The Convergence of Curating and Technology: A Multidimensional Perspective on Practice

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Abstract. Curation has traditionally been a static practice confined to physical spaces, focusing primarily on the display and interpretation of artworks. However, with the rapid development of digital technologies such as VR, AR, and AI, curatorial practices have evolved, integrating virtual and interactive elements that expand beyond physical locations. This study investigates the impact of digital technologies on contemporary curatorial practices, exploring how tools like big data, VR, and AI are transforming the way curators create interactive, immersive, and multi-layered exhibition experiences. Through case studies and analysis of curatorial projects utilizing these technologies, the research examines the ethical, political, and aesthetic dimensions of curatorial practices and explores the role of technology in enhancing curatorial precision, expanding spatial boundaries, and enabling new forms of audience engagement. The study finds that technologies such as VR and AI provide curators with innovative tools to create dynamic and participatory exhibitions. However, it also highlights the ethical risks associated with overusing technology, including the potential commodification of exhibits and the diminished focus on physical artworks. Digital technologies offer significant potential for expanding and enriching curatorial practices, transforming curation into a bridge between art, culture, and society. Nevertheless, these innovations come with challenges, requiring curators to balance technological integration with maintaining the integrity of traditional curatorial values across ethical, political, and aesthetic dimensions.

Keywords: Digital technologies, Virtual reality (VR), Interactive exhibitions, Immersive experiences, Curatorial practices.

1. Introduction

This study delves into the evolving landscape of contemporary curation, where technology merges with art to create new realms of meaning. The significance of this exploration lies in unveiling how digital innovations reshape the ethical, political, and aesthetic dimensions of curatorial practices, enriching the dialogue between art and society. The research weaves through the transformative possibilities of curation, focusing on ethics, politics, and aesthetics as its guiding threads. By employing a literature analysis method, the study sifts through a tapestry of resources, drawing upon the wisdom embedded in past and present works—allowing for a thoughtful and nuanced understanding of this dynamic field. Ultimately, this research aims to envision the potential future of curation, mapping its path as it unfolds within the intersection of the virtual and the tangible, where technology and art dance together in new harmonies.

2. Curation as the Practice of an Open "Space"

In an ever-changing era, museums are also redefining their roles and responsibilities within society. Since the advent of the New Museology, perceptions of museums and art galleries have significantly shifted: they are no longer isolated "ivory towers" detached from the outside world, but rather entities embedded within a broader socio-cultural environment. As mediums that narrate art, history, and culture through exhibitions, galleries face distinct challenges. These challenges relate not only to the "authority" within museum spaces but also to how visitors interpret information and construct meaning. Consequently, museums are adopting new strategies and methods to address changing visitor attitudes and redefine their relationships with the public.

Curating is a practice that permits the creation of different interpretive contexts, embracing different political, social and psychological positions, theories and ideologies, at the same time as making cultural connections between them. To put it more simply, it is about opening up ‘spaces’ within which different discourses can be brought into relationship with one another, ‘spaces of transformation’ in which both critical and self-critical engagement are put into work as the chief transforming agents. Such ‘spaces’ would bring personal strategies into the public domain in a way that encourages an arena of intersubjectivity [1].

Therefore, these imagined contexts must engage with the discourse of observers/respondents on aesthetic, ethical, and cognitive levels. The focus should not be on the "autonomous" objects or artworks themselves, but rather on the symbolic process provided by the context as a whole, along with the transformative interaction of all its constituent elements.

As shown in Figure 1, with the integration of technology, the concept of this "transformative space" has been further expanded. Emerging technologies such as digital technology, virtual reality (VR), and augmented reality (AR) enable curation to transcend the limitations of physical spaces, creating entirely new forms of exhibition. For example, virtual exhibitions allow audiences from around the world to participate through virtual platforms, making the presentation of works no longer confined to the physical walls of museums or galleries. Technology not only enriches the forms of curation but also shifts the concept of curatorial "space" from the physical realm to the virtual one, establishing a diversified, cross-regional interactive environment.

The application of this technology makes the curatorial ‘space’ no longer a unidirectional exhibition place, but a meeting point for interaction between the audience and the works, and between the audience and the audience.



Fig. 1 Banz & Bonwinkel's VR installation, ‘Reconstructing III and Virtual Reality’ exhibition site, Priska Pasquer Gallery, Cologne, Germany, 2017 Photo by Nathan Ishar

3. The Mapping Nature of Curation: The Use of Technology in Curation

According to John Tagg, curation is similar to mapping [2]. It attempts to do the following: first, measure the dimensions of a world (such as art, artists, generations, geography, etc.); second, determine a standard of measurement (translating it into a common language like art history, ethnography, history, sociology, etc.); third, assign an ideological characteristic (presenting it with a bias based on a set of shared principles or political beliefs); and finally, conceal from the viewer the methods that lead to this measurement, shaping, statement, and ideology (never revealing the secrets of the process, especially when these decisions are based on chance or nepotism). Thus, curation, much like mapping, is always already outdated in its desperate attempt to display [3].

Curators construct a map that reflects the art world through the selection and arrangement of works. This mapping process involves evaluating and translating factors such as the artist's history, geography, and generational context. It also implicitly reveals how curators use the exhibition space to convey specific ideologies and values.

Advancements in technology have made the cartographic nature of curation more precise and complex. Digital tools enable curators to conduct detailed analyses, digital reconstructions, and data visualizations of artworks before the exhibition, helping them to optimize the layout of exhibition spaces more effectively. For instance, through big data analysis, curators can select the most relevant artworks that align with the exhibition theme from a vast collection, or use virtual reality technology to simulate exhibition layouts in advance, ensuring the optimal use of space. In addition, curators can utilize technology to create multi-layered exhibition narratives, employing interactive installations or multimedia displays to guide visitors in exploring various historical contexts and cultural backgrounds within the exhibition.

This technology not only enhances the practicality of curatorial work but also introduces new approaches to curatorial practice. In the context of digital curation, the "mapping" aspect of curation is no longer confined to physical spaces; the inclusion of virtual spaces allows curators to extend the boundaries of exhibitions globally, facilitating cross-temporal and cross-spatial artistic dialogues and cultural exchanges.

Computer proficiency is a basic requirement for museum curators today. In fact, this skill has become so commonplace that it is often no longer explicitly mentioned in job descriptions. However, future museum curators will need to specialize in digital technologies and virtual platforms, going beyond basic computer skills. Museum activities and interpretative content are no longer confined to the physical space of the museum; they now extend into virtual spaces and, increasingly, into public virtual environments. This expansion creates numerous new opportunities for content delivery and audience engagement. Museum curators must adapt to technological advancements, future trends, and virtual modes of exhibition and communication, adjusting their output accordingly.

Today, many job descriptions for curatorial positions specify that candidates must adopt "innovative, creative, and dynamic" approaches, often utilizing "the latest technologies and digital media" to "engage new audiences" and enhance the appeal of museums. Museums are not only competing with each other but also with other organizations in the leisure and entertainment industry. This means that curators must help museums create entertaining experiences alongside exhibitions and events to attract a diverse range of visitors. This demand presents an opportunity: curators must adapt and support the mission of modern museums by expanding engagement, promoting interaction, and increasing visitor numbers. However, this constant emphasis on originality and innovative ways to present information and captivate the public can also pose a challenge, sometimes overshadowing other curatorial responsibilities such as scholarly research and the development of specialized expertise [4].



Fig. 2 "Arte virtuale: Van Gogh e Monet Experience", fino al 20 gennaio 2020, Ex Caserma Guido Reni

As shown in Figure 2, one of the key potentials of virtual reality (VR) is its ability to help art museums connect their collections more closely with their cultural contexts, transforming exhibitions from mere displays of beautiful objects into platforms for conveying cultural significance. Immersive VR, incorporating traditional technologies such as explanatory texts, videos, and animations, allows audiences to actively engage with reconstructed scenes rather than passively receive information. This immersive experience has driven the development of new methods for data visualization and interpretation, enabling cultural data to be experienced through multiple senses, making complex ideas more accessible and understandable.

However, despite the many advantages of virtual reality technology, its (over)use also presents certain risks. As a tool for attracting visitors and enhancing the prestige of art museums, technology-driven visual spectacles have become a competitive strategy among contemporary museums. This trend has led to criticism that museums are becoming increasingly commercialized. Additionally, the presence of virtual exhibits often diverts attention away from physical objects, relegating them to mere "background" or "supplementary elements" in the narrative, while the contextualization of the exhibition takes center stage. This can result in the oversimplification of knowledge into mere accumulations of information. In practice, high-performance VR systems are not always the best option; sometimes, lower-end systems or non-VR exhibition methods can achieve similar effects.

In the pre-AI era, digital creation was viewed as an extension of data visualization, primarily focused on constructing digital landscapes within virtual spaces, with interactivity at its core. Artists and game developers used game engines like Unity and Unreal Engine to merge art with programming, creating early immersive experiences. However, due to technological limitations, these digital creations were often linear and singular, making it difficult to present complex interactive scenarios.

The introduction of AI technology has brought a revolutionary shift to curation, greatly expanding the creative space for artists and curators. With the assistance of AI, the construction of virtual environments has become more detailed and realistic, while also enhancing the interactivity and complexity of the works. This not only opens up unprecedented possibilities for artistic creation but

also offers audiences entirely new experiences of appreciation. AI-driven artworks are no longer predefined experiences; instead, they are dynamically generated through complex algorithms and intelligent systems. Audience interaction is no longer linear but is based on multi-agent feedback, creating a multi-layered and real-time evolving sensory environment.

This deep integration of technology and art has sparked limitless creativity, while also raising discussions around innovation and ethics. For instance, by analyzing recent AI art cases, arts workers can observe that AI artworks generally fall into three categories: outcome-driven AI-generated works, AI-powered interactive pieces, and hybrid works involving multi-agent integration of virtual and physical elements. These categories demonstrate the varied applications of AI technology in art, reflecting how technology is transforming the logic and presentation methods of artistic creation.

4. Ethical Axis: Coexistence Between Technology and the "Other"

The ethical dimension of curation encompasses the relationships between curators, exhibited works, audiences, and the broader society. As curation evolves into a platform for cross-cultural dialogue, curators must consider how exhibitions can reflect the coexistence of humans with nature, society, and technology, emphasizing that curation is not merely about displaying artworks but also about fostering interaction and coexistence between people, and between people and their environment. Technology plays a crucial role in this dimension, not only offering new modes of display but also redefining the interaction between curators and audiences.

The application of technology offers new perspectives for curation. For example, ecological curation projects can use data visualization techniques to illustrate the impacts of global climate change or employ virtual reality to provide audiences with immersive experiences of endangered species' habitats. Through these technologies, curators can vividly and directly convey messages about environmental protection and sustainability, emphasizing the symbiotic relationship between humans and nature.

However, the excessive use of technology also introduces new ethical challenges. For instance, virtual reality and AI-generated artworks may divert audience attention away from physical artworks, potentially diminishing the cultural and aesthetic value of tangible pieces. As the proportion of virtual exhibits in exhibitions increases, curators must balance the relationship between the virtual and the real, ensuring that technology does not detract from the audience's engagement with physical art. At the same time, they must work to closely integrate virtual experiences with the cultural context of the physical exhibits.

5. Political Spectrum: Interaction Between the Margins and Public Space

The political nature of curation extends beyond the content of the artworks; it also concerns how curatorial practices create public spaces that stimulate social dialogue and critical thinking. As Georges Bataille and Hannah Arendt have noted, the politics of art and curation arise from their relationship with the margins, the concept of extravagant expenditure, and the use of public space [5, 6]. Bataille emphasizes that art, through the lavish expenditure of life energy, reveals the essence of humanity's pursuit of freedom. In contrast, Arendt, approaching from the perspective of the polis, views public space as a site for political action and discourse, where artists, as "workers" within the public realm, use their art to voice political demands and concerns.



Fig. 3 Galleria 0, Mostra Tommy Malekoff, The Bluffs, 2024

As shown in Figure 3, technology has introduced new possibilities for the political dimension of curation. Through digital technology, curators can bring marginalized narratives into public spaces, amplifying the voices of marginalized communities. For example, curatorial projects focusing on social justice can leverage social media platforms to expand their reach, engaging audiences globally in discussions. Additionally, with augmented reality (AR) technology, curators can embed virtual installations within urban public spaces, transcending the limitations of physical space and prompting the public to engage with and reflect on social issues.

Furthermore, the application of technology makes the political nature of curation more direct and far-reaching. Virtual curation and online exhibitions transcend geographical and temporal boundaries, enabling curatorial projects to take place simultaneously in multiple locations around the world, fostering dialogue among audiences from diverse cultural backgrounds. This globalized curatorial model not only extends the reach and impact of exhibitions but also transforms curation into a platform for global sociopolitical discourse, further highlighting its political dimension.

6. Aesthetic Axis: Technology-Driven "Art Geography"

According to Ewa Plonowska Ziarek, aesthetics today encompasses at least three meanings. The first refers to the general theory of artistic practice, the second pertains to the theory of art reception—how artworks are appreciated or evaluated, and the third relates to the experience, practice, and knowledge of sensory theory. In this sense, aesthetics is not necessarily confined to art but also concerns various sensory perceptions, such as touch, sight, taste, and smell, including feelings of pleasure, pain, or disgust [7]. The third meaning is particularly relevant to queer theory and the emotional turn in other sexual minority studies, reflecting relationships shaped by desire and power dynamics related to class, race, environment, and other political phenomena.

The development of technology has infused new vitality into the aesthetic experience within curation. By using virtual reality (VR), augmented reality (AR), and multimedia interactive installations, curators can break away from traditional two-dimensional displays and offer audiences more immersive, multi-dimensional experiences. For example, VR technology allows viewers to experience historical events as if they were present, or data visualization can provide a tangible understanding of global climate change dynamics. Technology not only expands the aesthetic boundaries of curation but also transforms sensory experiences, enabling audiences to engage with artworks on a broader and more interactive level.

This technology-driven aesthetic shift has also prompted new reflections on aesthetic theory. Curation is no longer solely about the display of visual beauty; instead, it uses technological means to evoke emotional resonance and deep engagement from the audience. In this process, artworks are no longer static objects but become dynamic mediums for dialogue between the viewer and the artwork, as well as between the artwork and society, through the integration of curation and technology.

7. Conclusion

Curation, as an interdisciplinary practice, fundamentally engages with the multidimensional issues of ethics, politics, and aesthetics. With the rapid advancement of technology, the spaces, forms, and content of curation have undergone profound transformations. Technology not only provides new tools and platforms for curatorial practice but also compels curators to rethink the essence and future direction of curation. In the future, curators must continuously explore the integration of technology and curation, breaking the boundaries of traditional curatorial practices to create more diverse, interactive, and participatory exhibition forms. Through such practices that bridge physical and virtual spaces, curation will continue to serve as a vital link connecting art, culture, and society, fostering global dialogue and critical reflection.

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