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Rhizomatic Creativity: Exploring the Uncharted Territories of AI-Generated Imagery.

Criatividade rizomática: Explorando os territórios inexplorados das imagens geradas por IA

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Abstract: Humans are always impacted by the influence of technology, on how they perceive, think, and act even if their creations don't directly involve technology. The fundamental principle of the human-centered view is the idea of subjectivity, which is reinforced by the distinction between subject and object and how reality is portrayed in images. The generation of contemporary imagery, which previously required multiple human operations, is now achievable using artificial intelligence (AI). This transition has not only allowed the creation of images that go beyond typical camera-based imaging, but it has also brought an independent ontology to digital images, allowing a unique approach to their study and interpretation. This paper examines a variety of studies that explore the technological advancements in image creation, involving the transition from analog to digital images as well as the latest trend in AI-generated images. The aim is to investigate the shared characteristics between AI-generated images and Deleuze/Guattari's concept of the rhizome, highlighting its significant effect on contemporary visual culture.

Keywords: AI-generated images, rhizome, algorithms, visual representations.

Resumo: Os seres humanos são sempre afetados pela influência da tecnologia, na forma como percebem, pensam e agem, mesmo que as suas criações não envolvam diretamente a tecnologia. O princípio fundamental da visão centrada no ser humano é a ideia de subjetividade, que é reforçada pela distinção entre sujeito e objeto e pela forma como a realidade é retratada nas imagens. A geração de imagens contemporâneas, que anteriormente exigia múltiplas operações humanas, é agora possível através da inteligência artificial (IA). Esta transição não só permitiu a criação de imagens que vão para além da imagem típica baseada em câmaras, como também trouxe uma ontologia independente às imagens digitais, permitindo uma abordagem única ao seu estudo e interpretação. Este

artigo examina uma variedade de estudos que exploram os avanços tecnológicos na criação de imagens, envolvendo a transição de imagens analógicas para digitais, bem como a última tendência em imagens geradas por IA. O objetivo é investigar as características partilhadas entre as imagens geradas por IA e o conceito de rizoma de Deleuze/Guattari, salientando o seu efeito significativo na cultura visual contemporânea.

Palavras-Chave: Imagens geradas por IA, rizoma, algoritmos, representações visuais.

1 Introduction

Over time, photography went through significant changes, moving from a process that needed specialized apparatus to becoming a more accessible and popular practice. Photographs hold the fundamental characteristic of catching a unique instant in time, which offers a glimpse into reality, although with a set of certain constraints inherent to the medium (Smits, 2021). The photographic act, once dependent on physical presence and dedicated machinery, has evolved into a rapid and ubiquitous process facilitated by machines such as smartphones, webcams, and AI (Taffel, 2020). The integration of components seen in modern imagery portrays the complex relationship of the contemporary world, in which humans and technology cooperatively exist and exercise mutual influence (Latour, 2017).

Contemporary visual culture may be defined as inorganic images involving several types of data that are collected, organized, arranged, concealed, saved, and discarded (Moreiras, 2017). Technological developments have always shaped visual culture. In recent years, advancements in AI have dramatically questioned conventional notions of imagery. The general adoption of AI to create images plays a crucial role in this disruption, as it not only changes the way images are created but also reshapes our relationship with visual content. This process initiates a chain reaction, causing entwined social and cultural practices to break apart, adapt to, and be influenced by modern technologies (Mitchell, 1992). In contrast to symbolic references and binary universality values, the era of inorganic images challenges traditional models of visual representation and communication by emphasizing the interconnection of networks that generate images. The questions that this paper aims to clarify are:

- What are the similarities between AI-generated images and the concept of rhizomes?
- How can the philosophical concept of the rhizome improve our understanding of AI-generated images?

2 Understanding Inorganic Imagery

The general adoption of advanced technologies and computational methods in image generation represents a shift in the present visual culture within a technologically driven society (Raaphorst et al., 2016). A fundamental tenet of the human-centric worldview is the universal subjectivity established through the dialectical relationship between subject and object, intricately interwoven with the representation of reality in images. These actions are executed discreetly beyond the image's signifying surface. Decoding and reading, as well as all other standard indexical signifier operations, are secondary processes arising from unconscious imagery (Balandina & Peredrienko, 2022). The massive production and distribution of digital images in contemporary times have prompted us to rethink the rules of image aesthetics, ontology, and epistemology. It is important to understand the significance of inorganic imagery in shaping and propelling the modern world, characterized by a dichotomy between the virtual and the tangible. In an era saturated with images that are increasingly supplanting written texts, the absence of critical analysis of visual content poses a significant challenge, given the misconception of images as inherently objective (Flusser, 1983). The notion that images are just representations is no longer the only valid perspective since they also include many levels of complexity. The conventional understanding of representation as a method of association with the outside world and the analogy of realistic images as a projection of the world is connected to the logic of the photographic image, which has been seen as a reflection of something inherent in the subject/object dichotomy (Kosminsky et al., 2022). The transition from analog to digital images and the widespread adoption of the Internet have irreversibly altered realistic imagery. It has challenged key concepts such as authorship and original work and has multiplied the possibilities of reproducing and circulating images to an unexpected extent (Reymond et al., 2020).

The digital-born image merges the fundamentals of representation with the concepts of self-duplication and mutation (Rubinstein & Fisher, 2013). The digital image is based on an architecture of infinitely repeatable abstractions in which the original and its copy are the same. Therefore, the digital copy of the digital image is indistinguishable, rendering the term "original" meaningless (Ritchi, 2009). The

contemporary landscape of our existence is characterized by a relentless quest for knowledge, technological advancement, and material prosperity, marking a significant departure from conventional societal norms (Spolaore, 2020). Within realistic imagery, a fresh perspective posits that it has inevitably transcended the limitations imposed by the photographic paradigm, thereby disentangling itself from conventional notions of reality, memory, and representation. AI-generated images represent a departure from traditional visual representations by embracing multiplicities and interconnectedness, offering a new way of understanding identity and subjectivity (Romele & Severo, 2023). The digital images do not adhere to binary principles, but rather provide a comprehensive perspective on the nature of life. In the context of modern image creation, the concept of "mechanical reproducibility" is no longer seen negatively. The introduction of technological advances in the generation of images is frequently seen as not resulting in the end of old methods, but rather their transformation (Lyotard, 1985). Our world is now being magically restructured by digital images; people are willing to forget that they generated images to help them understand the world. Since they are no longer able to decode them, their lives become a function of their images: imagination has turned into hallucination (Flusser, 1983). A lack of understanding of digital images is potentially problematic at a time when they are replacing human-made images, this is because machine-made image clarity is still an abstraction. Since they reflect even more abstract layers of symbols than human-made images, they go beyond being symbolic. They are integrated within a new complex of relationships between human and non-human actors: people, objects and things, concrete infrastructures, and abstract systems (Van Essen, 2020).

3 Uncertainty and Randomness

The necessity of vast amounts of information processing has transformed culture into an experimental ground for generative structures propelled by unrestricted regulations. Whether discussing DNA, bacteria, or stem cell cultures, auditory and visual cultures, temporal cultures, or spatial modeling cultures, algorithms currently elucidate processes of evolution, development, adjustment, and morphological transformation (Parisi, 2013). Computational randomness refers to vast amounts of

data that exhibit meaningful patterns that resist complete understanding, compression, or detection by any entity, whether it be the human mind or a computer system. (Parisi, 2013). The study of the role of algorithms on contemporary images is a subject that needs a thorough investigation. Obtaining a comprehensive understanding of the intricate relationship between algorithms and AI-generated images is necessary. The existing framework is no longer adequate for efficiency. In contrast, the culture of programming has embraced uncertainty and randomness as prevailing standards.

Algorithms play a pivotal role in the excessive generation and dissemination of images. They transcend their conventional perception as mere utilities and instead embody the creative force or intangible substance that facilitates the development of frameworks, systems, and components. This digitally originated, interconnected, and algorithmically constructed photorealistic imagery underscores the necessity for a comprehensive reassessment of its significance, imbuing it with a metaphysical essence that befits its nature (Rubinstein, 2013). The method suggested implies that algorithms go above basic information representations. Through careful examination of the characteristics of representation and its repercussions, it is possible to reevaluate AI-generated images as more than just passive reflections of real or virtual distortions, but rather as active and significant political structures. These images not only exist as participants of the contemporary moment but also actively participate in reshaping the world via algorithmic manipulation, unconventional thinking, and non-representational creative productions (Rubinstein, 2019).

4 Rhizomes and AI-Generated Images

To have a deeper understanding of Deleuze and Guattari's concept of the rhizome, it is necessary to examine particular passages from Deleuze's influential book Difference and Repetition (1994). Deleuze's criticism questions all of the potentialities offered by infinite representation, such as the unresolved, indifferent, unremarkable, or a difference that has been settled already as rejection. He argues that representation is ineffective in presenting the acknowledged field of plurality. Deleuze claims that representation is limited by a single point of focus and

an reduced viewpoint, resulting in an inaccurate sense of depth. Deleuze believes that philosophers consistently give more importance to identity over difference, seeing the latter as less important and of lower priority. Deleuze argues that this inclination results in an understanding of reality that is primarily focused on identity. Deleuze's principal concern is whether it is possible to think about difference apart from identity. It is essential to understand that Deleuze's goal is not to explain difference just in terms of two or more identities, as is frequently done. Instead, difference should emerge as the foundational constituent, the ultimate unifying principle; it should allude to other distinctions that do not assimilate it but rather set it apart through differentiation (Deleuze, 1994). His strategy is to prioritize difference over identity, leading to an ontology that elucidates how distinctions engender identities. We have been led to the constraints of identification, according to Deleuze, by our failure to understand difference as a source of inspiration and a catalyst for creation. By drawing parallels with modern visual representations and AI-generated imagery, it can be inferred that no matter how much we comprehend, there always remains an expanse of the unknown.

The tree model, or the concept of arborescence, serves as the basic structure for perceiving the relationship between knowledge and practice. Within the postmodern structure, Deleuze and Guattari describe the rhizome as an alternative paradigm to the hierarchical structure of the tree model. According to Deleuze and Guattari (2009), the rhizome is a complex organism formed of interconnected living cells that do not have a defined center, origin, shape, unity, or structure; this characteristic makes it impenetrable to eradication (Deleuze & Guattari, 2009). In the current setting involving AI-generated imagery, an entity must demonstrate a minimum of six fundamental characteristics to be classified as such:

1. A rhizome must establish diverse connections, continuously expanding and forming new relationships.
2. A rhizome must be heterogeneous, avoiding closure upon itself except due to impotence.
3. A rhizome encompasses multiple identities, varying in intensity and magnitude based on its construction, avoiding restriction by any single idea.

4. Rhizomes defy reduction to a single point; if disrupted, they regenerate elsewhere, ensuring their resilience.
5. The trajectory of a rhizome is only mappable, not traceable, resisting replication and suggesting its true freedom.
6. Rhizomes must be transferable, lacking hierarchy and central control, like images on the internet, illustrating their adaptability and decentralized nature.

A closer examination reveals significant parallels and connections between the symbolism of AI-generated images as well as of the rhizome. Each entity and representation challenges established norms by embracing difference and adaptability. AI functions as a decentralized entity in which fluid interactions among its various parts produce emergent results, similar to the rhizome. The non-linear role played by each pixel or component in the overall composition of AI-generated imagery distorts traditional distinctions between the creator and the medium. In the same way, the rhizome defies the concept of centralized authority by placing greater emphasis on decentralized intelligence and collective agency within interconnected systems.

AI-generated images without question contain both symbolic and representational qualities. Nevertheless, restricting the investigation of contemporary imagery to these characteristics neglects the complex multiplicity of processes that function inside as well as outside the image, thus preserving the dominance of contexts that are essential to its conceptual foundations. Despite image relevance in shaping our technological and cultural environment, they are often subjected to random use in modern society. Additionally, it is usual for scientific evaluations of images to prioritize aesthetic characteristics at the expense of the various visual details researched in different areas of study. AI algorithms operating through unique mechanisms such as replication, distribution, and mutation exist autonomously within the subconscious domain of the image, recognizing intricate patterns in imaging data (Romele & Severo, 2023). The AI algorithmic systems and their rhizomatic structure are largely to blame for the proliferation of images in our digital era. Consequently, the concepts of AI-generated images and the rhizome in the digital age exhibit striking parallels and shared characteristics (Grellier, 2013).

Presently, the conception of AI-generated images can be comprehended through a rhizomatic paradigm, forging connections among various nodes through ephemeral and expansive arrangements, diverging, creating intricate networks, continuously expanding and branching out in novel trajectories, rather than originating from a dichotomy between binary classifications of subject and object. The decentralized nature, alongside the ability to create, transform, multiply, and establish unlimited connections, demonstrates an innovative interaction between AI-generated images and the rhizome concept (Grellier, 2013). These images are generated by complex actions involving the generation of matrices and continuous transformations, moving beyond the binary understanding of images and their relationships with objects (Giudice et al., 2021). While human-generated images are often perceived as surfaces offering glimpses into reality, AI-generated images delve into the complexities of entities and their interconnectedness, shedding light on the intricate workings of the world (Agnese et al., 2020). For instance, the imperative for an image to serve as a representation has become obsolete within the fundamental framework of modern-day practices. The act of AI being able to create an infinite number of images provides the opportunity for a complex task that involves a variety of aspects of technology, politics, and aesthetics, which leads to the emergence of a debate about AI-generated images (Romele, 2022). The necessity of vast amounts of information processing has transformed culture into an experimental ground for generative structures propelled by unrestricted regulations. In contemporaneity, the importance of algorithms in modern imagery is a topic worthy of dedicated academic research. It is critical to understand the complex relationship between algorithms and AI-generated images, as well as the rhizomatic approach employed in their development.

Conclusion

The relationship between technology and visual content has gone through significant changes caused by AI. Our research looked at the transition from analog to digital images, and lately with the rise of AI-image generation. AI-generated images challenge established theories of image representation by embracing variety and non-linearity. The vast data processing capabilities of AI systems allow for the

generation of images that test traditional aesthetics and ontology, which needs a reconsideration of image analysis and interpretation. As AI-generated images are increasingly becoming more prevalent, and in doing so, they are reshaping our relationship to visual content. Delving into Deleuze and Guattari's philosophical concept of the rhizome, we may acquire a better understanding of AI-generated images as intricate, non-centralized, and interconnected objects. AI-generated images exhibit rhizomatic characteristics of multiple connections, diversity, adaptability, and distribution, reflecting the dynamic and flexible nature of contemporary digital networks. These images go beyond simple representation and actively contribute to impacting cultural and technical contexts. In addition, the use of algorithms in image generation brings about a new framework in which unpredictability and uncertainty play an essential part in the creative process. They are expanding the limits of our imagination and questioning the apparent divisions between the subject and object. This investigation highlights the need to adopt a rhizomatic perspective to fully grasp the complex nature and capacity to bring about change in AI-generated images in the digital era.

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