essay "The Language of Internet Memes," Davison developed a three-part methodology for analyzing Internet memes, comprising the ideal, the behavior, and the manifestation (Davison, 2009, p.122). According to Davison (2009), when constructing an image meme, the “Ideal” refers to the concept or message that the creator intends to convey. In the context of generating text-to-image memes, it can be considered as the textual description that the creator provides as input to the system. This input serves as the foundation for generating an image that accurately conveys the intended message or concept. The “Behavior” involves selecting an appropriate meme template and caption that effectively conveys the intended idea. Regarding text-to-image meme generation, the automated selection of a suitable image template and the utilization of natural language processing and computer vision techniques to produce an image that aligns with the textual input provided would be essential steps. The final result of this process is referred to as the Manifestation, which would be the resulting image meme with a

caption that conveys the message embodied by the Ideal in AI meme generation.

Davison's methodology manifests a conceptualization process in meme creation, which is relevant to both text-based and image-based meme generation. The discipline developed by Davison provides a framework for understanding the process of meme creation. Scholars concentrate on the behavior and manifestation of a meme, whose method for generating image memes is confined to selecting the most matching meme caption or producing a caption for a given image and template name. (Peirson et al., 2018; Wang & Wen, 2015).

Other studies in the field of meme generation can be classified into two categories. One involves the automatic generation of memes based on text input, while the other pertains to the automatic generation of memes based on image input. Regarding meme generation based on text input, researchers conceptualize the creation of memes as a process of text translation. With the recent release of DALL-E in 2021, a neural network developed by OpenAI that can generate high-quality images from textual descriptions, the potential for text-based meme generation has expanded significantly. DALL-E uses a combination of computer vision and natural

language processing techniques to understand the textual input and generate corresponding images that match the description(Dayma, 2021).

Figure 3. AI-generated Kermit Frog Images by Dall-E

This AI image generator could revolutionize the way memes are created by enabling meme creators to generate images based on their text descriptions

without relying on pre-existing image templates (Grimes, 2022). The procedure entails feature extraction from the input text, followed by the utilization of a selection module to pick an appropriate meme template image from a list of well-known candidate images, based on the extracted features. Subsequently, the module generates the text from the chosen template image, culminating in the combination of the meme template image and the generated text (Sadasivam et al., 2020). In the approach to meme generation based on image input, Wang and Wen (2015) proposed a "meme-text sorting algorithm" that relies on "input image features and caption candidate features." They initiate the process by conducting a reverse image search on the Internet to determine the most likely keyword associated with the input image. Soon after, they sourced other relevant caption candidates by searching for keywords on meme-searching websites. Finally, they applied the input image features to arrange the caption candidates through their algorithm, choosing the most appropriate caption generation result as the output caption for the input image.

Furthermore, Vyalla and Udandarao (2020) introduced an end-to-end meme generation system that provides users with the ability to instantly create memes on web applications. The system trains a classification model to categorize the input image based on its own image class labeling, obtaining the image's class label, and then employs the label information to prompt the

generation model to produce captions. The system is designed to be able to handle a large number of meme templates and can generate high-quality memes by combining text and images in a variety of ways. With these exciting developments in the field of meme generation, creating and sharing memes has become a more accessible and efficient way for individuals to express their ideas and humor on various online platforms.

MEME ECONOMY

HISTORY OF MEME MONETIZATION

Essentially, there were two economic models for attributing value to internet memes, namely, as a medium for generating advertising revenue on websites or social media accounts that feature memes (Lorenz, 2018), and as merchandise on physical or digital retail platforms, such as mugs, notebooks, shirts, and other related items (Jordan, 2011). The advertisement-based approach raised intriguing discussions about the economic value of memes and challenged the possibility of assigning monetary value to cultural construction (Elder-Vass, 2022). Notably, in September of 2007, investors purchased the meme aggregator website 'ICanHasCheezburger' from its creators for an incredible sum of $2 million, representing a meaningful moment in the evolution of the meme phenomenon as it was the first time

that such a considerable amount of money had been expended on the concept (Grossman, 2008). While the site had the potential to yield advertising revenue as a lucrative investment property over an extended period, contingent upon its ability to sustain its status as a platform that offers amusing and easily consumable content, there were also complex issues that merit further scrutiny. Chen (2012) posits a Marxist critique that these websites exploit their users by appropriating and publishing their memes to accumulate web traffic and generate revenue from advertising. These sites crowdsource the creation of content to their users, who produce it for free, presuming that they are cultivating a culture for the benefit of the platform. In reality, however, they are generating profits for the owners of these aggregation and dissemination platforms.

Subsequently, within the subreddit r/MemeEconomy, a distinct and captivating community of individuals, known as "meme traders," engage in extensive discussions surrounding the fluctuations and trends within the "meme market"(Literat and van der Berg, 2017). Meme Economy is a “satirical concept and internet subculture in which memes are discussed in the jargons of the financial industry as if they are commodities or capital assets with fluctuating values” (Know your meme, 2016). The concept of the meme economy had emerged prior to the events surrounding Reddit’s /r/wallstreetbets and GameStop, a struggling video game retailer. Before the

idea of meme-driven stock investments was proposed by Reddit users, a thriving online real meme economy existed. However, it did not conform to the traditional definition of a market but instead resembled a market for memes in which no actual monetary exchange took place. (Sanderson & Rigby, 2013). In the meme economy, the performance of stocks or cryptocurrencies is more indicative of the traded assets' "meme-ability", which is their potential for meme transformation, rather than their ability to forecast business revenue. This investment strategy, which involves user-created assets intended for mass dissemination, can be explained using Blackmore's theory of memes, which states that memes have the power to shape people's values and behaviors (Literat & Van den Berg, 2017).

Traditional investment strategies have been predominantly influenced by established media outlets, such as television, radio, and top-down online publications. In contrast, the advent of meme investing has been fueled by user-generated investment strategies, facilitated by communication platforms such as Reddit and Twitter (Cuofano, 2019). Unlike ordinary goods and services, financial assets are dependent on the belief that they can be redeemed or sold in the future. This reliance necessitates an additional layer of social construction, which is integral to their existence. Thus, financial assets are not intrinsically valuable and are distinguished from other commodities by their dependence on collective belief (Elder-Vass, 2022).

Likewise, the meme culture manifests through “a process of collective, primarily anonymous, remixing of visual imagery via message boards and social media channels” (Dovey, 2019, p. 3). When the cultural value of memes is related to financial assets, such as stocks, Bitcoins or NFT, the financial assets become a store of cultural value and might be immensely valuable. In the 2016 US election cycle, memes were being shared in adjacent online forums as Bitcoin experienced an immense surge in value, growing from $13 US at the start of 2013 to $18,000 US by the end of 2017. This period also witnessed the launch of thousands of alternative currencies, or alt-coins, as market capitalization rose and individuals engaged in collective speculation and trading of crypto-currencies against financial markets.

The most well-known example is Dogecoin, a “combination of money and meme,” existing in two distinct spheres: the “financial economy” and the “cultural meme economy,” with the latter performing “unprecedented tangible impacts on the former" (Nani, 2022, p. 1719). The distinctive cultural significance of Dogecoin portrays how Blockchain technology can effectively promote alternative monetary systems. The Doge meme originated in February 2010 after Japanese blogger Atsuko Sato shared a photo of her pet dog Shiba Inu Kabosu (Jeong, 2017). One of the photographs featured a distinctive image of Kabosu sitting on a sofa, staring askance at the camera with lifted eyebrows. Following articles published by *The Verge*, which

identified Sato's Kabosu as the source of the Shiba Inu represented in the meme, the image and content continued to obtain further online attention (Chayka, 2013).

Figure 4. Doge (Meme)


Figure 5. DogeCoin

In the following year, Doge attained a prominent cultural status and gained widespread recognition, to the point where corporations began to incorporate memes into their promotional campaigns (Bury, 2016, p. 36). The meme's broad appeal ultimately served as the inspiration for the development of a cryptocurrency known as Dogecoin, which was created by marketer Jackson Palmer and software developer Billy Markus. They capitalized on the psychological phenomenon of social proof, using the emotional investment that individuals have in a meme to amplify its influence as a “unique coalescence of meme and money” (Nani, 2022, p. 1728). The users of Dogecoin go beyond being mere cryptocurrency users; they engage with Doge as a cultural artifact that ‘constitute a cultural base that marks a commenter as part of... [a] community’ (Nissenbaum & Shifman, 2017, p. 497), and this approach has notable implications for Dogecoin's status as currency. One prominent campaign was that a group of enthusiastic supporters of the Jamaican bobsleigh team raised more than $25,000 in the cryptocurrency Dogecoin to enable the team to attend the Winter Olympics in Sochi (Hern, 2014). The convergence of memes and money is the distinctive feature that underlies Dogecoin's uniqueness and contributed to its viral spread (Jeong, 2017).

The creation and diffusion within the meme culture is a collaborative process, independent of competitive and economic motivations. The advent of

Blockchain technology, however, has introduced a platform for the acquisition or exchange of digital objects through Non-Fungible Tokens (NFTs), thereby establishing a new value system that provides meme creators with an opportunity for recognition and compensation with trading memes. Blockchain, which was first proposed by Nakamoto (2008), is a decentralized ledger maintained by decentralized nodes that are utilized for distributed sharing and storing of data. Blockchain originated from Bitcoin, a distributed ledger system that needs everyone to participate collectively and maintains the transcript of the entire value-transaction history. The structure of Blockchain technology is underpinned by four fundamental principles, namely persistence, decentralization, auditability, and anonymity (Gururaj et al., 2020).

Non-Fungible Tokens (NFTs), which are cryptographic tokens based on Blockchain technology, serve to signify ownership of singular content, including images, videos, and 3D objects. Although NFTs have gained immense popularity and their trading prices have surged, scant information is available regarding people's attitudes towards and encounters with NFTs (Sharma et al., 2022). The emergence of NFTs has ushered in a novel revenue stream centered on memes. An example is the sale of an NFT depicting the well-known photograph of the little girl in the Disaster Girl meme, which fetched a price of over $400,000. Zoë Roth, the individual in the photograph,

expressed surprise upon discovering that NFTs could offer a means of capitalizing on her online renown (Fazio, 2021).

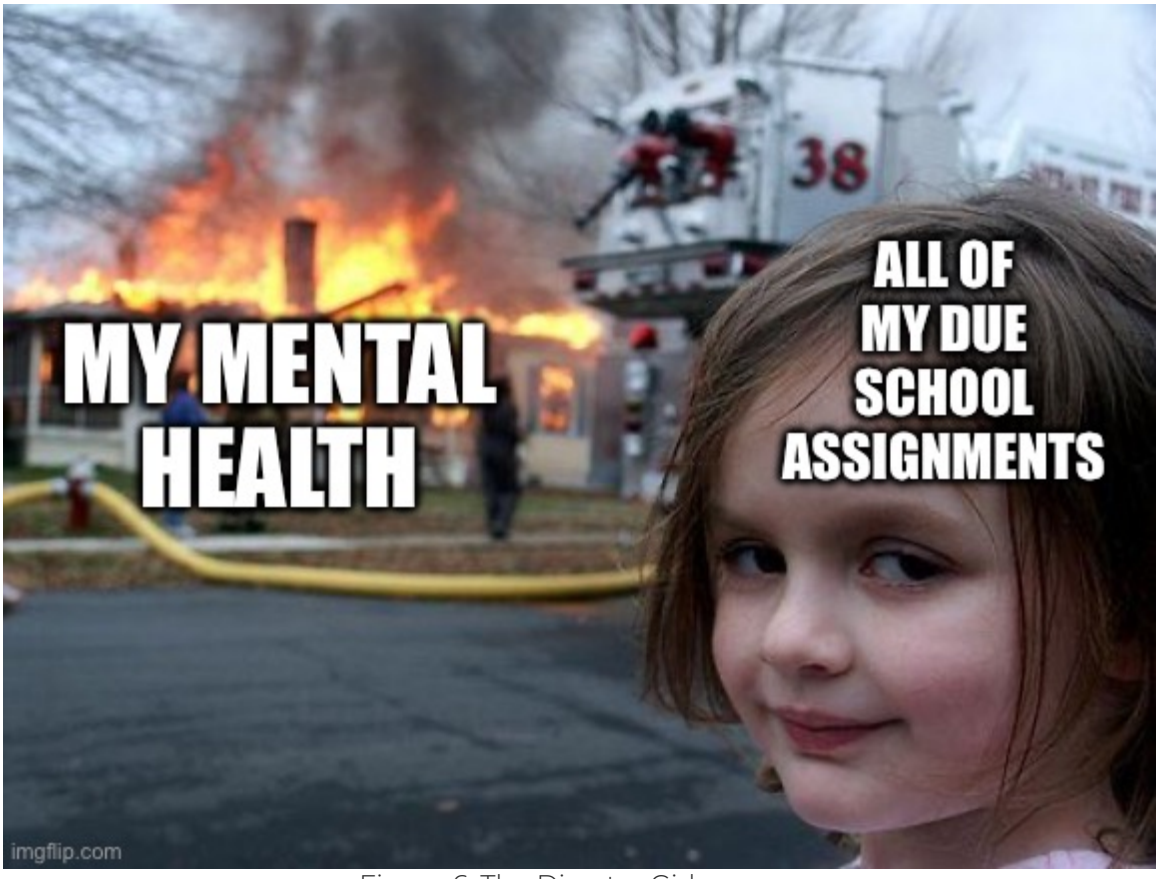

Figure 6. The Disaster Girl meme

Blockchain technology enables communication to evolve from the Internet of Information to the Internet of Value, “where a collection of protocols can transfer information in the form of bits and bytes over different physical media, can be used to transmit assets that can be expressed in monetary terms” (Treiblmaier, 2023, p. 5). One of Blockchain’s innovative promises is to forge “digital scarcity” (Nofer et al., 2017, p. 183); It replicates real-world economics, where products and services are not equally free. A digital asset can be coded to become a permanent limited supply. The success of specific

NFTs presents intriguing questions regarding the meaning of "value" and "scarcity" within the framework of Blockchain technology (Chohan, 2021). Operating on a digital platform, NFT trading is situated within “two-sided markets dominated by network externalities" (Pawelzik, 2022). Network effects, being defined as “the increasing utility that a user derives from consumption of a product as the number of other users who consume the same product increases" (McGee & Sammut-Bonnici, 2015), are deeply rooted in the process of platform usage and adoption by its users (Pawelzik, 2022). Vasan et al (2022) propose that the value of an NFT is driven by strong network effects between creators and their collectors. As the adoption and usage of NFT continue to grow, either creators or collectors are experiencing rising benefits. The expansion of the user base leads to greater liquidity, demand, and prospects for purchasing and repurchasing NFTs. Creators who sell their work in the NFT world also noticed that the value of their creative work is not fundamentally determined by its aesthetic qualities, but rather by the community surrounding it (Bruner, 2021).

The NFT marketplace exhibits a growing trend of active community formation. A multitude of online communities and forums cater to NFT users, including Discord channels associated with popular NFT projects, as well as NFT trading platforms such as Rarible, Foundation, and Opensea. The congregation of individuals with a shared interest creates a platform for NFT

creators to showcase their achievements and principles to the public (Sharma, 2022). Some NFT creators have observed that art transacted through NFT exhibits an interesting resemblance to memes in its dependence on community (Gloerich, 2022). However, “instead of creating scarcity, NFT markets appear to prioritize virality as a source of value, especially when it comes to memes. The more viral a meme is, in the NFT meme economy, the greater the value of the meme” (Lantagne, 2022, p. 286). Lantagne further argues that memes are poised to be commodified entities in “a space where value is based on the community” (Lantagne, 2022, p. 290). Unlike an individual work of art, a digital artifact can only “become a meme because it is replicated and shared” (Lantagne, 2022, p.290). The existence of a meme is fundamentally reliant on the presence of a community, given its underlying dependence on virality. Thus, the perceived value of an NFT meme is positively correlated with the degree of its ubiquity and virality.

CREATOR OWNERSHIP

COPYRIGHT OF HUMAN-CREATED MEMES

Marciszewski (2020) details two profound questions that are closely connected to this thesis:

(1) Does the use of pre-existing content in a newly created meme constitute copyright infringement by the meme creators?
(2) Do creators of memes hold copyright ownership over their works in the context of the rising commercialization of meme content?

The scholarship that I explore in this section aims to answer these two questions.

Internet memes have emerged as prevalent digital cultural artifacts for mass communication and public participation. Several legal scholars have put forth the argument that memes, as expressions of internet culture, should be separated from copyright liability due to their dependence on the participatory nature of their development (Patel, 2013). The European Union Directive on Copyright in the Digital Single Market adopted a similar line of reasoning and exempted memes and GIFs from the new regulations. In general, if an individual is sharing a meme as a form of expression on social media or other online platforms, concerns about infringement are relatively minimal. According to Smith and Lantagne (2021), social media platforms, such as Instagram or Twitter, have obtained licenses through their terms of service that authorize other users of the platform to share memes with other users through the service's functionalities. Additionally, these platforms have

implemented DMCA notice and takedown procedures to safeguard against copyright infringement claims of secondary liability.

Nowak points out that memes are a hybrid form of media, combining "indirect authorship by the culture industry" (i.e., producers of the original movies, cartoons, songs, etc.) and "direct authorship by active media audiences that reproduce these culture products with digital tools in order to create new meanings (possible readings) and propagate them horizontally across the internet" (Nowak, 2016, p. 83). Therefore, memes thrive in a gray zone of intellectual property protection where creativity and innovation bloom in spite of the lack of protection provided by Intellectual Property regulations and copyright laws.

As the popularity of memes increases, so do concerns about their legal status and implications under copyright law. Any attempt to restrict the production of memes through legal measures that fail to recognize them as a visual language could risk hampering online political and civic participation, which are essential principles of remix culture (Lessig, 2008). Though the collaborative character of memes represents a challenge to copyright law, memes as a communication tool with their specific logic and grammar (Milner, 2016) should be protected by copyright law (Mielczarek & Hopkins, 2020). According to the Copyright Act of 1976 in the US, internet memes may

be classified either as a "derivative work" or a "compilation." Internet memes are viewed as "derivative works" as Internet users add participatory creativity to pre-existing copyrighted works to produce new material, while memes that utilize more than one copyrighted work, such as ones juxtaposing images from different sources, are classified as "compilations" (Copyright Act, 1976).

According to Malaton (2019), the most important piece of law to meme-creators is the Fair Use Doctrine, a part of the Copyright Act. If meme creators utilize pre-existing memes or modify them in a way that creates a new meaning, such creators may be able to avail themselves of copyright infringement through the fair use of creativity which that law is designed to foster. Due to the transformative nature of memes and their minimal impact on the market value of the original material, a court would likely conclude that internet memes constitute a defense. There are four factors that courts weigh when determining if the appropriation of a prior work without permission is acceptable: purpose and character of the derivative work, nature of the original copyrighted work, amount and substantiality of original work used in the derivative work, effect on the market (Copyright Law, 1976). The fair use doctrine “permits and requires courts to avoid rigid application of the copyright statute when, on occasion, it would stifle fair use, following a

comprehensive weighing of the relevant factors under the doctrine of fair use" (Marciszewski, 2020).

Additionally, as mentioned in the previous section, the rising popularity of memes has created opportunities for individuals to obtain economic returns from making memes, and enterprises and corporations have dedicated segments of their marketing teams to working with meme creators, employing memes as promotional instruments to capture the attention of their consumers. However, the problem arises when larger meme-posting social media pages steal the creative work of meme creators with less fame and fortune (Marciszewski, 2020). Marciszewski (2020) highlights the F*ckJerry account as one of the most notorious of these meme-stealing pages, making a significant amount of money per sponsored meme post. The success of these meme-stealing pages has sparked concerns about the “theft” surrounding internet memes and the legal protection of meme creators. Meme creators have expressed their legitimate requirement for credit and compensation for their intellectual property, but without legal recourse, they are left powerless to protect their creative works from being stolen without recognition or compensation. Establishing legal copyright protections for internet memes also helps address these concerns and protect the rights of meme creators.

COPYRIGHT OF AI-CREATED MEMES

With the rise of AI systems capable of mimicking human creativity and producing original work, copyright laws are facing new and unexplored territory driven by AI, ethicists, lawyers, and regulators are scrambling to understand how innovations will spark new creativity in human society (Ihalainen, 2018). Many diverse definitions of artificial intelligence (AI) exist in the academic literature (Domingos, 2015; Poole et al., 1998; Russell & Norvig, 2010). However, for the current context, the most appropriate interpretation of AI can be characterized as "an entity sufficiently simulating the cognitive aspects of human thinking" (Zibner, 2019). The simulation of human intelligence involves both automated learning and automated reasoning.

Automated learning pertains to the process by which AI systems acquire information and apply predetermined rules for using that information. Automated learning refers to "the process by which AI systems acquire information and apply predetermined rules for using that information" (Selvadurai & Matulionyte, 2020, p. 536). Along with the same line, Guadamuz (2021) notes that "we are getting to the point at which vital creative decisions are not made by humans, rather they are the expression of a computer learning by itself based on a set of parameters pre-determined by

programmers" (p.148). With the proliferation of machines capable of mimicking human creativity and producing original work, the landscape of copyright has been pushed into a novel and unexplored territory that is driven by artificial intelligence.

The growing presence of artificial intelligence poses a technological challenge to copyright law (Zibner, 2019), addressing the issues of "whether copyright can subsist in a work generated using AI" (Selvadurai, & Matulionyte, 2020, p. 536) and "who will hold the copyright in these works" (Ihalainen, 2018). Today, ChatGPT4 starkly foregrounds this reality with its capacities of data aggregation and image from text generation, showcasing the potential of AI systems to produce original works that could potentially blur the lines of ownership and copyright law, leaving ethicists, lawyers, and regulators with new challenges to navigate.

Selvadurai and Matulionyte (2020) explain that "in [the] case of AI-generated work, natural persons or legal entities are involved at undertaking arrangements necessary for the creation of the work" (Selvadurai & Matulionyte, 2020, p. 540), outlining the diverse potential patterns and levels of interaction between humans and machines in AI-generated and identifying human input in three stages of computational creation: (1) selection and classification of data (2) creation of AI work (3) checking and

delivery of final AI work. The notion is proposed that in cases where human intervention is restricted to the mere selection and categorization of data, the output work cannot be regarded as original under copyright law, as it does not reflect the independent intellectual exertion of a human author.

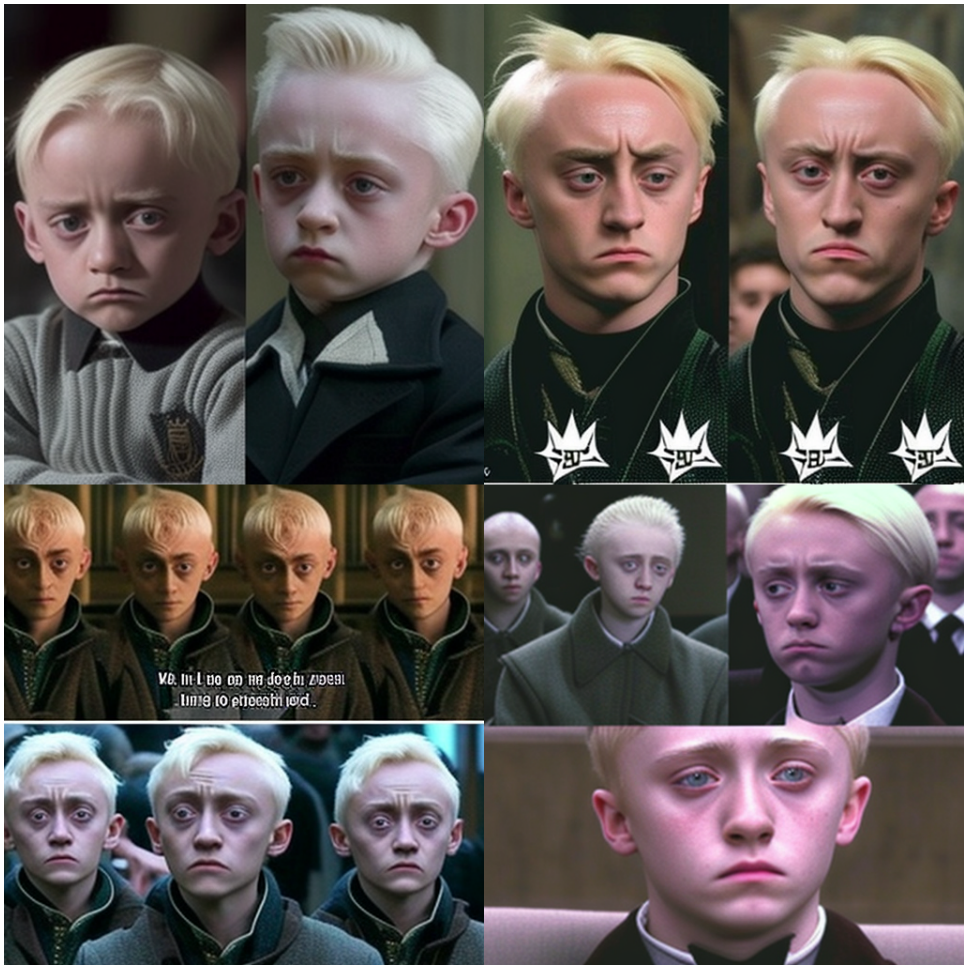

Figure 7. Harry Potter Memes created by Midjourney with prompt offered by human

Yanisky and Moorhead (2017) further state that ten essential attributes of algorithms are incorporated in artificial intelligence (AI) systems that create artwork, including “creativity, autonomous and independent, unpredictable and new results, capable of data collection and communication with outside

data, learning capability, evolving, rational-intelligent system, free choice and goal-oriented" (Yanisky & Moorhead, 2017, p. 681). They are critical to the copyright discourse on AI system accountability. Most AI systems incorporate any or all of these ten features, which are interrelated and partly overlapping. By utilizing such features, AI systems are capable of autonomously generating works of creative art. As we acquire a deeper understanding of these attributes and the autonomous nature of AI-produced output, it is evident that the copyright privileges afforded to human authors may not be exclusive, giving rise to prospective complications in implementing traditional copyright statutes. As technological advancements continue, AI systems are progressively capable of replicating aspects of creativity once deemed intrinsic to human minds.

Based on the existing framework of U.S and Europe copyright laws that are unprepared and irrelevant for AI-generated creative work, Yanisky and Moorhead (2017) propose a new accountability model, called the AI Work Made for Hire (WMFH) model, viewing the AI system as a creative employee or independent contractor of the user. This framework would attribute ownership, control, and responsibility to the individuals or legal entities utilizing AI systems. It uncovers the capabilities of AI systems, thus effectively imposing accountability on identifiable individuals or legal entities. Likewise, Birdy suggests that AI authorship can be accommodated within the existing

copyright framework by utilizing the "work made for hire" doctrine in the future. This doctrine enables copyright ownership to be granted to a legal person that is not the actual author of the work. This legal fiction acknowledges the creative contributions of generative code, while also recognizing that such creativity is distinct from that of its human coder.

Using AI to generate creative work involves a preliminary step of gathering a substantial corpus of training data, followed by the production of intermediary iterations of the data (Gillotte, 2020). These serve the purpose of training the AI program as its algorithm undergoes continuous refinement over time (Bonadio & Mcdonagh, 2020). In the context of AI-generated works, “copyright infringement claims could arise in two neural-network-based machine-learning scenarios” (Gillotte, 2020, p. 2671). The first scenario involves an engineer's unauthorized digitization and reproduction of copyrighted works to create a digital corpus of training data, which violates the copyright owner's exclusive right to reproduce their work. The second scenario entails the unauthorized production of intermediate copies of images during the training process of neural networks such as CNNs or GAN's discriminative model, which can also lead to claims of copyright infringement (Sobel, 2017).

Unlike older types of generative neural networks that necessitate the use of intermediate copies to learn, the GAN's generative model has the ability to produce images without such intermediary steps (Serban et al., 2016). This development poses new challenges to human creators. A New York-based group of artists has filed a lawsuit against Artnome, alleging that the company utilized generative adversarial networks (GANs) to create new works that are "substantially similar" to those of the artists, thus infringing on their copyrights. The artists are seeking damages and an injunction to prevent Artnome from using their work in the future. The lawsuit highlights the legal implications of utilizing AI in the creative industries, and the need to provide legal protections for artists whose work is reproduced without their consent. (Pimentel, 2023).

The rising “sophistication of generative software” and the fact that “all creativity is algorithmic compel recognition" that AI-generated works exhibit less heterogeneity with respect to their human-authored counterparts and existing copyright laws than what meets the eye (Birdy, 2016, p. 27). The concept of AI authorship can easily fit into the existing copyright system by utilizing the "work made for hire" doctrine (Birdy, 2016, p. 27). This principle enables the transfer of copyright ownership to a legal entity, even if that entity is not the actual creator of the work.

COPYRIGHT OF NFT MEMES

The features of Blockchain and NFT make it an innovative solution for code copyright management and the ownership of memes. In a Blockchain network, transactions are validated by a community of nodes and then recorded in a block, which consists of two parts: a block header and a block body (Priyadarshini, 2019). The block header comprises “the hash of the previous block, the timestamp of the current time, nonce, specified difficulty and Merkle root of a group of transactions. The block body contains “information about the transactions” (Liang, 2019, p. 122). Each block in the Blockchain is linked to the previous block through a peer-to-peer network. Recognizing the potentially transformative effects that Blockchain networks could bring to the organization of the internet and society, several Blockchain platforms emerged and attracted enormous attention from the financial, medical and digital fields (Nani, 2022). One of the developments was the creation of Non-fungible tokens, or NFTs, which are authenticated digital and Blockchain-verified assets (Popsecu, 2021), resembling cryptocurrency since they rely on a decentralized authentication process conducted through a network of nodes.

There are two different approaches to intellectual property rights and ownership structure for digital content within the context of NFTs. The first one is the original ownership, to which NFT serves as a means to ascertain the "provenance" of digital artifacts, supplying pertinent information including the identity of the original creator, the chronology of ownership for a given digital artifact, and the extant copies of said artifact, thereby shedding light on its relative scarcity (Sharma et al., 2022). The latter one is collective ownership, which refers to fractional NFTs that allows multiple individuals or entities to own, share, and collaborate on the creation, distribution, and governance of NFT content (Mukhopadhyay & Ghosh, 2021). This model is centered around the idea that digital content, like memes, is often an artifact of collective creation and shared cultural experiences. Scholars suggest that NFTs have the potential to empower artists and creators in the monetization of digital artwork online (Çağlayan & Özkan, 2021; Okonkwo, 2021; Rafli, 2022), but they also require careful consideration and responsible use to ensure that existing power imbalances in the art world will not be further entrenched (Rafli, 2022). The utilization of NFTs can facilitate art creators in registering their works for sale through an intelligent contract framework, whereby the ownership of the work is transferred to the new proprietor along with the verification of a digital certificate (Sharma et al., 2022). Creators employ NFTs to acquire funding directly from their supporters or investors and to effortlessly enforce their resale rights. When combined with an extensive

repository of works, these two functions have the potential to enable NFTs to create an unprecedented possibility for making the 'remix culture' commercially feasible. This outcome could decrease the need for copyright enforcement and leverage the unbridled circulation of information to the profit of creators (Bajčetić 2020). In the meme context, despite being “a powerful tool to protect artists’ rights” (Histed et al., 2021), the beneficiaries of NFTs are typically the subjects or entities featured in the artwork, as opposed to the artists responsible for creating them.

The fundamental purpose of copyright law has always been to establish scarcity, resulting in creating artificial scarcity when virality poses a risk (Genc, 2021). The same application of scarcity underlies NFT’s challenges on the Internet. According to Fisher, “NFT represents something unique and, along with providing verifiable authenticity and ownership, creates digital scarcity” (Fisher, 2019, p. 631). The core value of NFTs stems from their perceived rarity and legitimacy, which appeals to buyers seeking assurance that their NFTs are both genuine and unique. However, despite some NFT marketplaces claiming that attached works are scarce, this is frequently not the case in practice, with countless works being instantly available in identical forms across multiple platforms (Bennett & Koblinsky, 2021). Consequently, the purported scarcity of NFTs is often artificial. It is noteworthy that when creators sell NFT entities, they are selling copies of the artwork rather than

the underlying work itself, with the NFTs serving as proof of ownership for the copy (Berg, 2021). As a result, other copies of the artwork persist, and they can be freely copied and shared, particularly in the realm of memes.

As was mentioned in the previous section regarding the monetization of NFT memes, the perceived value of an NFT meme is positively correlated with the degree of its ubiquity and virality. And the value of the NFT memes is tied to their associated community, given their fundamental dependence on virality. This configuration of the meme NFT challenges current notions of copyright law in two prominent ways. Firstly, the discussions relating to NFT auctions of memes presume that the subject depicted in the meme, rather than the owner of the copyright, holds the right to auction off the meme NFTs. Secondly, NFT auctions prioritize the aspect of virality over scarcity, as the memes that enjoy wider circulation and recognition are accorded higher value (Lantagne, 2022).

However, NFTs indeed offer a prospective solution to the problem of proving ownership of memes, which are frequently circulated without regard for their creators, coupled with companies' growing use of memes in marketing (Sundlöf, 2022). By using NFTs, creators can provide proof of ownership without limiting accessibility, offering a new way for artists to monetize their work in digital space. More importantly, NFTs have enabled unprecedented

compensation opportunities for meme creators within the prevailing copyright framework, igniting expressions of awe and appreciation.

CONTEXTUAL WORKS

INTERACTIVE DOCUMENTARY

Through the creation of an interactive documentary, this study aims to address pertinent research questions of how interactive documentary can be used to imagine the possible future of memes. This section offers an overview of interactive documentaries, with the aim of comprehending the existing landscape and identifying areas for new contributions. The contextual works section is segmented into two subsections: interactivity and narrative form. The interactivity subsection examines how an interactive timeline is used as nonfiction storytelling and experience giving the audience an active role in the whole process. The narrative form section investigates the forking path narrative related to my own undertaking.

Intuitively, the interactivity of interactive documentary refers to the capacity for “responsiveness, exchange, and adaptation” (Nash, 2022, p. 7). Within the context of digital media, this concept underscores a defining feature of

computing technology: namely, the ability of computers to react to the actions and inputs of individuals utilizing the technology. According to Nash, interactive documentaries might extend documentary media's civil role beyond the domain of public knowledge. It can function as a tool for community projects addressing mutual social and economic problems, or even a platform for political engagement creating a civil culture and fostering dialogic spaces (Nash, 2015).

In exploring the relationship between reality, interactivity and participation in the interactive documentary, one of the compelling works that I examined is *Warsaw Rising 1944*. This project invites viewers to engage with the critical chapter in Poland's history during World War II, covering different historical periods in chronological order. The documentary employs a range of interactive features, such as the timeline to navigate different time spans, animated maps and data visualizations, and first-hand accounts from survivors of the uprising. By offering these interactive features, viewers are able to actively participate in the construction of their own understanding of the event, rather than passively consuming information. This participatory approach not only promotes a deeper engagement with the subject matter but also encourages critical thinking and reflection on the complexities of historical events.

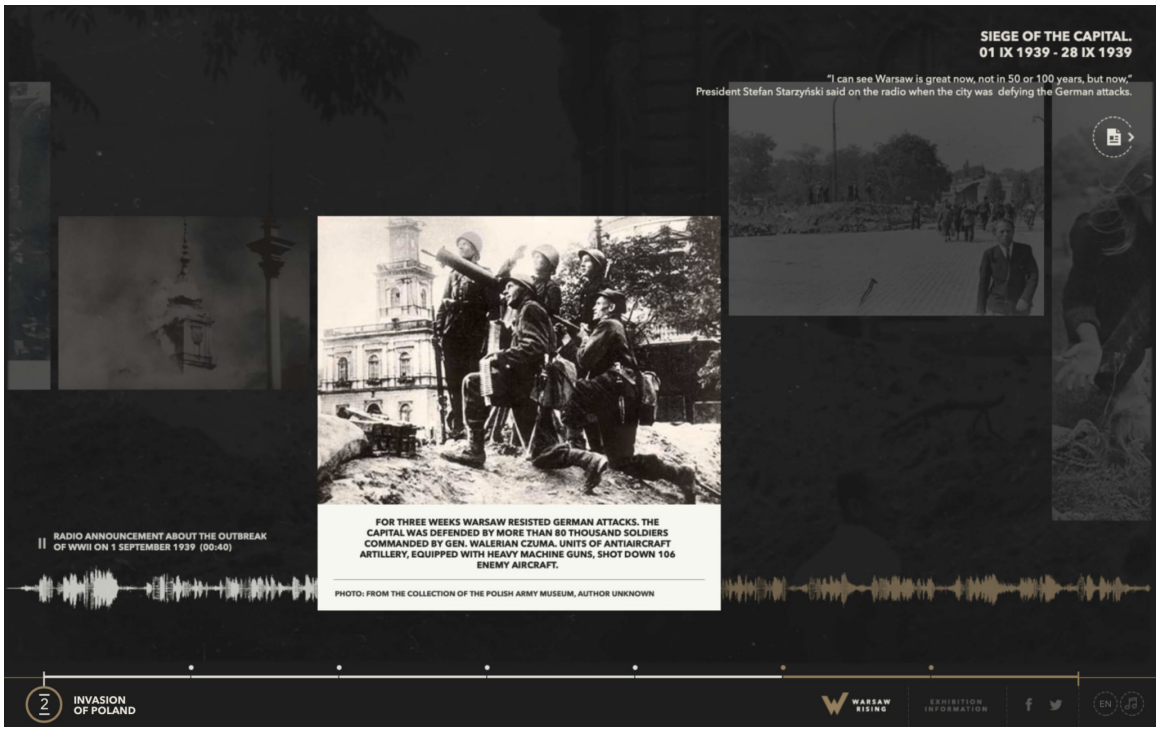

Figure 8. Photo galleries and audio-recordings that illustrates the invasion of Poland

My project also utilizes interactive features, such as an index, a timeline, and animation galleries, to present the historical trajectory of technological breakthroughs and economic innovation that affect the creation and propagation of memes, and the participatory speculated future of meme creators' ownership. Besides the possibility to view the documentary in its standard sequence by scrolling the page, it is intriguing to embrace the constant presence of an index on the bottom band. Having this in-built interaction mechanism to indicate the start of exploration, viewers can more freely choose the investigation through the map or continue to seek statistics or pictures without having to navigate through the challenges and confusion that is often appearing when people face an overload of new information.

Overall, *Warsaw Rising 1944* stands as a compelling illustration of the potential of interactive engagement and participation to augment the appeal of documentary narratives.

In terms of narrative form, a prevalent structure in database narratives is the 'forking path' form, which derives inspiration from Borges's work "The Garden of Forking Paths," and its potential for labyrinthine storytelling. This narrative form incorporates one or more decision points, which broaden the storyline to generate multiple parallel plots (Nash, 2022). One example of an interactive documentary that employs a forking path narrative is *Hollow* created by Elaine McMillion Sheldon and her team. *Hollow* is a participatory documentary that explores the impact of the economic decline of rural towns in the United States, particularly in West Virginia. The documentary is structured around the stories of residents from McDowell County, who share their experiences of living in a region that has been devastated by a range of challenges, including job loss, depopulation, and environmental degradation.

Figure 9. Interactive documentary *Hollow* tells a story of population decline in the rural U.S.

By utilizing a forking path narrative structure, *Hollow* invites viewers to select different stories and perspectives, as well as to access additional background information and interactive features, such as exploration maps and data visualizations. This structure encourages engagement with the material, enabling viewers to explore the complex factors that have contributed to the decline of rural communities in the US. Through its innovative use of interactive technology, *Hollow* provides a compelling example of how the forking path narrative form can be leveraged to enhance the impact of documentary storytelling. The use of forking path narrative also inspires my work, which is a database narrative documentary that leverages the form to allow viewers to select different stories and perspectives, and to access

additional background information and interactive features, to explore the complex factors that have contributed to the techno-economic development of meme monetization history.

Overall, the contextual works provide a compelling framework for understanding the potential of interactivity and narrative form in documentary storytelling, and my project for this thesis builds upon this framework to present a unique and innovative approach to the possible futures of meme creators' ownership.

CHAPTER 3: METHODOLOGIES AND METHODS

Unpredictable Memes makes use of two methodologies: Economic Constructivism and Participatory Speculation to address its research question, seeking how these methodologies can be employed to imagine possible futures based on the historical development of techno-economic changes that affect meme creators. The following chapter details a variety of critical, speculative and participatory methodologies and methods.

METHODOLOGIES

ECONOMIC CONSTRUCTIVISM

Economic Constructivism refers to the philosophical and theoretical foundations of economics and the methods used to study and analyze economic phenomena (Backhouse, 2008). I employ this methodology to consider the history of meme monetization, the switch of values of memes, and the aftermath of AI and NFT affects the meme creators' ownership, in a way that echoes the exploration of scholarly works in the section literature review. The approach that I take is Economic Constructivism, a theoretical approach that facilitates an individual’s immersion into the illustration of the economic reality and elucidates this reality based on how an individual perceives and constructs the world around him or her.

Popkov defines Economic Constructivism as the “deliberate construction of economic reality in accordance with the axiological preferences of a social subject (whether individual or collective), which takes into account the structural and parametric interfacing of subject and object on the basis of the principles of self-reference, duality, circularity and cyclical causality” (Popkov, 2017). This implies a deliberate construction of economic reality, which implies that economic systems are not natural or inevitable, but rather constructed and shaped by human beings based on their values and preferences. It also highlights the principles of self-reference, duality, circularity, and cyclical causality, suggesting that economic systems are not linear or unidirectional, but rather dynamic and interdependent.

In the case of technological change on social media platforms and meme monetization, the quote conveys that changes in economic models and incentive models may also have a feedback loop effect on the behavior of meme creators and consumers, as well as the technologies and platforms that influence meme distribution and monetization. The perspective of Economic Constructivism posits that economic reality is not purely objective but is instead a product of individuals' subjective experiences and

interpretations shaped by changes in their internal and external environments. Upon the completion of the Economic Constructivism approach, the visions obtained can be utilized as a fundamental basis for forecasting the future of memes through Participatory Speculation.

By incorporating Economic Constructivism for the analysis of meme monetization and creator ownership into the framework of Participatory Speculation, it becomes possible to envision various future scenarios regarding the monetization and ownership of memes. Such scenarios can provide a thought-provoking and engaging way to explore the potential future of memes based on an economic perspective of the meme as digital artifacts. The concepts and materials gained through this process are realized as visual elements of an interactive timeline in the thesis output.

PARTICIPATORY SPECULATION

This research project is principally focused on meme creators' ownership within the influence of technologies. Participation in meme creation intertwines collective nature and social-communicative bonds, thus, memes can be seen as the “cultural embodiment” of the so-called “networked individualism” (Yhee et al., 2021). The meme culture cannot exist without the

creation and sharing by meme creators. Also, given the fact that current theoretical research might not cover the application of AI and Blockchain to date, it is necessary to invite experts from related fields to the discussion and bring diverse voices to the conversation.

The Participatory Speculation Methodology combines the framework of Participatory Design with Speculative Methodology . Participatory Design (PD) is an approach to research and design by imagining and creating alternative sociotechnical scenarios that challenge our status quo, opening up debates and discussions about current and emerging issues. In two decades, it has moved from the fringes to the mainstream of design theory and practice. One of the most significant ways in which the evolution of speculative design over the past decade is its opening up to more participatory approaches. The participatory features encourage the democratic ideals to “emphasize the right to maintain a different opinion than those in power, to forward opposing positions, and to build knowledge on an alternative basis to support a different view” (Bjerknes & Bratteteig, 1994). It intends to explore and develop different opinions when the surrounding context supports a singular dominant narrative. In the context of speculative design, the participatory approach opens up possibilities for people to gather and think about, imagine in creating their preferable futures. Participatory Speculation creates a discursive space where thoughts,

needs, and desires, unanticipated by designers and researchers, can be expressed by participants. Coming face-to face with different individuals “demands work, speculative invention and ontological risk. No one knows how to do this in advance of coming together in composition”(Haraway, 2008, p. 83). It is important to make space for the unanticipated, in which designers and participants can communicate in a “mutuality of unfamiliarity” (Muller, 2009, p. 1067).

METHODS

Since meme culture embraces a shared and collective expression among Internet creators, the speculation process is designed to be two-fold: Individually through a historical analysis and group through a Participatory Workshop. The historical analysis covers more on the status quo, looking at the historical evolution of memes, analyzing how AI algorithms and Blockchain turn memes from cultural expression to profitable information products. For the purpose of seeking possible futures of memes, I combine participatory design approach with speculative design practices to enable diverse voices in the discussion. Participants are invited to engage in this research through employing E-mail recruitment strategy that uses my university E-mail account as the sender (see Appendix A - E-mail Invitation). The overall number of participants required for the workshop is 5-8, with a list

of 30 potential participants to ensure that additional participants can be reached out to if any current participants dropped from the workshop. I searched for creators who have written articles about memes within different professional fields, directly contacting them with E-mail.

The REB application was approved on February 3rd, 2022, and I initiated the recruitment strategy shortly after then. To participate in the study, interested individuals are identified as professional experts in different fields including Artificial Intelligence, Blockchain, NFT, meme creation and academic writing, and have sufficient knowledge in memes.

HISTORICAL ANALYSIS

Why do we need to look at history, if the goal is to speculate about the future? By exploring historical and current trends and development and learning their progression over time, we can open up new perspectives when imagining the future. Historical analysis is an effective research method that can “shed new light on recurring cultural themes embedded in technology” (Wyche et al., 2006). In this regard, it can be applied to the study of the history of meme monetization and the change of copyright of memes as digital artifacts. To conduct such a study, a literature review of relevant scholarship is necessary. By incorporating insights and viewpoints from interdisciplinary

research on meme creation, propagation and monetization within the literature review, a foundation of material is established for conducting a historical analysis. Historical research and analysis are selected as a method to investigate the effect of technologies on the propagation of memes and the relationship between disruptive technologies (specifically AI and Blockchain) and the monetization of memes. Firstly, it examines the different values of memes including cultural, social and economic values based on case studies on social media platforms. Secondly, the historical analysis can help identify the key players in the progress of meme monetization, such as algorithms, platforms, advertisers, and meme consumers, uncovering their roles in shaping the monetization and ownership of memes. Thirdly, this approach can be utilized to investigate the potential correlation between technological advancements and the evolution of the economic model of memes.

By examining the economic and technological factors that shape the production, distribution, and consumption of memes, this approach offers a comprehensive framework for analyzing the complex interplay between these two domains. Such an investigation can provide valuable insights into the ways in which meme creators have adapted to changing technological environments and the impact of such adaptations on their motivation for creation. Combining perspectives and insights from different fields within the

historical analysis, I build up knowledge of significant technological influence on the creation and distribution of memes which help create a starting foundation for the speculation.

APPLYING PARTICIPATORY SPECULATION: WORKSHOP

A workshop session is a research method that brings people together to brainstorm and collaboratively speculate on the topic of the possible future of memes. Five participants were required in this session. In this workshop, I presented 2-3 provocations from the literature review that participants can engage with. Participants were selected from experts in different fields related to memes, including AI, Blockchain, NFTs, meme creation, and meme scholars. The role of participants will be to engage in a 1-hour online workshop on Miro. The qualitative approach will consist of two parts: 1) focus group discussion and 2) Participatory Speculation.

1. The focus group is a way to explore the future of memes from experts' experience and perspective. In this part, participants will be asked to do individual speculation based on the questions provided and have a discussion. The ideas they generated were a starting point for the next part.

2. Participatory Speculation aims to explore how to build an engaging, interactive path from now to the speculative future. They used notes on Miro

to create the future of a fictional universe (in this case, the universe of future memes) starting with the broadest strokes of the future and then narrowing down to specific events and scenes featuring technologies, including AI and Blockchain. Participants were expected to collaboratively imagine both positive and negative future scenarios of memes after monetization by technologies. The speculation activities proceeded for two rounds to explore possibilities in different directions. The data included notes of individual speculation and group speculation, which were visualized and used in the interactive documentary.

PARTICIPANTS RECRUITMENT

In this project, an E-mail recruitment strategy was utilized, targeting community organizations in North America dedicated to research studies on meme creation, Artificial Intelligence and Blockchain, along with individual meme creators and academic writers on social media. The selection of organizations was recommended by research networks of AI, Blockchain and Digital Futures in OCAD and the individual researchers and creators are those who posted articles on Medium. Upon choosing the organizations, meme creators and individual researchers, I sent them an E-mail containing the recruitment material and a hyperlink to the participant interest form and consent form (see Appendix A and B).

WORKSHOPS

The participatory speculative workshop invited participants to become co-creators and co-constructors of the speculative future of meme-creator ownership. It was conducted twice through the Zoom video conferencing platform and a Miro board, as these were the best ways to foster collaboration given the constraints imposed by geographic location and the convenience of the participants. The participants were informed that they could be assured of their anonymity. Both workshops involved a focus group discussion with four participants, followed by a group speculation activity facilitated through a fractal role-playing game called Microscope Explorer.

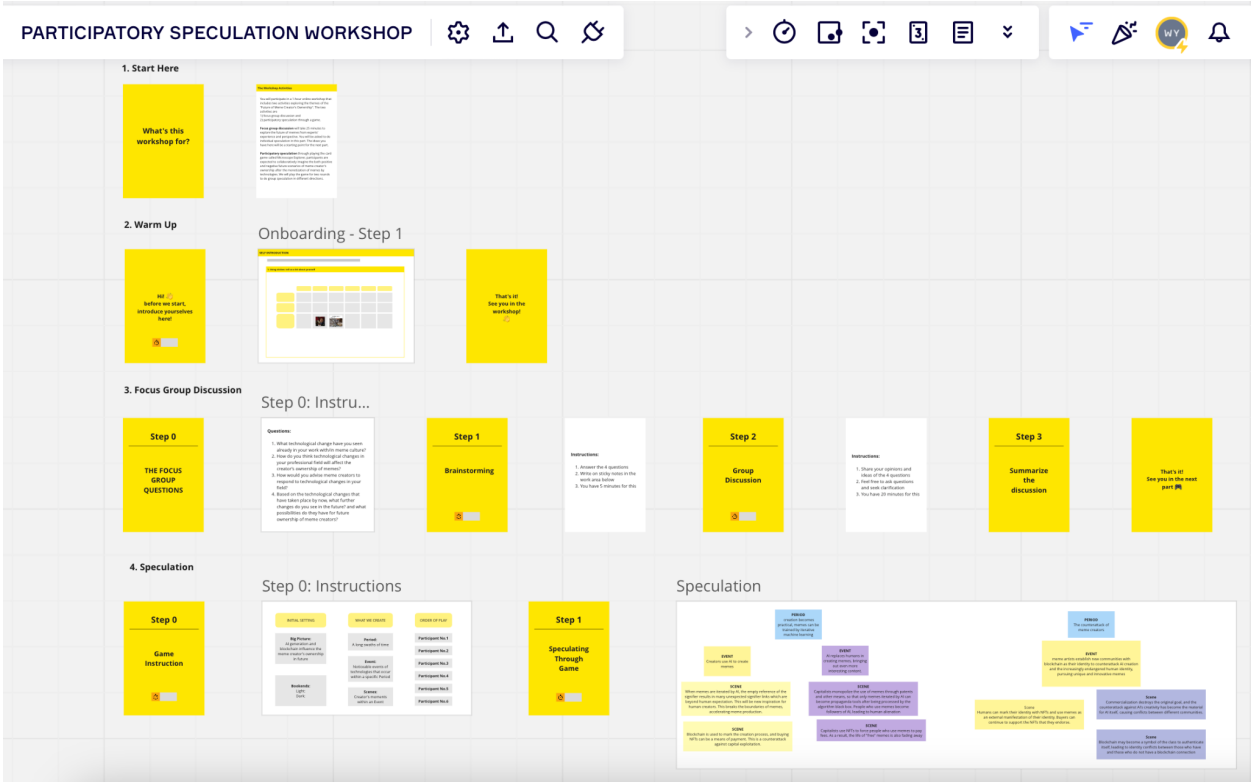

Figure 10. Documentation of Workshop Activities

The focus group discussion aimed to generate diverse perspectives and insights from professional experts on the topic of interest. Participants were asked to reflect on four questions (see Appendix D) related to the workshop topic and record their thoughts on stickers provided in the designated work area on Miro. This activity was intended to evoke individual reflection and generate initial ideas that will be discussed in turn during the group discussion. Each participant had five minutes to express their ideas and thoughts, shaping potential futures influenced by AI and Blockchain technology. They drew on their professional background and insights to respond to the proposed questions and contribute valuable insights and perspective to the discussion.

The game-based approach provided an engaging and interactive activity for participants to collaboratively build a timeline that envisioned possible directions and scenarios related to the future of meme creators' ownership. Microscope Explorer is a world-building storytelling game that allows players to create a shared history of a fictional world. The initial setting of the game includes Big Picture and Bookends. Big Picture refers to the overall theme or concept of the game world that players create through their collaboration, in this case, it was the landscape that AI generation and Blockchain/NFT influence the meme creators' ownership in future. Bookends specify the two different directions that go towards a bright and dark future under the big

picture. Within the initial setting, the game is broken down into three main components: Periods, Events, and Scenes. Periods represent broad spans of time and are defined by a single player to establish a starting point for the game. Events are pivotal moments or turning points that occur within the chosen period and are established through collaborative discussion among the players. Scenes, on the other hand, are snapshots of specific moments within an event and are played out through role-playing and improvisation. The game-based setting encouraged participants to think more creatively and explore bolder, unexpected ideas. By taking on roles and improvising within the context of the game, they were able to step outside of their usual perspectives and tap into imaginative solutions, making the workshop results more diverse and comprehensive. Also, the game components made the process more engaging and relaxed for the participants, maintaining their interest and motivation throughout the activity. As a result, they inspired each other in the speculation and contributed more actively, leading to a more dynamic and productive conversation.The workshop enabled the participants to collectively envision and co-create possible futures, providing valuable insights and perspectives for further exploration and analysis. The data collected was used later as a part of the interactive documentary in the thesis project.

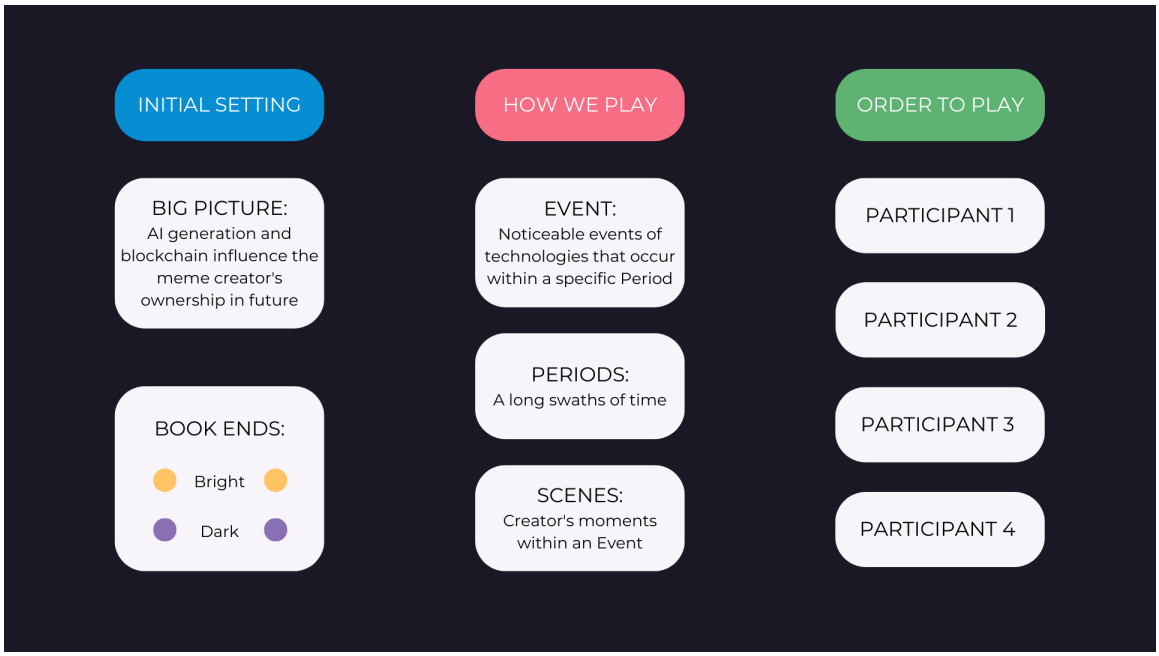

Figure 11. The rules and setting of Microscope Explorer

Two separate workshops were conducted to facilitate discussions with participants from different backgrounds. This approach aimed to promote a wide range of ideas and perspectives on the influence of AI and Blockchain technology in shaping potential futures.

In the first workshop, participants primarily had backgrounds in media studies and philosophy. Their unique perspectives focused on the ethical, societal, and cultural implications of AI and Blockchain technologies. The discussions revolved around topics such as the role of disruptive technologies in shaping public opinion, addressing privacy concerns, fostering responsible innovation, and exploring their impact on the human experience. The second workshop featured a more diverse group of participants, including meme

creators, NFT artists, and AI machine learning experts. These participants brought a different set of thoughts and experiences, focusing on the practical applications, challenges, and opportunities presented by AI and Blockchain technologies. Discussions in this group touched upon topics such as the democratization of meme creation through NFTs, the role of AI-generated content in the digital landscape, and the potential impact of decentralized systems on creators and industries.

DATA COLLECTION

Data collection was divided into three categories. The first category was the collection of information regarding the professional backgrounds of the participants. This information could provide insights into the diversity of the group and help to track the contributions made by individual participants during the focus group discussion. The second category involved the audio-recorded dialogue that occurred during the focus group discussion. The dialogue, which involved the participants remixing diverse information from their varied professional backgrounds, serves as an informative source of qualitative data for gaining insights into their opinions, experiences, and perspectives. The third category referred to the timeline created during the group speculation game, which can be utilized to track the progression of ideas and concepts throughout the game. This timeline represented a

valuable source of information for analysis and interpretation. By categorizing the data collection into these three categories, I ensured the comprehensive capture of a wide range of data, which served as additional references for the visual elements I created in the documentary video as part of my thesis deliverables.

DATA ANALYSIS

With the intent of analyzing the literature review and workshop data, I used a thematic analysis inspired by Braun and Clarke(2019), who define a theme as " a pattern found within data that is important to the research question and is associated with some level of meaning" (p. 14) in qualitative data analysis. They further explain that a theme is not simply a topic or a code, but a patterned response or meaning within the data that captures something important about the participants' experiences or views. The theme may be present in some or all of the data and may be identified “at the manifest level (directly observable information) or at the latent level (underlying the phenomenon)” (Botyzis, 1998, p.4).

CHAPTER 4: VOYAGE TO THE EDGE OF IMAGINATION

STUDY FINDINGS

This section takes up the descriptive results of individual speculation through historical analysis and group speculation through the Participatory Workshops to analyze the ways the thesis project answers my primary and secondary research questions. With the intent of bringing the study findings from the literature review and Participatory Workshop into critical narratives of interactive documentaries, this section is divided into two parts for discussion.

INDIVIDUAL SPECULATION

The analysis of the literature review resulted in three distinctive themes regarding the potential impact of disruptive technologies on the monetization of memes that may affect creators.

The first theme highlights the change of values incorporated in the memes. By taking a deep look into the case study of the /b/ board of 4chan, we can identify that the relationship between cultural capital and Internet memes is intertwined with the creative process and social dynamics that characterize

the circulation of memes on social media platforms. Being proficient in "meme literacy" has implications for an individual's user status and membership within their online communities. In this context, one's capacity to create, appreciate, and circulate memes indicates their level of cultural competence and membership within the online community. In addition, the Meme Economy satirizes the stock market by treating internet memes as tradable digital assets. This manifests a concept that revolves around the idea of investing in and trading internet memes as if they were stocks in a real-world market.

This echoes the Blockchain and NFT that replicates real-world economics and assigns economic value to memes by establishing a novel value system that offers meme creators the possibility of recognition and compensation by trading memes. NFT meme prices reflect how the reliance on community and the highlight of virality in memes favor meme creators who have greater social capital within the community or those who have popular memes. The transfer of cultural, economic, and social capital happens in a pyramidal fashion through reflexive feedback loops that mutually reinforce each other. Although culture occupies a prominent position at the apex of this structure, social currency and economics also exert a significant bottom-up influence, yielding tangible consequences in the real world. Within the realm of culture,

economic and social capital are closely intertwined, occupying a relatively equivalent and compelling footing.

The second theme underscores the potential for AI algorithms, AI meme generators and NFT to disrupt conventional models of meme monetization. Operating in the attention economy, social media platforms utilize a variety of techniques to capture and hold the attention of users. Consequently, this new paradigm redefines economic principles, shifting emphasis toward the exchange of attention. In this framework, the capacity to attract attention is the decisive factor that distinguishes successful influencers and creators from less successful ones. As attention is a valuable resource that can be monetized through advertising revenue, Internet memes represent a new form of approach for marketing, advertising, and branding purposes, since they engender a broad and engaged audience who consume, appreciate, and potentially modify them. Apart from the algorithms of social media platforms, the emergence of AI-generated memes also poses challenges for human creators seeking to monetize their work. The escalating prevalence of AI-generated memes could saturate the market, making it more difficult for human creators to stand out and achieve attention for their work on social media platforms.

Machine learning enables AI generators to produce memes in a quick and low-cost manner, and has historically made it challenging for human creators to compete with the efficiency and affordability of AI meme generation. Additionally, AI-generated memes disrupt various fundamental assumptions of copyright law in terms of creativity, commercialization, and distribution. It is still unclear in most cases who has the right to monetize AI-generated memes and whether human creators can claim ownership over them.

The emergence of meme coins also represents a significant change in the economic model of memes under the influence of Blockchain technology. Prior to the advent of Blockchain technology, traditional financial systems were centralized, with intermediaries such as banks, clearinghouses, and regulatory agencies controlling the flow of transactions. The introduction of Blockchain technology and decentralized cryptocurrencies like meme coin has challenged this paradigm by enabling peer-to-peer transactions without the need for intermediaries. This created a new economic model that is characterized by decentralization, transparency, and enhanced security. Moreover, the use of NFT in transactions ensures that each transaction is verified and recorded on an immutable ledger, increasing the trustworthiness of the system. Consequently, the rise of Blockchain technology has disrupted the traditional economic model and led to the development of a new decentralized economic system.

The third theme emphasizes how meme creators have transitioned to adapt to the changing technological landscape for maintaining relevance and profitability. The algorithms used on platforms like YouTube and Instagram are designed to prioritize content that has higher engagement rates and longer watch times. This implies that meme creators who consistently produce popular content and have a larger follower base are more likely to have their content shown to a wider audience, which in turn enhances their visibility, engagement, and revenue. By shaping a hierarchy among creators, where those with higher engagement rates and larger followings have an advantage over those who do not. Creators respond to this hierarchy in a number of ways, such as by using engagement-boosting tactics like clickbait titles, creating memes referencing trending topics that resonate with the audience and gaining popularity through producing political or commercial memes. Some influencers may also invest in advertising or sponsorships to increase their reach and visibility on the platform.

In contrast to the hierarchical algorithms used on other social media platforms such as YouTube and Instagram, the algorithm utilized on TikTok is characterized by its decentralized nature and the provision of greater opportunities for creative content. The algorithm incorporates a range of user-specific factors, such as viewing history, search history, and engagement

patterns, to recommend content that is more likely to be of interest to the individual user. This stands opposite to the prioritization of professional or popular creators, as seen in other social media platforms. Consequently, even new or lesser popular creators have the potential to attain a broader audience if their content is engaging and resonates with the TikTok community. The algorithm used on TikTok also promotes diversity and creativity by promoting a range of content and creators, rather than just prioritizing the most popular or mainstream content. This holds the promise of fostering unique and authentic creative content to achieve traction and visibility, thereby potentially leveling the playing field and providing new prospects for emerging creators.

The data analysis reveals a timeline of the intertwining of technological change and economic model change in the evolution of memes. This timeline is reflected in the emergence of new types of meme creators who adapt to changing technological landscapes for being seen in the attention economy era. The elements within the timeline will be visualized as part of an interactive documentary in the following section.

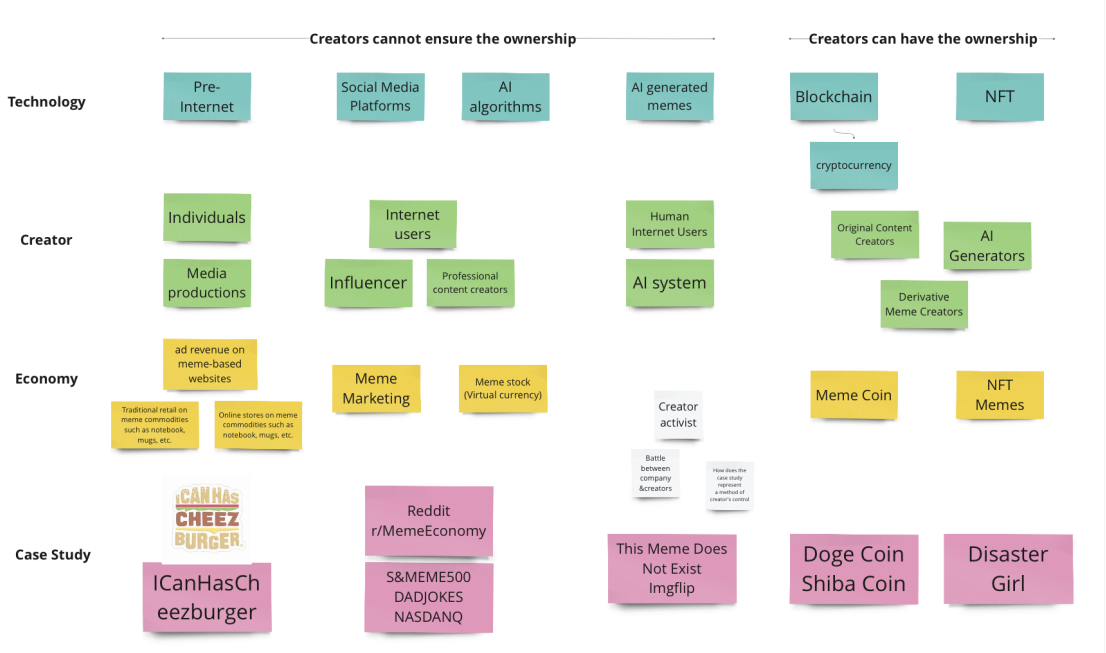

Figure 12. Interactive Timeline Wireframe

GROUP SPECULATION

The focus group discussion guided subsequent speculation, providing direction for the discourse that followed. The first step was to find the initial codes, which consisted of individual words, phrases, or short segments of text frequently mentioned by participants throughout the discussion. After reading the entire transcript and systematically reviewing the specific quotes and keywords of the focus group discussion, I assigned interpretive labels regarding the conversation's content as initial codes that represented important segments. The codes were organized into a codebook, which guided further analysis. The initial codes included "meme culture," "communication tool," "digital platforms," "monetization," "nature of meme

community," "meme ownership," "AI algorithms," "AI meme generation," "freedom of creativity," "Blockchain," "NFT memes," and "The Future," based on participants' different professional backgrounds and their contribution to the topic.

Next, I organized the initial codes into more specific categories of themes based on the relationships between the initial codes and the overarching speculative future scenarios imagined through the game. After grouping the initial codes with the events and scenes from the game, categories emerged, including "the impact of AI algorithms on meme monetization," "the potential of AI meme generation in mimicking human meme creation," "the role of Blockchain and NFTs in securing creator ownership," "the role of Blockchain and NFTs in constructing meme community," and "the new community of meme creators in the future."

The final step involved selecting the most relevant categories and themes to create a cohesive narrative that addressed the research question. I reviewed the categories and themes to identify the most salient points that emerged from the data. The following are the main themes that emerged from the analysis.

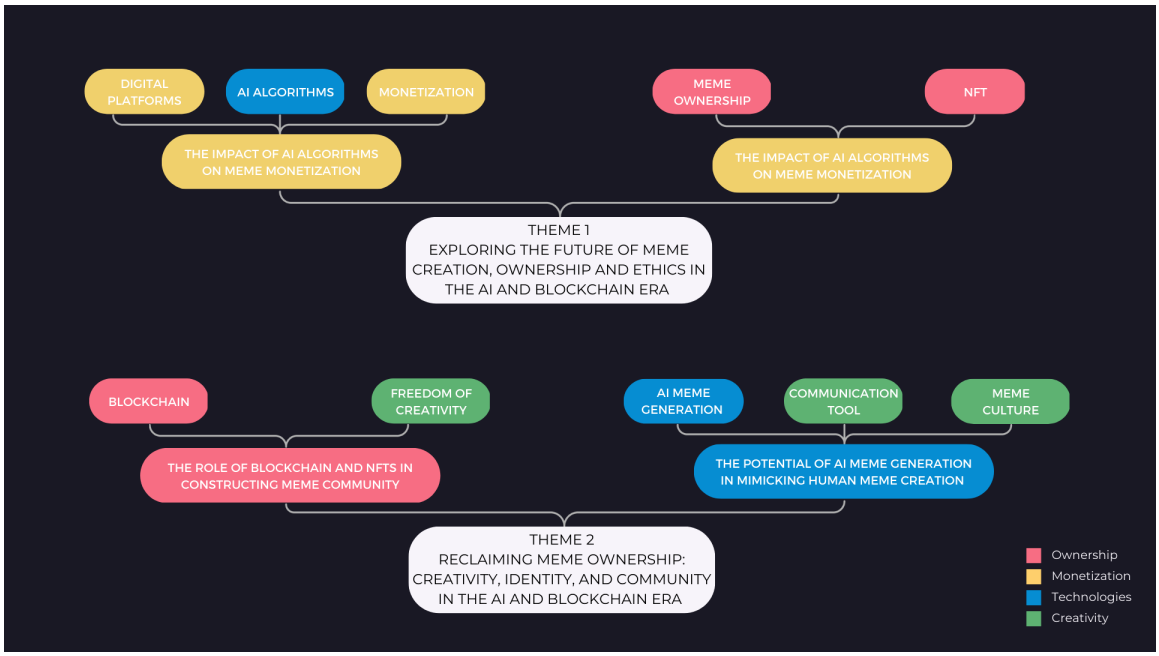

Figure 13. Initial Codes, Specific Categories and Themes

Theme 1 - Exploring the Future of Meme Creation, Ownership and Ethics in the Future AI and Blockchain Era, combines the impact of AI meme generation on human meme creation and the role of Blockchain and NFTs in securing creator ownership for speculation. It illustrates a future where meme creation becomes utilitarian, and memes enter the perspective of AI training and iteration. Artists use AI to create memes, and Blockchain technologies are used to differentiate meme creators. Memes, through AI iteration, can generate unexpected links that humans did not anticipate, and human creators can articulate meaning to them, pushing the boundaries of meme production. The use of Blockchain can mark the creation process, and purchasing NFTs can become a way to pay for memes, countering business exploitation.

The other direction of the future manifests how AI meme generation triggers a debate about AI replacing human meme creators. Cooperate giants may monopolize meme usage rights through patent laws, and AI-generated memes can become propaganda tools after being processed by algorithmic black boxes. People who use memes become followers of AI generators, leading to human alienation. They also use NFTs to force people who use memes to pay fees, which ultimately results in the fading away of “free” memes. This darker future emerged as a concern from participants for the future rather than speculation based on the solid reality.

Theme 2- Reclaiming Meme Ownership: Creativity, Identity and Community in the Future AI and Blockchain Era, combines the impact of AI algorithms on meme monetization and the role of Blockchain and NFTs in constructing a meme community. It constructs a future where we will be witnessing a counterattack towards AI algorithms by meme artists who strive for originality and innovation. Through the establishment of new communities with Blockchain technology as their identity, these creators are pushing back against AI algorithms and the growing crisis of human identity. By marking their social identity with NFTs and utilizing memes as a form of self-expression, individuals are able to convey their unique identities outwardly. In turn, meme consumers continue to demonstrate support for their preferred NFTs, creating

a market that sustains this ecosystem of identity expression. Besides, open communication and collaboration between meme creators and AI developers allows for mutual understanding and the creation of innovative and ethical solutions for the use of AI in creative practice. AI becomes a better assistant and a source of inspiration. Iterative Machine learning enables AI to recognize AI-generated content, therefore human and AI can cooperate at a higher level in meme creation.

Another avenue for imagination depicts the commercialization of meme creation that threatens its original intentions of pursuing freedom and authenticity in creation. In this case, the original goals of the counterattack by meme artists against AI creativity have been compromised. The counterattack has, in effect, become AI's own material, thereby blunting the force of the initial initiative. Such development has also led to conflicts within the community and society. Besides, the utilization of Blockchain technology as a means of identification may ultimately result in a symbolic hierarchy of certification. This, in turn, could contribute to further identity-based conflicts between those who do and do not identify with Blockchain.

The analysis of the Participatory Speculation and the methodological findings of the future of meme creators' ownership derived from this research are

summarized to be a part of the thesis output. This will be elaborated in the following sections.

THESIS OUTPUT

This section describes the creation of the interactive documentary prototype, built with an open-source codebase tool. It plays with the interaction of elements including an index named *Timeline Jumping*, a timeline called *Meme Creator Timeline*, and animation galleries entitled *Collective Futures*, in regard to the topic. The techno-economic development of meme monetization history and the participatory speculated future of meme creators' ownership are presented in two different ways. The former will be presented through a temporal narrative. It guides viewers to the chronological stages covering the historical trajectory of technological breakthroughs and economic innovation that affect the creation and propagation of memes.

The future is exhibited within an exploratory timeline that allows them to discover their own narrative paths within interactive data visualizations of the documentary. The framework consists of an interactive guide index on the left corner of the project, where blocks with texts introducing the different

stages of technological breakthroughs alternate with ones displaying various changes in all the prominent economic models of meme monetization. The project can be viewed as an interactive interface that visually translates textual data extracted from the literature review and speculative workshop, and presents it to the public as also a database narrative documentary.

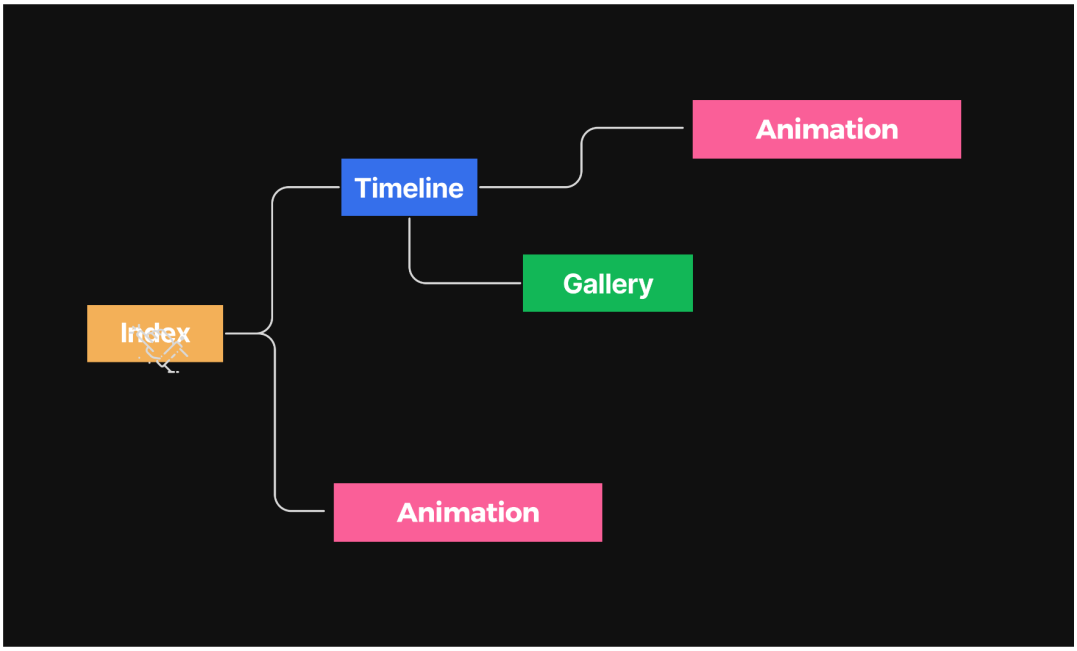

Figure 14. Illustrate diagram of interactive documentary

TIMELINE JUMPING

Timeline Jumping functions as an interactive guide index to navigate the viewers. Besides the possibility of watching the first part of the documentary in its standard sequence by scrolling the page horizontally and vertically, it is worth noting the persistent presence of an index on the left corner of the

project. This feature effectively orients the viewers to their position in the narrative and facilitates navigation through the sections. Time is distributed radially, while the time span related to the different chapters is shown by highlighting icons. By clicking the blocks in the index, the viewers will be directed to a specific time point in the timeline corresponding to that block.

Leveraging the skill of coding through CSS, I created the basic function of the interactive guide index, incorporating this function as one of the prominent features of the interactive documentary to explore unseen stories within the process of meme monetization. Having this in-built interaction mechanism to indicate the start of exploration, viewers can more freely choose to investigate through the index or continue to seek different stages in the timeline without having to navigate through the challenges and confusion that often appear when people face an overload of new information.

MEME CREATOR TIMELINE

The Meme Creator Timeline uses Historical Analysis to analyze the value addition in memes through the meme monetization process that has been influenced and changed by disruptive technologies. The prototype of the timeline creates space that draws viewers into a journey to explore the

technological and economic influence of meme creators' ownership with the flow of time.

To create a timeline that showcases the evolution of technological change in social media and the corresponding changes in the economic model of meme commodification, a thorough historical analysis of the development of these two domains was conducted. By examining the historical data and trends, it is feasible to identify essential components that have contributed to the evolution of these two domains. These components are later utilized to create a visual representation incorporated into the timeline. The timeline not only illustrates the chronological progression of technological change on social media but also highlights the corresponding changes in the meme economy. This analytical approach enables the identification of the key drivers of change and innovation.

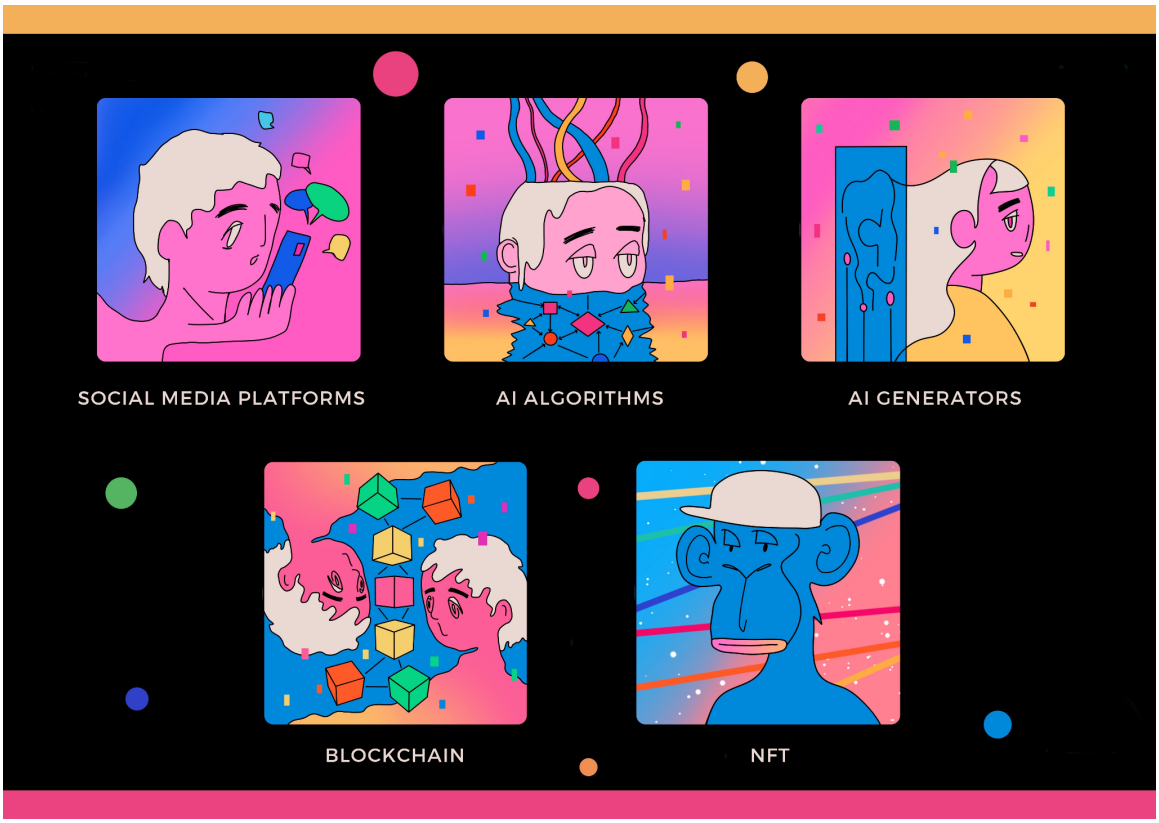

Figure 15. Visualization of the technologies

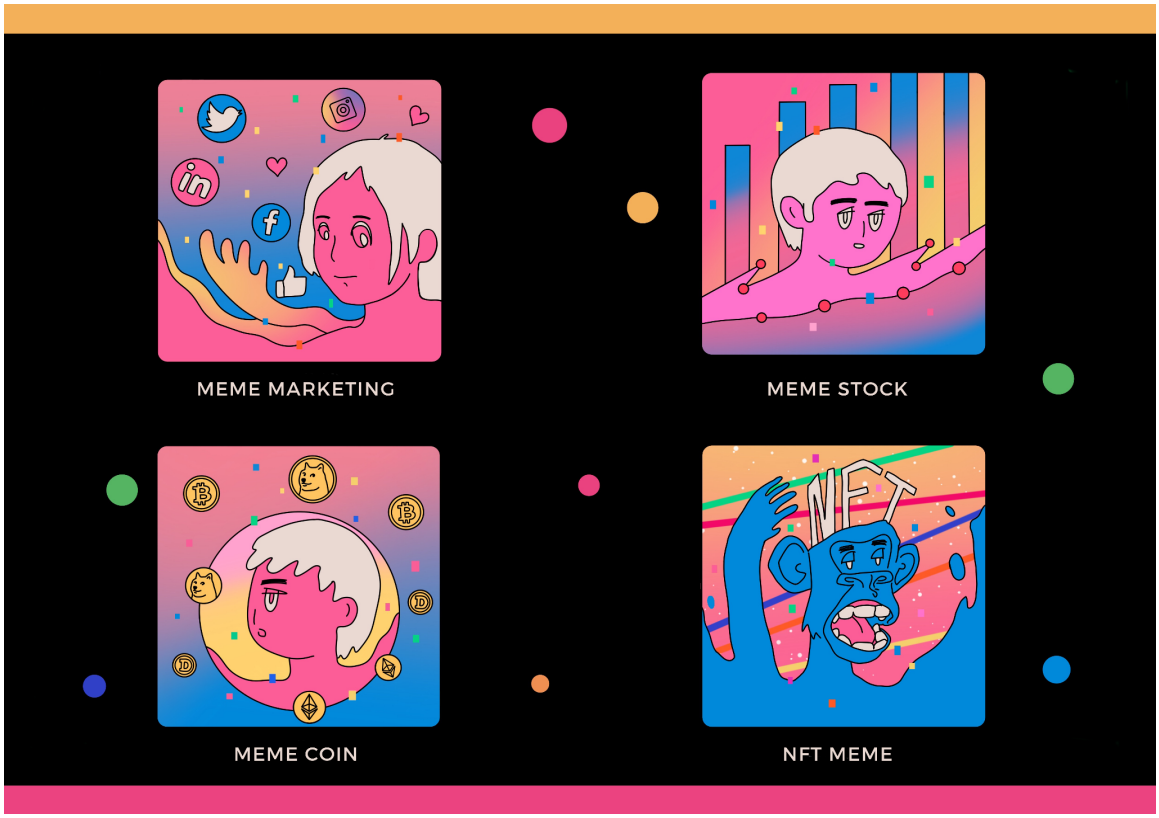

Figure 16. Visualization of the economic models

I first created a wireframe on Figma to illustrate the complex interplay between technology and the economy in the context of social media and meme monetization, and how the influences stemming from two distinct aspects have shaped the different types of meme creators across varying temporal epochs. I created graphical representations of different elements that are shown in the timeline. It also invites the viewer to focus on a specific time point, as well as to compare themes and continents. Clicking on the dots close to the time point brings up pop-ups that show how the selected components have affected meme creators' ownership, providing a perspective from the past and the present. The timeline enhances understanding of the meme creator's circumstances behind the intertwined information it displays.

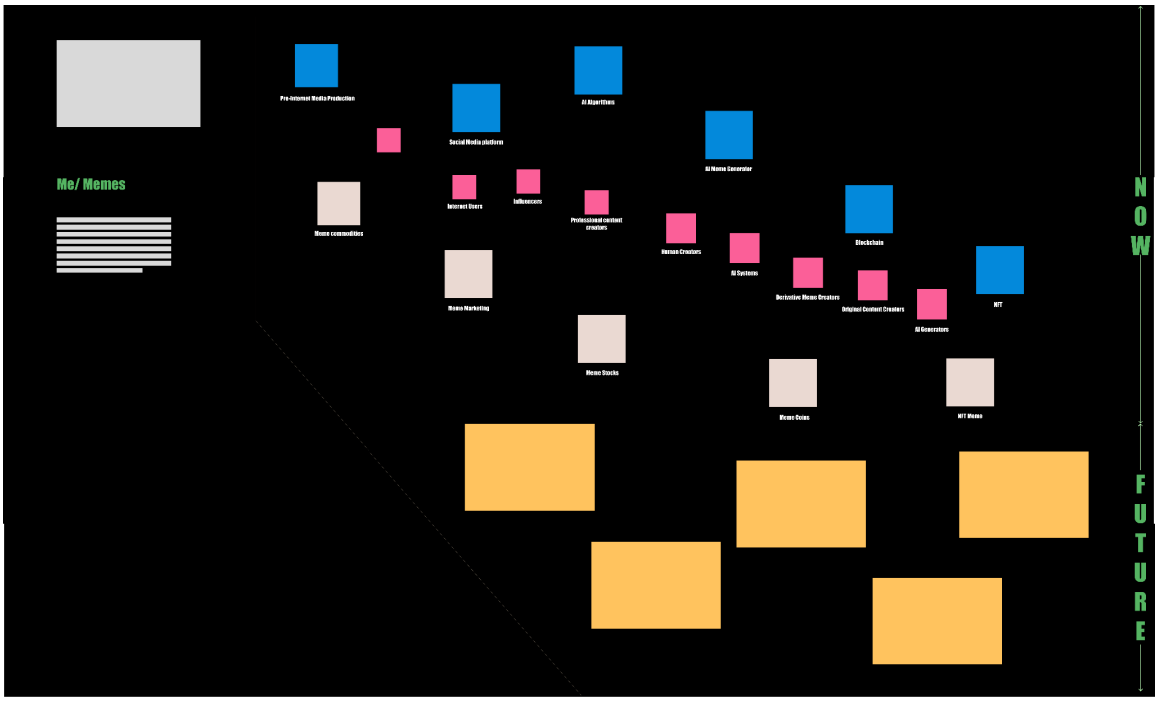

Figure 17. Interactive Timeline Wireframe (Figma)

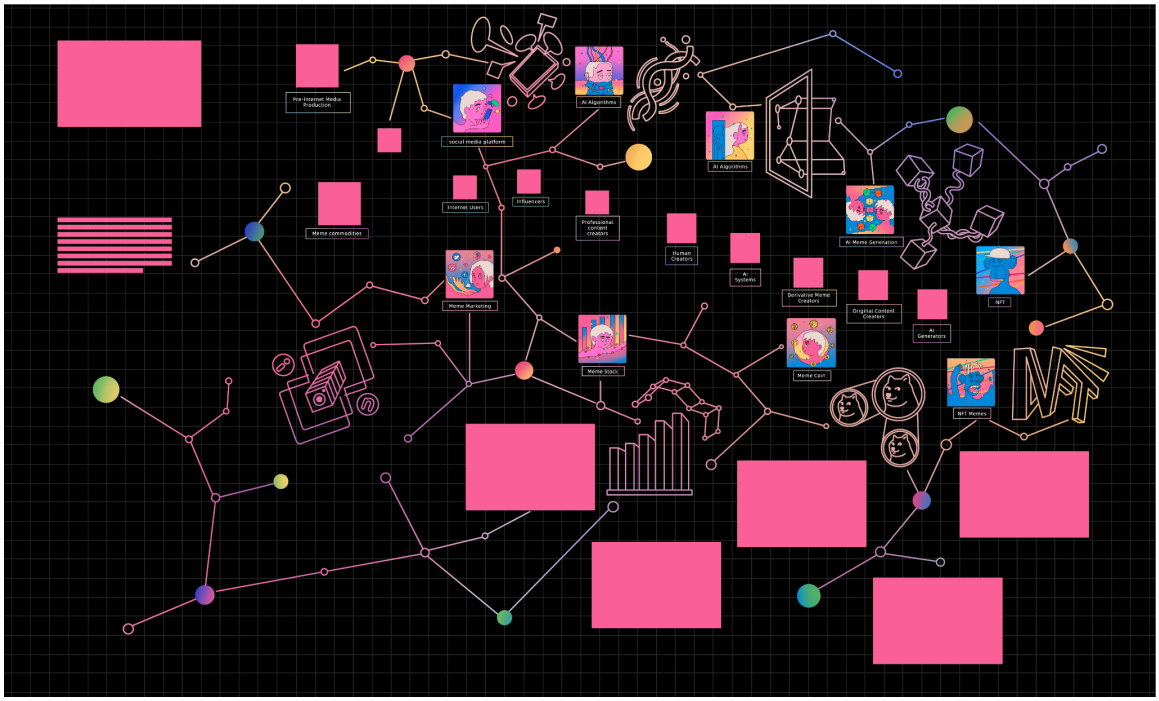

Figure 18. Interactive Timeline Wireframe (Adobe Illustrator)

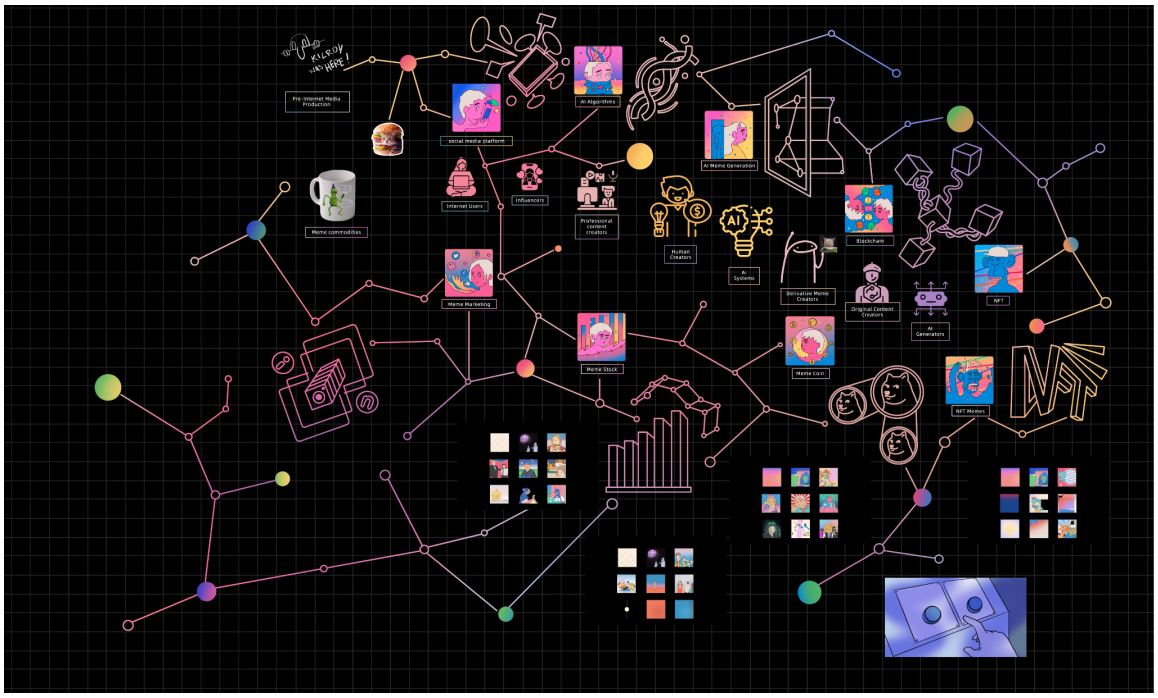

Figure 19. Interactive Timeline Final Design (Adobe Illustrator)

COLLECTIVE FUTURES

The final piece of work in this project was to create four animation videos that visualize the future of meme creators' ownership, as imagined in the participatory speculative workshop. The animations incorporate different themes that integrate various topics related to the technological impact of AI and Blockchain technologies. My creative process entails a blend of imagination, research, and technical skills. For the future part of the interactive documentary, my objective was to produce an animated, meme-style motion graphic that examines the conjectural prospects of meme creators' ownership.

Two components shaping the animations' vernacular are the camera zooms and the motion comic style. I initially conducted research on the impact of technological advancements and the evolution of economic models on meme culture. Following that, I used an AI meme generator to identify an appropriate meme format as the foundation for my creation. After selecting a template, I traced all the meme images to ensure that they did not infringe on any original works. In addition, I made some remixes and combinations of multiple memes to create new and unique content. This step was crucial in ensuring that my work was original and not a copy of someone else's creation. By creating new content, I could also convey the complex concepts related to the future of meme ownership in a creative and engaging way. Once the tracing and remixing were complete, I proceeded to animate in the consideration of incorporating various themes that emerged during the workshop discussions and activities. My intention was to depict and communicate intricate concepts related to the future of meme ownership in a clear and captivating manner.

Figure 20. Image tracing process: replication and mutation of meme *Evil Kermit*

Figure 21. Image tracing process: replication and mutation of meme *Woman Yells At Cat*

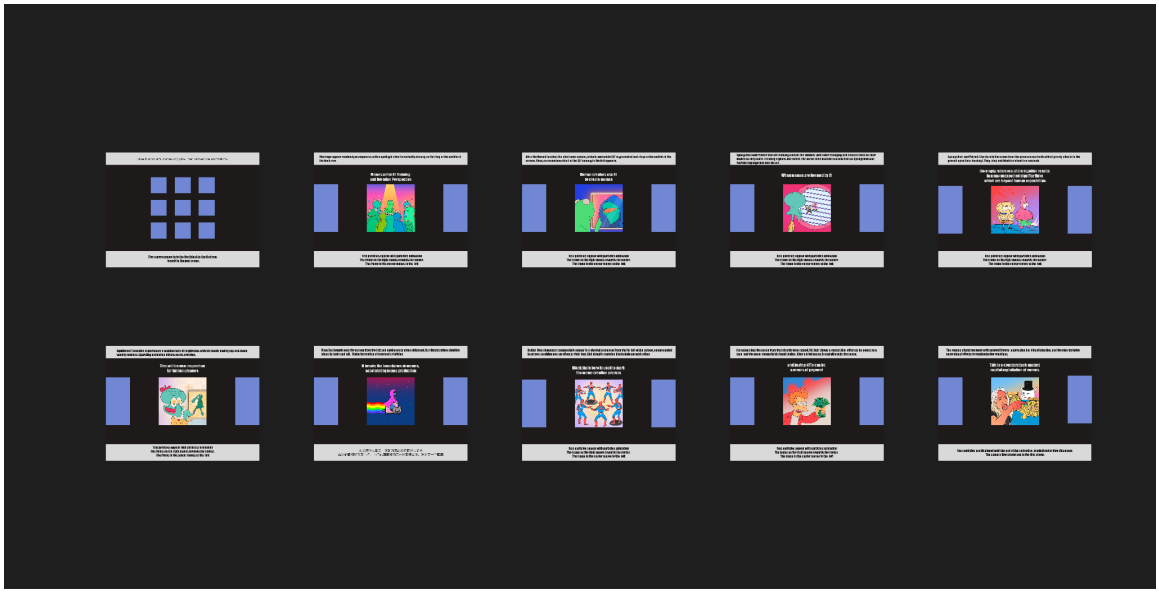

Figure 22. Storyboard for the first scenario of possible future of meme creators' ownership

To foster engagement and interaction, I create a branching narrative where the viewer is presented with a choice of two paths, each leading to a different future. Viewers can use this form to explore two divergent scenarios that represent the potential prospect. I provide the viewer with options at the beginning of the vision of the future, allowing them to choose which path they want to follow. Each path has its own set of animations and interactive elements that showcase the unique outcomes of that future. By experiencing both paths, the viewer can gain a deeper understanding of the importance of being aware of the innovative force and the potential impact AI and Blockchain technologies could have on creative individuals and practitioners. Therefore, every movement and click in this project is meaningful. This format relatively provides a great deal of interactivity and freedom to users while the creator can have control over what the audience views by cautiously selecting the content to keep the audience from an information tsunami.

Figure 23. Final presentation on a touch screen

CHAPTER 5: CONCLUSIONS AND FUTURE WORK

SUMMARY OF THE RESEARCH

The primary research question that underpins this project is: How might technological changes on social media platforms impact a creator's ownership of memes?

To develop a comprehensive understanding of the functionality and benefits of possible futures of meme creators' ownership, a literature review was conducted to examine the historical evolution of memes affected by technological advancement and the history of meme monetization that reflected the change in the valuation of the meme. This review continued with an exploration of copyright and authorship of both human and AI-created memes, focusing on how Blockchain technologies provide fractional solutions to the ownership issue while AI generation challenges the current legal framework of copyright. To envision the future scenarios of meme creators, Economic Constructivism was applied to identify the prominent issues embedded in the present that affect the future, from an individual perspective. This phase was followed by Participatory Speculation to invite experts from relevant fields to join the discussion, incorporating diverse

perspectives and collectively envisioning potential futures, and eventually present the results of the research in the form of an interactive documentary.

This research reveals that disruptive technologies, specifically Blockchain technologies and AI algorithms, hold the potential to provide novel opportunities for creators of internet memes to gain compensation for their creativity by selling their memes. Nevertheless, it is essential to note that disruptive technologies also introduce fresh challenges that necessitate a judicious approach for wise navigation. Originally, the creation and diffusion of meme culture was a collaborative process that featured the participatory culture, far from a competitive and economically motivated practice. While Blockchain-based platforms may offer avenues for creators to directly sell their memes to consumers and establish ownership of their intellectual property through tokens, the use of AI algorithms for more targeted advertising and sponsorships may increase competition and contribute to market saturation. Creators can leverage the technology's ability to mimic human creativity, produce original work, and generate diverse content. These AI systems, equipped with attributes such as creativity, autonomy, and learning capabilities, can generate creative art, potentially blurring ownership and copyright lines. As AI-generated works grow more prevalent, creators must navigate the complexities of copyright laws and legal frameworks. AI systems can be viewed as creative employees or independent contractors,

attributing ownership and responsibility to individuals or legal entities utilizing these systems. This approach acknowledges the creative contributions of AI while recognizing the distinct creativity of human authors. AI-generated work typically involves gathering training data and producing intermediary iterations for refining algorithms. However, AI advancements like Generative Adversarial Networks (GANs) can create images without intermediary steps, posing new challenges for human creators. As AI's sophistication increases and its output becomes more similar to human-authored works, creators must adapt to accommodate AI authorship within the existing copyright framework. As these disruptive technologies continue to evolve and become increasingly integrated into meme creation, creators must remain vigilant in identifying and capitalizing on new opportunities while addressing potential challenges.

REFLECTION ON METHODOLOGIES AND METHODS

Economic Constructivism was initially chosen as a methodology for this research due to its successful application in the early stages of exploration of the topic, echoing the approach taken in the literature review section that examines the history of meme monetization, the shifting values of memes affected by the technological change, and the impact of AI and NFTs on the ownership rights of meme creators. The significance of forming the basis for

understanding the technological impact on the creation and distribution of memes surfaced predominantly as a catalyst for later discussions in the participatory process. The analysis was presented as a background context to generate a set of insightful questions (See Appendix D) for the discussion among experts from diverse professional fields who attended the participatory. This played a crucial role in locating the intersection of technology, economy and creativity for the focus group discussion for participants, sparking the thoughts and ideas of experts from various professional backgrounds.

Participatory Speculation as a methodology was valuable in bringing together diverse perspectives and fostering interdisciplinary discussions that can enrich the understanding of complex topics. Through the focus group discussion, these experts shared their unique perspectives and knowledge in their own professional field to compose a more comprehensive understanding of the varied components affecting the future of meme creators. The gamification of the workshop played a crucial role in enhancing the content and perspective of the study. It fosters a more relaxed and creative collaborative environment, enabling participants to express their ideas more freely and sparkling a collection of new insights and ideas that may not have emerged through focus group discussion. The game-based approach within the workshop ideation was an appropriate method to

complement the speculative process, encompassing stages of conception to co-creation of possible futures. It offered value in collaborative imagination and ideation, where the open-ended nature and focus on scenario-building facilitated the generation of diverse and unpredictable ideas. These features of collaborative imagination were also reflected in the final creation of animation in the interactive documentary.

REFLECTION ON THE THESIS PROJECT

TIMELINE JUMPING

Timeline Jumping provides an interactive and engaging experience for viewers, allowing them to navigate through the content in a non-linear way. The use of an interactive index serves as an effective guide, providing viewers with a clear understanding of their position in the narrative and allowing for effortless navigation through the different sections. The horizontal distribution of technological and economic evolution as well as the highlighting of time spans in different stages further facilitate user's exploration.

To enhance the viewer's experience, the inclusion of supplementary visual cues or interactive components to signal the precise location of the viewer within the timeline could be advantageous. This may encompass the utilization of color variations, animations, or auditory effects to draw attention to specific time points. Additionally, the integration of more detailed descriptions or summaries for each segment could aid in contextualizing and illuminating the significance of the events being depicted.

In terms of the manifestation of information, the interactive guide index is a particularly effective feature, allowing viewers to easily explore the different stages in the timeline and discover unseen stories within the process of meme monetization. However, it may be helpful to consider incorporating more detailed information or context within each section, such as quotes from experts or statistics to provide additional insight and support for the narrative being presented.

MEME CREATOR TIMELINE

Meme Creator Timeline is a project that utilizes historical analysis, seeking to unravel the intricate evolution of memes and their monetization processes. Through an engaging and thoughtfully designed timeline, the project

enables viewers to explore the complex interplay between technology and the economy, particularly in the context of social media and meme monetization. By leveraging a meticulous historical analysis, the project identifies essential components that have driven change and innovation in these two domains, thereby offering a compelling perspective on the evolution of meme creators and their economic value.

To enhance the viewer's experience, it may be helpful to incorporate additional visual elements that guide the viewer's focus and attention, such as changes in color or motion graphics, to display the happening change in specific points of the timeline. Additionally, incorporating interactive elements, such as clickable pop-ups or videos, may help to provide more detailed information or context for each section, and further enhance the viewer's understanding of the interconnected dynamics between technology and the economy in the context of social media and meme monetization.

In terms of the clear clarification of information, the timeline showcases the evolution of technological change in social media and the corresponding changes in the economic model of meme commodification, highlighting the key drivers of change and innovation. However, it may be helpful to incorporate more detailed information or data to support the narrative being presented, such as expert quotes or statistical analyses, to provide deeper

insight and context for the viewer. Overall, the *Meme Creator Timeline* effectively illustrates the complex and interconnected nature of meme monetization and change of meme creators, and has great potential for further development and improvement.

COLLECTIVE FUTURES

Collective Futures involves the creation of four animation videos that explore the future of meme creators' ownership. It is an undertaking that requires a delicate balance of creativity, research, and technical skills. The use of animation and branching narratives adds an interactive and engaging dimension to the documentary, making it more fun to watch and interact with.

To further enhance the elements of interactivity and engagement, several improvements could be made to the project. For instance, by incorporating social elements such as user-generated content, live chats, and forums. This would allow viewers to connect with each other and share their thoughts and ideas, making the experience more collaborative and community-driven.

SIGNIFICANCE AND FUTURE WORK

The significance of this study lies in its contribution to the ongoing discourse on the future of creative ownership and monetization of digital artifacts in the digital era, particularly in the context of memes, which represents the freedom and creativity of human beings. The proposed vision of the future of meme creators' ownership and the interactive documentary created as part of this study may serve as a catalyst for further research and discussions among scholars, creators, and policymakers on the legal, ethical, and economic implications of technological disruptions on creative ownership and value. Future work could explore the implications of the findings on value change in digital artifacts, techno-economic influence, industry practices, and creator’s awareness, as well as the potential of interdisciplinary collaborations in shaping the future of creative ownership and value in the digital age.

Future work related to this research will also focus on exploring the legal, ethical, and economic implications of the proposed vision of the future regarding meme creators' ownership and the potential role of AI algorithms and Blockchain technologies in reshaping creative ownership and value. This future work will contribute to a community of scholars, creators, policymakers, and industry practitioners interested in the ongoing discourse on the future of creative ownership and monetization in the digital era. The findings of this research and the proposed vision of the future will serve as a

starting point for further discussions and debates on the potential of emerging technologies to disrupt traditional models of creative ownership and value, as well as the need for legal and ethical frameworks that reflect these changes.

Additionally, this work could contribute to a community of interdisciplinary researchers and practitioners interested in the intersections of technology, economy and creativity. The study's use of Participatory Speculation and collaborative methodologies could serve as a model for future research that seeks to engage diverse perspectives and expertise in imagining and shaping the future of creative industries.

CONCLUSION

This project aimed to explore the impact of technological change on the creation and propagation of memes in contemporary digital culture and envisions a possible future for the meme creator’s ownership. It responded to the primary research question, investigating how technological changes on social media platforms impact a creator’s ownership of memes in the attention economy. This research can be conceptualized as examining the topic in two distinct directions. By identifying how the technological evolution influence the creation and propagation of memes on the digital

platforms, and how the AI algorithms change the way creators and consumers determine the value of memes, I propose that the AI algorithms present new opportunities to catalyze human creativity for meme creators and to think of what creators should do to avoid homogenization of creativity. By examining how Blockchain and NFT replicates real-world economics and assigns economic value to memes by establishing a novel value system, I discover that its disruption offers meme creators the possibility of recognition and compensation by trading memes. I believe that the Blockchain technologies will open up possibilities for emerging communities where meme creators can reshape ownership of collective creation with NFTs and the decentralized nature will liberate the meme creators from the constraint of algorithms and bring out prospects of creativity.

The key contributions of this project include the Participatory Speculation that invites experts to collaboratively imagine the future landscape of meme creators' ownership together. The process has contributed to my understanding of the secondary research question, with the highlight of the participatory workshop as an effective tool for speculative thinking with the collaborative space for individuals to share ideas and and inspire each other.

The interactive documentary also responds to the secondary research question, manifesting positive promise as a project to present the co-create

possible futures of meme creators' ownership, with its clear clarification of information on technological and economic change, interactive and engaging experience, and freedom to explore new content via different paths of navigation. With further enhancements to the elements of interactivity and visual appeal, it could be even more playful in inviting and captivating the audience as part of an interactive documentary.

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APPENDICES

APPENDIX A: KEY FINDINGS TAKEN FROM LITERATURE

	Historical Evolution	Meme Economy	Creator's Ownership
Primary Research Question	• Algorithms influence participatory norms and facilitate the spread of memes as a form of marketing communication. Creators face challenges in establishing ownership of their creations. • Platforms like TikTok have advanced the concept of internet memes, potentially leading to a creator-centered economy.	• NFTs provide a new value system and revenue stream for meme creators, offering recognition and compensation through trading memes. • The value of NFT memes is tied to virality and community, emphasizing the significance of network effects and online community formation in the NFT marketplace.	• NFTs offer a solution for proving meme ownership, enabling creators to monetize their work without limiting accessibility, and presenting unprecedented compensation opportunities within the existing copyright framework.
Secondary Research Question 1	• Social media platforms and their algorithms play a significant role in shaping content visibility and determining meme popularity. • AI algorithms have revolutionized meme creation by automating text-to-image and image-to-text generation, making meme production more accessible and efficient. • AI has the potential to impact meme monetization and affect creators by changing the way content is generated, shared, and valued in the attention economy.	• The emergence of NFT as a novel revenue stream for meme creators, allowing them to capitalize on their online renown. • Blockchain technology introduces the concept of "digital scarcity," replicating real-world economics in the digital domain. • The value of an NFT meme is tied to its virality and ubiquity, with communities playing a crucial role in determining its worth. It reshapes the monetization landscape for meme creators.	• Memes inhabit a gray zone in intellectual property protection, but as their popularity and commercialization increase, so does the need for legal recognition and protection. • AI-generated memes present new challenges for copyright laws, as traditional frameworks struggle to accommodate the role of AI in the creative process. • NFTs can facilitate creator funding and resale rights, potentially enabling the remix culture's commercial viability.

APPENDIX B: PARTICIPANT RECRUITMENT MATERIALS

Unpredictable Meme | Interest Form

Deadline: Feb 20th 2023

Thank you for your interest in participating in this research study for Unpredictable Meme: Speculative Future of Memes through the Lens of Disruptive Technologies.

ABOUT THIS STUDY
The purpose of this study is to explore a future where digital technologies including Artificial Intelligence (AI) and blockchain further monetize memes to influence the meme creator's ownership. This speculation of a possible future builds up connections among digital artifacts, digital participatory culture, AI algorithms, blockchains and creator ownership. We are looking for participants to engage in our study to imagine the future of memes with us with their expertise in related fields.

If you are selected as a participant, you will be invited to an expert channel with a workshop session that speculates on the possible future of memes and the creator's ownership. This will happen online and require you to have Internet access and digital devices, ensuring a good Internet connection within the workshop. Participatory actions can simply consist of two parts: 1) focus group discussion and 2) participatory speculation. #1. The focus group is a way to explore the future of memes from experts' experiences and perspectives. In this part, you will be asked to do individual speculation based on the questions provided and have the discussion. #2. participatory speculation is a way to explore how to build an engaging, interactive path from now to the speculative future.

QUESTIONS AND CONCERNS
If you have any questions about this study or require further information, please contact Student Investigator Winter Yan using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [#102315]. If you have any comments or concerns, please contact the Research Ethics Office at research@ocadu.ca.

Please complete the following form:

winteeeryan@hotmail.com (not shared) Switch account

* Required

Your Name *

Your answer

Your E-mail Address *

Your answer

Your Preferred Pronoun *

Your answer

Please indicate your availability (EST) *

- ◯ Saturday, February 25, 2022, from 10 am to 11am
- ◯ Saturday, February 25, 2022, from 11 am to 12 pm
- ◯ Saturday, February 25, 2022, from 12 pm to 1 pm
- ◯ Saturday, February 25, 2022, from 1 pm to 2 pm
- ◯ Saturday, February 25, 2022, from 2 pm to 3 pm
- ◯ Saturday, February 25, 2022, from 3 pm to 4 pm
- ◯ Sunday, February 26, 2022, from 10 am to 11am
- ◯ Sunday, February 26, 2022, from 11 am to 12 pm
- ◯ Sunday, February 26, 2022, from 12 pm to 1 pm
- ◯ Sunday, February 26, 2022, from 1 pm to 2 pm
- ◯ Sunday, February 26, 2022, from 2 pm to 3 pm
- ◯ Sunday, February 26, 2022, from 3 pm to 4 pm

Submit Clear form

Never submit passwords through Google Forms.

APPENDIX C: PARTICIPATORY WORKSHOP CONSENT FORM

Informed Consent of Participatory Speculation Workshop

Consent Form

Date: 06/02/2022

Project Title: Unpredictable memes: Speculative Future of Memes through the Lens of Disruptive Technologies

Principal (or Student) Investigator:

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Faculty Supervisor (if applicable):

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PURPOSE

The purpose of this research study for *Unpredictable memes: Speculative Future of Memes through the Lens of Disruptive Technologies* is to envision a future where the disruption of digital technologies further monetizes memes and affects meme creator ownership. 6-8 participants will be invited to participate in a workshop. This will happen online and require participants to have Internet access and digital devices, ensuring a good Internet connection within the workshop. This speculation of a possible future enunciates connections among digital artifacts, digital participatory culture, AI algorithms, blockchains and the creator economy. This is important since memes can be seen as a map to contemporary digital participatory culture, where users actively engage in the moulding of collective identities. Disruptive technologies have given memes a new monetization avenue and a value-driven destination for their creation, which threatens the diversity in meme culture with the commodification and exclusivity.

WHAT'S INVOLVED

Participation in the study will be a workshop session consist of focus group discussion and participatory speculation through game Microscope. You will be invited to discuss the possible future of memes and participate in a workshop session to speculate together.

Participation will take approximately 60 minutes of your time.

POTENTIAL BENEFITS

Possible benefits of participation include contributing to the study of meme culture and help speculate the future of memes. Information learned from this study may help in making further design interventions in the university and communities. By participating in the research, participants will also benefit from expressing and opening up conversations related to memes.

POTENTIAL RISKS

There are no known or anticipated risks associated with participation in this study. Your participation in this study is voluntary. You may withdraw the study at any time upon communication with the researcher.

For questionnaires: You may decline to answer any of the question(s) as preferred (e.g., by leaving them blank, or by requesting to skip the question)

1) During the study, you can withdraw both data and participation at any time by contacting the student researcher via email. Upon successful withdrawal, any data and future contact of yours will be instantly ceased and removed without any consequences. Or 2) You can request data withdrawal in the workshop within 7 days starting from your submission date. The data will not be able to withdraw once it has been analyzed for study purposes.

Further, there will be no penalty or loss of benefits to which you are entitled.

CONFIDENTIALITY

The information (i.e. your name and your personal contact information) you share will be kept confidential by assigning a code for future use within the data analysis. These identifiers will be stored on an encrypted OneDrive folder, accessible only to the Principal Investigator and Supervisor. These personal identifiers will not be included in the final report and will be destroyed at the completion of the project. Access to this data will be restricted to the primary investigator and the co-investigator.

INCENTIVES FOR PARTICIPATION

Interview participants will not be paid to participate in this study. Their participation in this study is voluntary. They may withdraw the study at any time upon communication with the researcher.

They may, however, request a copy of their own full transcripts for their personal use.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study.

Further, you may choose to withdraw from this study at any time, or request withdrawal of your data prior to data analysis and you may do so without any penalty or loss of benefits to which you are entitled. Your choice of whether or not to participate will not influence your future relations with OCAD University or the investigators involved in the research.

Your participation in this study is voluntary. During the study, you can withdraw both data and participation by contacting the student researcher via email at winteryan@ocadu.ca. Upon successful withdrawal, any data and future contact of yours will be instantly ceased and removed without any consequences. You can request data withdrawal in workshop sessions within 7 days starting from your submission date. The data will not be able to withdraw once it has been analyzed for study purposes.

PUBLICATION OF RESULTS

The results will be used as material to show the speculative future of memes based in an interactive documentary. They may be published in reports, graduate thesis, OCAD University GradEx and presentations to conferences and colloquiums. In any publication, data will be presented in aggregate forms. Quotations from interviews or surveys will not be attributed to you without your permission.

Feedback about this study will be available from the Primary Investigator Winter Yan via email at winteryan@ocadu.ca

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please ask. If you have questions later about the research, you may contact Student Investigator Winter Yan using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [#102315].

If you have questions regarding your rights as a participant in this study please contact:

Research Ethics Board c/o Office of the Vice President, Research and Innovation

OCAD University

100 McCaul Street

Toronto, M5T1W1

416 977 6000 x4368

research@ocadu.ca

* Required

APPENDIX D: PARTICIPATORY WORKSHOP INVITATION LETTER

Invitation Letter

Date: **6th February 2023**

You are invited to participate in a graduate-level research study for Unpredictable memes: Speculative Future of Memes through the Lens of Disruptive Technologies. The purpose of this study is to explore a future where digital technologies including Artificial Intelligence (AI) and blockchain further monetize memes to influence the meme creator's ownership. This speculation of a possible future builds up connections among digital artifacts, digital participatory culture, AI algorithms, blockchains and creator ownership. We are looking for participants to engage in our study to imagine the future of memes with us with their expertise in related fields.

Please read the information about the study presented in this form carefully. The form includes details on the study's benefits and risks that you should know before deciding if you would like to participate. Before signing this consent form, please feel free to ask any questions you have and ask researchers. Your participation in this study is voluntary.

As a participant, you will be invited to an expert channel with a workshop session that speculates the possible future of memes. This will happen online and require you to have Internet access and digital devices, ensuring a good Internet connection within the workshop. Participatory actions can simply consist of two parts: 1) focus group discussion and 2) participatory speculation. #1. The focus group is a way to explore the future of memes from experts' experiences and perspectives. In this part, you will be asked to do individual speculation based on the questions provided and have the discussion. #2. participatory speculation is a way to explore how to build an engaging, interactive path from now to the speculative future. By conducting a workshop session as a research method, this research will bring experts on memes from different professional backgrounds together to participatory speculation on the possible future of memes. In the workshop session, a fractal role-playing game Microscope Explorer will be used to help share the creation of an over-arching storyline of memes' future and develop engaging and inspiring experiences.

Possible benefits of participation include contributing to the study of meme culture and helping to speculate the future of memes. Information learned from this study may help in making further design interventions in the university and communities. Participating in the research will also benefit from expressing and opening up conversations related to memes.

There are no known or anticipated risks associated with participation in this study.

If you have any questions about this study or require further information, please contact Student Investigator Winter Yan using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [#102315]. If you have any comments or concerns, please contact the Research Ethics Office through research@ocadu.ca.

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APPENDIX E: PARTICIPATORY WORKSHOP DESCRIPTION

Workshop Activity Description

The role of participants would be to engage in a 1.0 hours online workshop. During the session, you would be asked to participate in two activities that will explore the themes of the "future of memes" and "developing engaging interactive experience". We will be doing two activities: 1) focus group discussion and 2) participatory speculation through game.

Workshop Session Agenda

Warm Up (5 minutes)

1. The researcher will introduce herself and the session to the participants
2. Participants briefly introduce themselves

Focus Group Discussion (25 minutes)

1. The researcher will initiate the discussion with exploration questions
   - What technological change have you seen already in your work with/in meme culture?
   - How do you think technological changes in your professional field will affect the creator's ownership of memes?
   - How would you advise meme creators to respond to technological changes in your field?
   - Based on the technological changes that have taken place by now, what further changes do you see in the future? and what possibilities do they have for future ownership of meme creators?
2. The researcher and participants will summarize the discussions together and see if anyone has questions

Participatory speculation (25 minutes)

1. The researcher will introduce the way to play Microscope
2. Participants then can start the game to speculate the positive and negative future scenarios of the memes

Q&A (5 minutes)

The researcher will thank the participants for their time and contributions to the study and Participants may stay behind to ask questions or comment on the workshop.

APPENDIX F: PARTICIPATORY WORKSHOP SCREENSHOT