

The Ontology of Art in the Age of Post-Mechanical Reproduction:
Reconsidering Conceptual Art and The Phenomenon of Dematerialization

by

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Acknowledgments

I dedicate this thesis to my friend Li Haoming, to our decade-long critical friendship!

This article was written across the pre and post-epidemic and AI eras. If Lucy R. Lippard's *Six Years* chronicles her six years of work with Chandler, this article similarly covers my six-year life journey from age 24 to 29.

The title of the article stems from my reflections leading up to the 2019 epidemic. For me, it was a life journey where technology and conception intertwined. While studying post-conceptual in contemporary art and creating encrypted art with my iPad, I stumbled upon the contradiction between mechanical reproduction and contemporary art, and between NFT and digital reproduction. In 2020, under the guidance of professors Chang Ningsheng and Xing Li, I defined my research direction as Conceptual Art and began to read in depth about it. In 2021, I discovered that this direction was closely related to the phenomenon of dematerialization, and used it my draft to graduate from the Nanjing University of Arts. In 2022, I began to view Conceptual Art as post-philosophical art, and explored the new ontological changes brought about by the phenomenon of dematerialization, and its relationship to the latest generative AI. In my work as an AI designer from 2023 to the present, I have combined generative reproduction with mechanical reproduction to conceptualize a symbiotic ontology of art that does not depend on humans and overturns earlier conclusions about post-mechanical reproduction. In 2024, thanks to the generous support of my dear friend Luo Lang, I completed this paper after taking a hiatus from my work, and I would like to thank him first and foremost for his unconditional support.

I would like to express my special thanks to my supervisors, Prof. Chang Ningsheng and Prof. Xing Li, for their strong support of this not-so-popular (college) topic. Due to such as Benjamin, Conceptual Art, and dematerialization not enough "mainstream", my research was strongly opposed by the faculty committee during the opening and defense of my dissertation, but it was the strong support of my two professors that gave me the confidence to persevere with this six-year research and to finally complete this dissertation.

Special thanks to Prof. Gu Chengfeng, whose proposed writing method of analyzing from the phenomenon has provided me with important ideas for my writing. As my art criticism teacher, I have also benefited greatly from his research on Conceptual Art and art criticism.

Finally, thanks to the anonymous teacher who provided advice during the blind review at the 2021 Academy; although I do not know his identity, his advice gave me confidence and direction. Thank you to Ms. Evelyn at St. Martin's College for her help with the structure and language of the essay, I am deeply honored by her tireless efforts.

Introduction

This thesis is meticulously structured to examine an alternative Ontology of Art in the post-mechanical reproduction era, initiated by the inherent contradiction between mechanical reproduction and dematerialization. It seeks to investigate the ontological shift in art provoked by the phenomenon of dematerialization within conceptual art. Through a rigorous analysis of the dematerialization and informatization phenomena in the conceptual art of the 1960s and 1970s, the central objective of this study is to elucidate why traditional aesthetic definitions of art fail to resolve its ontological dilemmas, and why a more accurate analytical approach must consider how art exists within a new systemic framework. And the thesis is structured in such a way that it begins with problems and contradictions, moves into the study of art history, and finally turns to a philosophical analysis of art.

The thesis is composed of three distinct sections. The first section engages with the contradiction between Walter Benjamin's theory of mechanical reproduction and the irreproducibility intrinsic to conceptual art, setting the stage for the emergence of the conceptual art movement and the notion of post-mechanical reproduction.

The second section delves into the dematerialization in conceptual art, drawing out its consequential impact on the ontology of art. By exploring the informatization of art and the aesthetics of cybernetic systems, it argues that art as information transcends human exclusivity, instead existing as a communicative medium between objects. Additionally, this section critically engages with art historians' and theorists' perspectives on dematerialization.

In the final section, the characteristics of the post-mechanical reproduction era are scrutinized, proposing a redefined concept of post-mechanical reproduction. It asserts that in this era, the ontological question of art has evolved from "What is Art?" to "How Does Art Operate?" The inquiry shifts from defining the essence of art to understanding its functionality within a symbiotic cybernetic system. By challenging earlier philosophies of art, the thesis posits that the primary ontological question in the post-mechanical reproduction era should be: How does art function within a symbiotic cybernetic system?

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Chapter 1:

The Paradox of Mechanical Reproduction and Dematerialization

The dramatic historiographical interlude of papers such as Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction*, which was not well known in the 1930s and only became popular after the author's death in the 1960s, provides the thread that ties all the arguments together in the writing of this paper.

Benjamin explores the way in which mechanical reproduction has shaken the "aura"¹ of traditional art, that is the here and now of a work of art. Technology has changed the way art is appreciated and studied, removing the mystery of the masterpieces. Whereas the unique of the ancient Greek Venus had previously been felt in its aura, mechanical reproduction has made the spirituality of ancient rituals disappear. The work of art has been liberated from its parasitic role of propitiatory ritual function. More and more works of art are created precisely to be reproduced. Which of several photographs developed from the same negative is the original? This is a moot point. The authenticity of art has changed. The function of symbolizing and worshipping artworks has been replaced by the function of disseminating and displaying them, and reproduction and dissemination have even become the reason for creation.

"Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence."²

The unique means that the work of art exists in the here and now of space and time and environment, but what if the "here and now" itself is the work of art?

¹ Walter Benjamin, *The work of Art in the Age of Mechanical Reproduction* (New York, NY.: Prism Key Press, 2012), 1.

² Ibid. 3.

1.1: The Loss of Commonality in

Mechanical Reproduction and the Dematerialization of Art

Give not that which is holy unto the dogs, neither cast ye your pearls before swine, lest they trample them under their feet, and turn again and rend you.

-- *The Holy Bible, Matthews, 7:6*³

However, art's commonality of mechanical reproduction was dramatically lost in the 1960s, when in 1965 Beuys performed *How to Explain Pictures to a Dead Hare*, an act-plot performance in which a grotesquely dressed man sits in a closed room and holds a dead hare in his arms and reads from it. Contrary to the biblical practice of not giving holy things to dogs, Beuys gives art to a dead hare; how to reproduce this art?

Marcel Duchamp's 1917 work *The Fountain*, an industrial urinal signed "R. Mutt 1917," this work, now housed in eight museums, is there an aura to the industrial urinal?

For Kosuth, all art after Duchamp to be conceptual. Duchamp's ready-made⁴ inspired 1960s artists, such as Eva Hesse, who saw him as a pioneer of conceptual art. While some conceptual art can be physically reconstructed, such as Nam June Paik's *Robot-K-467* and *TV Buddha*, others, like John Cage's *4'33"*, which consists of a live performance and audience reaction, highlights how conceptual, performative, and episodic art defies reproduction; each performance is unique.

Dematerialization also extends to time, as illustrated by Richard Serra's 1969 piece *Castings*. Here, a solution of metallic lead is poured into a gallery corner, where it cools and solidifies, making the material's physical reaction unrepeatable. Similarly, land art, while material, its unique natural context, rendering it irreproducible.

As seen in Allan Kaprow's works, the improvisational and ephemeral nature of happenings exemplifies dematerialization. For instance, Kaprow's 1966 piece *Gas* involves a crowd collectively interacting within a specific environment, where the participants' improvisations defy reproducibility.

Dematerialization also manifests in the informatization of art, a concept Joseph Kosuth described as information. In his essay *Art after Philosophy*, Kosuth explored the

³ King James Version, *The Holy Bible old and new testaments, Matthews, 7:6*, (Durham, NC.: Duke Classics, 2007), 2138.

⁴ The notion of ready-made is a term coined by Duchamp around 1915 to refer to his distinctive works. Like *The Wheel* and *The Spring*.

notion of art as information.⁵ Exhibitions such as *Information* at the Museum of Modern Art and *Software* at the Jewish Museum in New York highlighted the influence of information technology on art.

Boris Groys, in his review collection *In the Flow*, addresses the tension between the avant-garde's focus on originality and the erosion of originality in reproductions. His piece, *Modernity and Contemporaneity: Mechanical Reproduction vs. Digital Reproduction*, delves into this contradiction:

"However the artistic avant-garde used the notion of originality in a completely different way than Benjamin used it. Benjamin's concept of originality is obviously rooted in the concept of nature ... an auratic experience that cannot be reproduced without losing the 'here and now'. To be original means here to be inimitable, irreproducible, in fact, natural – because nature is supposed to be inimitable and irreproducible by technical means ... However, for the avant-garde, to be original did not mean to be related to nature. Accordingly, it also did not mean to be inimitability and unrepeatability in the future, but only to be historically new ... In fact, the production of the new presupposes from the beginning its further reproduction. That is why the history of the avant-garde is among other things a history of interminable quarrels about who was the first, who created something original, and who was merely an imitator."⁶

While the avant-garde esteemed originality as a historical innovation, conceptual art transcends mere novelty by significantly challenging the mechanical limitations of its medium. The commonality of mechanical reproduction in photography, film, printmaking, and other arts has waned, replaced by non-reproducibility for various reasons. Drawing from Benjamin's notion of the "age of mechanical reproduction" in the 1930s, this paper proposes the term "age of post-mechanical reproduction" for the period following the 1960s. This term was first introduced in March 1990 at a panel forum organized by the Australian Arts and Technology Network, titled *Art in the Age of Post-Mechanical Reproduction*. Originally, it referred to the transition from mechanical reproduction to digital generative reproduction. Roger F. Malina articulated his perspective at this symposium :

⁵ Joseph Kosuth, "Art after Philosophy", *Studio International*, (London: The Studio Trust, Oct.1969), 134-37; reprinted in Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966-1990*, edited and with an introduction by Gabriele Guercio and foreword by Jean-François Lyotard (Cambridge, Mass.: MIT Press, 1991), 13-32.

⁶ Boris Groys, "Modernity and Contemporaneity: Mechanical Reproduction vs. Digital Reproduction", *In The Flow*, (Brooklyn, NY.: Verso, 1990.02), 137-146.

A different kind of reproduction is made possible by software– this is what I will call post-mechanical reproduction (although a more descriptive term such as 'generative reproduction' is needed). The goal of post-mechanical reproduction is to make copies that are as different as possible from each other, but constrained by a set of initial rules. The prototypical type of post-mechanical reproduction is of course sexual and biological reproduction... The computer is not just a useful tool for mechanical reproduction; rather it is the first tool available to the artist that is ideally suited for post-mechanical, or generative reproduction.⁷

But what is argued here is that "age of post-mechanical reproduction" extends beyond digital reproduction to encompass a philosophical concept relevant to the ontology of art. To grasp the "age of post-mechanical reproduction," it is essential to elucidate the phenomenon of dematerialization, which removes art from the domain of mechanical reproduction, and to address the new issues this engenders. Understanding this age requires a comprehension of how dematerialization disrupts the commonality of mechanical reproduction and the consequent challenges that arise.

1.2: Explaining Pictures to a Dead Hare: Conceptualism Movement

Conceptual Art is not so much an art movement or vein as it is a position or worldview, the focus of an event.

--Ken Friedman, *Notes on Concept Art*, 1971⁸

The earliest use of the term "concept art" was by musician Henry Flynt in 1960. Disillusioned with Fluxus, Flynt introduced the concept in La Monte Young's *An Anthology*, arguing that in his *Concept Art*:

"Concept art" is first of all an art of which the material is "concept, as the material of for ex. music is sound. Since "concepts" are closely bound up with language, concept art is a kind of art of which the material is language."⁹

In his correspondence, Robert Morris supported the notion of "concept" as the language of art. The term "conceptual art" was officially coined in Sol LeWitt's 1967 article *Paragraphs on Conceptual Art*, which outlines the principles and composition of

⁷ Ibid.

⁸ Ken Friedman, "Notes on Concept Art", *Seven Xeroxed Leaflets*, (San Diego: 1971); quoted in Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*. 258-259.

⁹ Henry Flynt, "Conceptual Art", *An Anthology*, edited by La Monte Young & Jackson MacLow, (Bronx, NY.: 1963), 30.

conceptual art: In conceptual art, the idea or concept is the most important aspect of the work ... The idea becomes a machine that makes the art.¹⁰ Joseph Kosuth's essay *Art after Philosophy* stated that works of art are analytical propositions... One begins to recognize the arts "art condition" it is a conceptual state... In other words, the propositions of art are not factual, but linguistic in character.¹¹ Tony Godfrey, in the preface to his book *Conceptual Art*, makes a similar point: conceptual art is not a style, nor can it be limited to a narrow period in time. It is, arguably, a tradition based on the critical spirit...¹² Lucy R. Lippard and John Chandler, in article *The Dematerialization of Art*, stated "ultra conceptual art" emerged from two directions: art as idea and art as action.¹³

Although the term conceptual art comes from Europe and the United States, the conceptualism movement was international, appearing in Japan, Vietnam, Australia, Western and Northern Eastern Europe, the Soviet Union, and North and South America during the 1960s and 1970s, with China only integrating into the global wave after 1990 due to the Cultural Revolution. There is no exact date for the beginning of the conceptualism movement; Lippard suggests 1966–1972, Buchloh suggests 1965–1975, and later historians loosely refer to the late 1960s to early 1970s. It is not the intention of this paper to collate all the conceptual art developmental strands across the globe, nor can it afford to do so: writers such as Peter Osborne, Tony Godfrey, Meyer Ursula, Nick Kaye, Terry Smith, Micheal Corris, and others have done exhaustive surveys of the conceptualism movement in Europe and North America, and Boris Groys, Matthew Jesse-Jackson, Marek Batlik, and Peter Osborne have written on Soviet avant-garde and Moscow conceptualism, Terry Smith has surveyed the conceptualism movements in Australia and New Zealand, Oen Karin and Gu Chengfeng has surveyed after Reform Era China, and Tony Godfrey has done a cursory survey of South American, Scandinavian, and Japanese conceptual art. Benjamin Buchloh and Lucy R. Lippard have also left behind a wealth of documentation as first-hand participants. Given the wealth of literature on Europe and America, this paper will focus on European and American conceptual art.

The complexity of the conceptualism movement arises from its comprehensive scope and the intricate dynamics of global geopolitics, making its interpretation

¹⁰ Sol LeWitt, "Paragraphs on Conceptual Art", *Artforum*, (1967 s:0 Summer1967), 79-83; reprinted in Charles Harrison and Paul Wood (eds), *Art in Theory, 1900-1990: An Anthology of Changing Ideas*, (Blackwell Oxford, 1992).

¹¹ Joseph Kosuth, "Art after Philosophy", *Studio International*, (London: The Studio Trust, Oct. 1969), 134-37; reprinted in Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966-1990*, edited and with an introduction by Gabriele Guercio and foreword by Jean-François Lyotard (Cambridge, Mass: MIT Press, 1991), 13-32.

¹² Tony Godfrey, "What is Conceptual Art", *Conceptual Art*, (London, UK.: Phaidon Press Limited, 1998), 4-16.

¹³ Lucy R. Lippard & John Chandler, "The Dematerialization of Art", *Art International*, (Lugano, Switzerland: James A. Fitzsimmons, 1968), 31-36.

somewhat akin to explaining pictures to a dead hare. As Lippard observed, "I was there, but I don't trust my memory. I don't trust anyone else's either. And I trust even less the authoritative overviews by those who were not there."¹⁴ Conceptual art represents a broad spectrum, encompassing not merely a style or movement but a diverse array of forms including language, text, philosophy, action, performance, behavioral performance, material experimentation, photography, events, natural landscapes, energy, and information. It signifies a global cultural revolution, evolving from a movement into a method and position. The 1999 exhibition *Global Conceptualism: Points of Origin, 1950s – 1980s* showcased conceptual art from around the world. Peter Osborne referred to art that followed conceptual art, which inherited its historical and critical legacy, as post-conceptual, encompassing contemporary practices such as conceptual photography and conceptual architecture.

In addition to Duchamp's Dadaism, conceptual art in the early 1960s was significantly influenced by the anti-aestheticism of Fluxus and the anti-formalism of Minimalism. The Fluxus opened up the question of 'what can be art' for conceptual art, in line with Joseph Kosuth's statement in *Art after Philosophy* that art is the definition of art.¹⁵ On the other hand, Godfrey argues that: Minimalism, if we see it as an attitude rather than a style, was a way of thinking and making which implied that all things could be seen potentially as art or as language.¹⁶

The phenomenon of dematerialization in conceptual art is closely related to Minimalism, which strives to express the maximum content with minimal substance. Minimalism extends the formalism of Greenberg and Clive Bell, who posited that beauty is found in significant form¹⁷. However, conceptual art challenges the notion of form and style, representing a divergence from Minimalist art. As Adrian Piper asserts in *The Logic of Modernism*:

The ideology of Greenbergian formalism undergirded the threat of McCarthyism to render politically and socially impotent a powerful instrument of social change—visual culture potential government censors have always seen far more clearly than artists do; and rationalized that impotence to the castrati.¹⁸

¹⁴ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001), vii.

¹⁵ Joseph Kosuth, "Art after Philosophy", *Studio International*, (London: The Studio Trust, Oct. 1969), 134-37; reprinted in Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966-1990*, edited and with an introduction by Gabriele Guercio and foreword by Jean-François Lyotard (London: MIT Press, 1993), 13-32.

¹⁶ Tony Godfrey, "What is Conceptual Art", *Conceptual Art*, (London, UK.: Phaidon Press Limited, 1998), 115.

¹⁷ In Clive Bell's book *Art* (1914), he describes the "Significant form" as "lines and colors combined in a particular way, certain forms, and relations of forms, that stir our aesthetic emotions."

¹⁸ Adrian Piper, "The Logic of Modernism", *Out of Order, Out of Sight Volume II Selected Writings in Art Criticism 1967-1992*, (Cambridge, Mass.: MIT Press, 2001), 209-214.

Although conceptual art defies definitive characterization, it possesses the following key attributes:

1. Concept First

Conceptual Art is very different from traditional art in form and does not aim to reduce or express an image or describe an object. Sol LeWitt wrote in 1967 in *Paragraphs on Conceptual Art* that "Those that show the thought process of the artist are sometimes more interesting than the final product" and that "The idea itself, even if not made visual, is as much a work of art as any finished product".¹⁹ Lucy R. Lippard, in her exhibition, *Reconsidering the Art Object: 1965-1975*, also referred to the "the idea is paramount",²⁰ and that the idea was the most important part of the work, not the materialized artwork.

2. Dematerialization

In his 1959 lecture at Galerie Sohlborn in Paris, *The Evolution of Art Towards the Immaterial*, Yves Klein posited that the material aspects of art—such as pictures, color, composition, proportion, and perspective—restrict both the artist's and the viewer's freedom. This notion is echoed in LeWitt's *Sentences on Conceptual Art*:

When words such as painting and sculpture are used, they connote a whole tradition and imply a consequent acceptance of this tradition, thus placing limitations on the artist who would be reluctant to make art that goes beyond the limitations.²¹

Lippard's 1968 essay, *The Dematerialization of Art*, explores the diminution of material: "Conceptual Art, for me, signifies work where the idea is paramount, and the material form is secondary, lightweight, ephemeral, unpretentious, or 'materialized'".²²

Consider Robert Barry's 1969 *Closed Gallery*: a notice stating "During the Exhibition the Gallery will be Closed" is posted at the gallery entrance, with the space empty save for the artist pacing. Barry remarked, "Nothing seems to me the most potent thing in the world."²³

In his 1971 work *Text-Context*, Kosuth argued that the "art" is not in the materials used, any more than meaning resides in the phoneme of a spoken sentence: once this

¹⁹ Sol LeWitt, "Paragraphs on Conceptual Art", *Artforum*, (Summer 1967), 79-83; reprinted in Charles Harrison and Paul Wood (eds), *Art in Theory, 1900-1990: An Anthology of Changing Ideas*, (Blackwell Oxford, 1992).

²⁰ Lucy R. Lippard. "Escape Attempts", *Reconsidering the Object of Art: 1965-1975*, edited by Ann Goldsteins & Anne Rorimer, (Cambridge, Mass.: MIT Press, 1995), vii.

²¹ Sol Lewitt, "Sentences on Conceptual Art", *Conceptual Art: A Critical Anthology*, edited by alexander alberro and blake stimson, (Cambridge, Mass.: MIT Press, 1999), 106-109.

²² Lucy R. Lippard. "Escape Attempts", *Reconsidering the Object of Art: 1965-1975*, edited by Ann Goldsteins & Anne Rorimer, (Cambridge, Mass.: MIT Press, 1995), 16.

²³ Ibid.

realization occurs, it becomes evident that all art is conceptual.²⁴

1.3: Global 60s: The American Century Foundered on the Shoals of Vietnam

The 1960s was a period marked by profound complexity on a global scale, characterized by the Cold War, the Iron Curtain, anti-war and anti-capitalist movements, women's liberation, black affirmative action, post-industrial and post-Fordist societies, the Vietnam War, Third World national liberation movements, socialist uprisings, and China's Cultural Revolution, among other dynamics.

Focusing solely on the United States, the social landscape of the 1960s was equally intricate: television emerged as the primary medium for shaping thought and perception, with events such as the Kennedy and Nixon campaigns and the JFK assassination broadcast live. The Beat Generation's influence was palpable in the hippie movement and the cultural vibrancy of San Francisco and Montreal. The struggle for civil rights intensified, culminating in the assassination of Martin Luther King Jr. five years after his iconic *I Have a Dream* speech. Photographers like Larry Burrows met their end in Vietnam, while others, such as Jerry N. Uelsmann, delved into the realm of digital darkroom techniques. The cyberpunk aesthetic found inspiration in Kubrick's 2001: A *Space Odyssey* and Philip K. Dick's *Do Androids Dream of Electric Sheep*. Concurrently, early computer art exhibitions and performances began to emerge, while U.S. and Soviet cosmonauts ventured into space, even as the Vietnam War persisted...

This section will analyze the impact of these major socio-cultural trends on the development of conceptualism during the 1960s.

1.3.1: Feminist Movement and Anti-war Ideology

In the conceptualism movement, a notable surge of female artists emerged, including Marina Abramovic, Yoko Ono, and Eva Hesse. A significant group exhibition of female artists at CalArts showcased prominent feminist figures such as Adrian Piper and Eleanor Antin.

The inexpensive, Happenings, unthreatening character of the Conceptual medias themselves (video, performance, photography, narrative, text, actions) encouraged women to participate, to move through this crack in the artworld's walls. said Lucy R.

²⁴ Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966-1990*, edited by Gabriele Guercio, (London: MIT Press, 1993), 83–88.

Lippard. With the public introduction of younger women artists into Conceptual Art, a number of new subjects and approaches appeared: narrative, role-playing, guise and disguise, body and beauty issues; a focus on fragmentation, interrelationships, autobiography, performance, daily life, and, of course, on Feminist politics. The book is a collection of articles on Feminist politics.²⁵

While Kosuth and others posited that conceptual art represents art after philosophy, emphasizing the role of linguistics, Adrian Piper emerged as the artist with the most profound philosophical engagement. Piper not only critiqued Greenbergian formalism but also noted that the philosophical inquiries of many conceptual artists were often dismissed by the philosophical community.

During this period, the United States was embroiled in the Vietnam War, and a domestic anti-war movement engaged artists. Lippard observed that "conceptual art"—or at least the segment in which she was involved—was deeply intertwined with the political turbulence of the time, despite this spirit arriving in the artworld somewhat tardily.²⁶ In 1969, the Art Workers Coalition (AWC) expanded from a group of art workers into a coalition of anti-war organizations, with figures such as Popoy Johnson and Sylviana forming the Guerrilla Art Action Group. This group opposed not only the Vietnam War but also racial and gender injustices. The involvement of women artists and critics in the conceptual art movement of the mid-sixties, though not fully recognized at the time, mirrored the roles of women in the Left.²⁷

In 1971, Camnitzer penned a letter to Uruguayan President Jorge Pacheco Areco, which stated:

The 5th of November you will simulate normal walking but you will be conscious that for this day Orders & Co. have taken possession of every third step you take. It is not necessary to obsess yourself with this.²⁸

²⁵ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001), xi.

²⁶ Ibid. x.

²⁷ Ibid. xi.

²⁸ The complete content of the letter is as follows:

Dear Dr. Pacheco Areco.

We have decided to put you under our orders.

You will receive orders by mail at your duty time.

The fulfilment of our orders will not occupy too much of your time or energy. We will dispose of certain zones of your time in the future because we consider that an individual with the accumulation of power that you have can only humanise himself by receiving orders. We will dispose of certain zones of your time in the future because we consider that an individual with the accumulation of power that you have can only humanise himself by receiving orders.

In the case of a refusal, at the moment you receive each order, you must communicate it to the press. Copies of our

Camnitzer sought to challenge the dictatorship by invoking the concept of dictatorship itself, ordering the leader to fulfill his duties. Women engaged in politics and society, rebelling against injustice and despotism, and aspired to influence social events. As Hans Haacke remarked in a 1971 interview with Jenny Siegel, participating in society allowed art to deliver its message effectively.²⁹

1.3.2: Mechanical vs. digital reproduction, Fordism vs. post-Fordism, Information and Cybernetics

The 1960s marked the zenith of Fordism's accumulation and its subsequent decline after the 1970s. Prior to Michel Aglietta's introduction of the concept of post-Fordism in 1976, production models distinct from the Fordist or Taylorist systems were already practiced, such as Toyotism in Japan during the 1950s and the Angang Constitution in China in 1960. The term "post-Fordist" was initially employed solely among French Marxist scholars, as Robin Murray noted:

Post-Fordism was the supposed shift away from Fordism to a system of 'flexible specialization'; the application of computer technology to production; specialise and differentiated products; and the decentralization of production.³⁰

Daniel Bell began contemplating post-industrial society in the 1950s, introducing the concept during an Austrian lecture in 1959. His 1973 book *The Coming of Post-Industrial Society* described the characteristics of post-industrial society: 1. a shift from manufacturing to service industries; 2. the application of advanced technology and intelligent systems; 3. the emergence of a knowledge-based value theory.³¹ These

orders will circulate among segments of the Uruguayan population, who, with us, will assume that you are fulfilling these orders unless you publicly express the contrary. Copies of our orders will circulate among segments of the Uruguayan population, who, with us, will assume that you are fulfilling these orders unless you publicly express the contrary.

Oct 5: Our next order is for the 15th of October. That day you will take special care to button your pants before going out into the street. Oct 30: The 5th of November you will simulate norm Oct 30: The 5th of November you will simulate normal walking but you will be conscious that for this day Orders & Co. November you will simulate norm Oct 30: The 5th of November you will simulate normal walking but you will be conscious that for this day Orders & Co. have taken possession of every third step you take. It is not necessary to obsess yourself with this. Orders & Co.

²⁹ Jeanne Siegel, "An Interview with Hans Haacke", *Working Conditions: the Writing of Hans Haacke*, edited by Hans Haacke and Alexander Alberro, (Cambridge, Mass.: MIT Press, 2016), 33-40.

³⁰Max Shock, "To address ourselves 'violently' towards the present as it is": Stuart Hall, *Marxism Today* and their reception of Antonio Gramsci in the long 1980s", *Contemporary British History*, (Oxfordshire, UK.: Taylor & Francis Group, 2019), 7.

³¹ Daniel Bell, "Technology Axis Era", *The Coming of Post-Industrial Society*, translated by Gao Qiao, Wang Hongzhou, and Wei Zhangling, (Nanchang, Jiangxi: Jiangxi Press, 2018), 8-66: The book organizes the characteristics of the post-industrial society: 1. from manufacturing to service industry; 2. changes in specialized and skilled occupations; 3. strengthening of the inheritance of property and education, and weakening of the influence of individual talent; 4. monopoly of financial and human capital; 5. development of technology and smart technology; 6. infrastructure, the infrastructure of the post-industrial society for the means of communication; 7. the theory of the value of knowledge Post-industrial society is based on the theory of the value of knowledge. [my translate]

correspond respectively to the artistic de-technologization, informatization, and rationality pursued by conceptual art.

Both post-industrial society and post-Fordism emphasize the impact of information technology on production and critique the impersonal Fordist system of large-scale industrial production. Whereas Benjamin criticized mechanical reproduction for its mass reproduction of art, post-industrial and post-Fordist reproductions are highly flexible and customized, diverging from the notion of the "original" and no longer involving mass production but rather limited-quantity customization.

Although Groys identified mechanical and digital reproduction as marking a divide between modernity and contemporaneity, generative reproduction today has made art creation remarkably accessible. Machinery has transcended the constraints of repetition, ushering in an era of artificial creativity—generative AI now functions as an algorithmic machine that does not replicate artwork. Recursive algorithms have replaced mechanical repetition, advancing art in terms of originality rather than achieving the "perfect reproduction" Benjamin anticipated.

Theorists such as Osborne and Groys have associated digital technology primarily with the Internet and media distribution, overlooking its connections to information, dematerialization, and artistic ontology. Similar to conceptual art's use of ideas or language to reference objects beyond material constraints, industrial production employs digital information technology as a language to enhance efficiency. However, the dematerialization inherent in conceptual art's use of computers and information technology is often neglected in art historical studies, an oversight that diminishes the potential for conceptual art to address today's technological context.

Research into cybernetics and information theory emerged in the 19th century. Andre-Marie Ampere originally used "cybernetics" to refer to the science of government. Norbert Wiener and Claude Shannon made significant contributions with their seminal works *Cybernetics* and *A Mathematical Theory of Communication*, both published in 1948. Wiener's work, subtitled *or Control and Communication in the Animal and the Machine*, was rooted in his communications engineering research for the military during World War II. He described cybernetics as a means of controlling both machines and societies through information, focusing on core concepts such as feedback loops and self-regulation.

Cybernetics, as introduced by Wiener, is known as first-order cybernetics, dealing with the systematic objects of organisms and machines. William Ashby, Heinz von

Foerster, and Humberto Maturana extended the theory to encompass dynamic systems and incorporated the role of the observer, resulting in what is known as second-order cybernetics. Today, the field encompasses an ecological cybernetic system where algorithmic machines, humans, plants, and animals coexist, and the concept of "third-order cybernetics" is emerging.

Wiener's conception of cybernetics extends beyond communication science to encompass an ambitious social science, a topic that has been extensively discussed by philosophers and scientists since its inception. In his book *The Human Use of Human Beings: Cybernetics and Society*, Wiener stated:

Society can only be understood through a study of the messages and the communication facilities which belong to it; and that in the future development of these messages and communication facilities, messages between man and machines, between machines and man, and between machine and machine, are destined to play an ever-increasing part.³²

Shannon's *A Mathematical Theory of Communication* is considered a seminal work in information theory, presenting a mathematical framework for understanding noise and information in communication systems. Shannon emphasized that his theory was fundamentally probabilistic and engineering-focused, with meaning not inherent in the information itself. Despite this, information theory quickly evolved into an interdisciplinary field, similar to cybernetics. Rolf Randall, in *Information is Physical*, argued that information must have a physical carrier and thus adheres to the laws of physics. Meanwhile, McCulloch developed an information theory that integrated meaning, suggesting that information can exist within a mind-body environment.

In *How We Became Posthuman*, N. Katherine Hayles observed that the pattern/randomness dialectic does not erase the material world; information in fact derives its efficacy from the material infrastructures it appears to obscure. This illusion of erasure should be the subject of inquiry, not a presupposition that inquiry takes for granted.³³

One of the most notable cybernetic practices was the Cybersyn project initiated by the Chilean government under Salvador Allende in the 1970s. This ambitious social system aimed to facilitate socialist reforms by developing a national industrial management network using computers and communications technology. Earlier, during the Khrushchev era in the 1960s, Soviet scientist Victor Mikhailovich Grushkov

³² Norbert Wiener, *The Human Use of Human Beings*, (London: Free Association Books, 1989), 16.

³³ Hayles, N. Katherine. *How We Became Posthuman : virtual bodies in cybernetics, literature, and informatics*, (Chicago: The University of Chicago Press, 1999), 46.

proposed the OGAS system, intended to create a real-time computer network for supervising and controlling resources and production in the Soviet planned economy. Beyond these social implementations, cybernetics has significantly influenced the arts.

In Hans Haacke's work, *Shapolsky et al. Manhattan Real Estate Holdings, a Real-Time Social System*, and in his papers *Systems Esthetics* and *Real Time Systems*, Jack Burnham introduced the concept of "real-time social systems." Burnham stated in his essay:

Presently it will be accepted that art is an anarchaic information processing system, characteristically Byzantine rather than inefficient. To emphasize this cybernetic analogy, programming the art system involves some of the same features found in human brains and in large computer systems. Its command structure is typically hierarchal. At the basic level artists are similar to programs and subroutines. They prepare new codes and analyze data in making works of art. These activities are supervised by metaprograms which consist of instructions, descriptions, and the organizational structures of programs. Metaprograms include art movements, significant stylistic trends, and the business, promotional, and archival structures of the artworld. At the highest level art contains a self-metaprogram which, on a long-term basis, reorganizes the goals of the artimpulse. The self-metaprogram operates as an undetected overseer, establishing strategies on allower levels in terms of societal needs.³⁴

Burnham curated exhibition *Software* (1970), which included artists such as Hans Haacke and Robert Barry and was subtitled *Information Technology: The New Meaning of Art*. Burnham argued that real-time systems "encompass the entire cycle of information processing in art" and that "the artwork is in fact the trigger that mobilizes the information cycle." Notable exhibitions on cybernetics and information include *Cybernetic Serendipity* (1967), *The Machine, as Seen at the End of the Mechanical Age* (1968), and *Information* (1970).³⁵

Heidegger candidly admitted in a 1966 *Der Spiegel* interview that European philosophy was ill-equipped to address a technologized world. When asked what might follow philosophy, Heidegger replied: Cybernetics, he added, is another kind of thinking in which traditional metaphysics no longer offers the possibility of a fundamental impetus in the technological age.³⁶

³⁴ Jack Burnham, "Real Time Systems", *Artforum*, 1968, 30-35. <https://www.artforum.com/features/real-time-systems-210752/>

³⁵ Ibid.

³⁶ Martin Heidegger, "Only one God can save us," *Der Spiegel* 30 (May, 1976): 193-219. Trans. by W. Richardson as "Only a God Can Save Us" in *Heidegger: The Man and the Thinker*, ed. Thomas Sheehan, (Chicago: Precedent

Chapter 2:

The Dematerialization of Conceptual Art in the 1960s and 1970s

The root word "image" need not be used only to mean representation (in the sense of one thing referring to something other than itself). To represent can be defined as the shift in referential frames of the viewer from the space of events to the space of statements or vice versa. Imagining (as opposed to imaging) is not a pictorial or visual representation. Imagination is a projection, the exteriorizing of ideas about the nature of things seen. It reproduces that which is initially seen. Imagination is a projection, the exteriorizing of ideas about the nature of things seen.

--Mel Bochner, "Elements from Speculation (1961-1970)", 1970³⁷

Although the phenomenon of "dematerialization" in conceptual art was first articulated by Lucy R. Lippard and John Chandler in 1967, the concept was originally introduced by Soviet avant-garde artist El Lissitzky in his 1926 essay *The Future of the Book*, published in the *Gutenberg Yearbook*:

The idea moving the masses today is called materialism, but dematerialization is the characteristic of the epoch. For example, correspondence grows, so the number of letters, the quantity of writing paper, the mass of material consumed For example, correspondence grows, so the number of letters, the quantity of writing paper, the mass of material consumed expand, until relieved by the telephone. Matter diminishes, we dematerialize, sluggish masses of matter are replaced by liberated energy.³⁸

Lissitzky's notion of dematerialization centered more on information and energy. In the era of conceptual art and information technology, this issue has been further

Publishin, Inc, 1981), 45-67. <https://www.ditext.com/heidegger/interview.html>

³⁷ Mel Bochner, "Elements from Speculation (1961-1970)", *Artforum*, (May. 1970, VOL. 8, NO. 9.). <https://www.artforum.com/features/excerpts-from-speculation-1967-1970-210583/>

³⁸ Al Lissitzky, "The Future of Book", *New Left Review*, (1967), 37-44. <https://newleftreview.org/issues/i41/article/s/el-lissitzky-the-future-of-the-book>

magnified.

2.1: The Phenomenon of Dematerialization in Conceptual Art

Some have contended that describing conceptual art as "dematerialization" is inaccurate since elements such as images, texts, and language are also objects. However, Lucy R. Lippard argues that:

And since I first wrote on the subject in 1967, it has often been pointed out to me that dematerialization is an inaccurate term, that a piece of paper or a photograph is as good as a photograph. an inaccurate term, that a piece of paper or a photograph is as much an object, or as "material," as a ton of lead. Granted. But for lack of a better term I have continued to refer to a process of dematerialization, or a deemphasis on material aspects (uniqueness, permanence, decorative attractiveness).³⁹

Lippard defines dematerialization as the process of converting art into a state or dynamic by utilizing minimal and organized material elements to achieve the artist's intent.

2.1.1: The Dematerialization of Conceptual Art

As Flynt noted, Conceptual Art employs language as its primary material. Early conceptual art drew influence from Minimalism, which rejected reliance on imagery, materiality, commodification, and stylization, advocating instead for a reduction in media and the pursuit of the most simplified form and content. Although conceptual artists often traced their ideas to Duchamp, their work more closely resembled Rene Magritte's approach. Magritte's 1928 and 1968 paintings titled *This Is Not a Pipe*—a depiction of a pipe accompanied by the text "Ceci n'est pas une pipe".

Initially, conceptual artists favored text over imagery, but they later adopted a more flexible approach, incorporating various mediums to enhance their expression. For instance, Joseph Kosuth's *One and Three Chairs* consists of three components: a wooden chair, an image of a chair, and a textual definition of a chair. This use of language and text in conceptual art, which Kosuth refers to as the "linguistic turn," reflects its broader trend toward dematerialization.⁴⁰ In *Conceptual Art 1962–1969*, Buchloh stated that the inherent problem of conceptual art is the replacement of the object of spatial and perceptual experience with linguistic definitions (the work as an analytical proposition)

³⁹ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001), 5.

⁴⁰ Joseph Kosuth, "Art after Philosophy", *Studio International*, (London: The Studio Trust, Oct. 1969), 134-37; reprinted in Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966-1990*, edited and with an introduction by Gabriele Guercio and foreword by Jean-François Lyotard (London: MIT Press, 1993), 13-32.

alone...⁴¹ Both Kosuth and LeWitt's works frequently incorporated physical, visual, and textual elements. As LeWitt articulated: art itself becomes conceptual; matter is not the only means of expression.⁴²

In 1968, British conceptual artists, led by Michael Baldwin, established the transatlantic Art and Language Group, which operated primarily in London and New York. The following year, the group released the first issue of the journal *Art and Language*, subtitled *Conceptual Art Magazine*, with Kosuth, Bochner, and Charles Harrison serving as successive editors. As Nick Kaye has argued:

The art historical narrative of Anglo-American Conceptual Art tends to cohere around a definition of language-centric practices in visual art in the later 1960s: practices that explicitly and critically rejected the perceived hegemony of the New York School of abstract art and its associated formalist critical narratives while also self-consciously overtaking the phenomenological emphasis of Minimalism.⁴³

Robert Smithson organized four language-themed exhibitions between 1967 and 1970: *Language I*, *Language II*, *Language III*, and *Language IV*. In an interview, he stated, "I am concerned with the physical properties of language and materials; I don't think of them as discrete; they are all physical entities." Mel Bochner believed that language expresses more than physical objects and images and is a more efficient means of expression. In *Conceptual Art and/or Philosophy*, Osborne argued:

I shall refer to those who advocate an expansive, empirically diverse and historically inclusive use of the term 'Conceptual Art' (such as Sol LeWitt) as inclusive or weak Conceptualisms. I shall call those championing more restricted, analytically focused and explicitly philosophical definitions (such as Kosuth and the British group Art & Language) exclusive or strong Conceptualisms.⁴⁴

2.1.2: The Dematerialization of Process Art

Process art refers to American sculpture or installation art from the mid to late 1960s and 1970s, characterized by an emphasis on the process of creation. The term

⁴¹ Benjamin H. D. Buchloh, "Conceptual Art 1962-1969: From the Aesthetic of Administration to the Critique of Institutions", *October*, (Vol. 55. Winter, 1990) (Cambridge, Mass.: MIT Press, 1990), 105-143.

⁴² Sol LeWitt, "Paragraphs on Conceptual Art", *Artforum*, (1967 s:0 Summer1967), 79-83; reprinted in Charles Harrison and Paul Wood (eds), *Art in Theory, 1900-1990: An Anthology of Changing Ideas*, (Blackwell Oxford, 1992).

⁴³ Nick Kaye, "From Language to performance", *Conceptual Performance: Enacting Conceptual Art*, (New York: Routledge, 2024), 4.

⁴⁴ Peter Osborne, "Conceptual Art and/as Philosophy", *Philosophy in Cultural Theory*, (New York: Routledge, 2000), 86-102.

"process" encompasses meanings such as method, craft, and procedure. Robert Morris's 1968 article *Anti-Form*⁴⁵ advocated for art that emerges naturally, free from human interference, arguing that any such interference is unnatural. This theoretical stance underpins both Happenings and process art. Process art involves arranging and controlling the materials according to their physical and chemical properties, requiring a deep understanding of these materials. Morris focused on the inherent nature of the materials and suggested that only Jackson Pollock could truly restore the process.

Jackson Pollock's action painting recorded the creative process through images, exhibiting them as independent works of art rather than as mere by-products. Yves Klein, another pioneer of process art, used similar methods in his 1960s work *Anthropometry of the Blue Period*, where a female model's body, stained with paint, was printed on canvas. Like Pollock, Klein used the process itself for publicity and display.

Although process art relies on the physical, it can also be understood through the lens of dematerialization. The art object is not the material product or residue of the physical process but rather the entire process of creation. Morris argued that the random piling and loose stacking of materials do not impose preconceived permanence or order, rendering the "process" itself as the artwork invisible.⁴⁶

Eva Hesse's *Addition 3* (1968) employs the chemical properties of fiberglass and carbonate resin, creating a new substance through reactions in an unstable environment. The essence of this artwork is not the final material or image presented but the process and time involved. The final material is merely a result, not the entirety of the art. For some works, the process is continuous, with chemical reactions evolving unpredictably with environmental conditions, thus perpetuating the art-making process.

Process art also challenges materiality in other ways. Richard Serra's *Candles Piece* involves a row of burning candles, which eventually consume themselves. While the process can be reproduced, the residue remains an ephemeral artifact.

Time serves as a medium in process art, with the process often presented through temporal documentation. For instance, Robert Morris's *Continuous Project Altered Daily* (1969) uses a video camera to record daily activities in the studio. This work relies not on special materials or properties but on the passage of time and the artist's ongoing documentation of his work.

Both process and time, as means or ends, function as ideas in art. Various works utilize these concepts to achieve specific effects or explore themes. Time, being the most crucial and indispensable material, underscores the significance of process art,

⁴⁵ Robert Morris, *Anti-Form*, *OCTOBER*, (Cambridge, Mass.: The MIT Press, 1993), 41-47.

⁴⁶ *Ibid.*

reflecting its inherent focus on temporal and conceptual dimensions.

2.1.3: The Dematerialization of Performance Art

Peter Osborne argues that all performing arts are dematerialized, constituted through disappearance in time, and only persist at the conceptual level as time passes and history evolves⁴⁷, Lippard has also noted that performances of conceptual art often involve disappearance: again, this includes unseen actions, indeterminate realizations or performances that are only confirmed by proclamations, fictional records or rumors⁴⁸.

Performance art began to gain prominence in the early 1960s, and by the early 1970s, it was recognized as non-theatrical art, with the term "Live Art" emerging more frequently by the late 1970s. During the twentieth century, performance was viewed as an open and limitless medium, offering artists a means to break conventional boundaries and explore new forms of expression. The original Dadaists in Zurich, who were poets, cabaret artists, and performers, exemplified this experimental spirit.

In performance art, the act of performing itself constitutes the medium or art. Despite being dismissed from the Dusseldorf Academy in 1973 for this innovative approach, Beuys still believes that "to be a teacher is my greatest work of art... objects aren't very important for me anymore. I want to get to the origin of matter, to the thought behind it... I think that the formation of thought is already sculpture",⁴⁹ the concept of role-playing was already integral to sculpture (or art), demonstrating performance art's emphasis on dematerialization.

The dematerialization in Happenings is more radical than in performance art. The term "Happening," coined by Robert Kaprow in 1959, refers to an artistic state of creation, as exemplified by his 18 Happenings in 6 Parts, performed in New York's East Village. Unlike traditional theater, which relies on fixed roles, scripts, and environments, Happenings is characterized by its freedom to unfold in various venues, often guided by the environment and performers' instincts.

For Jim Dine, Happenings were "interpretations of everything in everyday life", such as The Smiling Worker and Vaudeville Acts, made around 1960, the former on a stage table with three tubes of paint and two brushes, the artist painted red, with a black mouth and a shirt that reads "I LOVE WHAT I'M DOING, HELP". He drinks from a jar of paint, pours it over his head and onto a canvas, and so on. In the latter, Dine takes the stage in a red suit full of cotton and pulls the cotton around in time to the music. These

⁴⁷ Peter Osborne, "Conceptual Art and/as Philosophy", *Philosophy in Cultural Theory*, (New York: Routledge, 2000), 20.

⁴⁸ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001).

⁴⁹ Joseph Beuys, "An Interview with Joseph Beuys", edited by Marianne Landré and Liza Béar, *Art Forum*, 1969. <https://www.artforum.com/features/an-interview-with-joseph-beuys-210674/>

performances are random, improvised, absurd, and informative sensory stimuli.

Happenings and performance art are often conflated due to their shared elements of behavior and performance, yet their distinctions are clear. Performance art emphasizes planning, predetermination, and interaction to fulfill artistic objectives. In contrast, Happenings prioritize randomness, improvisation, and spontaneity.

Performance art is conducted within a predetermined context established by the artist. Although elements of chance may be present, the environment and outcomes are intentionally set up by the artist. For instance, Marina Abramovic's *Rhythm 0* (1974) featured a controlled setting where the audience could use a variety of tools—flowers, scissors, lipstick, and even a pistol—on the artist. Despite the apparent openness, Abramovic had anticipated the audience's possible actions and had established limits for their behavior, including legal disclaimers. The performance began with cautious interactions but escalated to violence, illustrating the controlled yet dynamic nature of performance art.

In contrast, Happenings are characterized by their unstructured and spontaneous nature. Artists like Red Grooms used improvisation in their Happenings, often performing roles and creating plots on the spot, driven by audience reactions and live elements. For example, in *Man Walking Up* (1984) and *The Burning Building* (1959), Grooms' performances were unscripted and contingent on immediate responses from the audience and other actors, demonstrating the open-ended nature of Happenings.

Happenings originated from Black Mountain College's explorations of performance and gained widespread popularity in the 1960s. Unlike performance art, which flourished globally across various media, including art galleries, concerts, and theaters, Happenings remained more localized and spontaneous.

Keith Arnatt's *Is It Possible For Me To Do Nothing As My Contribution To This Exhibition?* (1970) exemplifies dematerialization in performance art. In this work, Arnatt's absence from the exhibition space resulted in a completely void experience for the viewer, paralleling Robert Barry's *Closed Gallery* in its emptiness and conceptual intent.

In addition to Happenings and Performance Art, Body Art emerged as a significant genre in the 1960s, characterized by the use of the artist's own body as the primary medium. This term evolved from early 1960s speeches and performances where artists employed their bodies for both dynamic and static expressions. Body art emphasizes the artist's physical presence and actions as a central component of the work.

A notable Body Art performance from this era was Yoko Ono's *Cut Piece* (1965) at

Carnegie Hall. In this performance, Ono sat on stage and invited audience members to cut away pieces of her clothing until she was left bare. This act was a profound commentary on violence and aggression. Although Ono never officially aligned herself with Fluxus, George Matthews has identified her as a central figure in the movement, and Lucy R. Lippard has referred to her work as "independent proto-Conceptual work."⁵⁰

Body art also intersected with the Feminist movement, with a significant number of female artists engaging in performance art throughout the 1960s. Lucy Lippard highlighted this trend by curating an exhibition of women artists in Buenos Aires in 1970, which was the third in a series of tours featuring over 20 women artists, and Lippard wrote on the catalog card: "This is my angry response to those who say, 'There are no women making conceptual art'".⁵¹

Another prominent figure in body art was Ana Mendieta, a Cuban-American artist known for her provocative works. In *Rape Scene* (1973), Mendieta responded to a school rape incident by staging a performance in which she strapped herself to a table, naked from the waist down, and covered in blood, simulating a rape scene. This work used the artist's body as a medium to address and critique violence against women, exemplifying the intense and personal nature of body art.

2.1.4: The Dematerialization of Land Art

The dematerialization of land art is expressed in the use of energy and the natural environment, as well as in anti-urbanization and anti-industrialization. As Lippard argues, quoted earlier, dematerialization represents a process of dematerialization.⁵² Lucy Lippard's view is that dematerialization of land art is the de-artifactualization of things, such as artists' use of natural landscapes, social landscapes, and energies, and that landscapes, while material, are not industrial or artisanal.

Land art, emerging at the end of the 1960s, is an art form that transcends national boundaries and has been developed globally. This genre involves using the natural environment or human-altered landscapes as its medium, often resulting in works that are integrated into or shaped by the landscape itself. Many land art pieces address themes of industrial production, human impact on the environment, and ecological reflection. Historical precedents for land art include prehistoric megalithic monuments in England. While the terms "Land Art," "Earth Art," and "Earthworks" are often used interchangeably, many artists working in this genre do not necessarily identify their

⁵⁰ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001). xii.

⁵¹ Ibid, xi.

⁵² see quote. 41.

work as land art. Instead, they view their projects as part of a broader, exploratory practice.

Robert Smithson's essay *Dialectic of Site and Non-Site* serves as a theoretical underpinning for his work *The Spiral Jetty*, explored a binary dialectic between physical matter and conceptual ideas, which unfolds through a series of contrasting perspectives. This dialectic frames the tension between the tangible aspects of the artwork (site) and its conceptual underpinnings (non-site), reflecting on the interplay between the material and the intellectual dimensions of art.⁵³

	Site	Nonsite
1.	Open Limits	closed Limits
2.	A Series of Points	An Array of Matter
3.	Outer Coordinates	Inner Coordinates
4.	Subtraction	Addition
5.	Indeterminate Certainty	Determinate Uncertainty
6.	Scattered Information	Contained Information
7.	Reflection	Mirror
8.	Edge	Center
9.	Some Place (physical)	No Place (abstract)
10.	Many	One

Peter Osborne points out that:

Smithson's initial use of 'non-site' to refer to the location of physical material displaced from a site to a place at which that site is represented (an art institution) here becomes transformed, via the mechanism of representation, to denote the function of representation itself. Hence the subsequent derivation of the concept of the 'functional site' from the spatial generality of the non-site, giving Smithson's dialectic a further axial turn. This socio-spatial dialectic, immanent within the artwork under the economic and communicational conditions of globalization, derives its temporality from the novel historical temporality of 'contemporaneity'.⁵⁴

The most iconic example of land art is Walter de Maria's 1977 installation *The Lightning Field*, which involved erecting 400 stainless steel poles in the New Mexico

⁵³ Robert Smithson, "The Spiral Jetty." *Arts of the Environment*, edited by Gyorgy Kepes, (New York: G. Braziller, 1972), 222-232, <https://holtsmithsonfoundation.org/spiral-jetty-1>

⁵⁴ Peter Osborne, *The Postconceptual Condition: Critical Essays*, (Brooklyn, NY.: Verso, 2018), 1-19.

desert to capture lightning strikes. This work's fascination lies in its use of natural phenomena and energy, embodying the concept of dematerialization through its integration with the environment.

Dennis Oppenheim's *SFAI Gallery* (1969) served as another significant example. In this piece, Oppenheim placed the dimensions of the San Francisco Art Institute's gallery on an abandoned oil field, documenting the work through photography and prints. Nick Kaye observed that for Oppenheim, this act of displacement also represented a form of dematerialization, emphasizing the conceptual over the physical. Oppenheim himself noted in a 1996 interview that his land art was characterized by its intangibility: "You can't see the work, you can't own the work, you can't buy the work."⁵⁵

Claes Oldenburg's *Spirit of the Monument* (1967) involved digging a large hole in New York's Central Park and then filling it in hours later. This piece was intended as a satirical commentary on the destruction wrought by U.S. military actions in Vietnam and as a reflection on the nature of monuments. The material used – land and mounds – highlighted its natural and ephemeral quality.

The dematerialization inherent in land art is further illustrated by the ambiguity surrounding the artwork's status. Often, these works cannot be fully exhibited; they exist transiently in the landscape or only in documentation. The viewer's experience may be limited to images and textual descriptions, rather than the physical presence of the artwork itself. This characteristic underscores the dematerialization of land art, where the art's physicality is often secondary to its conceptual and environmental context.

Land art's use of man-made landscapes is even more evident in the group of wrapped buildings by another pair of American artists, Christo and Jeanne-Claude, who traveled to the coast near Sydney, Australia, in 1969, and wrapped the coastal cliffs in huge white fabric products. The length of the wrapped coast was more than 1,600 meters and was spectacular. This group of works known as *Wrapped Coast* is the couple's prologue to the wrapping of buildings and natural landscapes, after which they have a lot of works related to wrapping, such as *Vally Curtain* in 1970, *Surrounded Islands* in 1980, "Wrapped Reichstag" in 1995, etc., all of these works are made of huge cloth fabrics will be the natural landscape or man-made landscapes combined, and the scene is particularly grandiose, very grand. These works are all made of huge fabrics combining natural or man-made landscapes, and are generally very grand and spectacular, and some of them have become man-made landscapes for a long time for people to enjoy. Although landscapes also involve materiality in their creation, they ultimately become

⁵⁵ Nick Kaye, *Conceptual Performance: Enacting Conceptual Art*, (New York: Routledge, 2024), 15.

man-made landscapes. In addition, the dematerialization of land art is also manifested in its anti-industrialization and anti-urbanization tendency, which isolates artworks from the industrialized environment.

Almost most conceptual artists rely on ideas, reason, and thinking, so much so that Lucy Lippard once said that "conceptual artists have changed the studio into a study", a utopian attempt to escape from the art system and the market, and away from galleries and museums. But the land artists are different from those conceptual artists who think about their ideas in the study, they "escape" to the countryside, "escape" to nature, and use the landscape (not as an art or craft product to be viewed and sold) as a medium for de-materialization, which is a response to the mechanization of art.

Land art's use of man-made landscapes is prominently illustrated by Christo and Jeanne-Claude's *Wrapped Coast* (1969). In this ambitious project, the artists wrapped the coastal cliffs near Sydney, Australia, in vast swathes of white fabric, extending over 1,600 meters. This work marked the beginning of their exploration into wrapping natural and architectural forms, which they continued with notable projects such as *Valley Curtain* (1970), *Surrounded Islands* (1980), and *Wrapped Reichstag* (1995). These works involve the use of large fabric sheets to envelop natural or man-made landscapes, creating grand, temporary installations that often become iconic landmarks in their own right.

The wrapped artworks by Christo and Jeanne-Claude highlight both the material and conceptual dimensions of land art. Despite their use of physical materials, these works often transcend their materiality, emphasizing the visual and spatial transformation of their environments. This process of wrapping and the resulting spectacle reflect a deliberate engagement with the landscape, challenging traditional notions of art as a marketable commodity and promoting a form of dematerialization through their ephemeral nature.

Land art, in general, demonstrates an anti-industrial and anti-urbanization stance by physically situating artworks outside the conventional gallery or museum spaces. This separation from industrial environments and urban settings underscores land art's critique of mechanization and commercialization in the artworld.

In contrast to conceptual artists, who often use the studio as a space for intellectual exploration and theoretical work, land artists physically "escape" to nature, using landscapes as both a medium and a commentary on art's relationship to industrialization. As Lucy R. Lippard observed, conceptual artists have transformed the studio into a

study,⁵⁶ striving to detach from traditional art institutions. Land artists, by immersing themselves in natural environments, embody a different form of dematerialization, one that responds to and critiques the mechanization of art by re-engaging with the natural world.

2.2: Cybernetic Serendipity: The Informatization of Art

As early as 1963, Ivan Sutherland's doctoral dissertation at the MIT Media Lab, titled *Sketchpad: A Man-Machine Graphical Communication System*, introduced one of the earliest interactive systems for drawing. This groundbreaking system supported users in creating drawings using light pens and geometric wireframes. Many features of Sketchpad, such as high magnification for zooming in and out of drawings and curve control, laid the foundation for modern graphic design software.

Before the advent of digital computers, Ben Lapotsky created the first analog computer artwork, *Electronic Abstractions*, in 1952. This work utilized a transistor computer and a tube monitor, marking a significant milestone in the intersection of art and technology. Additionally, in 1954, the Center for Computer Music at Columbia University hosted computer music performances at MoMA, further exploring the artistic potential of computational technology. The introduction of computers signified a departure from the rigid schematization of mechanical production, transforming machines into organic, creative entities. This shift allowed for a new form of human-machine synergy, where machines played an active role in the creative process. Heather A. Love's explanation in *Cybernetic Aesthetics* is that:

As I have discussed, cybernetics is understood to have emerged around World War II as a techno-scientific field of study that employed statistics and probability to develop machines capable of high-speed, high-volume data-processing. These machines' basic goal was to enable the transmission of useful information – that is, to facilitate communication and the ability to incorporate feedback – at rates that exceeded the scope of human cognitive processing. These machines' basic goal was to enable the transmission of useful information – that is, to facilitate communication and the ability to incorporate feedback – at rates that exceeded the scope of human cognitive processing.⁵⁷

Yuk Hui, in his book *Art and Cosmotechnics*, explored the relationship between art

⁵⁶ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001), x.

⁵⁷ Heather A. Love, *Cybernetic Aesthetics: Modernist Networks of Information and Data*, (Cambridge: Cambridge University Press, 2024), 50.

and automation, reflecting on how technological advancements reshape artistic practices.

The fact is that we are no longer dealing with the mechanistic beings of the nineteenth century like steam engines, but rather with technical systems becoming organic. The fact is that we are no longer dealing with the mechanistic beings of the nineteenth century like steam engines, but rather with technical systems becoming organic. This becoming organic and reflective is based on the concepts of feedback and information, a foundation already established by Norbert Wiener in 1948. We are no longer in an epoch of repetitive mechanical reproduction, but rather of recursive digital reproduction. This takes a very different form, which increasingly resembles the organic mode of reproduction in plants and animals, but with much higher capacity and speed of mutation.⁵⁸

2.2.1: The Cybernetic Serendipity and the Telegraph without Information

Cybernetic Serendipity: the Computer and the Arts opened at the Museum of Contemporary Art, London, in August 1968. The exhibition sought to explore the intersection of science and art, highlighting the stochastic systems utilized by artists, composers, and poets, as well as those involved in the creation and application of cybernetic systems. Among the notable figures were computer scientists and artists such as Michael Noel, Norman Downton, D. P. Henry, and Nam June Paik, alongside musicians John Cage, Joseph Schillinger, and Peter Chinoviev, with contributions from around the globe. The exhibition was organized into three sections:

1. Computer-generated graphics, computer-animated films, computer-composed and -played music, and computer poems and texts;
2. Cybernetic devices as works of art, cybernetic environments, remote-control robots and Picturesmachines;
3. Machines demonstrating the uses of computers and an environment dealing with the history of cybernetics. environment dealing with the history of cybernetics.⁵⁹

John Cage noted in his 1966 diary:

Are we an audience for computer art? The answer's not No; it's Yes. What we need is a computer that isn't labour-saving but which increases the work for us to do, that puns (this is McLuhan's idea) as well as Joyce revealing bridges

⁵⁸ Yuk Hui, *Art and cosmotechnics*, (Minneapolis, MN.: the University of Minnesota Press, 2021), 211.

⁵⁹ Jasia Reichardt, *Cybernetic Serendipity: the Computer and the Arts*, (London: Studio International, 1968), 5.

(this is Brown's idea) where we thought there weren't any, turns us ('my idea) not 'on' but 'on'. my idea) not 'on' but into artists.⁶⁰

For works related to computer projects, John Severson's *Computer Structures* stands out. In this piece, viewers are invited to select elements to interact with the computer, allowing them to create graphic works. In his introduction, Severson delves into the manner in which these works exist:

The work of art exists in many physical states: electric impulses in the brain of the artist, verbal dictations to the programmer, flow chart on paper, punched on cards, printed as output, displayed on cathode ray tube, and translated to some other physical state determined by the spectator and the programmer. The work of art exists in many physical states: electric impulses in the brain of the artist, verbal dictations to the programmer, flow chart on paper, punched on cards, printed as output, displayed on cathode ray tube, and translated to some other physical state determined by the spectator and artist. Thus the computer is used as a tool for the spectator and artist, it does not produce art, but is used to manipulate thoughts and ideas which could be called art. It does not produce art, but is used to manipulate thoughts and ideas which could be called art.⁶¹

Gordon Pask's *The Colloquy of Mobiles* depicted a system of mobile devices, each equipped with attributes and programs, capable of interaction, collaboration, or competition, akin to contemporary social media platforms. Nicholas Schoffer envisioned a cybernetic light tower that would function as both a cityscape element and a meteorological tool.

Norman Toynton critiqued anthropocentrism through his cartoon depicting a nun praying to a robot, while D. P. Henry presented his *Henry Drawing Computer* alongside other drawing machines created by scientists. The exhibition also included written works, such as a Japanese haiku generator program for online human-computer interactions, a modern poetry program, and various computer programming dances. Additionally, the display featured computer equipment, images, and paintings.

Joseph Schillinger, who documented mathematical theories of music before the advent of computers, applied these theories to compose music. In his 1966 book *Mathematical/Musical Foundations*, he noted that converting Bach's or Handel's music by a factor of 2 could produce high-quality compositions in the style of Debussy.⁶²

⁶⁰ Ibid. 24.

⁶¹ Ibid. 32.

⁶² Ibid. 17, Schillinger's book, *The mathematical basis of the arts*, (New York: Philosophical Library, 1966).

Michael Noll employed a computer program to explore Mondrian's abstract paintings, producing a series of experimental works in both Mondrian style and fractal art. In his exhibition survey, viewers often struggled to distinguish between Mondrian's originals and Noll's computerized pieces, with 72 participants even mistaking Mondrian's works for computer-generated creations. Noll, a computer scientist, documented his endeavors in computer graphics, which began at Bell Tele-Labs in 1962, in his article *The Beginnings of Computer Art in the United States: A Memoir*.

Joseph Schillinger's and Michael Noll's computational and mathematical approaches to art analysis closely align with Amanda Wasielewski's *Computational Formalism*. This contemporary theory uses neural networks to analyze artistic styles through unsupervised machine-learning algorithms, differing from Greenberg's formalism.⁶³

Following Trump's assassination in 2024, internet users shared computersimulated ballistic parsing videos. Similarly, in 1968, the CTG group in Japan produced simulations of JFK's assassination, including images titled *Shot Kennedy No.1* and *Diffused Kennedy*. The computer art exhibitions of the 1960s encompassed many elements now prevalent in algorithmically-generated art, such as computational formalism, generative algorithms, computer programming, choreography, and simulated reality. In his 2018 publication *The Post-Conceptual Condition*, Osborne discussed the post-conceptual condition as being doubly encoded, intertwined with artistic scenarios and the constraints imposed by communication technologies and new spatial relations.

⁶⁴ Despite the progress and impact of computer-generated imagery, digital photography has long dominated mass media and art institutions. However, within just five years, AI-generated imagery has swiftly surpassed digital photography as the leading presence on social media.

The cybernetic exhibition *The Machine, as Seen at the End of the Mechanical Age*, held at MoMA in New York in November 1968, featured works by Leonardo da Vinci, Wen-Ying Tsai, and Robert Rauschenberg, among others. This exhibition made a strikingly bold statement about the end of the mechanical age. Rauschenberg's E.A.T. (Experiments in Art and Technology), established in 1966, represents a technological art collective that continues to operate today, with notable members including Andy Warhol and John Cage. The group was initiated following their meeting at the *Art and Technology Festival* in Stockholm in 1964, where they conceived the idea of creating a

⁶³ Amanda Wasielewski, *Computational Formalism: Art History and Machine Learning*, (Cambridge Mass.: The MIT Press, 2023), 30-33, Computational Formalism is a research method that applies machine learning to art history. Computational Formalism is a research method that applies machine learning to art history.

⁶⁴ Peter Osborne, *The Postconceptual Condition: Critical Essay*, (Brooklyn, NY.: Verso, 2018)

collaborative platform involving computer scientists, engineers, artists, and musicians.

On July 2, 1970, Kynaston L. McShine's *The Message* exhibition opened at the Museum of Modern Art in New York, and later toured North America and Europe. The exhibition could be described as a collection of conceptual artists: LeWitt, Kosuth, Newman, Lippard, Yoko Ono, Barry, Hacker, Klein, and more than 100 others. The message of conceptual art is not a message in the sense of engineering, emphasized in Kosuth's exhibition essay:

Every unit of an (art) proposition is only that which is functioning with a larger frame work (the proposition) and every proposition is only a unit which is functioning within a larger framework (the investigation) and every investigation is only a unit which is functioning within a larger framework (my art) and my art is only a unit which is functioning within a larger framework (the concept "art") and my art is only a unit which is functioning within a larger framework (my art). (the concept "art") and the concept art is a concept which has a particular meaning at a particular time but which exists only as an idea used by living artists and which ultimately exists only as an idea used by living artists. The concept art is a concept which has a particular meaning at a particular time but which exists only as an idea used by living artists and which ultimately exists only as information.⁶⁵

The *Information* exhibition highlighted that the ontological questions surrounding art had evolved and become predictable through algorithms. Mel Ramsden wrote:

However, we contend that, since "art-object" is being credited with some measure of ontological status, we are not involved, on this level at least, in any Ontological assertions. However this again allows undue emphasis to be awarded to the subject of the proposition, ie. the objects about "of art" which is being predicated. However this again allows undue emphasis to be awarded to the subject of the proposition, ie. the objects about which "of art" is being predicated.⁶⁶

In September 1970, Jack Burnham's exhibition *Software* at the Jewish Museum in New York, subtitled *Information Technology: Its New Meaning for Art*, featured works by conceptual artists and computer scientists, including Hans Haacke, Kosuth, and Nicholas Negroponte. Burnham drew an analogy between the intangibility of information and the "dematerialization" of art. Influenced by Edward Fry, Burnham published

⁶⁵ Kynaston L. McShine, *Information*, (New York: The Museum of Modern Art, 1970,) 69.

⁶⁶ Ibid. 32.

essays such as *System Esthetics* and *Real-Time System*, and shared with Mel Ramsden the realization that art and aesthetics could be emulated by information.

At *Software*, Negroponte presented the *SEEK Intelligent Building System*, a cybernetic system consisting of a SEEK computer system and a 20-inch building block "city" with gerbils. In his book *Being Digital*, Negroponte predicted making machines more akin to people, envisioning a future where information becomes personalized, with domestic robotics, the Internet of Things, education, and the arts all becoming computerized.

In his essay *The Work of Art in the Age of Information: Technology and Conceptual Art*, Edward Shanken discusses how art historians have treated technological art separately from conceptual art. The former examines the relationship between art and technology through history, while conceptual art emerged as a critique against conventional formalism, not as a specific genre or style but as a process of meta-critique and self-reflection.

2.2.2: Information and Conception

Admittedly, the generative art of the 1960s was rudimentary compared to today's generative AI, but it was already characterized by generative reproduction. Information in conceptual art extends beyond mere engineering and communication, or Shannon's concept of information, to encompass a broader sense where information may be confined to what the text or language provides. This is exemplified by Siegelau's 1968 exhibition book *The Xerox Book* and his subsequent exhibition practices of the same name. *The Xerox Book* functions as a work without a conventional "original," utilizing the print medium in lieu of a traditional exhibition, thereby employing the printed word itself as the exhibition. Siegelau describes it as "raw information, original message," reflecting this broader interpretation of information:

When art does not depend upon its physical presence, when it has become an abstraction, it is not distorted and altered by its representation in books. It becomes primary information, while the reproduction of conventional art in books and catalogues is necessarily (distorted) secondary information. information is primary, the catalogue can become the exhibition.⁶⁷

Osborne analyzes Benjamin's conception of information as defined by its

⁶⁷ Seth Siegelau, "Interview with Seth Siegelau", (March 1972), Marja Bloem, Luran van Haaften-Schick, Sarah Martinetti and Jo Melvin (eds), *Seth Siegelau: Better Read Than Dead: Writings and Interviews 1964-2013*, (London: Koenig Books, 2020), 143-50.

verifiability and semantic self-sufficiency, noting that in the 1970 exhibition *Information*, information became synonymous with art. However, in the subsequent *Software* exhibition, information was simultaneously reduced to the latest technological medium. Edward A. Shanken, conversely, viewed information purely as a new medium, referencing McLuhan's concept of the global village and positing that the information age would supplant the mechanical age.

The message of conceptual art can be textual, pictorial, or material, with Kaye referring to it as "art information" to differentiate it from engineering information. Despite Shannon's assertion that meaning is irrelevant, this notion is seldom addressed by artists and theorists. Johanna Drucker, however, has noted that information in early conceptual art was intricately connected to language and analytic philosophy. She highlighted that this analytic approach and the use of language were deeply intertwined with the processing of information by computers. As Drucker stated:

Analytic philosophy attempted to inscribe that order in a fully logical language. Logic here is defined as the study of rules of right thinking—not what comes to be thought, but how it might be rendered systematic and thus, in terms of language, free of nonsense or meaninglessness. Analytic philosophy attempted to fix a logical language as a means of completing a long-standing philosophical drive to identify the logic of thought itself. Analytic philosophy attempted to fix a logical language as a means of completing a long-standing philosophical drive to identify the logic of thought itself.⁶⁸

As Norbert Wiener stated in *The Human Use of Human Beings*:

I wish to point out nevertheless that language is not exclusively an attribute of living beings but one which they may share to a certain degree with the machines man has constructed.⁶⁹

Drucker must have recognized the similarity between the way machines process information and how humans process language, a similarity particularly evident in conceptual art, which utilized language as its primary material. She continued:

⁶⁸ Johanna Drucker, "The Crux of Conceptualism: Conceptual Art, the Idea of Idea, and the Information Paradigm", edited by Michael Corris, *Conceptual Art: Theory, Myth, and Practice*, (New York: Cambridge University Press, 2004), 251-267.

⁶⁹ Norbert Wiener, *The Human Use of Human Beings*, (London: Free Association Books, 1989), 76.

Instead, I am calling attention to the separation between program (processes and operations) and data (stored information), that is I am calling attention to the separation between program (processes and operations) and data (stored information), that is central to information science because that separation, crucial to the function of computational methods, parallels the distinction Conceptual Art makes between idea and material. That distinction emphasizes the transformative role of the process by which idea becomes material form. information in the context of early Conceptual Art and its subsequent influence on artistic practice is one means to align the apparent dematerialization of the art object with its material form. Invoking information in the context of early Conceptual Art and its subsequent influence on artistic practice is one means to align the apparent dematerialization of the art object with a practice that was becoming highly visible on the broad horizon of contemporary culture, mainly, electronic technology and computational data processing.⁷⁰

Drucker intentionally compared the dematerialization of conceptual art to Plato's ideal-form and Aristotle's ideal-substance. However, she recognized that concepts are sometimes merely novel ideas, rather than true ideas; they are more often described as information or language, in a manner comparable to how computers process information. Adrian Piper, in her collection of commentaries, developed the concept of "meta-art," which refers to the explicit expression of the thought processes, procedures, and prerequisite activities involved in creating art. As a rare academic philosopher within the conceptual artworld, Piper acknowledged the ontological problem but did not propose a philosophical solution. Her concept of "meta-art" pertains specifically to the artistic process rather than serving as a broader philosophical inquiry.

2.3: Conceptual Art and Theoretical Disputes over Dematerialization

Attitudes toward dematerialization within the conceptualism movement have varied, as have those of later art historians and critics. This debate begins with a critique of the definition of matter: does invisibility equate to dematerialization? Philosophers Johanna Drucker, Peter Osborne, Boris Groys, and artists Terry Atkinson and Mel Bochner have argued that dematerialization was a personal view of Lucy R. Lippard and not necessarily reflective of conceptual artists' work. Conversely, art historians and critics such as Lucy R. Lippard, Tony Godfrey, and Nike Kaye, along with artists like Joseph Kosuth, Robert Smithson, Robert Barry, and Sol LeWitt, support Lippard's research. They maintain that dematerialization is not about eliminating matter but about

⁷⁰ See quote.67.

lightening and devisualizing, focusing on the process of dematerialization, which emphasizes the unique characteristics of material. Adrian Piper and Edward Shanken represent a default school of thought that tacitly accepts dematerialization as a perspective within conceptual art, offering explanations or rebuttals in their respective fields – whether scientific, technological, or philosophical. This section will analyze these varying viewpoints and present my own opinion.

Peter Osborne has contended that Lucy R. Lippard's and John Chandler's studies of dematerialization represent merely "a novel historical approach," suggesting that rejecting visibility's determinative role does not imply a retreat from "materiality" but rather an expansion of creative methods. Osborne points to Robert Barry's use of sound waves and inert gases — substances that are invisible — as an example. He also references Terry Atkinson's observation:

It is more than plain then that when a material entity becomes dematerialized it does not simply become non-visible (as opposed to invisible), it becomes an entity which cannot be perceived by any of our senses. As far as material qualities go it is simply a non-entity. Thus it seems to me that if you are talking about art-objects dematerializing,¹ then you would be obliged to talk about objects of which there was now no material trace; if, on the other hand, you are talking or implying, by virtue of the metaphorical license, that some artists today are using immaterial entities to demonstrate ideas, then you would be talking of ideas that had never had any material concretization.⁷¹

A similar point is made in Boris Groys' *Global Conceptualism Revisited*:

But this new orientation towards meaning and communication does not mean that art became somehow immaterial, that its materiality lost its relevance, or that its medium dissolved into message. The contrary is the case. Every art is material – and can only be material.⁷²

The denial of the notion that the invisibility of matter (e.g., sound waves, energy) and linguistic messages constitutes dematerialization mirrors Norbert Wiener's perspective in *Cybernetics*:

Information is information, not matter or energy. No materialism which does not admit this can survive at the present day.⁷³

⁷¹ Terry Atkinson, "Concerning the Article: 'The Dematerialization of Art'", (1973), in Alexander Alberro and Blake Stimson (eds) *Conceptual Art: A Critical Anthology*, (London: MIT Press, 1999), 52-59.

⁷² Boris Groys, "Global Conceptualism Revisited", *In The Flow*, (Brooklyn, NY.: Verso, 1990.02), 121-136.

⁷³ Luciano Floridi, "Philosophical Conceptions of Information", Conference: Formal Theories of Information:

Donald Judd and Robert Morris have taken a similar view, countering Lippard and Chandler: the works of art mentioned in your essay are, with very few exceptions... still a substance, whether solid, gaseous, or liquid... In this chapter, the discussion begins with a quotation from Mel Bochner, who asserted that no art is free from some form of physical burden and that even art which seems to lack material substance often produces certain tangible outcomes. In his 1969 notecard, Bochner wrote:

In this equation, "dematerialization" might suggest the effect of conceptual strategies on objects and things, where Conceptual Art does not so much "abolish" the object as render "things" and materials malleable or treat objects as if subject to flow, change, and relation, or as equivalent to or subsumed into language and information.⁷⁴

In *Conceptual Performance*, Nike Kaye quoted archaeologist Ian Hodder's physicalism attitude:

there are no things at all, only flows [...] things are themselves just flows of matter, energy or information. Things are unstable and unruly. Material things decay and erode, institutions crumble, ideas and thoughts pass fleetingly. Some appear to stay, to have duration, but looked at from sub-atomic or long-term perspectives, all is in flux.⁷⁵

But as Osborne pointed out:

Kosuth alone considered space, and thus by implication, materiality, to be irrelevant to his work. In line with this view, in his critical writings, Kosuth was insistent that he alone was a Conceptual Artist in the proper (capitalized) sense of the term—free of all morphological, stylistic, or object-based concerns. Yet ironically, retrospectively, the works that fall most clearly into Kosuth's derogatory category of stylistic conceptualism are probably his own. The divide he proposed between 'pure' Conceptual Art and 'morphological' Conceptual Art quickly became a gulf into which the strong programme of a theoretical or analytical Conceptual Art would vanish forever.⁷⁶

In several of the previous quotes, Kosuth expressed disdain for materiality, and in his 1970 exhibition *Information*, he treated art as pure information, stating, "Art is the

From Shannon to Semantic Information Theory and General Concepts of Information, [Conference paper, Muenchenwiler Seminar (Switzerland), May 2009], 13-53.

⁷⁴ Nick Kaye, *Conceptual Performance: Enacting Conceptual Art*, (New York: Routledge, 2024), 122.

⁷⁵ Ibid. 125.

⁷⁶ Peter Osborne, *Conceptual Art*, (New York: Phaidon, 2002), 29.

act of placing this activity in the context of my art."⁷⁷ LeWitt similarly noted in 1969 that ideas themselves could be works of art; they represent a series of developmental processes that eventually take form, and not all ideas need to materialize physically.⁷⁸ John Baldessari also asserted that information is intriguing and does not necessarily require visualization in art, as evidenced by cubism.⁷⁹

While Drucker concurred with Atkinson and others that the belief in the non-existence of dematerialized works within the canon of conceptual art constitutes a reductionist fallacy and delusion from the early conceptualism movement, she also advanced a cybernetic systems approach:

What remains as an interesting aspect of the fallacy of dematerialization, however, is the way in which it echoes the data-processing model of pulling input apart from output so that it can be stored as information. In this model, the "idea" and the "matter" are unlocked from their relation. "Idea" as information is stored without regard to material support, able to be reenacted at any point and in any of a number of variable forms. Structurally, the electronic environment, thought "material" in its own circuitry, storage forms, and data configurations, is close to "dematerialized."⁸⁰

This analysis suggested that dematerialization represented a unique and original perspective on art, with both refutations and support contributing to the phenomenon. Osborne used Barry's work to challenge the notion of dematerialization; however, Barry himself identified with a focus on nothingness rather than matter, using gaseous or invisible substances to advance his dematerializing ideals.

The conclusion of dematerialization was naturally untenable from the standpoint of physicalism, yet this very contradiction revealed that art did not exist as previously conceived by formalism or Greenberg's monistic materialism.

Kaye's critique of materiality reflected Benjamin's lamentation over the originality of art as much as it engaged with the ritualistic function of traditional art. This paper posited dematerialization as marking the end of the era of mechanical reproduction. Previous discussions on post-mechanical reproduction had addressed the issue primarily through the lens of digital reproduction replacing mechanical reproduction or

⁷⁷ Kynaston L. Mcshine, *Information*, (New York: The Museum of Modern Art, 1970,) 69.

⁷⁸ Sol LeWitt, "Paragraphs on Conceptual Art", *Artforum*, (1967 s:0 Summer1967), 79-83; reprinted in Charles Harrison and Paul Wood (eds), *Art in Theory, 1900-1990: An Anthology of Changing Ideas*, (Blackwell Oxford, 1992).

⁷⁹ Lucy R. Lippard, *Six Years: The Dematerialization of the Art Object from 1966 to 1972*, (Berkeley and Los Angeles, California: University of California Press, 2001), xiii.

⁸⁰ Johanna Drucker, "The Crux of Conceptualism: Conceptual Art, the Idea of Idea, and the Information Paradigm", edited by Michael Corris, *Conceptual Art: Theory, Myth, and Practice*, (New York: Cambridge University Press, 2004), 251-267.

organic cybernetic machines supplanting conventional machinery—ideas that were often playful or somewhat tongue-in-cheek references to Benjamin. As Kaye concluded:

Rather than conflate Conceptual Art with immateriality, "the dematerialization of the art object" was part of a reconception of materiality in critiques of the uniqueness, permanency, mute form, and valorisation of "the precious object".⁸¹

Thierry de Duve argued that conceptual artists conflated the tautology of art as a process of dematerialization or the substitution of language for visuality. This confusion led conceptual artists to perceive art as either an idea or a quest for the essence of art itself.

As the only one among the conceptual artists, who generally confuse Duchamp's lesson with the dematerialization of the work of art or with the substitution of language for visuality, to have seen that the enunciative paradigm was the apposite one, Broodthaers acknowledges reception of the Broodthaers acknowledges reception of the enunciative paradigm and draws the consequences, taking it up in his own turn as the subject matter of his work.⁸²

⁸¹ Nick Kaye, *Conceptual Performance: Enacting Conceptual Art*, (New York: Routledge, 2024), 127.

⁸² Thierry de Duve, *Kant after Duchamp*, (Cambridge, Mass.: The MIT Press, 1996), 421.

Chapter 3:

Art Ontology in the Age of Post-Mechanical Reproduction

It is commonly held that the avant-garde no longer exists, whether this avant-garde is sexual, political, or artistic: that this movement which corresponds to the linear acceleration of a history, to an anticipatory capacity and henceforth to a possibility of a radical critique in the name of desire, in the name of the revolution, in the name of the liberation of forms, that this revolutionary movement has come to a This glorious movement called modernity did not lead us to a transmutation of all values, as we had once dreamed, but to a dissemination and involution of values which, in our opinion, are not the only ones. This glorious movement called modernity did not lead us to a transmutation of all values, as we had once dreamed, but to a dissemination and involution of value which resulted in a state of utter confusion. This confusion is expressed, primarily, by our inability to grasp anew the principle – whether political or sexual – of an aesthetic determinacy of things.

-- Jean Baudrillard, *Transpolitics, Transsexuality, Transaesthetics*, 1992⁸³

As a transitional theory, the ontology of art in the post-mechanical reproduction era necessitates its own set of meanings and questions, which this paper will address. Resolving these questions is essential for advancing beyond this transitional framework. Given that the artwork is neither fully dematerialized nor purely material, the central issue lies in determining the form in which art exists — a problem central to the discourse on reconsidering conceptual art. With the so-called dematerialization and informatization marking the end of mechanical reproduction, it is crucial to explore the exact connotations of post-mechanical reproduction.

The concept of the age of post-mechanical reproduction emerged as early as 1968 in *The Machine, as Seen at the End of the Mechanical Age*, an exhibition curated by K.

⁸³ Jean Baudrillard, "Transpolitics, Transsexuality, Transaesthetics", *Jean Baudrillard : the disappearance of art and politics*, Edited by William Stearns and William Chaloupka, (London: Macmillan Academic and Professional LTD. 1992), 9-26.

G. Pontus Hulten. In the accompanying publication, Hulten stated:

This exhibition is dedicated to the mechanical machine, the great creator and destroyer, at a difficult moment in its life when, for the first time, its reign is threatened by other tools.⁸⁴

By "other tools," she primarily referred to computers:

Moreover, technology today is undergoing a critical transition. We are surrounded by the outward manifestations of the culmination of the mechanical age. Yet, at the same time, the mechanical machine– which can most easily be defined as an imitation of our muscles– is losing its dominating position among the tools of mankind; while electronic and chemical devices which imitate the processes of the brain and the nervous system – are becoming increasingly important.⁸⁵

In 1943, Warren McCulloch and Walter Pitts introduced neural networks based on Boolean functions. Today, the immense capabilities of backpropagation neural networks in reproducing ideas and images in a generative manner, rather than through mere mechanical repetition, have become evident. This chapter will trace the historical development of post-mechanical reproduction era to propose a concept that differs fundamentally from previous.

3.1: Art in the Age of Post-Mechanical Reproduction: Information, Ideas, Energy, Substance

Mechanical reproduction is often associated with the Industrial Revolution and large-scale machine production, epitomized by Taylorism and its advanced form, Fordism. While post-Fordism and post-industrial society emphasize the integration of information technology and the diversification of machinery, advocating against mass production by large machines, this does not necessarily equate to the concept of post-mechanical reproduction. Fordism, post-Fordism, and post-industrial society are primarily concerned with methods of social production and organization that do not directly correspond to the modes of art production. Unlike the collaborative nature of the Hollywood system, much of the conceptual art canon is neither mechanically nor

⁸⁴ K. G. Pontus Hultén, "Introduction", *The machine, as seen at the end of the mechanical age*, (New York: The Museum of Modern Art, 1968), 6.

⁸⁵ Ibid. 3.

informationally produced; it often exists purely as an idea.

Walter Benjamin's notion of mechanical reproduction specifically addresses the manner in which art is produced, a process that underwent significant transformation when intelligent beings or machines gained the ability to generate ideas. However, the question remains: is digital reproduction synonymous with post-mechanical reproduction? This concept appears more closely aligned with artistic production, and much of the discourse surrounding post-mechanical reproduction tends to support this view, including perspectives from Osborne and Groys. Yet, such analyses, as previously discussed, often oversimplify the distinction between digital and mechanical reproduction, merely marking the contemporary and modern divide.

Malina references artist Roman Verostko's article *Epigenetic Pairing: Software as Genotype*, published in *Leonardo*:

This new artistic process, while hardly the same, is remarkably analogous to the biological process of epigenesis. The software ... may be viewed as a genotype, because it is a code for how to make work. The software can make a family of works, each work being unique (one of a kind, yet familiar). The potential for crossing families of different artists opens the possibility of hybridization of form and eventually of a genealogy of form.⁸⁶

Verostko's concepts not only apply to his artistic practice but also to contemporary generative art, often referred to today as artificial creativity. Malina's proposal to use generative reproduction as a term for post-mechanical reproduction offers a more nuanced solution than digital reproduction or post-Fordism. However, this perspective has limitations, as it does not fully account for the fact that art exists within a symbiotic cybernetic system. Thus, both digital and generative reproduction can be seen as characteristic of post-mechanical reproduction to some extent.

We have previously analyzed new forms of artistic existence—such as information, ideas, energy, matter, and time. If these forms of existence cannot be converted into a format processable by software — i.e., non-computable art like improvisation — then generative and digital reproduction are inherently limited, as highlighted by the phenomenon of dematerialization.

Yuk Hui expands on LeWitt's notion that "the idea becomes the machine that creates art" and posits that the conceptual artist employing the conceptual machine can be viewed as a type of cyborg, merging the industrial machine with the

⁸⁶ Roman Verostko, "Epigenetic Pairing: Software as Genotype", *Leonardo*, 23, No. 1, (Cambridge: The MIT Press, 1990), 17.

mechanical-organic gestures of human-machine integration. This perspective offers an original view that surpasses the one-dimensional replacement of mechanical by digital, as suggested by Groys or Osborne. Hui interprets Kosuth's creation of new art forms through self-reflective thinking as a recursive and tautological process, aligning with Drucker's analysis of the conceptual artist's engagement with the information machine. The conceptual artist engages in the reflexive nature of art, forming a self-organizing procedural structure through continuous questioning.

Considering conceptual artists as cyborgs, the question arises: is post-mechanical reproduction post-human? The answer is no. The concept of posthumanism emphasizes the diminished centrality of humans within technological systems, particularly in cybernetic societies where humans are no longer the measure of all things. Ihab Hassan articulated this in his notable 1976 lecture, *Prometheus as Performer: Toward a Posthumanist Culture*:

We need to understand that five hundred years of humanism may be coming to an end, as humanism transforms itself into something that we must helplessly call posthumanism. The figure of Vitruvian Man, arms and legs defining the measure of things, so marvelously drawn by Leonardo, has broken through its enclosing circle and square, and spread across the cosmos. "Stands he not thereby in the center of Immensities, in the conflux of Eternities?"⁸⁷

Posthumanism also underscores the symbiotic relationship between humans and machines, including concepts such as cyborgs and human-machine cooperation. It challenges the Renaissance notion of human supremacy, advocating instead for recognizing humans as integral, equal components within technological systems. Katherine Hayles concludes in *How We Became Posthuman* by stating that:

Humans may enter into symbiotic relationships with intelligent machines (something that has long been true today); they may be displaced by intelligent machines (something that is happening now); but there is a limit to how seamlessly humans can be articulated with intelligent machines, which remain distinctively different from humans in their embodiments... By contrast, when the human is seen as part of a distributed system, the full expression of human capability can be seen precisely to depend on the splice rather than being imperiled by it.⁸⁸

⁸⁷ Ihab Hassan, "Prometheus as Performer: Toward a Posthumanist Culture?", *The Georgia Review*, Vol. 31, No. 4 (Winter 1977), 830-850.

⁸⁸ Hayles, N. Katherine. *How We Became Posthuman : virtual bodies in cybernetics, literature, and informatics*, (Chicago: The University of Chicago Press, 1999), 334-344.

Similar to posthumanism, post-mechanical reproduction abandons the human-machine dichotomy inherent in Benjamin's "Age of Mechanical Reproduction" and rejects anthropocentrism. It shifts the focus to the form of artistic production or the mechanism of art's role within the system. As John Cage observed, the artist is no longer considered exceptional; post-mechanical reproducers recognize that machines, inorganic objects, non-human sacred objects, and intelligent beings can all function as vehicles, audiences, or creators of art. In line with this, Heller asserts that the human body is viewed as a product of evolution:

Interpreted through metaphors resonant with cultural meanings, the body itself is a congealed metaphor, a physical structure whose constraints and possibilities have been formed by an evolutionary history that intelligent machines do not share.⁸⁹

For post-mechanical reproduction, the body is considered merely a medium, rather than a defining criterion that separates humans from other species, and focusing on the body alone risks being prejudiced against machinery. Post-mechanical reproduction emphasizes how art operates within a system, rather than solely addressing the physical or symbiotic relationship between humans and machines. Donna Haraway's *The Robot Manifesto* and *The Companion Species Manifesto* view robots and other animals as species comparable to humans, reflecting a tendency similar to that of post-mechanical reproduction. However, post-mechanical reproduction also encompasses what is invisible, non-calculable, or non-computable, extending beyond mere species and organisms.

In summary, while post-mechanical reproduction shares common ground with these concepts, it is distinct in its focus on artistic ontology. In the era of post-mechanical reproduction, humans and machines will engage in an egalitarian symbiotic relationship, with non-human entities, including cyber organisms, gaining recognition as artists and audiences. This era transcends digital reproduction to include artificial creativity — generative reproduction. *Art in the Age of Post-Mechanical Reproduction* thus refers not only to information and cybernetics, but also to non-calculable and non-material elements such as ideas, feelings, and time, as discussed in the previous chapter.

Given that Benjamin's discourse pertains solely to art, and considering our argument stems from the dematerialization phenomenon in conceptual art, the main

⁸⁹ Ibid.

question for the age of post-mechanical reproduction should be: how does art exist within such a symbiotic system? The existence of art, a question pondered by conceptual art, remains central to this inquiry.

	Mechanical Reproduction	Post-Mechanical Reproduction
Production	Mechanical Reproduction Manufacture Fordism	informatization Reproduction Digital Reproduction Generative Reproduction Limit or Unique Post-Fordism Post-Industrial
Man-machine	Man-machine Opposition Anthropocentrism Inorganic machinery	Man-Machine Symbiosis Post-Human Companion Species De anthropocentrism System Aesthetics Organic Machinery
Material	Material object	Dematerialization informatization Computable Incalculable and Incomputable
Works	Records Photography Prints	Pop Art Digital Art Conceptual Art Animals, Cyborgs and Robots' Art Dematerialization Art Generative Art Synthetic Biology Art ...
Ontology	Art-works	Art Objects and System
Philosophy	What sort of Objects are Art-works	How Art Objects works in the System

In *Philosophy of Art: A Contemporary Introduction*, analytic aesthetician Noel Carroll employs a refined analytic philosophical approach to challenge representationalism, expressionism, aesthetic empiricism, and the formalism inherent in Western art ontology. Conceptual art, by its very nature, has already resisted the reproductionist and neo-representationalist notions of art as a product of naturalism. Carroll draws upon Duchamp's work to argue that the essence of art transcends manual labor or craftsmanship.

Both representationalism and formalism address specific categories like "visual

art" and "music", suggesting that conceptual art should not merely be categorized as a traditional art form but rather as an eclectic one. Clive Bell's assertion that "beauty is a significant form" would imply that by creating enough computer programs, one could exhaust all forms of art, a notion already challenged by computational formalism. However, certain art objects cannot be formalized or computed, and Conceptual Art, along with the concept of dematerialization, effectively contests this notion. As LeWitt stated in his 1969 *Sentences on Conceptual Art*: conceptual artists are mystics, not rationalists. They leap to conclusions that logic cannot reach.

Expressionism, like representationalism, faces similar challenges. While a significant amount of art is expressive, not all art represents emotion, and much of twentieth-century art emphasized ideas over feelings. Art often aims to elicit perceptual pleasure rather than explore emotional states.

Conceptual art also opposes aesthetic centrism. Discussing aesthetic experience seems impractical, as much of the avant-garde art of the twentieth century rejected aesthetic centrism. How can one derive an aesthetic experience from explaining paintings to dead rabbits?

Edward N. Zalta and Uri Nodelman, in *A History of the Ontology of Art*, catalog various perspectives on the ontology of art throughout Western history, predominantly focusing on "what object is a work of art." Similarly, Amie Thomasson's work, *The Ontology of Art Debate*, underscores that "what kind of object is a work of art" remains a critical issue.

Conceptual art demonstrates that any object can be transformed into a work of art. The more pertinent question is not whether any object can become an artist, but rather: what kind of treatment must an ordinary object undergo to be perceived as possessing artistic attributes? Or, how is a recognizable work of art produced?

Yuk Hui, in *Art and Cosmotechnics*, notes that artists, as the longest-standing craftsmen, have employed themselves as transformative machines to resist automation, thus shifting forms of artistic production into machinery. This view still regards art as a human creation and machinery as a cooperative organism. However, conceptual art blurs the distinction between art and reality objects; machinery can produce items indistinguishable from those created by humans, rendering the traditional notion of artistic production obsolete. Today, machinery and algorithms can easily generate art objects.

Andy Warhol, in a 1963 *Art News* interview, remarked, "I paint the way I do because I want to be a machine... I think everyone should be a machine, everyone

should be exactly like another person." Warhol's embrace of repetition and reproduction was a response to Benjamin's spiritual rhyme, acknowledging that machines may surpass human capabilities in art creation.

Lucy Lippard described the Bechers' typological photography and LeWitt's conceptual machines as industrialized, reflecting a post-industrial, even post-mechanical, feature. Human-machine collaboration, rather than opposition, signifies a transcendence of mechanical reproduction through symbiosis with machines.

The essential question for the ontology of art in the age of post-mechanical reproduction is: how does art exist in an automated, generative, dematerialized, non-anthropocentric, and symbiotic system? What mechanisms govern its action?

3.2: The New Ontology: Towards an Information Ecosystem

Philosophical explorations of art in the twentieth century transitioned from theories of origins to notions of ecosystems, addressing criticisms of Formalism and Wittgensteinianism. This shift included Arthur Danto's artworld and Thierry de Duve's proper name. In the 21 century, philosophy of art have increasingly emphasized the idea of art as an ecosystem, as Jason Hoelscher.

The critical spirit of Conceptual Art partly arose from critiques of Formalism, as noted by Adrian Piper, who viewed Formalism as an ideological tool of the McCarthy era. While Formalism was grounded in materialist beliefs about objective formal beauty, its invalidity stemmed from avant-garde experiments in anti-form and anti-aesthetics. Art, as a product of a complex series, diverged from mere art form or function, akin to William Kennick's thought experiment: while art could be identified in a warehouse, objects with "significant form" could not.

Formalist analysis has also influenced the development of machine learning and generative art through computational formalism. Amanda Wasielewski defined this approach as one that employs formalist methods in machine learning research within art history:

Computational formalism is, in many ways, very similar to traditional formalism: it analyzes the external features/qualities of the work, often to the exclusion of contextual factors; it is based on comparison; and its aim is to create systems of classification and taxonomy for artworks. Computational formalism is in many ways, very similar to traditional formalism: it analyzes the external features/qualities of the work, often to the exclusion of contextual factors; it is based on comparison; and its aim is to create systems of

classification and taxonomy for artworks. However, computational formalism differs in fundamental ways from human/manual formalism. One of the key ways, as mentioned, is that it gives researchers the ability to analyze large amounts of data. One of the key ways, as mentioned, is that it gives researchers the ability to analyze large amounts of data in a relatively short time. Another way that it differs, however, is in the type of features and measurements that computational systems make in order to compare artworks.⁹⁰

However, this approach represents only a machine perspective on art historical research. While it contributes significantly to art historical research, it does not address ontological issues. Formalism, having evolved from an ontological to an analytical approach in art history and criticism, highlights this gap. Machine learning extends beyond art historical research, a notion explored since the 1960s by John Cage and Jack Burnham, who drew from cybernetics and systems theory. Cage expanded the diversity of artistic practices, while Burnham developed a systems aesthetic.

Sofian Audry, in *Art in the Age of Machine Learning*, explores the connection between Burnham's systems aesthetics, dematerialization, and computationalism. Audry argues that this connection signifies a paradigm shift in the artworld, where machine learning transforms the relationship between artists, audiences, and algorithms.

In the late 1960s Jack Burnham suggested a revision of contemporary art inspired by cybernetics and systems theory. In this new regime the art object had to give way to processes. Burnham's systems art echoed a dematerialization of aesthetics promoted by the avant-garde of his time, including conceptual and performance art and also an emerging computationalist worldview within computer science. Burnham's systems art echoed a dematerialization of aesthetics promoted by the avant-garde of his time, including conceptual and performance art and also an emerging computationalist worldview within computer science that would come to profoundly influence culture. This new version of Cartesian dualism reimagined through information technologies also favored de-materialized high-level processes ("software") over mostly irrelevant low-level processes ("software"). This new version of Cartesian dualism reimagined through information technologies also favored de-materialized high-level processes (software) over mostly irrelevant low-level matter (hardware).

In parallel to cognitive sciences finally moving away from computationalism and increasingly recognizing the importance of the body in cognition, the This paradigmatic shift calls for a more nuanced vision of the

⁹⁰ Amanda Wasielewski, *Computational Formalism: Art History and Machine Learning*, (Cambridge Mass.: The MIT Press, 2023), 30-33.

human in which processes and behaviors cannot be dissociated from their material embodiment. This paradigmatic shift calls for a more nuanced vision of the human in which processes and behaviors cannot be dissociated from their material embodiment. As an embodied conception of aesthetics that rejects a dualistic understanding of robotic behaviors, Penny's aesthetics of behavior offers a contemporary alternative to Burnham's systems art compatible with this shift. Penny's aesthetics of behavior offers a contemporary alternative to Burnham's systems art compatible with this shift.⁹¹

Morris Weitz, in his Neo-Wittgensteinian position, contended that art is an open concept characterized by family resemblance, remaining indefinable and assessable only through the family resemblance method. In his 1956 essay, *The Role of Theory in Aesthetics*, he stated:

The problem with which we must begin is not "What is art?," but "What sort of concept is 'art'?" "New conditions (cases) have constantly arisen and will undoubtedly constantly arise; new art forms, new movements will emerge, which will demand decisions on the part of those interested in professional critics, which will demand decisions on the part of those interested in art. New conditions (cases) have constantly arisen and will undoubtedly constantly arise; new art forms, new movements will emerge, which will demand decisions on the part of those interested, usually professional critics, as to whether the concept should be extended or not. Aestheticians may lay down similarity conditions but never necessary and sufficient ones for the correct application of the concept."⁹²

This creates an illusion of proof: that art is a tautological repetition of the self, possessing self-discipline and legislating for itself through self-questioning, without requiring validation through philosophy. As Kosuth argued:

To repeat, what art has in common with logic and mathematics is that it is a tautology; i.e., the "art idea" (or "work") and art are the same and can i.e., the "art idea" (or "work") and art are the same and can be appreciated as art without going outside the context of art for verification.⁹³

⁹¹ Sofian Audry, *Art in the Age of Machine Learning*, (Cambridge Mass.: The MIT Press, 2023), 30-33.

⁹² Morris Weitz, "The Role of Theory in Aesthetics," *The Journal of Aesthetics and Art Criticism*, XV (1956), 27-35. <https://www2.hawaii.edu/~freeman/courses/phil330/24.%20The%20Role%20of%20Theory%20in%20Aesthetics.pdf>

⁹³ Joseph Kosuth, "Art after Philosophy", *Studio International*, (London: The Studio Trust, Oct. 1969), 134-37; reprinted in Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966-1990*, edited and with an introduction by Gabriele Guercio and foreword by Jean-François Lyotard (Cambridge, Mass.: MIT Press, 1991), 13-32.

Noel Carroll argues that the debate about the concept of openness confuses the notion of closed art with the act of open art:

This argument seems compelling, but it trades on a very dubious ambiguity. When the Neo-Wittgensteinian maintains that art cannot be defined, he is talking about the attempt to craft necessary and sufficient conditions for what counts as an artwork; but to show that this is impossible, he then adverts to the idea that it is not possible. talking about the attempt to craft necessary and sufficient conditions for what counts as an artwork; but to show that this is impossible, he then adverts To the practice of art, the very concept of which he maintainss must be open to the permanent possibility of expansion. Wittgensteinian is arguing that a closed concept of artwork is incompatible with an open concept of the practice of art.⁹⁴

Noel Carroll contends that art cannot be classified as art if it diverges from its familial resemblances. A similar rebuttal is found in Thierry de Duve's *Kant after Duchamp*, where Duve wittily challenges the Neo-Wittgensteinians by demonstrating that if a urinal can be considered art, then, theoretically, anything can be, provided one subscribes to that belief. He further criticizes the conflation of conceptual art with concepts such as logic and mathematics by figures like Kosuth, arguing that conceptual art sidesteps the issue by rendering the conceptual problem of art a self-replicating one.

Suffice it to say that Kosuth's most blatant confusion is between the logical genre of discourse, which does not need a referent to assign truth value to a proposition, and the cognitive genre, which requires the designation of a referent for its verification. In short, conceptualism simply ignores the thesis in the modern version of the Kantian antithesis. In short, conceptualism simply ignores the thesis in the modern version of the Kantian antinomy, by making the sentence "this is art" run in circles.⁹⁵

Neo-Wittgensteinianism and conceptual art suggest a new antinomy:

Art is not a concept.
Art is a concept.⁹⁶

But Duve argues that Kant answered the question about antinomy long ago in his *Second Critique*, i.e. – supersensible:

⁹⁴ Noël Carroll, *Philosophy of Art: A contemporary introduction*, (New York, NY.: Routledge, 1956), 218.

⁹⁵ Ibid. 307.

⁹⁶ Ibid. 304.

In the thesis we mean that the judgment of taste is not based upon determinate concepts, and in the antithesis that the judgment of taste is based upon a concept, but an indeterminate one (viz. of the supersensible substrate of phenomena). In the thesis we mean that the judgment of taste is not based upon determinate concepts, and in the antithesis that the judgment of taste is based upon a concept, but an indeterminate one (viz. of the supersensible substrate of phenomena). Between these two there is no contradiction.⁹⁷

Duve explains that Kant's supersensible is a rational concept that transcends the senses, an a priori and subjective aesthetic idea:

Thus, to reread Kant after Duchamp, replacing the judgment "this is beautiful" by the judgment "this is art," is to consider that the word "art" conflates genius and taste and refers both to an "inexponible" aesthetic Idea and to an "indemonstrable" rational Idea. genius and taste and refers both to an "inexponible" aesthetic Idea and to an "indemonstrable" rational Idea. (In the Kantian vocabulary, exponible means "what can be established theoretically". means "what can be established theoretically"; demonstrable means—in this context— "what can be shown to the senses. intuition" means perception, a presentation precisely offered to the senses in the perceptual world.)⁹⁸

Duve developed his theory of Art as proper name, and the resulting antinomy:

Art is not a concept; it is a proper name.
Art is a concept; it is the Idea of art as proper name.⁹⁹

In reality, rather than addressing the question of what art is, "Proper Name" reintroduces the question of what kind of idea art represents. "Proper Name" does not substitute for an answer; it neither clarifies the nature of art nor explains how art functions. Duve acknowledged this limitation, as he noted at the conclusion:

There are signs that the Idea of an ecosystem of self-regulated organisms might in the near future replace that of a community of reasonable beings, an ecosystem of which in any case those prematurely emancipated animals called humans, fortunately capable of regulative Ideas, are in charge. ecosystem of

⁹⁷ Immanuel Kant, *Critique of Judgement*, translated by John Henry Bernard, (New York: Hafner Pub. Co., 1951), 186.

⁹⁸ Thierry de Duve, *Kant after Duchamp*, (Cambridge, Mass.: The MIT Press, 1996), 314.

⁹⁹ Ibid.

which in any case those prematurely emancipated animals called humans, fortunately capable of regulative Ideas, are in charge.¹⁰⁰

This ecosystem of artistic prophecy engages with Jack Burnham's ideas on one hand and, on the other, sets a path for future explorations. In addition to Duve, Arthur Danto employed the notion of the "artworld" to encompass all possible artworks, delegating the evaluation of art to the realms of art theory and art history. Danto critiqued the Wittgensteinian concept of family resemblance as follows:

The concept of the family to designate this crisscrossing of phenotypical qualities is almost appallingly ill chosen, since the members of a family must, however much or little they resemble one another have common genetic affiliations that explain their "family resemblance". however much or little they resemble one another have common genetic affiliations that explain their "family resemblance" and someone is not a member of a family if he lacks the ability to recognize a family as a whole. and someone is not a member of a family if he lacks this, even though he should resemble another (though a striking resemblance may be evidence for satisfaction of the genetic criterion).¹⁰¹

In Danto's artworld, art is a concept that differentiates from reality or commonplace, when there is art, people can recognize the difference between the real world and the artworld; the artworld and the real world form a kind of organic symbiosis, as the evidence of each other's existence.

For this reason one could not imagine, any more than one could a world made up just of shadows, a world made up solely of artworks. One could imagine a world without artworks, or at least nothing its denizens would refer to as artworks, for such a world would be exactly that in which the concept of reality had as yet arisen. The philosophical value of art lies in the historical fact that it helped bring that concept to consciousness along with itself. None of this is so much to have advanced a philosophical definition of art as it is to have shown why the definition of art is a philosophical matter.¹⁰²

Danto's artworld directly inspired Jason Hoelscher's information theory of art, which conceptualized the artworld as an information ecosystem. Hoelscher defined the uncertainty and informativeness of art using Shannon's engineering principles and

¹⁰⁰ Ibid. 462.

¹⁰¹ Arthur Danto, *The Transfiguration of the Commonplace A Philosophy of Art*, (Cambridge, Mass.: Harvard University Press, 1981), 5.

¹⁰² Ibid., 83.

expanded the notion of information from Shannon's engineering information to Simondon's generative information. According to Simondon's theory, information represents a transition from sub-stability to homeostasis,¹⁰³ which Hoelscher identified as the driving force behind art's role. "Rather than information with a stopping point, this is information as a process of sustained differencing."¹⁰⁴ Hoelscher integrated this information system with Danto's artworld, suggesting:

The artworld is thus a level-two chaotic system of second-order complexity that is not subject to distortion wrought by exploration-driven feedback, but rather emerges from and acquires structure as cascades of distortion and exploration-driven feedback. The artworld is thus a level-two chaotic system of second-order complexity that is not subject to distortion wrought by exploration-driven feedback, but rather emerges from and acquires structure as cascades of distortion and exploration-driven feedback. explore aspects of its own operations; rather, the operational exploration of the system is the system, as the activity in and of itself. This in part explains the accelerated rate of artistic transformation over the course of the 1960s, whereby the more information the artworld generated by and about the artworld, the more complex and intensive the artworld became.¹⁰⁵

Jack Burnham argued in 1968 that humanity was transitioning toward a systems-oriented culture where humans would initially assume the role of aesthetic decision-makers. However, he contended that the role of humans as decision-makers within these systems would not endure for long:

In the past our technologically-conceived artifacts structured living patterns. We are now in transition from an object-oriented to a systems-oriented culture. We are now in transition from an object-oriented to a systems-oriented culture. Here change emanates, not from things, but from the way things are done As a culture producer, man has traditionally claimed the title, Homo Faber: man the maker (of tools and images). With continued advances in the industrial revolution, he assumes a new and more critical function. As Homo Arbiter Formae his prime role becomes that of These decisions-whether they are made concertedly or not-control the quality of all future life on the Earth. These decisions-whether they are made concertedly or not-control the quality of all future life on the Earth. Moreover these are value

¹⁰³ Gilbert Simondon, *Individuation in Light of Notions of Form and Information*, translated by Taylor Adkins. (Minneapolis, MN.: University of Minnesota Press, 2020), 11.

¹⁰⁴ Jason A. Hoelscher, *Art as Information Ecology: Artworks, Artworlds and Complex Systems Aesthetics*, (Durham : Duke University Press, 2021), 7.

¹⁰⁵ Jason A. Hoelscher, *Art as Information Ecology: Artworks, Artworlds and Complex Systems Aesthetics*, (Durham : Duke University Press, 2021), 155.

judgements dictating the direction of technological endeavor. Quite plainly such a vision extends beyond political realities of the present.¹⁰⁶

Burnham's view, possibly aligned with Duve's perspective, posited that the era of the human artist as the central figure in art history was drawing to a close. In the emerging de-anthropocentric ecosystem, all objects were seen as equal, diminishing the artist's role as a subject in the art system. The artist's function had shifted from making to choosing and, like Duchamp, to showing, as exemplified by Magritte.

Despite these explorations since the 1960s, the contemporary art information ecology remains flawed. Hoelscher's integration of information theory with the artworld highlights some shortcomings in Danto's vision for art theory and power. The deficiencies in the art information ecology are as follows:

First, there remains a strong humanist inclination to view art as a product or artifact confined to human society. Although Hoelscher acknowledges the informational aspects of art, he does not fully consider that information can be realized in any medium and is not necessarily tied to human artifacts. This limitation is likely influenced by the concept of the artworld.

Second, Hoelscher's emphasis on difference and sub-stability limits the applicability of his art information theory primarily to modern art and makes it less effective for understanding art within a homeostatic society. This focus may also be a result of the artistic innovations and rebellions of the 1960s, which were primarily concerned with Western modern and contemporary art. While both Hoelscher and the author recognize the significance of art information theory in the context of 1960s art, the application of this theory should not be restricted to modern and contemporary art alone. A thought experiment could be proposed:

In an extremely stable society, human beings live a timeless life, producing the same art over and over again every day. As described by Lao Tzu in *Tao Te Ching*: The country should be small, the population should be small, and even if there are all kinds of very effective instruments, they should not use them, so that the people will cherish their lives and not migrate at will. Even if there are vehicles and ships, there is no need to travel on them; even if there is armor, there is no need to travel on them. Even if there are vehicles and ships, there is no need to travel on them; even if there is armor and weapons, there is no opportunity to use them; let the people return to the primitive state of keeping records with knotted ropes. Let the people have plenty of food, dress splendidly, live in peace and comfort, and be natural. sound of chickens and dogs will be

¹⁰⁶ Thierry de Duve, *Kant after Duchamp*, (Cambridge, Mass.: The MIT Press, 1996), 422.

audible to each other, and the people will not communicate with each other even until they are old and dead.¹⁰⁷ Hoelshcher at this time so hoped for Shannon's engineering differences and Simondon's information differences do not arise, and therefore neither does the artistic message. This state of society or relatively rare in human history, but entirely possible in the world of Cyborg.

Finally, Hoelscher's theory overlooks the roles of energy and matter, treating them merely as supplementary to information. This omission makes the information theory of art particularly suited to avant-garde or dematerialized art but overlooks the significance of the art object itself. Ignoring the material component of art risks repeating the pitfalls of formalism.

A comprehensive understanding of the information ecosystem must extend beyond the traditional dichotomy between machines, other species, and humans. This consideration is crucial for art ontology in the era of post-mechanical reproduction, especially from a de-anthropocentric perspective. Yuk Hui's concept of cosmic technology challenges Western notions of technological development, proposing alternative frameworks for understanding technology. Similarly, the ontology of art in the post-mechanical reproduction era should explore how art, as information, transcends human-centric paradigms and can exist across diverse media and species.

Revisiting Beuys's performance from the perspective of the dead hare, we can address *Matthews* adage: "Do not serve holy things to dogs, nor give pearls to swine." This idiom warns against misplacing or wasting sacred things on those unworthy or incapable of understanding their value. It suggests a hierarchy where humans, as divine creations, are deemed worthy of holy objects or art, while animals are not. However, this raises the question: do animals truly lack an appreciation for art?

Eastern wisdom, such as the idiom "playing the qin for a cow"¹⁰⁸ from the Spring and Autumn period, offers a complementary perspective. Gong Mingyi's attempt to play music meant for humans to a cow illustrates the mismatch between human artistic expressions and animal perceptions. The cow's indifference to human music, contrasted

¹⁰⁷ Lao Tzu, *Tao Te Ching*, (Beijing: Beijing United Publishing Co., 2017), 75: 小邦寡民，使有什佰之器而不用。使民重死而不远徙。虽有舟舆，无所乘之；虽有甲兵，无所陈之；使民复结绳而用之。甘其食，美其服，安其居，乐其俗。邻邦相望，鸡犬之声相闻，民至老死不相往来。

¹⁰⁸ Mou Rong, "理惑论", eds. by Mou Rong, Liang Qichao, etc. 牟子理惑论, (Bright Publishing, 光明印刷局, 1912), 3-16, Mou Rong, a person from the Eastern Han dynasty, was well-versed in classics and histories and also proficient in Buddhist teachings. Many Confucian scholars sought his guidance on Buddhism. When explaining Buddhist principles to them, Mu Zi often used Confucian texts for illustration. When explaining Buddhist principles to them, Mu Zi often used Confucian texts for illustration. This origin story shows that Mou Zi's mention of "playing the qin for a cow" was not meant to disparage the cow but to clarify his intent. <https://zh.z-library.rs/book/28604311/6e3532/%E7%89%9F%E5%AD%90%E7%90%86%E6%83%91%E8%AE%BA.html> [my translate]

with its responsive engagement to familiar natural sounds, emphasizes that art and music must be tailored to the audience's sensory capacities. This lesson is particularly relevant in modern intensive farming, where music designed to appeal to cows is used to enhance their well-being and productivity.

Donna Haraway, in *The Companion Species Manifesto*, challenges this notion. She argues that the cyborg, and by extension, animals as companions, are part of a broader, complex family that includes beings affected by reproductive biotechnology and the politics of technoscience. Haraway suggests that considering animals as potential audiences or creators of art could enrich our understanding of art's reach beyond human confines. She notes, "The transformation of the cyborg is hardly the kind of zeal required for ontological editing in technoscience. I came to see the cyborg as a junior sibling in a larger, stranger family of companion species".¹⁰⁹

Psychological studies further support this notion. For example, British pianist Paul Barton's performance of Beethoven's *Moonlight Sonata* for a mistreated elephant — accompanied by the sounds of nature—moved the elephant to tears, suggesting that art's impact extends beyond human experiences .

John Cage's diary reflects a shift in the artist's role: We used to put the artist on a pedestal, now he will no longer be more special than we are.¹¹⁰ This change highlights a move away from viewing art as a solely human endeavor. If art is understood as an idea or message, it could be communicated through any object.

In reconsidering the age of post-mechanical reproduction and dematerialization, we must address how to convey art to beings beyond the human realm, contemplating how to "explain pictures to the dead hare" before it evolves into an intelligent organism.

¹⁰⁹ Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness*, (Chicago: Prickly Paradigm Press, 2003), 11.

¹¹⁰ see quote. 64.

Conclusion:

Beginning with Walter Benjamin's theory of mechanical reproduction, this paper examines the contradictions arising from the phenomenon of dematerialization within the context of art. It embarks on an art historical exploration of dematerialization in the conceptual art movement and transcends the confines of art history to analyze the ontological shift in art during the era of post-mechanical reproduction.

In the initial section, this paper addresses the inadequacy of Benjamin's theory in the conceptual art era, where both the ontology and the production mode of art have evolved due to the influence of dematerialization. The inherent contradiction between mechanical reproduction and conceptual art emerges as immaterial media resist mechanical reproduction, challenging Benjamin's framework.

Next, in the art historical analysis, the concept of dematerialization is examined through Lucy Lippard's vocabulary, which, though not strictly aligned with physical and philosophical definitions, offers insight into various forms of conceptual art such as performance art, ephemeral art, and earth art. However, philosophers like Johanna Drucker contend that invisibility does not equate to dematerialization, arguing in contemporary cognitive aesthetics that ideas and consciousness remain physical phenomena. Analytically, philosophers like Thierry de Duve suggest that conceptual art scholars often conflate the informatization, dematerialization, and reduction of visibility with the tautological nature of art's ontology that conceptual art presents.

This discussion of dematerialization then leads to an inquiry into the ontology of art. Post-1960s ontological investigations have increasingly aligned with the notion of information ecosystems. From John Cage and Jack Burnham's explorations of computer art and systems aesthetics to the critique of formalism and the rise of computationalism—which reinterprets formalism as an analytical tool for art history and criticism—the shift has accelerated the informatization of art. Critiques of Wittgensteinian aesthetics have also gravitated towards systemic approaches, with de Duve, after addressing the dichotomies posed by conceptual art through a Kantian lens, predicting that art would evolve into an ecosystem. This perspective echoes Arthur Danto's concept of the artworld, while Hoelscher integrates informatization, ecosystem, and artworld views to propose a unique information theory of art.

Finally, the ontology of art in the post-mechanical reproduction era raises the question: how does art exist within a non-anthropocentric symbiotic system? Addressing this question points towards transcending the limitations of art's ontology in this new era and suggests a future research direction: how to explain art in a manner akin to Beuys'

enigmatic *How to Explain Pictures to a Dead Hare*.

Building on this, the current definition of information in art information theory requires further exploration to avoid falling into a predicament similar to formalism. Furthermore, Hoelscher's art information theory, due to its association with Danto's artworld, is constrained by human-centered perspectives. Additionally, by emphasizing Shannon's uncertainty and Simondon's differentiation, it becomes limited to addressing only modern and contemporary Western art. Resolving these issues will be crucial for advancing art information theory beyond the transitional phase of the post-mechanical reproduction era.

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