



The Ontology of Simulation: Rethinking 3D Graphics as Constructed Reality in New Media Art

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DOI : [https://doi.org/ 10.5281/zenodo.20680388](https://doi.org/10.5281/zenodo.20680388)

ARTICLE DETAILS

Research Paper

Accepted: 21-05-2026

Published: 10-06-2026

Keywords:

3D Graphics, Constructed Reality, Digital Ontology, Indexicality, New Media Art, Simulation

ABSTRACT

The debate over the use of 3D graphics in new media art often hinges on questions of authenticity and presence. While artists like Michal Rovner resist computer-generated imagery for its perceived artificiality and lack of embodied indexicality, others embrace it as a means of constructing new experiential realities. This paper argues that 3D graphics should not be dismissed as synthetic or inauthentic, but understood as a distinct ontological model of reality — one that privileges *constructability, immersion, and simulation* over material presence. Through the lens of media theory and practice-based analysis, the study examines how digital environments expand the artist’s agency to generate spatial-temporal experiences beyond the limits of the camera’s indexical trace. Drawing upon theoretical frameworks from Lev Manovich, W.J.T. Mitchell, and Vilém Flusser, and analyzing contemporary practices that merge 3D, video, and interactivity, this paper reconsiders the aesthetics of the “artificial” as a site of new forms of authenticity — rooted not in resemblance to the real, but in the reality of code, data, and perception.

1. Introduction:

In the discourse of the visual presentation of New Media art, the emergence of 3D computer graphics has opened a new faultline and created two choices for the artists: the indexical image of the real through video photography and the constructed reality of the simulacra through digital simulation. This fundamental aesthetic choice is not about using technology; it's about the ontology. What kind of ‘real’ is



produced by each choice? Which form of embodiment is at stake when they are created in a virtual environment rather than filmed?

Many notable new media artists rely more on filmed human figures than on 3D graphics, considering the indexical function of the camera as the conduit for existential and spiritual presence. The artificiality of the synthetic characters of 3D animation is rejected for the lack of ambiguity and lived residue captured in the real videography captured in the real light and time. This stance reflects the idea of Andre Bazin, as he mentioned photographs as carriers of the trace of reality rather than being an inventor. (Bazin, 1960) For these artists, the moving image is the embodiment of mortality, retaining the ethical and phenomenological connection to being.

On the other hand, to a growing generation of artists, 3D graphics transcend the indexical limits of the camera to an alternative reality. They construct digital physicalities simulating the flow of light, matter, and motion, not as limitation but as invention, by relying on real-time rendering, generative systems, and immersive environments more than their predecessors. The constructedness of the images and their capacity to visualize unseeable, representing the body and the code with the help of each other interchangeably, creates the aesthetic power of the art practice of these artists.

This study aims to trace how the use of indexical traces and constructed reality negotiates authenticity, embodiment, and perception in the digital age. By analyzing the philosophical stances of the contrasting artists who rely on filming and those who simulate, the paper argues that the 3D graphics in New Media art creates its own virtual reality that is different from the photographic real, and therefore it's a matter of choice and artistic language for the artists to choose one of them. Drawing on the theoretical views of Lev Manovich, Vilém Flusser, and W.J.T. Mitchell, the paper stands for the idea that 3D graphics can be interpreted as an emergent aesthetic condition in the upcoming era rather than identifying it as an escape from materiality (Flusser, 2000; Manovich, 2001; Mitchell, 1992).

2. Theoretical Framework: Index, Simulation, and Embodiment

2.1 Indexicality and photographic legacy: Theoreticians dealing with photography by their traditional theories anchor photography and cinema or the moving image as the indexical trace to the reality that is captured chemically with the help of lights passing through specific lenses. The notion that the photographic images bear a literal correspondence to real events and bodies gives the idea of 'authenticity' to those scholars. In the critical writings on the moving image, this position is implicit to them, as they identify movies to be a recording of reality. (Mitchell, 1992)



The author of the book *The Language of New Media* (Manovich, 2001), noted that the indexical identity of the images alter when the movie-making shifts from analogue systems to digital ones. The digital technologies are able to generate images that is no longer possible to record through cameras. Therefore the digital moving image is no longer merely a record of a filmed event but a constructed sequence of coded elements.

2.2 Digital Representation: Computability and Media Transformation: According to Manovich, it's a radical shift in how the images either still or moving images is constituted in digital media. Unlike the optical record, the images that are generated are fundamentally computable numeric data, which can be manipulated, recombined and synthesized in a way that optical analogue systems cannot. The distinction between recorded and constructed becomes collapsed as both of them are reduced to data structures in the software environment.

Breaking the primacy of indexicality, the shift also defies the causal chain of the physical world to simulate a photorealistic appearance. Consequently, this digital representation invites us to rethink the concepts of realism and authenticity, and create a newer aesthetics that can handle the ontology of simulated images through software.

2.3 Simulation, Constructed Presence, and Digital Images: In media theory, addressing the question about representation in the context of the transformation of the image to simulation from indexicality, these two are always seen in contrast to each other. The simulation is considered to be a construction of a model of the real world, potentially generating forms of experience that are internally coherent even if they lack a physical original. According to Jean Baudrillard, a simulacrum is not a copy of the real, but rather a copy of its own reality (Baudrillard, 1994). There is a significant development of this perspective in the digital age by many thinkers.

This theoretical shift of idea can provide the groundwork to interpret the reason to choose 3D simulation over photography by many contemporary artists. These generated images, therefore, can be reevaluated as a different mode of reality, to understand why 3D graphics and digital simulations are no longer thought to be inherently “artificial” in a pejorative sense.

2.4 Towards an Ontology of Digital Images: In the digital context, the simulacra is neither a representation nor detached from the sensory world; it is an intermediate ontological condition occupied by it, shaped by interactive potential, algorithms, and software logics. The argument of this paper is based on the increasing consensus among media theorists that digital images are not merely dissimilar



from their analogue predecessors in degree but also in kind. Specifically, the argument is that 3D graphics should be interpreted as active modes of constructing new realities in contemporary art, rather than as inferior approximations of reality.

3. The Artists of the Real: Indexicality and the Human Trace:

The initial cohort of video artists — including Nam June Paik, Joan Jonas, Bill Viola, and Peter Campus — saw the video image not as an artificial creation but as a temporal extension of the corporeal form. Their technique was grounded in what may be termed the ethics of the real: a firm belief that the moving picture, regardless of manipulation, retains the essence of human presence, gesture, and temporality. For them, the potency of video resided not in the creation of parallel realities but in the enhanced awareness of current reality.

Case studies: Michal Rovner, Bill Viola, Pipilotti Rist, Yuge Zhou and Tony Oursler

3.1 Michal Rovner: Among the new media artists, Michal Rovner offers significant alternative as indexical visuals to the digital simulation. Though at times, her works are mistaken to be simulated, she strongly mentions that the figures she uses are ‘real recorded’. In her words, “My work is an interaction with reality... it is very important for me to always start with reality, with recording or collecting something from reality.”

By removing identifying features and other details of the human bodies, such as facial features or other characteristics of individuality, she converts the videographed human figures into animated figures. But as long as their movements are real, not simulated, they retain an emotional and phenomenological weight beyond the synthetic realism of 3D graphics. The figures exist between their bodily presence and symbolic reference. Resembling some marks or scriptures, each of these forms often derives from live movements, proving that videographic art can transform reality instead of abandoning it. Rovner’s work preserves the affective energy of the human trace while she uses digital means to make it universal (Rovner, 2002).

3.2 Bill Viola: Being one of the early pioneers of video art, Bill Viola historically had access to early analog video technology over celluloid film strips. Later, he acquired digital technology in the form of digital cameras and editing technologies only.

He chose video as a medium that has a direct and living temporal relationship with reality and human experience, rather than being a fabricated image-based medium. It's a spiritual instrument for him. His



thoughts are more aligned with what André Bazin described as “the mummy complex” of the photographic image: the human desire to preserve being against time (Bazin, 1960; Viola, 1995).

As he describes in an interview, video is the ‘electronic water’, for him. Its movement, continuity, and current are linked with the bodily and mental energy. As Viola always distrusted pure spectacle, the camera, for him, functions as an extension of the senses and mind, integrating sound, memory, emotion, and bodily awareness as the ‘keepers of the soul’, and creating an ontological bond with the moments it captures.

3.3 Pipilotti Rist: For Rist, video should be a bodily and live medium rather than being a flawless digital illusion. She points out that virtual reality is still just organised information. Even high-definition videos lack the true richness of life. Rist uses the imperfection of video as the third eye on the lower level. She uses the camera in a way that the visuals create a transformed encounter with the physical reality, devised by extending the capacities of the human senses we already have. Often believing in the immersive nature of the video, she uses the camera as a machine to rediscover the world rather than replacing it.

3.4 Yuge Zhu: Hailing from China, Yuge Zhou kept her practice focused on the visual experiences of New York City. Although trained in computer science, she gave precedence to observation rather than simulation, choosing the camera as her primary tool of work. Starting from human movements to everyday social rhythms, she developed her visual language by recording real environments. While editing the footage, as she mentions, she discovers “interesting relationships” and “micro-narratives” which helped her explore the rhythms and patterns of urban life, architecture, and collective human behaviour. The camera acts as a device of encounter besides capturing the visual, creating an exchange between the subject and the artist. She accepts the contingencies of real life, letting uncontrolled events happen during the recording, which is not possible in a simulated world. Zhou likes to explore the natural essence of life rather than creating it through machines.

3.5 Tony Oursler: As Oursler deals with the psychological and social reality in his video works, the technology acts as a tool to manipulate or transform the recorded reality. His video works, projected on a 3-dimensional sculptural surface, seek to mirror memory, trauma, thought processes, and psychological states, creating a mental space and embodiment instead of a simulated illusion. As video photography is directly connected with real human experience, his goal to connect with the soul of the viewer is reached through his process. To him, this mental space is different from the virtual worlds made by simulated



graphics. Therefore, in an explicit denial, he mentions computer-generated spaces as “replication for replication’s sake”, and could have been made better by videography.

We see that the artists mentioned here are connected not just their preference of photographic representation of the real, but a common conviction that the recorded images carry ethical and ontological weight. Their works ensures a field of empathy and recognition. On the other hand digital simulation appears to be suspect in this framework, as it scissors the connection between the indexical presence and the source, between seeing and its beeing.

4. The Artists of the Constructed: Digital Physicality and the New Real:

Despite of the strong denial of computer generated reality by a majority of video artists throughout the history of Video Art, there are new generations of artist embraced 3D graphics and digital simulation to explore new aesthetic possibility. The absence of the real is not detrimental, but a generative condition, a parallel to the living reality. They find a constructive power inn the algorithmic image which does not document existence, but model it, proposing the truth may not live within the illumination of light, but in the coherence of simulated experience.

Case Studies: teamLab (Japan), Refik Anadol, John Gerrard, Ian Chang, Kate Cooper

4.1 teamLab (Japan): This Japanese artist collective provides a very prominent example of such shift towards immersive digital ontology by creating large-scale installations, such as Borderless (2018). These works are vast generative digital environment that change in form in real time. The moving image here are not pre-recorded videos but algorithm driven dynamic interactive process that simulate images as the viewers make movements. They breaks the frame of the video as well spreading the display spreading through the whole interior keeping the work truly ‘borderless’.

They create an algorithmic sublime abolishing the boundaries between the viewers and the image also. As participants influence the display by their physicality in the form of movements through sensors, generative codes creates a response to that presence and produce illusion of an interaction in a world that is neither virtual nor real, but both of them simultaneously.

Here the 3D simulation turns into a medium of embodiment, where the bodily movement of the viewers complete the work by activating it. Its a procedural presence, arises from the relational data than the photographic indexicality of Rovner’s recorded human trace. Thus, a persuasive form of reality is achieved within this temporality as long as the code runs.



4.2 Refik Anadol: Extending the idea of digital physicality, Anadol's data-driven installations, where algorithm translate vast datasets into moving 3D visualisation, transform computational processes into monumental and immersive forms of aesthetic experience. For example, the *Machine Hallucination* (2019) suggest that the algorithmic operations themselves can be a new material for art, which he refers as 'data painting'. Though the origin of these images lies not in a physical recording, what Anadol achieves in these works can be termed as 'post-indexical sublime', where the viewer encounters the images with the sensory intensity of reality. The temporal fluidity of Anadol's work becomes therefore a strength instead of being a weakness for the absence of referential sources (Anadol, 2019).

John Gerrard: Gerrard is considered one of the pioneers of simulation in moving image art. His works such as 'Leaf Work (2020)' leaf-coverd are rendered in real time and inteacts with the surrounding with help of a game engine software. The images in his work demonstrates the paradox of what Lev Manovich describes as "paradox of digital realism", where the images are entirely synthetic but visually indistinguishable from the photographic reality (Gerrard, 2020; Manovich, 2001).

4.3 Ian Chang: Chang creates autonomous reality employing simulation in his works. Using procedural generation and game-engine technologies, he explicitly values unpredictability in his work by building digital ecosystems that behave more like a nature than a narrative movie. For example, his work *Emissaries* (2015-17) is a virtual space where events emerge rather than being captured by a camera. They elements of the visual composition interacts with each other in real time instead of being pre-determined indexical traces of reality. Consequently his works parallels the ontological foundations of lens-based media with a living system in its own right (Chang, 2015).

4.4 Kate Cooper: Cooper deliberately abandoned photographic indexicality for CGI (Computer Generated Imagery) figures. She inspects the synthetic bodies that increasinglu populate the contemporary consumerist capitalist culture adorned by advertising and digital graphics. Her avatars, such as in the work 'We Need Sanctuary' (2018), she treats the avatar as a site where labour, gender, visibility and self-representation are negotiated. Though she does not use simulations, but with help of 3D animated figures she critiques the ideal of the digital bodies by making them vulnerable, restricting their ability to perform as exhausted or sick. The avatar's virtual presence, thus, becomes a political and speculative space where the representative mechanisms are questioned.



5. **Between the Real and the Simulated: Toward a Hybrid Ontology**

In contemporary new media art the dialectic between 'indexical presence' and the 'digital construction' is no longer a simple opposition as they coexists within the same aesthetic periphery, creating which may be called as a 'hybrid ontology of the image', which neither glorify the recorded real nor fully deny it for an algorithmic invention. Instead the separation dissolves into the continuum of mediated experience with help of the technologies such as motion capture, photogrammetry, AI generation and real-time rendering. Artists are now allowed to transform physical bodies and environments into a data-driven form without disrupting their connection to the reality.

The photographic index acts as a starting point in these works rather than a destination. Motion Captured performances, Scanned objects and recorded movements produce works that lie between the documentation and invention by becoming the virtual embodiments. Artists such as Lu Yang demonstrate this phenomenon in her work through human presence that is translated into algorithmic for while keeping the traces of embodied presence.

In recent times around 2020s, the mass popularity of various AI models available for public use further complicates the relationship, where it has become possible to create convincing reality without any indexical referents or input. These images operate through plausibility, instead of functioning as evidences of the real existence. These works engage viewers with the persuasive experience of reality.

Contemporary artists are increasingly shifting from the concerns of fidelity to the concerns of perceptual authenticity. The real and virtual coexist in an interconnected mode of experience and no longer stand as opponents. In this expanded arena, simulation does not act as substitution of the reality, but stand as a newer way of constructing visual reality within the dialectics of ontological philosophy of constructed visual images. The choices between filming and modelling or between index and simulation becomes less related to the question of truth, instead, connects more to the question of artistic strategy in the contemporary new media art. The most notable works generate from the tension between these two condition now onwards.

6. **Conclusion: Beyond the Artificial**

The traditional contradiction between the filmed and digitally simulated image is not sufficiently explains the contemporary new media art any more, as the coexistence between these two operate as continuum. Veteran artists such as Bill Viola, Michal Rovner and others who choose to continue to emphasize the significance of the indexical imagery and bodily presence, will exist in this arena with the others like



teamLab, John Gerrard, Refik Anadol and others who demonstrate the simulated environments as a mean to generate meaningful aesthetic and emotional experience.

In such context, the ability of an artwork to create convincing and engaging viewer experience is preceded over authenticity. A new form of truth emerges through these digital works from perception, interaction and immersion rather than photographic evidence alone. As a consequence, 3D graphics constitute a different form of real, one constructed through code, computation an experience, leaving the previous idea of understanding it as an artificial substitute for reality. The simulation becomes a creative strategy to the contemporary artists to consider it as a visualizing phenomena that is not possible to record. The technology thus expanding the possibilities of the artistic expression in this post-indexical age.

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