Asia Pacific Science Press

Critical Humanistic Social Theory
ISSN(O):3005-9291
ISSN(P):3005-9283
Vol. 3 No.2 (2026)

Digital Technology, Multisensory Extension, and the Scalability of Media Art
A Case Study of TeamLab Borderless Shanghai

Wan Li*

Hebei Institute of Communications, Shijiazhuang, Hebei, 050000, China

Corresponding author: Wan Li, liwanlady@126.com

Abstract: The rapid advancement of digital technology has catalyzed a profound transformation in media art, enabling its expansion across sensory, spatial, interactive, economic, and social dimensions in ways that challenge longstanding assumptions about artistic form, audience engagement, and cultural value. This article employs Marshall McLuhan's media theory — particularly the propositions that 'the medium is the message' and that media constitute extensions of the human sensorium — as an analytical framework to examine the multidimensional scalability of contemporary media art. Drawing on TeamLab Borderless Shanghai as a primary case study, the analysis proceeds through four interrelated dimensions: technology integration and sensory extension; interactivity and the reconfiguration of creative agency; spatio-temporal reconstruction; and economic and social transformation. The article argues that media art, understood through a McLuhanesque lens, does not merely deploy digital technology as a neutral vehicle for aesthetic content; rather, the technological medium itself is the constitutive message, actively reshaping perceptual ratios, reconfiguring the ontological boundary between artwork and audience, and generating systemic socio-economic effects. As generative artificial intelligence and extended reality technologies deepen their integration with artistic practice, the scalable boundaries of media art will continue to expand, warranting sustained theoretical and empirical attention from scholars of media, culture, and the arts.

Keywords: Media Art; The Medium Is the Message; McLuhan; Digital Technology; Immersive Experience; TeamLab

Published: May 28, 2026

DOI: https://doi.org/10.62177/chst.v3i2.1437

1. Introduction

The invention of photography in the first half of the nineteenth century inaugurated a new epoch in the history of art — one defined not by the stylistic convictions of individual artists or the patronage structures of courts and academies, but by the transformative agency of technology itself. From this moment, the material conditions of image-making became inseparable from the aesthetic and cultural meanings those images could produce. Photography was followed by cinema, broadcasting, video, and ultimately by the networked, algorithmic environments we now call new media. Each successive wave of technological innovation introduced not merely new tools for artistic expression but new frameworks for perception, new configurations of the relationship between maker and audience, and new contexts for the circulation and reception of aesthetic experience. Taken together, these developments constitute the broad and heterogeneous field of media art.

Scholars Hu Zhifeng and Liu Jun have defined this field as encompassing all art forms and genres that, since the birth of

photography, have leveraged post-Industrial Revolution technological advancements, the development of mass media, and changes in the modern social environment to exhibit distinct characteristics of technological innovation, media-specificity, and public participation in artistic creation, dissemination, and reception.[1] This definition usefully identifies three structural features — technological mediation, media-specificity, and participatory access — that distinguish media art from its traditional counterparts. Yet it does not fully account for what we might term the scalability of media art: that is, its inherent and apparently open-ended capacity to push beyond existing limits across sensory, spatial, interactive, economic, and social dimensions simultaneously.

This concept of scalability has become increasingly salient as digital technology accelerates the evolution of media art forms. Immersive digital exhibitions, interactive installation art, and virtual reality environments have proliferated globally, attracting audiences of a scale and diversity previously unimaginable in the context of gallery or museum practice. Japan's TeamLab and its flagship "Borderless" series represent one of the most compelling and extensively documented examples of this phenomenon.[2] Since its opening in Tokyo in 2018, TeamLab Borderless has attracted millions of visitors annually, achieved recognition as the world's most visited single-artist museum in its inaugural year, and subsequently expanded to Shanghai, where it generated substantial cultural and economic impact. The exhibition thus provides an ideal empirical lens through which to examine the mechanisms and dimensions of media art's scalability.

The theoretical framework guiding this analysis derives from the media theory of Marshall McLuhan, and particularly from two of his most foundational and generative propositions: that 'the medium is the message,' and that media constitute extensions of the human sensorium. Writing in the mid-twentieth century, McLuhan's insights anticipated with remarkable prescience the conditions of digital media culture, and they continue to provide powerful conceptual tools for understanding how media forms — rather than the content they carry — function as the primary agents of perceptual and social transformation. Applied to contemporary media art, McLuhan's framework illuminates the ways in which digital technology does not simply serve as a vehicle for aesthetic ideas but actively constitutes and transforms those ideas, reshaping experience at the level of sensation, cognition, sociality, and economic exchange.

The present article proceeds through four analytical sections following this introduction. Section 2 situates McLuhan's theory in relation to media art and provides an overview of TeamLab Borderless Shanghai as the central case study. Section 3 undertakes a multidimensional analysis of media art's scalability, examining in turn its dimensions of technological integration and sensory extension; interactivity and the expansion of creative agency; spatio-temporal reconstruction; and economic and social impact. Section 4 offers a synthetic conclusion that reflects on the implications of this analysis for understanding the evolving paradigms of art communication in the digital age.

2. McLuhan's Media Theory and TeamLab Borderless Shanghai

2.1 "The Medium Is the Message": McLuhan and the Epistemology of Media

Marshall McLuhan's proposition that 'the medium is the message,' introduced in Understanding Media: The Extensions of Man (1964), constitutes one of the most durable and contentious interventions in twentieth-century media thought. The claim is at once simple and radical: the social and cultural significance of a medium resides not in the particular content it carries — the programs broadcast on television, the texts printed in books — but in the formal and technological properties of the medium itself. As McLuhan argues, the content of any medium is always another medium: the content of writing is speech, the content of print is the written word, the content of the telegraph is print. What matters, therefore, is not the message that passes through the channel but the channel itself, since it is the channel that restructures the patterns of human association, perception, and thought.[3]

Terence Gordon's prefatory remarks to the standard English edition capture McLuhan's position concisely: form follows content, and innovative technologies give rise to new emotional and intellectual structures. This insight has profound implications for the analysis of art and aesthetics. If we accept McLuhan's premise, then the meaning and value of an artwork are not fully or even primarily determined by its representational content — what it depicts, narrates, or symbolizes — but by the technological medium through which it is produced and experienced. The shift from oil paint to photography, from photography to cinema, from cinema to digital installation, thus represents not merely a change of tools but a succession of

distinct perceptual and cultural regimes.

McLuhan's allied concept of media as extensions of the human sensorium deepens this analysis. Every medium, in McLuhan's account, extends or amplifies a particular human faculty: the wheel extends the foot, clothing extends the skin, the book extends the eye, the telephone extends the ear and voice. Crucially, this extension is never neutral; it always involves what McLuhan calls 'amputation' as well — the extension of one sense or faculty tends to numb or diminish others, producing systematic shifts in what McLuhan terms the 'sensory ratio' — the balance and relative dominance of the senses in perceptual experience and cultural life. The advent of print culture, in McLuhan's diagnosis, produced a profound shift toward visual dominance and linear, sequential modes of thought, with far-reaching consequences for politics, education, and social organization. Electronic media, by contrast, restore a more integrated, multisensory mode of experience, moving culture toward what McLuhan famously described as the 'global village.'

It is within this theoretical field that media art becomes particularly legible. Artists, as McLuhan himself recognized, are among the most sensitive perceivers of the transformations wrought by new media technologies. They are, in his terms, the 'early warning system' of culture, registering shifts in sensory ratio and cognitive pattern before these shifts become visible to the broader society. [4] Media art, understood in this sense, is not merely art that happens to use technological media; it is a practice that makes the medium itself the subject and site of aesthetic inquiry, foregrounding the ways in which technology reconfigures sensation, perception, and human relationship.

2.2 TeamLab Borderless Shanghai: A Profile

Founded in 2001, TeamLab is an interdisciplinary creative collective whose membership spans artists, programmers, engineers, architects, mathematicians, and CG designers. Under the creative direction of Toshiyuki Inoko, the group has consistently pursued a practice at the intersection of art, technology, and natural philosophy, developing what they describe as a 'continuity' between the human body, the living world, and the digital environment. TeamLab's flagship 'Borderless' concept, first realized in Tokyo in 2018 and subsequently instantiated in Shanghai in 2019, represents the fullest realization of this philosophy at institutional scale.

The Shanghai iteration of TeamLab Borderless occupied approximately 6,600 square meters within the Oil Tank Art Center, a converted industrial complex on the city's Huangpu River waterfront. The exhibition deployed 480 computers, 470 projection systems, and 980 sets of beam lights to create what TeamLab describes as a 'world of art without boundaries.' The spatial design explicitly rejects the conventions of the 'white cube' — the neutralized, standardized gallery environment that dominated twentieth-century exhibition practice — in favor of a 'black box' environment in which LED installations, interactive sensors, and ultra-high-resolution projections dissolve the boundaries between walls, floors, ceilings, and the bodies of visitors. Artworks are not contained within discrete frames or plinths; they overflow and interpenetrate, flowing from room to room and responding dynamically to the presence and movement of the audience.

Among the exhibition's most prominent works, Forest of Flowers and People: Lost, Immersed, and Reborn uses real-time computation to generate a continuously changing environment of flowering and decaying digital blooms, their rhythms directly responsive to visitors' movements and touch. The Flow of the Ocean: Colors of Life transforms the physics of water into cascading digital particles, creating a perpetual waterfall that extends from wall to floor and generates ambient sound from visitors' passage through it. Bubble Universe suspends visitors within a luminous field of responsive light spheres, each reacting to touch and proximity. Floating Crystal World uses mirrored LED systems to construct an apparently infinite extension of space, collapsing the perceptual certainty of physical boundaries.

The name 'Borderless World' is not merely descriptive but programmatic. It signals a deliberate effort to dissolve the multiple boundaries that structure conventional art experience: the boundary between the artwork and the space it inhabits; the boundary between individual works within a single exhibition; and, most fundamentally, the boundary between the work and its audience. It is this systematic dissolution of boundaries — technological, spatial, temporal, and social — that makes TeamLab Borderless Shanghai an exemplary case for investigating the multidimensional scalability of media art.

3. Multidimensional Analysis of the Scalability of Media Art

3.1 Technology Integration and Sensory Extension

The most immediately apprehensible dimension of media art's scalability is its capacity for multisensory engagement. Traditional visual art — painting, sculpture, drawing — addresses the audience primarily through the optical channel, situating the viewer in a relationship of contemplative distance from an object whose boundaries are clearly demarcated. Even photography and cinema, despite their greater capacity for temporal and narrative complexity, remain fundamentally visual media, received in conditions of relative bodily passivity. The sensory regime of the art museum, as scholars from Tony Bennett to Brian O'Doherty have noted, is in this sense a profoundly restricted one: vision is privileged, touch is forbidden, sound is incidental, and bodily movement is constrained to the pace of ambulatory contemplation.[5]

Media art disrupts this regime at its foundation. Through the integration of real-time motion capture sensors, algorithmic generation engines, surround-sound systems, and high-resolution projection arrays, it activates multiple sensory channels simultaneously and establishes dynamic feedback loops between the visitor's body and the work's behavior. In TeamLab Borderless Shanghai, this multisensory integration reaches a level of technical and aesthetic sophistication that is difficult to convey in description alone. The Flow of the Ocean: Colors of Life exemplifies the principle with particular clarity. The work uses complex algorithms to model the physics of water — its viscosity, momentum, turbulence, and diffusion — and to generate a real-time visual representation of these dynamics as cascading digital particles across walls and floor. Critically, this representation is not a pre-rendered animation; it is a computation that responds continuously to the position and movement of each visitor, such that the waterfall's path and character are altered by the presence of bodies within the space. Simultaneously, the movement of the particles generates brief tonal sounds that accumulate, through the visitors' collective and spontaneous movement, into an emergent musical texture. The work thus achieves a genuine fusion of visual, auditory, and kinesthetic experience — a synthesis that McLuhan's theory of sensory extension identifies as both the promise and the challenge of electronic media.

From a McLuhanesque perspective, this multisensory synthesis is not merely a technical achievement but a reconfiguration of the sensory ratio itself. The dominance of the visual that McLuhan associated with print culture and the 'Gutenberg Galaxy' is here disrupted by the reintegration of hearing, proprioception, and motor engagement. Visitors to TeamLab Borderless are not stationary observers positioned at a regulated distance from a fixed object; they are moving, listening, reaching, and responding participants whose bodily agency is constitutive of the work's ongoing existence. This shift in sensory ratio corresponds, in McLuhan's framework, to a corresponding shift in cognitive pattern and social orientation: from the detached, sequential, individualistic mode of typographic culture toward the more immersive, participatory, and relational modes characteristic of what he termed the 'electric age.'[6] Media art, on this analysis, does not simply represent this transformation; it enacts and extends it, functioning as a medium whose message is the restructuring of human perception itself.

This analysis is further supported by the broader technical architecture of the TeamLab system, which constitutes what might be described as a unified multi-sensory extension apparatus. The integration of real-time motion capture sensors, data processing engines, CG rendering pipelines, and high-resolution projection matrices does not merely amplify individual senses but creates the conditions for their synergistic coordination — what media theorist N. Katherine Hayles might describe as an 'embodied' mode of engagement in which cognition is distributed across body, environment, and computational system.[7] The scalability of media art, in this sensory dimension, is thus understood not as an additive accumulation of stimuli but as a qualitative transformation of the experiential field.

3.2 Interactivity and the Reconfiguration of Creative Agency

If sensory extension constitutes the technological foundation of media art's scalability, interactivity constitutes its most radical departure from the conventions of traditional aesthetic experience. In the conventional paradigm of Western art, the meaning of a work is understood to originate with the artist: the creator determines the work's form, content, and symbolic significance, while the audience's role is essentially interpretive — to receive, decode, and appreciate what the artist has made. This paradigm was significantly complicated by twentieth-century developments in aesthetic theory, from the Russian Formalists' attention to the reader's role in activating literary meaning, to Roland Barthes's proclamation of 'the death of the author,' to Wolfgang Iser and Hans Robert Jauss's reception aesthetics. The artwork itself typically remained a stable, bounded object; what varied was the interpretation brought to bear upon it, not the work's material constitution.

Media art challenges this paradigm at a deeper level by making the audience's behavior literally constitutive of the work's form. This is not simply a matter of interpretation; it is a question of ontology. In TeamLab's Forest of Flowers and People: Lost, Immersed, and Reborn, the flowers that fill the space bloom or wither in direct response to the movements and gestures of visiting bodies. The computational system continuously tracks visitor behavior and translates it into generative parameters that determine the work's visual state at every moment. There is, as a result, no fixed or canonical version of the work; it exists only as a perpetual process of co-generation, in which the artist's algorithms and the audience's bodies function as collaborative agents. No two visitors' experiences are identical; indeed, no single visitor's experience is ever fully repeatable.

Marcel Duchamp famously argued that the creative act is not performed by the artist alone; the spectator contributes to the creative act by deciphering and interpreting the work's inner qualifications, and thereby adds their contribution to the creative act.[8] Duchamp's formulation remains, however, primarily semiotic: the spectator contributes to meaning, but the material work remains unchanged. TeamLab's practice radicalize Duchamp's insight by extending it to the material and computational level: the spectator's contribution is no longer merely hermeneutic but generative, directly altering the physical and digital substance of the work in real time.

McLuhan's distinction between 'hot' and 'cold' media provides a useful, if imperfect, framework for understanding this transformation. Hot media, in McLuhan's typology, are those that deliver a high-definition message with little room for participatory extension — a photograph, a lecture, a film projected in a darkened cinema. Cold media, by contrast, offer low-definition information that requires the audience to 'fill in' or complete the message through active sensory and cognitive participation — a telephone conversation, a seminar, a cartoon. By this rubric, media art constitutes an extreme case of cold media: it not only invites but requires, and indeed technically mandates, the audience's active physical participation in order to exist at all. The work cannot be experienced from a position of detachment; it demands full bodily immersion.

This radical interactivity has significant implications for the scalability of media art as a form. By transforming the audience from consumers of a fixed aesthetic object into co-producers of a dynamic aesthetic event, interactive media art creates a fundamentally different — and, in many respects, more expansive — model of artistic engagement. It expands the creative process beyond the studio or the artist's intention; it distributes agency across the entire experiential encounter; and it produces a form of experience that is, by design, impossible to reproduce fully through secondary means such as documentation or description. The work can only be known through direct participation, which is itself a powerful driver of the physical attendance and embodied engagement that distinguishes media art from most other contemporary cultural forms.

3.3 Spatio-Temporal Reconstruction

One of McLuhan's most influential, if frequently misread, observations concerns the relationship between media and time-space experience. In his analysis of the electric light bulb — which he famously proposed as a pure medium, a medium without content — McLuhan noted that electricity eliminates the spatial and temporal factors in human interaction, enabling a form of presence that is simultaneously immediate and universally distributed. This analysis anticipated the network cultures of the digital age with uncanny precision, and it gains additional resonance when applied to the spatial and temporal operations of contemporary media art.

In terms of spatial experience, TeamLab Borderless Shanghai effects a thoroughgoing dissolution of the conventional categories through which gallery and museum space is organized. The 'white cube' model of exhibition design, as O'Doherty's classic analysis demonstrated, is far from neutral: it constructs a purified, idealized space in which the artwork is isolated from the contaminating influences of the everyday world, and the viewer is positioned as a disembodied, mobile eye moving from object to object along a prescribed circuit.[9] The spatial grammar of the white cube encodes a particular ideology of aesthetic autonomy and individual contemplation that has dominated Western art institutions for over a century.

TeamLab's spatial practice explicitly subverts this grammar. Through projection mapping technology applied across all surfaces — walls, floors, ceilings, and even the bodies of visitors themselves — the exhibition dissolves the physical divisions that structure conventional gallery space. In The Flow of the Ocean: Colors of Life, the digital waterfall extends continuously from vertical to horizontal surfaces, rendering the distinction between wall and floor experientially irrelevant. The absence of physical barriers between individual works means that images, sounds, and movements flow from one zone of the exhibition

to another, creating what TeamLab describes as an 'organic, borderless digital continuum' — a space that functions less like a collection of discrete objects than like a single, differentiated environment.

This spatial reconfiguration is accompanied by an equally significant temporal one. Forest of Flowers and People: Lost, Immersed, and Reborn condenses the full cycle of the seasons — the progressive unfolding of blossom from bud, the fullness of summer, the decay of autumn, the apparent death of winter, and the renewal of spring — into an accelerated temporal sequence of approximately one hour, the duration driven and varied by visitors' interactions with the space. This compression of ecological time into experiential time is not merely a spectacular effect; it is an epistemic operation that restructures the visitor's relationship to natural temporality and to the cycles of growth, decay, and regeneration that constitute biological life. By collapsing the time scale of seasons into the time scale of a museum visit, the work makes perceptible — makes felt, rather than merely understood — the continuity of natural process and the human body's implication within it.

Beyond the physical exhibition space, the digital architecture of media art enables a further scalar extension through reproducibility and networked distribution. Unlike traditional artworks — whose originality and aura, as Walter Benjamin famously analyzed, depend on their singular material existence in a specific place — media artworks are, in principle, infinitely reproducible across multiple physical and digital sites.[10] TeamLab Borderless has been instantiated in Tokyo, Shanghai, and other cities; each iteration adapts to its specific architectural context while sharing the fundamental algorithmic and aesthetic logic of the original. Online documentation, virtual walkthroughs, and augmented reality extensions further extend the exhibition's reach to audiences who may never enter a physical TeamLab space. This capacity for scalar distribution across geographies and platforms represents a form of spatio-temporal scalability with no precise analogue in the traditions of fine art, and it corresponds closely to McLuhan's identification of 'immediacy' and 'interconnectedness' as the defining characteristics of electric media.

3.4 Economic Benefits and Social Impact

McLuhan's proposition that the 'message' of any medium is the totality of the changes it introduces — in scale, pace, and pattern — into human affairs, extends the analysis of media art beyond the domains of aesthetics and perception into the material structures of economy and society. The scalability of media art, on this account, is not adequately described by an analysis confined to the experiential level; it must also encompass the structural transformations that media art generates in economic, social, and cultural systems.

The economic impact of TeamLab Borderless provides some of the most striking evidence for this claim. In its inaugural year of operation in Tokyo in 2018, TeamLab Borderless welcomed 2.3 million visitors, establishing it as the most visited single-artist museum globally and surpassing the annual attendance of many of the world's major public museums. Approximately half of these visitors came from outside Japan, and a significant proportion listed the exhibition as a primary motivation for their visit to the country — making TeamLab Borderless, in effect, a significant driver of inbound cultural tourism and its associated economic multiplier effects across hospitality, transportation, and retail sectors. In Shanghai, the 2019 installation at the Oil Tank Art Center attracted over 200,000 visitors in its early run, making it among the most popular cultural events in the city at that time.

These figures reflect a broader structural development in the cultural economy, in which media art has moved beyond the traditional commercial channels of gallery sales, auction markets, and institutional patronage to generate new models of experience-based economic value. Organizations such as TeamLab, Canada's Moment Factory, and South Korea's Emberin have demonstrated that media art can underpin sustainable institutional and commercial models at scale, functioning as an anchor for urban cultural districts, a platform for brand collaborations, and a driver of what economists of culture term the 'experience economy' — the sector in which the primary commodity is not a material object but a distinctive, memorable, and often shareable experiential event.

This economic dimension is inseparable from, and in many respects produced by, the social and communicative dimensions of media art. The immersive, participatory, and visually spectacular character of works like those in TeamLab Borderless generates a powerful incentive for social media documentation and sharing, which in turn extends the exhibition's reach and cultural capital far beyond the population of direct visitors. The selfie, the Instagram story, and the shared video clip

function as forms of ambient advertising that reinforce the exhibition's identity as a must-see cultural event and contribute to the production of what sociologist John Urry might describe as the 'tourist gaze' — a collectively constructed and media-mediated structure of attention and desire.

At a deeper level, however, the social significance of media art extends beyond these economic and promotional functions to engage with substantive questions of ecology, ethics, and social organization. TeamLab's Forest of Flowers and People: Lost, Immersed, and Reborn is premised on a philosophical commitment to what the collective describes as 'nature's unpredictability' — an acknowledgment of the limits of human control over ecological processes and an invitation to reflect on the interdependence of human life and the natural world. In the context of accelerating climate change and ecological crisis, this is not an apolitical aesthetic proposition; it is an intervention in one of the defining moral and political debates of the contemporary moment. By translating the complexity and dynamism of natural systems into a form that can be directly felt and navigated rather than merely described or depicted, the work achieves a mode of environmental communication that operates at the level of bodily affect and pre-reflective experience — a register that research in environmental psychology and risk communication consistently identifies as more motivationally powerful than abstract informational appeals.

Furthermore, the spatial philosophy of TeamLab Borderless — its insistence on fluid, unbounded movement through an interconnected environment — enacts, in aesthetic form, a social imagination in which fixed identities, rigid hierarchies, and inviolable boundaries give way to dynamic, relational, and permeable configurations. Visitors from radically different cultural, linguistic, and social backgrounds navigate the same space, respond to the same stimuli, and participate in the same generative events; their bodies become, temporarily, nodes in a shared computational and aesthetic network. This experience of shared participation across difference does not, of course, resolve the social divisions and inequalities that structure life outside the exhibition; but it does provide a form of experiential evidence that such configurations are possible — an imaginative resource that may, in ways not easily traced or measured, contribute to the social and cultural work of reimagining human community.

Conclusion

The foregoing analysis has sought to demonstrate, through a combination of theoretical argument and case study analysis, that the scalability of media art — its capacity for continuous expansion across sensory, spatial, interactive, economic, and social dimensions — is not an incidental or contingent feature of its current technological instantiations but a structural property of the medium itself, rooted in the fundamental characteristics of digital technology as an artistic medium.

Drawing on McLuhan's media theory, the analysis has argued that digital technology in media art functions not as a neutral instrument for the delivery of aesthetic content but as a constitutive medium whose formal properties actively reshape the structures of perception, cognition, sociality, and economic exchange. The 'message' of media art, in McLuhan's sense, is the totality of changes it introduces into the experiential and social field: the reorganization of sensory ratio through multisensory integration; the redistribution of creative agency through interactivity; the dissolution of conventional spatio-temporal frameworks through projection mapping, algorithmic generation, and networked reproducibility; and the generation of economic and social transformations at regional, national, and global scales.

TeamLab Borderless Shanghai exemplifies each of these dimensions with unusual clarity and ambition. Its technical system constitutes a sophisticated apparatus for multisensory extension, activating visual, auditory, kinesthetic, and proprioceptive channels simultaneously in ways that restructure the visitor's perceptual engagement with the work and the space. Its interactivity radically redistributes creative agency, making visitors' bodies and behaviors constitutive of the work's ongoing form and meaning — a practical realization of Duchamp's theoretical claim that the spectator contributes to the creative act, extended to the level of material and computational co-production. Its spatial and temporal operations dissolve the fixed boundaries of the conventional exhibition environment, creating an experience of continuous, fluid immersion that challenges the epistemological presuppositions of the 'white cube' model. And its economic and social impact — in terms of visitor numbers, tourism revenue, environmental communication, and the imaginative modeling of alternative social configurations — demonstrates that media art has become a significant force in the broader cultural and material economy, with effects that extend far beyond the immediate context of the gallery or museum.

The implications of this analysis extend beyond the specific case of TeamLab. As generative artificial intelligence, extended reality technologies, and large-scale sensor networks deepen their integration with artistic practice, the conditions for media art's scalability will continue to expand. AI-driven generative systems offer the prospect of works whose complexity and responsiveness exceed anything achievable through conventional algorithmic composition; extended reality technologies promise to dissolve even the residual boundary between the exhibition space and the everyday environment; and networked sensor systems open the possibility of artistic works that operate at urban or even global scales, incorporating the data of entire cities or populations into their generative logic. Each of these developments will intensify the questions this article has begun to address: about the nature of aesthetic experience in conditions of radical immersion and interactivity; about the distribution of creative agency in human-machine artistic systems; about the social and ethical responsibilities of artistic practices that operate at the scale of mass cultural experience; and about the relationship between the formal properties of artistic media and the perceptual, cognitive, and social transformations they introduce.

McLuhan famously observed that the artist is the person who 'in any field, scientific or humanistic, who grasps the implications of his actions and of new knowledge in his own time' and acts accordingly. In this sense, media artists like TeamLab's Toshiyuki Inoko are doing precisely what McLuhan identified as the artist's characteristic social function: registering, in sensory and aesthetic form, the transformations that new media technologies are introducing into human experience and social life, and making those transformations available for collective reflection and response. Attending carefully to what media art does — not merely what it represents or depicts, but how it reconfigures the conditions of experience itself — remains one of the most important tasks facing scholars of media, culture, and the arts in the years ahead.

Funding

No.:HB25-ZD011, Principal Investigator: Li Wan; Project Title: Key Project of the Hebei Provincial Cultural, Art, and Tourism Research Program: "A Study on the Expandability of New Media Art from the Perspective of Art Communication"

Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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