

A Narrative Review of the Ecological Turn in Digital Art Curation

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ABSTRACT

Digital art exhibitions increasingly behave like ecosystems. Research on their curation, however, remains scattered across single technologies and single cases, so the long-term evolution of curatorial logic is poorly explained. This article reviews research literature and verifiable practice materials on digital art curation published between 2005 and 2025. The method is a theory-driven integrative narrative review. The review follows six recurring questions, which concern artwork form, media and infrastructure, curatorial workflow, communication and governance, authorship and roles, and preservation and maintenance. Four successive and overlapping phases emerge from the comparison. During Technological Accommodation, curators dealt mainly with display conditions and technical dependency, and preservation became a curatorial concern in its own right. During Platformed Participation, platform communication and participatory culture turned exhibitions from single events into relational fields that run continuously. During Immersive Systematization, exhibition spaces were organized as controlled system environments that demand constant operation and teamwork across disciplines. During Ecological Governance, hybrid operation and artificial intelligence raised governance and lifecycle management to core curatorial competences. The article then distills these findings into a Curatorial Ecology Framework. The framework groups the six questions into three layers of technological systems, social networks, and audience participation. Each layer can be traced back to the evidence assembled in the review. The framework offers a historical reference for comparison across phases, a checklist that helps practitioners locate failures of experience, collaboration, or maintenance, and a structure that future case studies can test. The article closes with limitations and directions for research on generative artificial intelligence in museums.

Keywords: digital art curation, narrative review, curatorial ecology, governance, preservation

INTRODUCTION

Digital art curators know that an exhibition no longer ends at the gallery wall. Servers must stay up. Interfaces must respond. Someone has to maintain the online version, and algorithms decide who sees the content. A long history stands behind these working conditions. Over the past two decades, digital art has not developed along a single line of technical progress. Scholars read its exhibition history instead as a series of structural turns (Shanken, 2009; Paul, 2008). The turns concern the status of the artwork, the organization of curatorial work, and the ways audiences take part. Digital technology itself changed roles in the process. It began as a novel medium to be looked at and became a basic condition that keeps artistic practice running (Weil, 2002; Giannini & Bowen, 2018).

Traditional art institutions built their systems of collecting and interpretation around stable objects that could be preserved. The meaning of digital art arises elsewhere. It is generated in how a work runs, how people interact with it, and how audiences take part (Paul, 2008; Graham & Cook, 2010). Curators therefore had to rethink the

relations among artwork, space, technology, and institution. Display, preservation, and maintenance became intertwined curatorial decisions rather than separate tasks (Rinehart & Ippolito, 2014).

Later changes in the media environment kept accelerating this turn. Web 2.0 let artists bypass institutions and reach the public directly. Virtual museums and distributed curating weakened the exhibition paradigm built on physical space (Proctor, 2010; Giannini & Bowen, 2018). As immersive media and algorithmic systems spread, curatorial narrative came to be generated dynamically in spatial arrangement, media systems, and audience action (Giannini & Bowen, 2016). The pandemic then pushed exhibitions online at scale. Digital exhibitions became indispensable to institutions, and research moved from whether to adopt digital technology to how digital curation should be governed and historicized (ICOM, 2020; UNESCO, 2020; Giannini & Bowen, 2022; Arrigoni et al., 2022; Nikolaou, 2024).

Debate on digital exhibitions and museum transformation has run continuously since the late 1990s (Paul, 2008; Graham & Cook, 2010). Yet the field studies an object that depends on fast-moving technical conditions. Its agenda has shifted with each wave of technology, from net art and interactive installation to immersive display and artificial intelligence (Shanken, 2009; Ghidini, 2019). Existing research therefore tends to proceed as a row of separate specialties. It rarely asks, over a longer span, how curatorial work has kept adjusting its methods and its criteria of judgment. Most studies also examine one case, one technology, or one institution, and seldom trace continuities between practices (Li et al., 2024; Nikolaou, 2024). Digital technology is now part of everyday institutional operation. The problems facing curators have moved from presenting works to long-term coordination, maintenance, and the allocation of responsibility. Review research has not yet consolidated this shift. The article therefore asks two questions.

RQ1. What key structural changes has the curating of digital art exhibitions undergone over the past two decades, and how do these changes form a historically continuous sequence of phases?

RQ2. What has driven curatorial logic to move from technological presentation toward sustained operation, institutional collaboration, and ecological construction? How has this turn reshaped the relations among art, infrastructure, and the public?

Answering these questions serves scholarship in a direct way. It reconnects curatorial debates that are scattered across technological contexts and makes them comparable over time. It also serves practice. Curators gain a historical reference for locating their own work, so that current debates on platforms, immersion, and artificial intelligence can be read within a longer trajectory.

Theoretical Perspective and Research Method

The Curatorial Ecology Perspective

Since the mid-2000s, curating has no longer revolved solely around the interpretation of stable objects. It increasingly intervenes in a complex environment made up of technological systems, institutional conditions, and audience participation (Paul, 2008; Graham & Cook, 2010). Because the meaning of digital art keeps being generated in operation and use, platforms, algorithms, and infrastructures acquire distributed agency (Shanken, 2009; Rinehart & Ippolito, 2014). In the post-digital condition, the digital and the material together form the operating conditions of exhibitions (Cramer, 2015; Paul, 2016). This article therefore adopts curatorial ecology as its analytical stance. Curating proceeds through sustained coordination and stewardship. It translates continually among actors with different kinds of agency, and it reconfigures the roles, responsibilities, and meanings that connect artists, technical systems, institutions, and publics. Through technological change and media migration, it displays systemic resilience (Latour, 2005; Giannini & Bowen, 2018, 2022).

Actor-network theory (ANT) helps to analyze how agency is distributed within such an ecology. Practice, on this view, is composed of human and nonhuman actors together. Devices, infrastructures, and procedures shape

the direction and outcome of action just as people do (Latour, 2005). In digital curation, algorithmic systems, platform architectures, and software interfaces set real limits on curatorial narrative and decision-making. They determine how works can be accessed, which paths interaction may take, and at what rhythm a work runs (Paul, 2016; Parikka, 2012; Graham & Cook, 2010).

Translation, in the ANT sense, is the process by which actors reshape one another's roles and relations as they interact (Latour, 2005). In curating, this appears as ongoing negotiation among artistic intention, technical capacity, institutional norms, and audience expectation (Graham & Cook, 2010; Giannini & Bowen, 2018). Curating also involves repeated black-boxing and un-black-boxing. Technical detail is reduced to workable display modules during installation. It reenters curatorial decision-making when something breaks or needs maintenance (Rinehart & Ippolito, 2014). Technical actors are thus mediators that alter the conditions of presentation, not mere intermediaries. A curatorial ecology, in turn, is a provisionally stable configuration of relations produced by continuous translation.

ANT has known limits. It explains how practice works but says less about long-term institutional structures, power asymmetries, and public accountability (Couldry, 2008; Couldry & Hepp, 2017). An ecological perspective compensates for this. Practice is embedded in a layered environment of technical systems, social relations, and cultural norms, and its stability depends on continuous adjustment across layers (Guattari, 2000). This view helps explain how curating builds durable operating structures and organizational resilience over time.

As digital technology became an institutional norm, curatorial problems extended to governance. They now include cross-institutional collaboration, resource allocation, and the attribution of responsibility (Arrigoni et al., 2022). Artificial intelligence adds new challenges of decision transparency and algorithmic bias (Krysa & Impett, 2021). Curatorial ecology connects the micro-processes that ANT reveals with these larger questions of governance. It does not replace the network perspective. It adds temporal and institutional considerations to it.

The concept draws on Guattari's three ecologies, in which practice is embedded at once in mental, social, and environmental registers (Guattari, 2000). Only the layered mode of thought is borrowed here, not the political philosophy. Curatorial ecology is then defined as a dynamic configuration of technological systems, institutional and collaborative networks, and audience participation. Its stability comes from no single element. It is achieved provisionally through continuous coordination, translation, and adjustment. Where the network perspective asks how relations emerge, curatorial ecology asks how they are sustained, reconfigured, or dissolved over time. It serves below as an analytical tool, not a normative model, and it gives the following phases a consistent frame of reference.

Review Design

Research on digital art curation spans art history, media studies, philosophy of technology, and organization studies. The literature is highly heterogeneous. A theory-driven integrative narrative review suits this situation. The approach supports conceptual integration and historical interpretation of mixed material, and it can trace how the dominant problems of a field evolve over long periods (Baumeister & Leary, 1997; Torraco, 2005; Snyder, 2019). Narrative reviews differ from systematic reviews aimed at statistical pooling. Their value lies in proposing a new conceptual organization for dispersed debates and in pointing out directions for research (Grant & Booth, 2009).

The review covers research literature and verifiable practice materials published between 2005 and 2025. The year 2005 marks the point at which digital art began entering museums and large exhibitions on a sustained basis, which prompted systematic debate on display conditions and institutional accommodation. The review ends in 2025 because hybrid exhibitions, artificial intelligence, and governance had by then become standing topics of curatorial research. The span only delimits what material is included. The unit of analysis is the shift in dominant curatorial problems, not calendar time. On terminology, digital art serves here as an umbrella term

for practices that depend on computation, networks, and real-time media. It covers what the literature also calls new media art or media art.

A narrative review does not aim at exhaustive and fully replicable database searching. It is organized instead by conceptual relevance and thematic saturation (Snyder, 2019). Thematic searches were run in major scholarly databases around digital art, curating and exhibitions, and infrastructure and governance. Citation tracking and institutional documents supplemented the searches. The material comprises peer-reviewed research, reports of international cultural organizations, and verifiable exhibition records.

Two kinds of material had priority. The first is research on digital art exhibitions and curatorial practice in institutional settings, provided it offers empirical description or theoretical analysis of technical configuration, collaboration, or governance judgment. The second is practice material of clear provenance and professional standing, such as ICOM reports, research white papers, and in-depth interviews. Material was excluded if it discussed technical development without curatorial context, if its sources could not be verified, or if no full text was available.

Three measures support the credibility of the synthesis. First, sources of different types corroborate one another. Each phase in the historical review draws at once on peer-reviewed research, institutional reports, and verifiable exhibition records. The account of Ecological Governance, for example, rests on an institutional survey (ICOM, 2020), on journal research (Nikolaou, 2024), and on biennial archives (Whitney Museum of American Art, 2021). Second, comparison was iterative. Phase divisions and thematic groupings were adjusted until new material stopped changing the structure. Third, claims remain traceable. The historical narrative and the entries in Table 1 name representative sources, so readers can check each claim (Snyder, 2019).

The four-phase division is not a linear cut along the timeline. It identifies junctures at which the dominant concerns of curating shifted markedly (Paul, 2008; Graham & Cook, 2010). Three aspects were weighed together. One is how technical conditions affected artwork form and modes of display (Shanken, 2009). Another is how museums adjusted their organization, collaboration, and maintenance arrangements (Rinehart & Ippolito, 2014; Giannini & Bowen, 2018). The third is how strongly the literature concentrated on participation, maintenance, and governance at a given time (Ghidini, 2019).

Each phase is named for its core characteristic. The four are Technological Accommodation, Platformed Participation, Immersive Systematization, and Ecological Governance, with reference periods of 2005 to 2009, 2010 to 2015, 2016 to 2019, and 2020 to 2025. These periods mark when each phase's dominant problems were most concentrated. Adjacent phases overlap and accumulate (Giannini & Bowen, 2022). The division rests on shifts in dominant problems rather than on years as such. The narrative below is organized by phase name.

Six kinds of question recur throughout the literature. In what form does a work exist. On what technical conditions does it depend. What workflow does it require. How is it communicated and governed. Who is credited and held responsible. How is it preserved. The article takes these six questions as the threads of comparison. Their labels are artwork form, media and infrastructure, curatorial workflow, communication and governance, authorship and roles, and preservation and maintenance. The four phases can then be discussed against the same set of questions (see the cross-phase comparison and Table 1).

The Historical Evolution of Digital Art Curation

This section draws together key digital art exhibitions worldwide, curatorial texts, scholarly commentary, and institutional reports from the past two decades. It shows curatorial logic moving from an object-centered to an ecosystem-centered mode. The four phases are narrated in turn. A cross-phase comparison along the six threads follows.

Technological Accommodation

Digital and new media art did not simply bring new display technologies into the museum. Scholars broadly agree that it changed the object of curating, the exhibition space, the curatorial role, and the modes of preservation all at once. The curatorial paradigm had to adjust structurally as a result (Paul, 2008; Gere, 2008; Graham & Cook, 2010).

A landmark makes the point concrete. In 2008 the National Art Museum of China staged *Synthetic Times*, a large international survey of media art curated by Zhang Ga (Fan & Zhang, 2008). The exhibition ran as a cultural program of the Beijing Olympics. Exhibitions of this scale in national museums marked the institutional arrival of digital art. They also exposed the problems of accommodation for the first time at institutional scale, from display conditions and equipment dependency to continuous operation.

Debate in this period turned first on what the object of curating actually is. The meaning of digital art arises in interaction, operation, and duration, and it cannot be fixed in a single object. Curating therefore shifted toward organizing technical conditions, operating structures, and modes of participation (Paul, 2008; Graham & Cook, 2010). The exhibition space stopped being a neutral container as well. It took part in building audience experience and narrative (Gere, 2008).

Institutions changed alongside the works. Museums came to be understood as platform institutions whose functions extend beyond display and collecting to resource integration and public connection (Gere, 2008; Proctor, 2010). Curators moved from interpreters to coordinators. Their work now mediates among artists, technicians, institutions, and audiences (Paul, 2008; Graham & Cook, 2010).

Preservation moved to the foreground in the same years. Because the works are variable and technically dependent, display and preservation cannot be separated, and curatorial decisions bear directly on how works are recorded and placed in history. Retrospective studies of the period treat preservation as an unavoidable issue of new media art's entry into institutions (Graham & Cook, 2010; Rinehart & Ippolito, 2014). Technological Accommodation thus pushed display conditions, technical dependency, and maintenance responsibility into curatorial view together. An infrastructure-centered curatorial logic begins here.

Platformed Participation

Research in this period moved from a technical orientation toward curating understood as knowledge production and cultural mediation. Discussion no longer stopped at how to display. It took in curatorial roles, discourse, institutional structures, audience experience, and preservation arrangements. The theorization turn names this change. From the early 2010s, curatorial practice was placed within frameworks that made it available for reflection, comparison, and critique.

Curating came to be redefined as a form of cultural mediation that organizes media, builds meaning, and modulates social relations in digital culture. Curating itself became an object of historical and critical study (O'Neill, 2012; Graham & Cook, 2010). Histories of web curating supply a clear sequence of examples (Ghidini, 2019). One early case is *ada'web*, launched in the mid-1990s, among the first online curatorial platforms, which commissioned artists to create for the browser. *CuratingYouTube*, active from 2007, treated the video-sharing site as a curatorial venue and organized works inside an existing platform. The 2017 project *#exstrange* was an exhibition staged entirely on eBay. Curators invited artists to make works in the form of auction listings. The works circulated as commodities, and the transaction itself became part of the work. In such projects the platform stops being a channel. It becomes the curatorial space in which art is produced and distributed.

The participatory turn also unfolded inside physical institutions. Writing on the participatory museum proposed rebuilding the interpretive frame of exhibitions around audience participation. The same literature kept a warning

in view. Interaction does not automatically produce better understanding, and criteria of selection and quality control remain matters of negotiation (Simon, 2010; Russo et al., 2008).

The Brooklyn Museum's Click! of 2008 is often cited as an institutional forerunner. Photographs were solicited from the public, rated anonymously by an online community, and installed according to the results. It became an early experiment in the crowd-curated exhibition (Simon, 2010; Proctor, 2010). StreetGallery pointed in another direction. This network of interactive screens in the urban space of Oulu, Finland, let artists publish directly to public space. Curators had to manage content placement, contextual fit, and the visibility of entry points (Kukka et al., 2017). Platformization changed more than the channels of communication. It redistributed the power of selection and the labor of curating.

Preservation questions surfaced outside institutions as well. Post (2021) examined Paper-Thin, an artist-run online platform that commissions and presents three-dimensional virtual environments. Artists and curators operate and maintain the platform themselves. The study shows that long-term care on such platforms is accomplished cooperatively, and co-operative stewardship became a key lesson of curating beyond the museum. The core change of Platformed Participation follows from this. Communication and participation entered the internal structure of curating, and selection power, the division of labor, and the responsibility of care were redistributed (Simon, 2010; Post, 2021).

Immersive Systematization

In this phase, curatorial narrative stopped relying mainly on linear text and curatorial discourse. Narrative was now generated dynamically in technical systems, spatial configuration, and audience participation. The curator turned from sole narrator into a mediator among many actors. Technical obsolescence and ethical responsibility entered the narrative frame as well.

The turn shows first in the move from text-led interpretation to experiential narrative built on immersion, interaction, and bodily perception. Media systems now prescribe the temporality, spatiality, and viewing logic of narrative (Giannini & Bowen, 2016). A study of exhibition lighting documents the change in concrete terms. New media display gradually formed a black-box norm. Darkness stopped being a technical constraint and became a display language that shapes perception and narrative. Some artists and curators have since reintroduced light deliberately, to contest the norm (Juste, 2023).

teamLab Borderless, the MORI Building Digital Art Museum opened in Tokyo in 2018, is emblematic. Roughly 10,000 square meters housed some 520 computers and 470 projectors. Works had no physical boundaries and changed continuously with visitors' movement and dwell time (teamLab, 2018). The condition of such an exhibition is no longer the display of single works. It is the total technical orchestration of projection, sensing, lighting, and circulation. Staying open depends on long-term operation and iteration. The exhibition space becomes a controlled system environment that has to be run.

The conditions of audience understanding became an explicit curatorial variable at the same time. Experimental research shows that exhibition context and the way curatorial information is provided significantly affect how audiences understand and evaluate critical art. Interpretation and guidance thus became a key setting for the quality of experiential display (Szubielska & Imbir, 2021).

The crux of the phase can be stated briefly. Exhibition space, technical systems, and audience action were organized into one system environment, and narrative is generated within it. The center of curating moved from displaying works to running systems. Continuous operation and interdisciplinary collaboration became standing requirements (Nikolaou, 2024; Li et al., 2024).

Ecological Governance

By around 2021, digital curation, online exhibitions, and immersive display had become institutional norms. The literature stopped asking whether to adopt digital technology. It turned to boundaries, sustainability, ethics, and responsibility (Giannini & Bowen, 2022; Nikolaou, 2024).

Artificial intelligence, algorithms, and platforms then began to take part in narration, and the curator stopped being the sole source of narrative. A study of nine AI-themed exhibitions in German museums between 2022 and 2023 is telling. Curatorial teams tried to deconstruct dominant AI narratives, yet they weighed critical stance against accessibility at every step. Curatorial judgment formed among artists, technology, institutions, and audiences, and the curator moved toward the position of negotiator (Maksimova, 2024). Audience participation was likewise redefined as a relational condition rather than an add-on to experience (Zardini Lacedelli et al., 2023).

Two projects condense the governance question. The Next Biennial Should Be Curated by a Machine was commissioned jointly in 2021 by the Liverpool Biennial and the Whitney Museum's Artport. The machine-learning system built by UBERMORGEN, Impett, and Krysa trained on the two institutions' archives and generated endless possible biennials (Krysa & Impett, 2021; Whitney Museum of American Art, 2021). Data bias, archival power, and the limits of responsibility in human-machine curating became public curatorial issues. The 2023 Helsinki Biennial, *New Directions May Emerge*, carried the experiment to urban scale. The project used the Helsinki Art Museum collection to reimagine the city through machine perception, and later research has examined authorship and the division of labor in human-machine curating (Schaerf et al., 2026; Yeğinsü, 2025).

Reflexive concerns followed. Interview research with institutions that collect VR and AR art shows immersive media being placed back within the frame of preservation, restaging, and future readability (Aristidou & Stylianou-Lambert, 2024). How to preserve, how to restage, and how to enter art history became the new focal points. Collaboration between institutions and artists is seen as the main way forward. Digital curation thus turned toward a more self-aware, stable, and governance-minded form of practice in the post-digital condition.

Cross-Phase Comparison

This section compares the four phases along the six threads. Change did not arrive on all fronts at once. It accumulated in a sequence that ran from media conditions through organizational workflow and communication and governance to roles and responsibility, and it accelerated markedly after 2020 (Agostino et al., 2020; Nikolaou, 2024; Iervolino & Milne, 2025).

- (1) Artwork form. Works moved from operable interactive objects to networked and participatory structures, then to environmental and systemic experiences under immersive expansion. After the pandemic they took hybrid onsite and online forms, often in distributed versions (Albrezzi, 2024; Schaerf et al., 2026).
 - (2) Media and infrastructure. Technical conditions have always structured what can be shown. The dependency ran from hardware and on-site construction, through platform interfaces and data flows, to projection systems and black-box spatial conditions. Online platforms and algorithms finally became the key infrastructure of visibility and resource allocation (Juste, 2023; Nikolaou, 2024; Li et al., 2024).
 - (3) Workflow. Project-based routines of technical liaison, installation, and testing developed into cross-role collaboration and continuous operation. The pandemic normalized remote collaboration. Digital capability turned from a communication option into an organizational competence (Agostino et al., 2020; Noehrer et al., 2021; Albrezzi, 2024).
 - (4) Communication and governance. Institutions moved from testing the waters to circulation on social platforms and the design of communicable experiences. Going online layered algorithmic visibility rules on top, which
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pushed contextual cues and governance issues to the fore. Experiments confirm that exhibition context and curatorial information shape the understanding of critical art (Szubielska & Imbir, 2021; Giannini & Bowen, 2022).

- (5) Authorship and roles. Credit moved from artists' self-built systems and technical authorship toward co-creative attribution and interdisciplinary production chains. With AI the boundaries blur further. Human-machine collaboration renegotiates role power and authorship rather than replacing the curator (Iervolino & Milne, 2025; Yeğinsü, 2025; Krysa & Impett, 2021).
- (6) Preservation and maintenance. Practice moved from variable-media migration and basic archiving to the long-term pressures of operating budgets, equipment iteration, and platform dependency. The task became explicit as whole-lifecycle management and governance responsibility. Preservation is a matter of collaboration among actors and of institutional arrangement (Post, 2021; Nikolaou, 2024).

In sum, the four phases reinforce one another across media conditions, workflow, communication and governance, and roles and responsibility. The most recent phase has accelerated into a structure of hybrid operation, collaborative governance, and AI involvement (Agostino et al., 2020; Iervolino & Milne, 2025). Table 1 condenses these differences into a comparable set of keywords.

Table 1 states the dominant concern of each phase on each dimension as a key feature plus a representative source. In Technological Accommodation, display conditions, technical dependency, and maintenance governed entry into institutions. In Platformed Participation, change concentrated on the platformization of communication and participation. Immersive Systematization reinforced the integrated configuration and continuous operation of environment as system. Ecological Governance layers algorithmic and AI collaboration onto routine hybrid operation, and it makes governance and the limits of responsibility a visible curatorial agenda. The discussion below turns to the two research questions and explains how these shifts pull on one another across the six dimensions.

Table 1. Dominant concerns of the four phases of digital art curation across six dimensions

Phase	Artwork form	Media infrastructure	Workflow	Communication & governance	Authorship roles	Preservation & maintenance
Technological Accommodation	Variable, process-based running systems (Paul, 2008)	Display conditions and equipment dependency as the entry threshold (Grau, 2007)	Project-based routines of installing and testing (Graham & Cook, 2010)	Mediatization drives institutional accommodation (Hjarvard, 2008)	Curator as translator and coordinator (Paul, 2008)	Maintenance foregrounded as a curatorial concern (Rinehart & Ippolito, 2014)
Platformed Participation	Participatory, networked organization of works (Simon, 2010)	Platforms as visibility infrastructure (Russo et al., 2008)	Collaborative production and iteration enter the workflow (Simon, 2010)	Platformed communication; participation quality under negotiation (Russo et al., 2008)	Selection partly ceded to audience communities (Proctor, 2010)	Co-operative stewardship emerges outside institutions (Post, 2021)
Immersive Systematization	Environmental, systemic forms of experience (Giannini & Bowen, 2016)	Black-box space becomes the display norm (Juste, 2023)	Continuous operation and system integration (Nikolaou, 2024)	Context and curatorial information shape understanding (Szubielska & Imbir, 2021)	Interdisciplinary team coordination (Nikolaou, 2024)	Equipment iteration and maintenance pressure normalized (Li et al., 2024)

Ecological Governance	Hybrid onsite and online presentation (Albrezzi, 2024)	Algorithms and platforms as key infrastructure (Li et al., 2024)	Remote collaboration and rapid iteration (Noehrer et al., 2021)	Governance and accountability move to the fore (Iervolino & Milne, 2025)	Machine collaboration reshapes authorship (Yeğinsü, 2025)	Whole-lifecycle responsibility (Nikolaou, 2024)
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Note. Each cell states the dominant concern of a phase on one dimension as a key feature plus a representative source. The works cited are representative rather than exhaustive. Full evidence appears in the historical review above. The periodization is heuristic, and adjacent phases overlap and accumulate.

DISCUSSION

Structural Changes across the Four Phases (RQ1)

The answer to RQ1 does not lie in a list of successive technologies. It lies in showing how the focus of curatorial work kept moving, and how those movements changed the basic structure and division of labor of the exhibition. Accounts organized by media type miss this. The four phases put the succession of curatorial problems at the center instead (Paul, 2008; Graham & Cook, 2010). The decisive change of each phase is summarized below.

In Technological Accommodation, the decisive change concerned maintenance. It turned from back-of-house support into part of curatorial judgment. Curating concentrated on the tension among display conditions, technical dependency, and preservation. The first workflows formed around installation, testing, debugging, and documented substitution (Paul, 2008; Grau, 2007; Hjarvard, 2008; Rinehart & Ippolito, 2014).

In Platformed Participation, the change went beyond a growth in channels. Platform tools and participatory culture pushed the exhibition from a single event toward a relational field that runs continuously. Audiences co-construct the interpretive frame through modes of participation and feedback loops (van den Akker & Legêne, 2016; Simon, 2010). Curatorial labor came to resemble long-term collaboration and production management (Kukka et al., 2017; Giannini & Bowen, 2018).

In Immersive Systematization, the curatorial center of gravity migrated. The exhibition space itself became the condition of the work. Dark-room control, the coordination of projection and sound, and the choreography of visitor movement decide whether the experience holds (Juste, 2023; Li et al., 2024). Curating came to depend on deployable technical stacks and continuous operation. It also needed contextual cues and interpretive support to lower the threshold of understanding (Szubielska & Imbir, 2021; Nikolaou, 2024).

In Ecological Governance, the pandemic triggered the change, but the change outlived it. Online migration hardened into a dual structure of onsite and online provision, which reordered workflows and rhythms of collaboration (ICOM, 2020; Noehrer et al., 2021; Albrezzi, 2024). Once generative AI entered curatorial processes, questions of authorship, bias transparency, and the division of responsibility became hard to avoid. Institutions now need to connect the explanation of commissions, documentation, and long-term preservation into tasks that span the whole lifecycle (Yeğinsü, 2025; Boiano et al., 2024; Iervolino & Milne, 2025).

Drivers of the Turn and the Reconfiguration of Relations (RQ2)

RQ2 has two parts, the drivers of the turn and the reshaping of relations. On the drivers, the comparison of phases and dimensions is clear. No single technology produced the turn. Communication structures and infrastructural conditions changed first. Workflows and role responsibilities followed. The pandemic and generative AI then amplified the process and pushed questions of rules and responsibility to the front. Curating moved, in effect, from displaying a work to maintaining an operating environment in which works stay visible and intelligible.

Four drivers can be distinguished. Platformization changed the structure of visibility first. Online nodes took on archival narration and sustained interaction. Curatorial labor expanded into content updating, community

collaboration, and the orchestration of communication, and an ethic of co-operative stewardship emerged that treats maintenance as an institutional task (Ghidini, 2019; Post, 2021; van den Akker & Legêne, 2016). Immersive media then drove systematization. Environment and equipment became decisive for whether the experience holds, and curating came to depend on interdisciplinary collaboration to bring narrative, operation, and safety into one process (Juste, 2023; Nikolaou, 2024; Li et al., 2024). The pandemic added hybrid operation as a routine. Online migration ran alongside reopened venues, and virtual construction and remote collaboration reshaped curatorial method in return (ICOM, 2020; Noehrer et al., 2021; Albrezzi, 2024). AI finally reordered organization and responsibility. Machine-curation experiments put bias, visibility, and the limits of responsibility on the table (Krysa & Impett, 2021; Grba, 2024). Institutions responded with clearer divisions of labor and rules of accountability, and they folded the explanation of commissions and long-term preservation into the lifecycle path (Boiano et al., 2024; Yeğinsü, 2025; Iervolino & Milne, 2025).

This cumulative process reshaped the division of labor among art, infrastructure, and the public. The artwork became a system that must be operated and maintained, so curating attends to display and to the continuity of operating conditions at once (Rinehart & Ippolito, 2014; Nikolaou, 2024). Audiences take part in generating meaning through interaction. The participatory museum made that argument early, and the recent reframing of participation as a relational condition confirms it (Simon, 2010; Zardini Lacedelli et al., 2023). Aesthetic experience also depends heavily on exhibition space and modes of presentation. Curators therefore need clear guiding narratives and information hierarchies that help audiences turn perception into intelligible content (Szubielska & Imbir, 2021).

Infrastructure moved from the back of the house to the front. It shapes how works are experienced, when they break down, and how they recover, and its agency shows itself at moments of failure and maintenance (Star & Ruhleder, 1996; Kukka et al., 2017). Workflows must therefore write testing and iteration into the process and organize long-term collaboration between artists and technical teams (Li et al., 2024). Social context matters in a parallel way. Organizational forms such as digital art festivals shape how works are seen and understood through their display formats and frames of discourse (Ghidini, 2019; Giannini & Bowen, 2018). The curator comes to resemble a coordinator and systems organizer who balances resources, institutional requirements, technical conditions, and public experience (Gaskill, 2011).

The Curatorial Ecology Framework

The answers to the two questions can be integrated into one reusable conceptual tool. On the basis of this review, the article proposes the Curatorial Ecology Framework. The framework moves beyond the object-centered paradigm of display. It reads curating as a process of systematic stewardship conducted between a dynamic technological base and a network of social collaboration. It derives from narrative synthesis and serves understanding and comparison. It is not an empirical model for statistical testing.

Three interpenetrating layers make up the framework. The technological foundation layer corresponds to media and infrastructure and to preservation and maintenance. It holds that server stacks, black-box configurations, and algorithmic models are not a neutral backstage but structural preconditions with curatorial agency. The organizational orchestration layer corresponds to workflow and to authorship and roles. It marks the shift from one-off content selection to long-term system scheduling, including interdisciplinary collaboration, rapid iteration, and the allocation of whole-lifecycle responsibility. The relational field layer corresponds to artwork form and to social context and communication. It watches how works evolve from isolated interactive objects into distributed environment-systems under the joint action of interfaces, platform distribution, and public participation.

The phase-by-dimension comparison explains where the three layers come from. Technological systems condense the threads of media and infrastructure, workflow, and preservation. Social networks condense communication and governance together with authorship and roles. Audience participation condenses artwork form and its contexts of circulation. The differences among the four phases then read as changes in the relative

weight of the three. Technological Accommodation first had to settle whether the technology would work at all. Platformed Participation shifted the emphasis to communication and collaboration. Immersive Systematization had to integrate space and equipment into an operable system. Ecological Governance places the allocation of responsibility at the center.

Theory serves the framework here as a language, not as a superstructure. ANT explains why technological systems can act. The three ecologies explain how the three concepts interlock within one niche. O'Neill's account of curatorial culture explains how authorship and institutional governance are being rearranged under platforms, AI, and hybrid operation.

From the actor-network side, the agency of infrastructure shows itself at moments of breakdown, maintenance, and upgrade, and resources and meaning are redistributed at the same time (Star & Ruhleder, 1996; Larkin, 2013). Algorithms rank, recommend, and measure. They take direct part in producing visibility and should count as key actors in the curatorial network (Gillespie, 2014; Kitchin, 2017; Seaver, 2017).

The methodological point of the three ecologies, introduced earlier, becomes a principle of cross-layer linkage. Technological systems answer to the environmental and medial register, social networks to the social register, and audience participation to the mental register (Guattari, 2000). This explains why a decision that looks like a mere technical upgrade can trigger adjustments of governance and rewrites of the experiential script, and why the reverse also happens.

O'Neill reads the curatorial turn as a mode of cultural production in which authorship and organizational form are continually redefined under changing institutional conditions (O'Neill, 2012). Under platformization, public cultural space is embedded in the connective logic and value conflicts of the platform society (van Dijck et al., 2018; Srnicek, 2017), and the algorithmic black box magnifies the invisibility of governance (Pasquale, 2015). In the phase of AI and hybrid operation, curatorial authorship takes on a distributed signature. Human judgment remains decisive, but it depends increasingly on the cooperation of models, data, and platform rules (Iervolino & Milne, 2025; Yeğinsü, 2025). The social network is thus a governance structure of power, responsibility, and explainability. The technological system is an object open to audit and negotiation.

Limitations and Future Research

This is a narrative review. Its sample includes journal articles, exhibition reports, project archives, and critical commentary (Torraco, 2005; Snyder, 2019), and three limitations follow. Language and retrieval bias comes first. Material published in English is easier to retrieve and cite, so practice and research from non-English-speaking regions may be underrepresented (Egger et al., 1997). Regional and institutional bias comes second. Archives of smaller institutions and locally published material are not fully represented. Third, the four phases are interpretive rather than hard-edged, and the heterogeneity of the evidence limits causal inference (Gough et al., 2012). NFT and tokenized curating were excluded deliberately as a boundary decision (Mezei & Lapatoura, 2024).

Future research can take three paths. Multilingual and gray literature deserves fuller inclusion, with the selection process documented more completely (Gough et al., 2012). The framework of technological systems, social networks, and audience participation can be tested through multi-case studies, in-depth interviews, and process tracing (Yin, 2018). Operationalizing the dimensions would allow differences between phases to be examined. AI and generative technology offer a test window of their own. Relevant questions include applications and risks in digital museums (Zhou, 2025) and organizational change at institutional level (Iervolino & Milne, 2025; UNESCO, 2025). Audience studies can then test how AI affects understanding and visit satisfaction (Michelsen & Mukherjee, 2026). The relation of NFTs to copyright, preservation, and institutional governance also merits separate treatment (Mezei & Lapatoura, 2024).

CONCLUSION

This review organized two decades of evidence through a four-phase periodization. Phase membership rests on shifts in dominant problems, not on calendar years. Taken together, the phases show curatorial logic moving from display-centered technological accommodation to an ecological construction centered on sustained operation and collaboration. The movement runs across all six dimensions. Works moved from objects to processes and systems. Infrastructure moved from a background condition to an organizable technical stack. Workflow moved from one-off installation to continuous operation and governance. Communication moved from institutional channels to platformed circuits of visibility. Authorship moved from a single subject to collaboration among many actors, human and machine. Preservation rose from technical logistics to an institutional capacity that spans the whole lifecycle.

The framework contributes in three ways. It construes digital curation as a relational practice that brings artists, technological systems, social networks, and audiences into one explanatory frame, which gives dispersed debates an integrative perspective. It is derived from the phase-by-dimension comparison, so each of its three layers can be traced back to the evidence of the historical review rather than standing as a slogan. For practice, the six dimensions can serve as a checklist for reflection. When an exhibition suffers broken experience, disordered collaboration, or unsustainable maintenance, practitioners can work along the dimensions to find the failing link.

The limits of application are equally clear. The framework rests on narrative synthesis and heterogeneous evidence. It explains configurations of structural conditions and the organizational turn of curatorial logic. It does not support strong causal prediction or a linear periodization (see the limitations above). Its explanatory power addresses exhibitions as organized systems. Practices that are fully de-institutionalized, or that exist only as online publishing, will require other kinds of evidence for calibration.

Digital art curation, in short, should no longer be understood as the project management of display technology. It is a practice of ecological governance and sustained maintenance built around technological systems, social networks, and audience participation. If future research and practice adopt this framework as a common language, they will be better placed under fast-changing media conditions. Reusable modes of collaboration and sustainable exhibition infrastructures become easier to build on that shared ground.

Ethical Considerations

This study is a review of published literature and publicly available exhibition records. It did not involve human participants or animals, and ethical approval was not required.

Conflict Of Interest

The authors declare no conflict of interest.

Data Availability

All materials analyzed in this review are published sources cited in the reference list. No new datasets were generated.

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