Review of the Impact of Technology Use on Modern Painting

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ABSTRACT

In the 21st century, technology has profoundly reshaped the world of art, including the domain of modern painting. From digital tools to Artificial Intelligence (AI) driven innovations, the intersection of art and technology has opened new possibilities, redefined traditional techniques, and expanded creative boundaries. This study uses qualitative methods according to a conceptual framework such as environmental visual analysis, visual studies, evaluation of visual technology, review of technical effects, study into the effects of technology on the past, and historical technology. In this study, the discussion is based on a new movement that has made an impact in the world of modern art and has had a big effect on all kinds of creativity. Another big reason for this new age of New Modern art is the progress made in computer technology. Researchers, artists, and even art lovers have been able to find new ways to make art with its help. Lastly, modern painting is seen as a major step forward in the history of the fine arts. It has opened a new chapter in the world of visual art, which is made better using technology in works. There were a lot of new ideas in New Modern Painting. Some radical ideas have been made better, like site-specific art, installation art, low-brow art, and digital art. These new ideas are now backed up by technology, like computers, all kinds of electronic gadgets, and digital publications.

Keywords: *Impact, Technology, Modern Painting, Adaptation*

INTRODUCTION

In this century, advancements in information and communication are happening at a dizzying pace, and technical items are being updated all the time. The increasing influence of technology on painting in the twenty-first century has made living more pleasant. Modernism has always been shown in art as a fresh approach to creating art that incorporates a variety of powerful aspects. In a sense, contemporary new modern art strives to give older modern art a fresh perspective. The surfaces of contemporary paintings are frequently mimicked by their contemporary counterparts, seemingly lacking concern for their uniqueness. Because it had its own beliefs, old modern paintings used to try to avoid copying the exact surfaces of previous works. It had sufficient faith in it to desire to grow and progress it. Developing and progressing meant moving the idea or principle that was underneath the surface rather than replicating the surface. Maybe the version of the new contemporary painting that we now know became established and settled in the late 1980s and early 1990s. The paintings were glitzy, enigmatic, seductive, soulful, macabre, and humorous this time around.

The concept was that it would endure and would never vanish. The modern painting's legacy is composed of several strong impressions. The legacy of the previous geniuses also consisted of these impressions. People's lives are increasingly being infused with computers, which give them a sensation of increased energy. Computer graphics technology and art have opened a world of possibilities for artists. The assurance that errors can be made without dire repercussions has allowed programs or functions to be tested. These days, software and technology are becoming more sophisticated and reasonably priced, while the World Wide Web's introduction in the middle of the 1990s provided a level of "global connectivity." Artists have traditionally been among the first to consider the culture and technology of their era; in fact, they were experimenting with digital media for decades before the term "digital revolution" was coined. Art relates to life. A civilization is made by its artists. A portion of the creative process involves fusing technology with real-world experiences. An artist never takes a safe route. Each time he creates a work of art, like a painting, he risks everything. Many notable artists throughout history have also been innovators and architects. It has long been acknowledged that artists with excellent technical skills and a disciplined mind excelled in architectural design, metal casting, pigment formulation, and the construction of intricate and colossal constructions. These are the same people who are drawn to computer art, just like in the twenty-first century. Like the great artists of the past, many of the images created by computer artists today are seen as having been magically created by technology rather than by supernatural beings. These breathtaking photos are the result of ability, training, vision, perseverance, and extraordinary technical and artistic skill, just like a genuine piece of art.

LITERATURE REVIEW

A Brief History of Technology and Art

Artistic creations were created with computers as early as the 1960s. Some of the first computer-generated photographs were produced by researcher Michael A. Noll of Bell Laboratories in New Jersey. One such image is *Gaussian Quadratic* (1963), which was displayed in 1965 as part of the "Computer-Generated Pictures" exhibition at the Howard Wise Gallery in New York. the computer-generated alteration of visuals through mathematical functions that power any process of "digital drawings" will continue to have an impact on contemporary art (Whitney et al., 1960; King, 2002). For instance, Whitney (1917–1996), who is regarded as "the father of computer graphics," created his 1961 short film *Catalogue* using antiquated military computing equipment that included effects he had been working on for years. Whitney has been known as a pioneer of computer-generated imagery

with his subsequent films, *Permutations* (1967) and *Arabesque* (1975). Whitney also worked on several experimental films alongside his painter brother James (1922–1982). Csuri started using an IBM 7094 computer in 1964 to create his first digital visuals. His 1967 video *Hummingbird* is considered a milestone in computer-generated "animation." (Hope, 2014; Sito, 2013).

According to Olsson (2016), artists' interest in the points where art and technology converged and grew as the industrial age gave way to the electronic era. Billy Kluver established Experiments in Art and Technology (EAT) in 1966 with the intention of "developing an effective collaboration between engineer and artist," according to Kluver. Artists including Andy Warhol, Robert Rauschenberg, Jean Tinguely, John Cage, and Jasper Johns were involved in the collaborative efforts for ten years. They were first seen in performances in New York and then at the Pepsi-Cola pavilion during World Expo '70 in Osaka, Japan. The intricate cooperation between scientists, engineers, programmers, researchers, and artists that would eventually characterize digital art was first demonstrated with EAT. Some pieces, including painting machines and generators of pattern or poetry, highly concentrated on the aesthetics of machines and metamorphosis. Others explored interaction possibilities and the "open" system as a post-object, with a dynamic process orientation. Artists in the 1970s also started experimenting with "live performances" and networks using "new technology," like video and satellites, anticipating the interactions that today take place on the Internet and by "streaming media," which is the direct broadcast of audio and video. These initiatives focused on a variety of topics, such as using satellites to spread television broadcasts more widely, exploring the artistic possibilities of video teleconferencing, and investigating a real-time virtual environment that transcended geographic borders (Spampinato, 2021).

Artists working in painting, sculpture, architecture, printmaking, photography, video, and performance started experimenting with new computer imaging methods in the 1970s and 80s. Digital art developed at this time into a variety of practice areas, from object-oriented pieces to those that combined dynamic and interactive elements and formed a process-oriented virtual object. According to Hui and Mokhtar (2024), the emergence of digital technologies and new media has expanded traditional painting modalities, enabling innovative expression and wider dissemination (Li et al., 2018). Modern adaptations are seen not as a departure from tradition but as an extension that respects the heritage of the art form while engaging with contemporary artistic discourse (Mei, 2005). The study may encourage artists to explore new expressions while remaining connected to their artistic roots (Yan, 2023). It also offers a model of how traditional art forms from various cultures can evolve by integrating modern elements and technologies (Li et al., 2018). Building on the ideas of conceptual art and movements like Fluxus, traditional ideas about the artwork, audience, and artist have been called into question by digital technology and interactive media. In the process, the artwork frequently becomes an open structure that depends on an ongoing flow of information and interacts with the spectator/participant similarly to how a performance might. Instead of being the only "creator" of a piece of art, the artist frequently acts as a facilitator or mediator for the audience's participation and engagement with the piece (Hutson, 2023).

The advancement of computer science and technology has led to a significant breakthrough in the professional painting art industry. Digital painting has become a popular kind of visual art in the digital age, adding new material and expanding the creative area. It is now accessible to the public as a mainstream art form. The art of digital painting is still in its infancy, with its theoretical foundation and construction idea currently being developed. This study explores digital painting, its diverse performance, and its potential for growth and new art forms (Cui, 2017). Digital art has given rise to work that crosses borders between science, technology, design, and the arts and comes from a variety of places, including academic institutions and research and development labs. Digital art tends to defy simple classification, both in terms of its history and its production and presentation. As is frequently the case, science fiction writers influence the concepts, and occasionally even the details and aesthetics, of new technology by crafting enticing visions of a technologically advanced future that motivate their replication in real life.

When William Gibson released his now-famous book Neuromancer in 1984, where he also created the word "cyberspace," referring to a network and data environment that readers could perceive as an organic informational matrix (Cavallaro, 2000).

RESEARCH METHODOLOGY

The proposed research will use an interdisciplinary technique that integrates qualitative analysis with a comparative approach to examine the influence of contemporary art on technological adoption. According to Sgier (2012), research process and design issues, sampling (the constitution of a data body), quality criteria and writing up, and further issues as necessary, depending on the topics. This conceptual framework can be defined as the evolution and impact of visual technologies that are divided into a few components. There are, contextual visual interpretation, visual studies, visual technology assessment, technical effect evaluation, historical technology impact and historical research to understand the technological developments that have influenced contemporary painting (Figure 1)
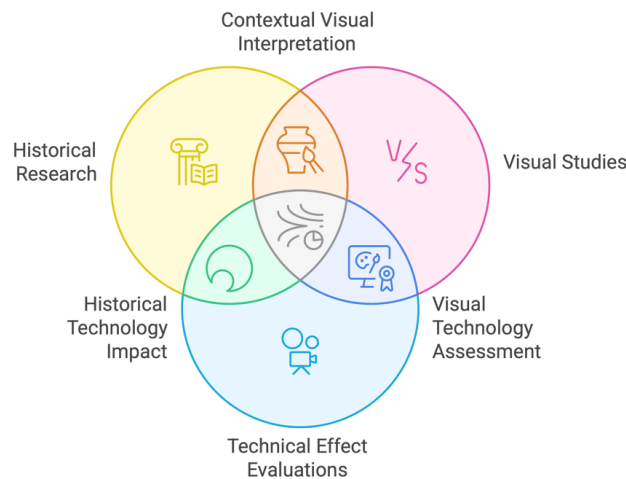

Figure 1. The conceptual framework for enhancing understanding of digital technology
(Source: Author, 2025)

Contextual Visual Interpretation

Contextual visual interpretation indicates the study and comprehension of visual art by considering the wider context of its creation, interpretation, and experience. In contemporary painting, especially with the integration of technology, this methodology is essential for understanding the profound meanings and consequences of a piece of art. The visitor must investigate both the formal components of the painting (colour, shape, composition) and the cultural, technical, historical, and sociological issues that influence its production and reception.

Visual Studies

The discipline of Visual Studies is an interdisciplinary topic that investigates the role that visual culture plays in creating human experience, identity, and comprehension of the world. To investigate how

images and visual practices impact and reflect social, political, and technical processes, it relies on ideas and approaches from the fields of art history, cultural studies, media studies, anthropology, and philosophy.

Visual Technology Assessment

The examination and study of technologies that are used to generate, display, or interact with visual material is accomplished via the process known as Visual Technology Assessment (VTA). Visual technologies are investigated in terms of their influence, efficacy, and ramifications across a variety of sectors, including the arts, the media, healthcare, education, and entertainment, among others. Through the evaluation of tools and techniques for visual creation and consumption, Visual Technology Analysis (VTA) assists us in comprehending how visual technologies impact creativity, communication, and the progression of society.

Technical Effect Evaluation

Technical Effect Evaluation is the methodical assessment of the performance, influence, and results of a certain technology or technical procedure. This assessment examines the efficacy of technology in fulfilling its stated objectives and the wider ramifications of its implementation. It is often used in disciplines like engineering, art, design, healthcare, and media to evaluate efficiency, effectiveness, and prospective areas for improvement.

Historical Technology Impact

Historical Technology Impact denotes the transformational influence of technical breakthroughs on communities, cultures, economics, and human lives over history. From the creation of the wheel to the emergence of artificial intelligence, technology has continually influenced human advancement, propelling progress but also generating new problems.

Historical Research

Historical research is the methodical examination of historical events, individuals, and civilizations to comprehend their importance, context, and influence. It entails the examination of primary and secondary materials to develop a narrative or elucidate historical events. Historical study is crucial for comprehending how the past informs the present and impacts the future.

DISCUSSIONS

Where Technology and Modern Painting Meet

The nomenclature used to describe technological art forms has never been very precise. Since its inception, what is currently called digital art has gone by several names. Digital art is now referred to as "new media art," having previously been called "computer art" (since the 1970s) and then "multimedia art." By the close of the 20th century, sound art, video, film, and other hybrid forms were considered the

main media for which the word was employed. Some claim that the phrase "digital art" itself has grown to refer to a wide variety of artistic mediums and techniques, negating the need for it to define a single, cohesive style. The use of digital technologies as a tool to create traditional art objects such as paintings, sculptures, photographs, or music and art that uses these technologies as its medium is produced, stored, and presented solely in digital format, and utilizing its interactive or participatory features are two fundamental but important distinctions made here. Even though digital technology is present in each of these forms of art, their aesthetics and forms are frequently very different from one another.

According to Timothy Binkley, Director of Computer Studies of the School of Visual Arts, New York thoughts on the digital artist and the computer, quoted:

> *"When I tell computer artists the computer is not a medium, they're typically surprised or confused. To declare the computer is not a medium elevates its artistic value. Unexpected reactions to my difficult thesis demonstrate the stark distinction between computer art and media. Since the computer can actively participate in the art-making process rather than just store its results, it offers a new perspective." (Binkley, 1998).*

This study makes widespread the belief that media is necessary for art, that the creation of artwork will use one or more media or even a blending of media in a "multimedia" presentation of the work. This has essentially been the method used historically: painting and sculpture are traditional paradigms. Content is given form and information is incorporated in a substance by changing the physical material that serves as the medium's foundation. This allows the message to travel across cultural boundaries and be sent from one time and place to another. This conception of the media's fundamental role was challenged in the 1960s by conceptual art, which showed that since art is frequently more about ideas than perceptions, anything other than thoughts can be used as the "materials" to create an artwork.

The use of tools such as computers can help move at least two important steps further away from media hegemony, he continued. It gives us a kind of common denominator in this digit where information from radically different sources, including all traditional media, can be brought together, as well as allowing us to interact with the conceptual material of bits and numbers. Furthermore, it is not only capable of processing this data in digital format, but it is also frequently more efficient than humans. The ability of computers to transfer visual shapes with a degree of flexibility that surpasses that of traditional media both statistically and qualitatively demonstrates the computer's distinctiveness as an artistic tool. A computer processes data in addition to storing it. Since computer information is represented by numbers, mathematical methods for manipulating numbers can be used to change the information. The limitations of this activity are mental rather than physical: with the assistance of your creative partner, you can probably carry out any idea you can imagine. One of the first artists in the field of digital painting, Laurence Gartel, uses a plethora of these picture changes in his work, which frequently gives it a distinctive abundance of visual activity. It might be a chaotic jumble of unrelated images created on the spur of the moment while the artist is painting, or it can be a complex pattern of colour and shape created via repetitive processing.

Figure 2. This artwork from Chris Finley, *"Goo Goo Pow Wow 2"* the year 2001 using Sign enamel on canvas on wood, 48 × 96 in 121.9 × 243.8 cm
(Source: Hidman. (2025). Artsy. From Museum of Modern Art (MoMA)|Museum of Contemporary Art, Los Angeles (MOCA): https://www.artsy.net/artwork/chris-finley-goo-goo-pow-wow-2)

Digital Tools and Platforms

The introduction of digital painting tools, such as Adobe Photoshop, Corel Painter, and Procreate, is one of the most profound effects that technology has had on the world. Artists can produce sophisticated works without the need for real materials thanks to these platforms, which provide them with the opportunity to explore further colour, texture, and shape. Painters have access to an endless canvas and the capacity to enhance their work in ways that are not possible with conventional approaches because of features such as layers, brushes, and filters. Along with the production of art, technology has also made the transmission of art more accessible to more people. Painters can share their work with an audience from all over the world via the use of platforms such as Instagram, DeviantArt, and Behance, which helps to cultivate a feeling of community and accessibility. The work in figure 2 is the artwork of Chris Finley who uses digital technology in the production of his artwork. The artwork was produced in 2001.
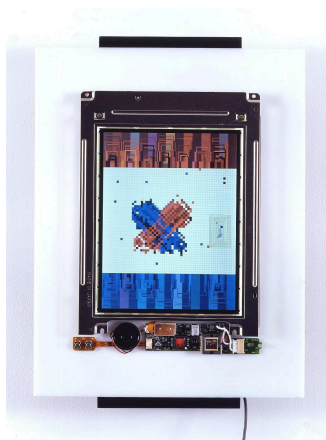

Figure 3. Title CPU by John F. Simon from the year 1999, Apple Powerbook 280c, computer software, acrylic, plastic
(Sources: John F. Simon, J. R. (2025). MoMA. From The Museum of Modern Art: https://www.moma.org/collection/works/110568)

AI and Machine Learning

The use of artificial intelligence has become a significant factor in the development of contemporary painting. Various tools, such as Deep Dream and DALL-E, can produce paintings, which might provide artists with assistance in conceptualizing new ideas or even in co-creating works. (Figure 3) While there are purists who believe that artificial intelligence-generated art is devoid of human feeling, there are others who view it as a creative partner that pushes the limits of creating new things.

Challenges and Critiques

Considering all its advantages, technology in contemporary painting presents several obstacles. Traditional methods may become less effective because of an over-dependence on digital technologies, and the wide range of work that can be seen online may make it more difficult for individual artists to stand out. Furthermore, because of the compositions that are supported by AI, problems about authorship and originality emerge, which in turn prompts arguments about what constitutes "true art."

The Process of Exploring the Material

When used by a skilled artist, a computer can be just as useful as a paintbrush or chisel in helping to convey an artistic vision. It is important to understand that excellent art is not just the result of an epiphany as it also requires meticulous attention to detail and millions of important decisions made along the way to bring the final work to life. Like how a skilled painter, printmaker, sculptor, or draughtsman expresses their distinct sense of colour, form, material, or method, a computer artist manipulates the software's numerous variables to produce visually captivating visuals. Computer art appears to be simple. Digital brushes and other tools can be used to manipulate photos to create photo-realistic images on the screen. One further illustration of the vast differences that exist between a well-made feature film and a home movie. To create their work of art, filmmakers must navigate a challenging array of lighting, cinematography, staging, narrative, and editing challenges. To take a feature picture, a small army of skilled technicians and artists must set up and operate the equipment. The amazing computer-generated special effects for the film follow suit. The term "CGI," or computer-generated image, refers to artwork produced on a computer. Any image that is produced using a computer processor can be categorized as CGI, or computer graphics, in its broadest sense. Additionally, the genre is used in amazingly wide-ranging printed materials, such as matchbook covers and billboards, among other printed materials. Computers are used in modern architecture, film and television production, package design, medical imaging, textile design, and other fields.

Its broad range of skills combined with its cutting-edge technological know-how may make it something truly unique. We can change the way we look at it and accept it as another tool, although a complex one, and a part of life. However, a tool is not an artist. To effectively construct a plastic embodiment of artistic permanency, only an artist can employ a tool. Therefore, when designated works satisfy all requirements to be called such, computer-assisted art is precisely that art. Its long-term effects are still unknown, but computers are here to stay. One of the many instruments that artists will now employ to navigate the realm of limitless possibilities is a computer. Everyone will use it for various purposes. It will eventually be considered a normal tool, like pencils, charcoal, brushes, canvas, marble, and wood, and taken for granted.

Painting and the Telematics Culture

The two potent fields of computing and telecommunications have been merging into one from the 1970s till the end of the 1990s. technological progress that has enabled the fusion of several electronic media, such as video, sound synthesis, remote sensing, and a range of cybernetic systems, to produce a novel phenomenon. These phenomena have a significant impact on both individual behaviour and society. The new advancements are accompanied by a "telematics culture" that is characterized by a set of behaviours, ideas, media, values, and objectives that differ greatly from those that have shaped society since the Enlightenment. The word "telematics" can be called computer-mediated communications networking, which includes satellite, cable, and phone connections between geographically separated people and organizations. These linkages are interfaced with data-processing systems, remote sensing equipment, and large data banks. It deals with the technology that enables communication between people as well as between artificial intelligence and perception systems and the human mind. Every network user has the potential to be a part of a global net, and there is always a chance that the globe and the individual will interact. The cultural form is used to assess community telematics development. The paper is based on an actual study on East End London telematics development. Technology may convey a societal vision, produce a compelling symbol, and involve us in a way of life (Wessels, 2000). This means that telematic art is not something that is produced by the artist, sent over the network, and picked up by the viewer. The interaction between the observer and the system produces meaning, and the system's content is always changing and evolving. In this state of uncertainty and instability, content is represented in data that is immaterial in and of itself, in addition to the crisscrossing exchanges between network users. Until it has been reassembled as a picture, text, or sound at the interface, it exists only as an electronic difference. The sensory output can be further classified as being in virtual space, painting, environment, articulated structure or substance, or existing on screen.

Marcel Duchamp was the first in modern Western art history to flip the metaphor of the glass, the window onto the outside world, back on itself to disclose what is invisible. The piece titled "The Bride Stripped Bare by Her Bachelors, even" or "The Large Glass" depicts a vitreous world where tension and interaction between male and female, natural and artificial, and human and machine generate energy and emotion. The function and status of the glass as "ground" anticipates that of the computer display, which serves as a screen for operations and transformations as well as a place for interaction and meaning negotiation. Before the invention of telematic media, Jackson Pollock's artwork may have had the strongest symbol of interconnection and the horizontal embrace. The horizontal arena, which is a demarcated area on the earth's surface, serves as the "ground" for the transformation and action that ultimately culminate in the painting. Pollock generated fields of intertwining, interweaving, branching, joining, colliding, crossing, and linking lines of energy to create his potent metaphors of connectivity. His surroundings are welcoming and inclusive, and his imagery exudes an anonymous authorship that invites the observer to participate in the meaning-making process. There isn't a single painting that is more representative or foretelling of the network consciousness that emerges with telematic society.

The new creative order that is taking shape is interactive, or "dispersed authorship," with an unpredictable and contingent canon. Hypermedia, videotext, telefacsimile, interactive video, computer animation and simulation, teleconferencing, text exchange, image transfer, sound synthesis, telemetry and remote sensing, virtual space, cybernetic structures, and intelligent architecture are just a few examples of the diverse media that are included in telematic art. Simply put, these are broad categories of technologies and processes that are rapidly diverging, uniting, and hybridizing. The technological advancements of electronic media and telematic systems are no longer perceived as merely a collection of intricate instruments that broaden the scope of published books, music performances, art, and sculpture. We now have access to a new means of consciousness, expression, and creation. Although it deals with technology and poetry, the virtual and immaterial as well as the tangible and concrete, the telematic can hardly be

classified as either art or science, even though it is closely related to both fields' discourses. The advancement of this subject will undoubtedly require the interdependence of goals and competencies in the arts, sciences, and technology, as well as the urgent development of a transdisciplinary education. Networking is more than just a technical means of exchanging information; it offers the foundation for spiritual exchange, which has the potential to bring about the harmony and creative growth of the entire world. In this scenario, the metaphor of love in the telematic embrace may not be wholly out of place, however, naively hopeful and transcendental it may appear in our fin-de-siècle doldrums.

Implications of the Evaluation of Technological Utilization in Modernism Painting

The study of the role of technology in modern painting not only reflects how art has evolved but also explores its broader implications for creativity, culture, and society. There are several key implications for studying this dynamic relationship, such as redefining the nature of art as the incorporation of technology into painting challenges traditional definitions of art. By studying this shift, scholars and artists can explore how digital tools, artificial intelligence, and virtual mediums are influencing the meaning of artistic expression. It raises questions such as:

What distinguishes human-made art from machine-assisted art?
How does the absence of physical material affect the perception of a painting?
Understanding this shift helps the art community embrace a more inclusive view of what constitutes "art" in the modern era.

Additionally, expanding the boundaries of art allows artists to transcend the constraints of traditional techniques. Digital brushes, 3D modelling, and interactive mediums offer new ways to express ideas. Researchers can study how these innovations expand the possibilities of creativity and lead to entirely new forms of art, such as virtual reality painting or generative art. Furthermore, the impact on art education and preservation of the study of technology in modern painting has profound implications for art education. Digital tools provide new methods for teaching techniques, while online platforms preserve works for future generations. Understanding these trends can help educators adapt curricula to include both traditional and modern approaches.

Meanwhile, it can reflect culture and society, meaning that art is always a mirror of society. The use of technology in painting reflects the increasing digitalization of the world, highlighting themes such as artificial intelligence, consumerism and the environment. Studying this intersection allows sociologists, historians and cultural theorists to analyse how technology shapes cultural narratives and identities.

CONCLUSION

In conclusion, Technology has undeniably transformed modern painting, empowering artists to innovate and redefine the medium. While challenges remain, the fusion of traditional techniques with digital tools ensures that painting remains a vibrant and evolving art form, reflective of the times we live in. In this age of advanced digital technology, the artist and the environment of the digital domain augur new relationships with his audience and his art. The participant provides the direct performance of the experience. The environmental hardware is the instrument. The computer acts much like an orchestra conductor controlling the broad relationships while the artist provides the score to which both performer and conductor are connected. But the artist's responsibilities here have become even broader than those of

a composer who typically defines a detailed sequence of events. Over some time, the computer's display has established a context within which the interaction occurs. The result was the concept of a responsive environment in which a computer perceives the actions of those who enter and responds intelligently through complex visual and auditory. The responsive environment would be presented as AI (Artificial Intelligence) as the basis for a new aesthetic medium based on real-time interaction between men and machines. In the long range, it promises a new realm of human experience, artificial realities that seek not to simulate the physical world but to define arbitrary, abstract and otherwise impossible relationships between action and result. In addition, it has been suggested that the concepts and tools of responsive environments can be fruitfully applied in several fields. We as always are incredibly attuned to the idea that the sole purpose of our technology is to solve problems. Now it also creates concepts and philosophy. We must more fully explore these aspects of our inventions because the next generation of technology will speak to us, understand us, and perceive our behaviour. It will enter every home and office and intercede between us and much of the information and experience we receive. The design of such intimate technology is an aesthetic issue as much as an engineering one. We must recognize this if we are to understand and choose what we become because of our own doing.

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