From Photography to Blockchain

Digital Art, Provenance, and the Next Major Movement in the Art World

Aaron Long

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Abstract. Every technological medium that has entered the fine-art canon — photography, film animation, computer-generated imagery — traveled the same road: invention greeted with derision, a speculative or commercial phase dismissed as non-art, piecemeal museum validation, and finally absorption so complete that the medium's outsider period became difficult to remember. This paper argues that digital art, together with the blockchain provenance layer popularly known as NFTs, is traveling that road now — and traveling it faster than any predecessor. Photography needed roughly seventy years from the daguerreotype to its first American museum exhibition and a century to its first museum department; computer art needed fifty years from the 1965 Stuttgart and Howard Wise exhibitions to a comprehensive Whitney survey; blockchain-native art needed four years from the first CryptoPunks to museum accession and eight to the permanent collection of the Museum of Modern Art. We assemble market data through mid-2026 — the collapse of speculative NFT volume from a wash-inflated 2021–22 peak to roughly $300 million per month, alongside the simultaneous acceleration of institutional embedding (Centre Pompidou, LACMA, MoMA, Toledo, Art Basel's Zero 10 platform) and high-net-worth collecting (51% participation; 14% of fine-art spending) — and argue that the boom-and-bust is not evidence against major-movement status but a recurring feature of how new media are absorbed. We analyze the NFT strictly as a receipt: a provenance instrument whose strengths (attribution, chain of custody, programmability) and failures (link rot, the royalty collapse of 2023, the oracle problem) we compare against a traditional provenance infrastructure that was already broken. We close with scenarios for a hybrid art world shaped by the great wealth transfer, blockchain registration of physical works, and the authorship crisis introduced by generative AI.

Contents

1. Introduction and thesis

In March 2021 a JPEG file by a commercial illustrator from Charleston sold at Christie's for $69,346,250 [20]. In September 2025 Christie's quietly closed the digital art department it had built on the strength of that sale [26]. Between those two dates lies one of the fastest boom-and-bust cycles any art market has ever recorded: total sales of non-fungible tokens fell from a 2021–22 peak measured in the tens of billions of dollars to roughly $300 million per month by early 2026, the flagship NFT Paris fair canceled its 2026 edition a month before opening, and the art segment of the NFT market specifically contracted 93 percent from its peak [21][24][25][27]. To many observers the verdict seemed obvious. The NFT was a mania, the mania ended, and digital art would return to the margins from which it had briefly and embarrassingly escaped.

This paper argues that the obvious verdict is wrong, and that it is wrong in a way art history has seen before. In the same five years during which the speculative token market collapsed, the Centre Pompidou, the Los Angeles County Museum of Art, the Buffalo AKG Art Museum, the Institute of Contemporary Art Miami, the Toledo Museum of Art, and the Museum of Modern Art all brought blockchain-native works into their collections — MoMA twice, adding CryptoPunks and Chromie Squiggles to its permanent collection in December 2025 [38][43]. Art Basel, the most powerful commercial institution in contemporary art, launched a dedicated digital-art platform, Zero 10, in Miami Beach in December 2025 and expanded it to Hong Kong and Basel within seven months, the Basel edition co-curated by Trevor Paglen with blue-chip galleries Hauser & Wirth, Marian Goodman, and Sprüth Magers among twenty exhibitors [44][45]. And the collectors whose spending sustains the $59.6 billion traditional art market told Art Basel and UBS's 2025 survey that a majority of them — 51 percent — had bought digital art, which now accounts for 14 percent of high-net-worth fine-art spending, third among all media behind painting and sculpture [47]. Speculation collapsed; the medium kept climbing.

Our thesis is the strong one: digital art — the practice stretching from 1960s plotter drawing through net art, generative systems, AI collaboration, and blockchain-native work — constitutes a major movement in the full sense, comparable to photography's entry into the canon rather than to any single style or school. The claim rests on three arguments. First, a historical argument: the trajectory digital art is tracing — derision, speculative froth, museum validation, absorption — reproduces, at accelerating speed, the exact path photography walked between 1839 and 1940 and animation walked between 1928 and 1958 (Sections 3–4). Second, a structural argument: like photography and unlike any mid-century 'ism,' digital practice changes every layer of the art system at once — how work is produced (code, models, networks), how it is distributed (instantly, globally, without gatekeepers), how it is owned (tokenized, fractionable, programmable), and how authorship itself is constituted (generative systems, AI collaboration). Movements that change only style arrive every decade or two; shifts that change the medium of art itself arrive once or twice a century (Section 2). Third, an evidentiary argument: the market and institutional record through mid-2026, read carefully — with wash trading removed, with the collectible and art segments separated, and with museum-quality practice distinguished from profile-picture speculation — shows a medium being embedded, not expelled (Sections 5 and 7).

The word 'NFT' will be used narrowly. A non-fungible token is not an artwork; it is a verifiable digital receipt — a public, timestamped record of issuance and ownership transfer that may point at an artwork [28]. Confusing the receipt with the art produced both the mania (receipts traded as assets) and the backlash (the mania mistaken for the medium). Section 6 takes the receipt seriously as infrastructure: what it actually certifies, where it fails, and how it compares to a traditional provenance apparatus whose own failures — the Knoedler forgery scandal, the litigation-driven closure of the Warhol and Basquiat authentication boards — are the relevant baseline [33][34]. Section 8 turns to the future: the generational wealth transfer now estimated at $124 trillion through 2048 [48], the extension of blockchain provenance to physical art, and the authorship questions that generative AI has forced into copyright law and auction rooms alike. Section 9 states what would falsify the thesis.

2. The cadence of movements: a frequency heuristic

Art movements do not run on a clock, but their historical spacing is regular enough to support a rough taxonomy, and the taxonomy matters because it tells us what kind of claim 'major movement' is. At the largest scale, changes that reorganize what art *is* — not merely how it looks — arrive roughly once or twice per century. The Renaissance consolidation of humanism and linear perspective (Brunelleschi's demonstrations of the 1410s–20s, codified in Alberti's *De pictura* of 1435) is one; the modern break that runs from the first Impressionist exhibition of April 1874 through Cubism (1907–14) and the arrival of abstraction (c. 1910–15) is another; the postwar reconfiguration through Abstract Expressionism, Pop, Minimalism, and Conceptual art (c. 1943–72) arguably a third. Each paradigm shift bundled a technological or epistemic change (oil and perspective; the tube-paint and photography pressures behind Impressionism; mechanical reproduction behind Pop) with new institutions and new collecting classes.

Plate V. Monet, Impression, Sunrise (1872)

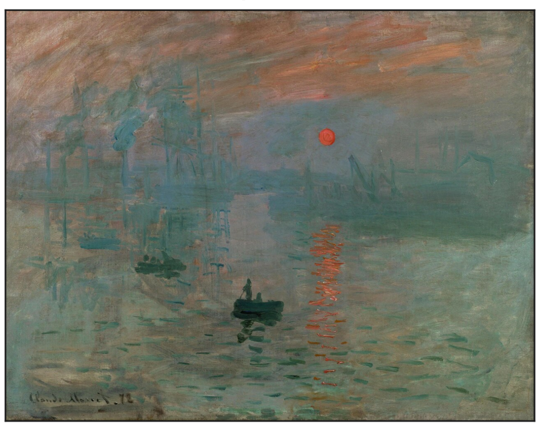


Plate V. The painting that named a movement, reduced to its schema. Critic Louis Leroy coined 'Impressionism' as an insult in his review of the April 1874 exhibition — the canonical case of a derided technique becoming a canonical movement.

Below the paradigm level, mid-level movements — coherent styles with named practitioners, manifestos, and dealers — cluster far more tightly, especially after 1860: Impressionism's exhibiting life spans 1874–86; Fauvism roughly 1905–10; Cubism's heroic phase 1907–14; Dada 1916–24; Surrealism 1924 into the 1940s; Abstract Expressionism's dominance c. 1947–60; Pop from Hamilton's 1956 collage to c. 1970; Minimalism c. 1963–68; Conceptual art c. 1966–72. The spacing is ten to twenty years, with individual movements sustaining ten to fifteen years of real vitality (Figure 1). Niche substyles — Pictures Generation, YBAs, net.art — burn through cycles of six to twelve years. The heuristic is crude, but it does one useful thing: it forces the question of which shelf a candidate phenomenon belongs on.

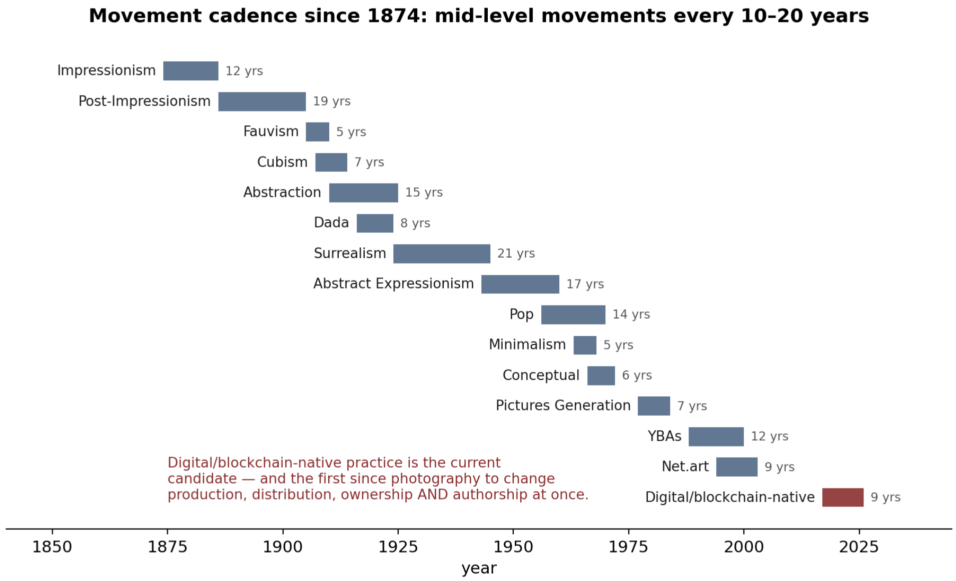


Figure 1. Movement cadence since 1874. Mid-level movements arrive every 10–20 years and sustain roughly 10–15 years of vitality. Digital/blockchain-native practice (red) is the current candidate — but its claim in this paper is to the paradigm shelf, not the mid-level one, because it alters production, distribution, ownership, and authorship simultaneously. Dates are conventional art-historical anchors.

Two objections to using the heuristic at all deserve immediate acknowledgment. The first is that the movement concept itself may be obsolete. Critics surveying the twenty-first century have noted that no consensus 'ism' has formed since roughly the 1980s; Hal Foster has suggested that the movement has given way to the 'scene,' and others have proposed, only half-ironically, that the market itself is the most powerful movement of the era [19]. If movements no longer form, digital art cannot be one. But this objection cuts the other way: the thesis here is not that digital art is another entry in the mid-level catalogue but that it is a medium-level shift of the kind that produced *photography* — and photography was never an 'ism' either. It hosted many (Pictorialism, straight photography, New Vision) while itself being something larger: a new technical basis for image-making that forced the institutions of art to expand. That is precisely the structural signature digital practice displays.

The second objection is that the heuristic invites numerology — counting decades instead of reading history. Agreed; the heuristic proves nothing. Its role is diagnostic. When a candidate phenomenon (a) persists across multiple market cycles, (b) generates its own institutions and then captures existing ones, (c) reorganizes production and distribution rather than only style, and (d) provokes a legitimacy war whose script matches earlier media transitions, the frequency heuristic says: this is not a six-year substyle. The remainder of the paper assembles the evidence for (a) through (d). The strongest comparative evidence comes from the two best-documented precedents, to which we now turn.

One further pattern belongs in the framework before the case studies: the canon clock is compressing. Table 1 measures, for each technological medium, the interval from technical origin to first museum validation. The intervals fall monotonically — roughly seventy years, ten, fifty-three (for computer art's full survey canonization; its first museum platforms came decades sooner), four. Three forces drive the compression, and all are structural rather than accidental: each new medium inherits the legitimacy arguments won by its predecessors (no curator in 2021 needed to relitigate whether machine-made images can be art — MoMA settled that for photography in 1940); the validating institutions themselves now compete for the credit of early adoption, where in 1910 they competed to withhold it; and specialized curatorial roles — departments of photography then, curators of digital art now — exist precisely to shorten the gap. Compression is therefore not hype outrunning judgment; it is the institutionalization of judgment about new media. It also sets expectations for the argument ahead: on the compressed clock, the four-year lag from CryptoPunks to museum accession is not suspiciously fast. It is on trend.

Medium	Technical origin	First museum validation	Lag
Photography	1839 (daguerreotype)	1910 Albright exhibition & purchases	~71 yrs
Animation	1928 (Steamboat Willie)	1938 Met cel accession	~10 yrs
Computer art	1965 (Stuttgart / Howard Wise)	2018 Whitney survey (platforms from 2001)	~53 yrs
Blockchain-native	2017 (CryptoPunks, ERC-721)	2021 ICA Miami accession	~4 yrs

Table 1. The compressing canon clock. Sources: refs. [1–18, 37].

3. Two precedents: photography's long march and Disney's campaign

3.1 Photography, 1827–1940: from 'art's most mortal enemy' to the museum

The earliest surviving camera photograph, Nicéphore Niépce's heliograph *View from the Window at Le Gras*, dates to 1827 [1]; the daguerreotype was announced to the world in 1839. Within twenty years the new medium had a mass market — and the art world's considered contempt. Reviewing the Salon of 1859, Baudelaire called photography 'art's most mortal enemy,' fit to be the 'servant of the sciences and arts' but ruinous wherever it 'is allowed to encroach upon the domain of the impalpable and the imaginary' [2]. The objection was structural, not aesthetic: a mechanical process, available to anyone, producing infinite identical copies, could not be the vehicle of singular artistic genius. Every clause of that indictment would be recycled, verbatim, against digital images 150 years later.

Plate I. The machine that was 'art's most mortal enemy'

the 1839 instrument

the instrument domesticated

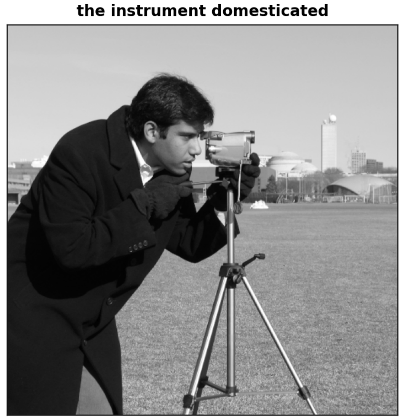


Plate I. The 1839 objection in physical form: a wooden box with a lens, operable by anyone — and, at right, its descendant domesticated ('Cameraman', the standard public-domain test photograph of the digital-imaging literature: the machine that shot film became the file that trained the algorithms).

Legitimation took the form of a deliberate, decades-long institutional campaign. Alfred Stieglitz founded the Photo-Secession in 1902, the quarterly *Camera Work* in 1903, and the Little Galleries of the Photo-Secession — '291' — in 1905, explicitly to exhibit photographs as one would exhibit paintings [3]. The breakthrough came in November 1910, when the Albright Art Gallery in Buffalo staged the *International Exhibition of Pictorial Photography*: more than six hundred photographs by sixty-five artists, organized with the Photo-Secession — the first exhibition in which an American museum presented photography as fine art, and the occasion of the first museum purchases of photographs in the United States, including a core group of twelve prints by Steichen, Stieglitz, Kühn, Annan, and Clarence White [4]. Full institutional arrival took another generation: the Museum of Modern Art established the world's first curatorial department of photography in 1940 under Beaumont Newhall, three years after his landmark survey *Photography 1839–1937* [5]. And market normalcy took longer still. The first photography-only commercial gallery to succeed opened in 1969; Sotheby's created the first auction-house photography department in 1971; and the take-off decade was the 1970s, when the number of American photography galleries went from roughly a dozen to more than 125 and a Paul Strand platinum print appreciated from $125 to $12,000 [6][7]. The full arc — invention to museum exhibition to museum department to robust market — spans roughly seventy, one hundred, and one hundred thirty-five years respectively.

Plate VI. Photography, 1827–1907: from experiment to art

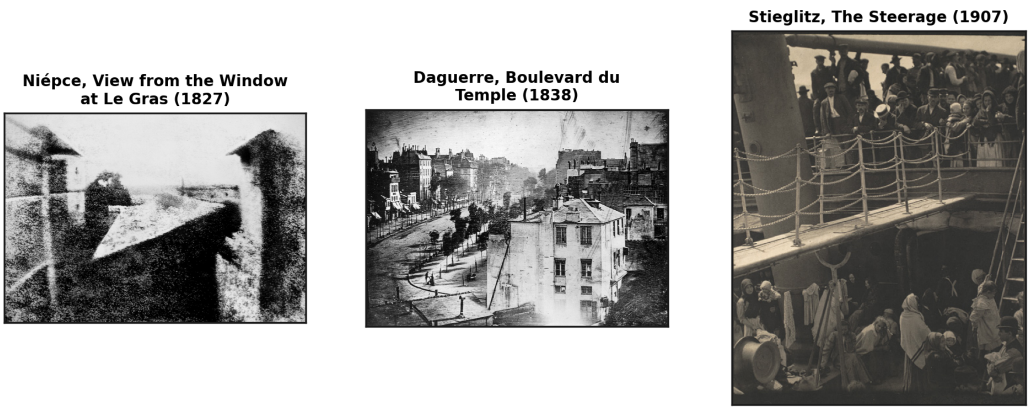


Plate VI. Three stations of the canon path: the earliest surviving camera photograph; the first photograph of a human being (the bootblack on Daguerre's boulevard); and the Stieglitz masterwork made the year of the Photo-Secession's museum breakthrough. Images: Wikimedia Commons, public domain.

3.2 Disney's campaign for animation, 1938–1966

If photography shows the long default path, animation shows what a determined commercial actor can do to compress it. Walt Disney pursued fine-art status for animation as strategy. In July 1938, months after *Snow White*'s triumph, the Disneys signed an exclusive agreement making San Francisco dealer Guthrie Courvoisier the sole marketer of Disney original art; by that autumn, production cels — industrial byproducts the studio had been washing and reusing — were selling in galleries nationwide at $5 to $35, framed and certified [8]. That same year the Metropolitan Museum of Art accessioned a *Snow White* cel, 'The Vultures' (object 38.154, 'Gift of the artist, 1938'), delivered through the dealer Julien Levy that November and announced in January 1939, with Met paintings curator Harry B. Wehle calling Disney 'a great historical figure in the development of American art' [9][10]. MoMA followed with *Bambi: The Making of an Animated Sound Picture* in 1942 [11]. Disney's own capstone was *The Art of Animation*, the touring exhibition he conceived during *Sleeping Beauty* production, which opened in 1958, toured the United States, Europe, and Japan, and ran at Disneyland from 1960 to 1966 — the exhibition that announced, in its own framing, that animation 'had become' a fine art [12][13]. The sequel is familiar: vintage cels became blue-chip collectibles, and by 2021–22 the Met itself staged *Inspiring Walt Disney*, treating the studio's output as continuous with French decorative art [10].

Plate II. Steamboat Willie (1928) — public domain since January 1, 2024

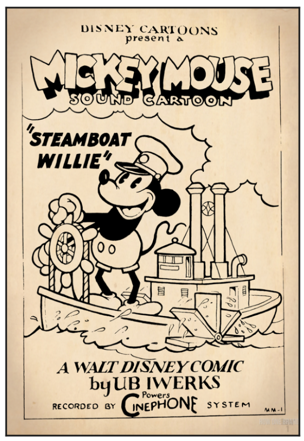


Plate II. Animation's year zero. Steamboat Willie (1928) — the film that made the medium a mass phenomenon — entered the U.S. public domain on January 1, 2024, ninety-six years after release: a reminder that copyright terms, like canon status, run on long clocks.

Three lessons carry forward. First, commercial origination is no bar to canonization: the cel was a merchandising instrument before it was an artwork, exactly as the CryptoPunk was a free giveaway before MoMA accessioned eight of them. Second, legitimation is manufactured by identifiable actors — Stieglitz, Courvoisier, Levy, Wehle — not conferred by consensus; the digital era's equivalents (patron-collectors, specialist curators, fair platforms) appear in Section 7. Third, the interval between 'obviously not art' and 'obviously art' is shrinking across media: roughly seventy years for photography's first museum embrace, ten for animation's, and — as Sections 4, 5, and 7 document — four for blockchain-native work (Figure 2).

3.3 The recycled indictment

It is worth pausing on how precisely the argumentative script repeats, because the repetition is itself evidence that we are watching a media transition rather than a fad. Against photography: the machine makes it, so there is no author; anyone can do it, so there is no skill; it copies infinitely, so there is no original; it is sold as commerce, so it is not art. Against animation: it is industrial piecework, made by teams for money, exhibited in cinemas rather than salons. Against digital and blockchain-native art, 2021–26: the computer (or the model) makes it; anyone can right-click and save it, so owning it is a delusion; it was minted to be flipped, so it is a security, not a picture. Each indictment identifies a real property of the new medium and misreads it as disqualifying. Each was answered not by argument but by practice: photographers developed the print connoisseurship that made 'original' meaningful; animators' cels acquired scarcity the moment the studio stopped washing them; and digital artists answered the infinite-copy objection with the receipt infrastructure of Section 6 — which is why the objection quietly vanished from serious criticism after 2021 and survives mainly as internet folklore. The pattern suggests a rule: when the objections to a new medium are structural rather than aesthetic — about how it is made, copied, and sold rather than about whether particular works are any good — the objections are a stage of absorption, not a verdict.

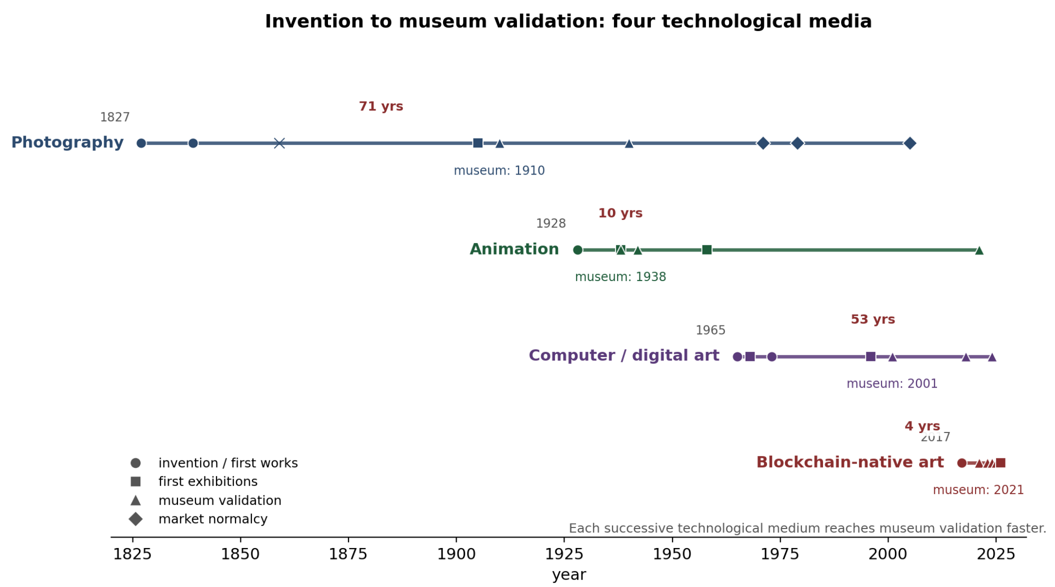


Figure 2. Invention to museum validation across four media. Photography: 1839 daguerreotype to 1910 Albright exhibition (~71 years). Animation: 1928 Steamboat Willie to the Met's 1938 cel accession (~10 years). Computer art: the 1965 Stuttgart/Howard Wise shows to the Whitney's 2018 Programmed survey (~53 years to comprehensive canonization; first institutional platforms earlier). Blockchain-native art: 2017 CryptoPunks to ICA Miami's 2021 accession (~4 years). Sources: refs. [1–18, 37–43].

4. Digital art before the blockchain, 1965–2016

The deepest error in the popular account of digital art is the belief that it began in 2021. The medium is sixty years old, and its institutional history recapitulates photography's with striking fidelity — including the initial commercial failure. In February 1965 Georg Nees exhibited plotter drawings at the Technische Hochschule Stuttgart, in a program instigated by the philosopher Max Bense — the first public exhibition of computer-generated art. Two months later Bell Labs researchers A. Michael Noll and Béla Julesz showed *Computer-Generated Pictures* at the Howard Wise Gallery in New York: the first American gallery show of the medium, of which not a single work sold [14]. (Photography's 1859 reviews and the Wise Gallery's 1965 sales ledger deliver the same message: the art world's first answer to a new medium is no.)

Institutional curiosity nonetheless came quickly. In 1968 Jasia Reichardt's *Cybernetic Serendipity* at the ICA London gave computational art its first blockbuster survey, touring to the Corcoran and the Exploratorium, while MoMA's *The Machine as Seen at the End of the Mechanical Age* placed machine art inside the modernist genealogy [15][16]. A generative tradition consolidated around figures like Vera Molnár and Frieder Nake — whose 1965 *Hommage à Paul Klee* is now in the V&A — and Harold Cohen, who from 1973 built AARON, the first sustained art-making AI program, exhibited at documenta 6 (1977), SFMOMA (1979), and the Tate (1983) [17]. The 1990s added the network: net.art circulated entirely outside object markets, and Rhizome, founded in 1996 and resident at the New Museum since 2003, built the ArtBase archive that made born-digital work collectible in the archival if not yet the commercial sense [18]. The Whitney opened its artport commissioning portal in 2001 under curator Christiane Paul — a museum department for internet art in all but name.

By the 2010s the canonization machinery was running at full speed, before any token touched any artwork: the Whitney's *Programmed: Rules, Codes, and Choreographies in Art, 1965–2018* (2018) wrote the sixty-year genealogy into a single survey; the Whitney gave Cohen's AARON a retrospective in 2024; and Tate Modern's *Electric Dreams* (2024–25) canonized the pre-internet technological avant-garde [17][18]. This matters for the thesis because it inverts the causality assumed by skeptics: museums did not stumble into digital art chasing NFT money; they had spent five decades building the intellectual scaffolding onto which blockchain-native work was then rapidly bolted. What the medium lacked, for all sixty years, was not artists, institutions, or critics. It was a market — because an infinitely copyable file defeated every mechanism (scarcity, provenance, resale) on which art markets run. Editioning conventions borrowed from photography helped at the margins; video art found collectors through certificates. But the general problem — how do you own a file? — remained open until 2017. That is the gap the NFT filled, and the reason the following section treats the token cycle as the market's arrival rather than the medium's birth.

The nearest precedent for the missing-market problem, and for its partial solutions, is video art. Nam June Paik's generation faced the same paradox — a medium of infinitely duplicable signals — and the market's answer was contractual scarcity: limited editions attested by signed certificates, with the certificate, not the tape, functioning as the object of ownership. Collectors and museums accepted this convention for half a century, which should embarrass anyone who finds tokenized ownership conceptually absurd: a certificate of authenticity is an off-chain NFT with worse record-keeping. What editions and certificates could not do was scale — every transaction still required galleries, registrars, and trust — or carry conditions forward through resale. The blockchain receipt is best understood as the video-art certificate industrialized: scarcity by contract, made self-enforcing, machine-readable, and liquid. That continuity, rather than any crypto ideology, explains why curators of digital art adopted the instrument almost immediately while remaining indifferent or hostile to the coin markets around it.

5. The NFT cycle: boom, wash, contraction — and what survived

5.1 The shape of the cycle

The numbers first, with their methodological warning labels. NFT trackers disagree because they filter differently: CryptoSlam attempts to exclude wash trades; DappRadar publishes both raw and 'organic' series; NonFungible.com tracked a narrower universe. Cited by source: total NFT trading rose from $82 million in 2020 (NonFungible) to a 2021 peak of $15.7–25.1 billion depending on tracker (CryptoSlam $15.7B; DappRadar organic $25.1B; NonFungible $17.6B, a 21,000 percent annual increase) [20][21][22]. The 2022 headline figure of $57.2 billion (DappRadar unfiltered) collapses on inspection to $24.7 billion organic — a discrepancy explained almost entirely by wash trading on token-incentive marketplaces [22][23]. Volumes then fell for three consecutive years: $8.7 billion (2023), $8.8 billion (2024), and $5.6 billion in 2025, when the average sale price fell to $96 and more than 1.34 billion tokens changed hands — a market of vast unit volume and vanishing unit value [21][24]. By late 2025 and early 2026 monthly sales ran at roughly $300–320 million, total NFT market capitalization stood near $2.6 billion against a $16.8 billion April 2022 peak, and NFT Paris — the scene's flagship European event — canceled its February 2026 edition, its organizers writing that 'the market collapse hit us hard' [25].

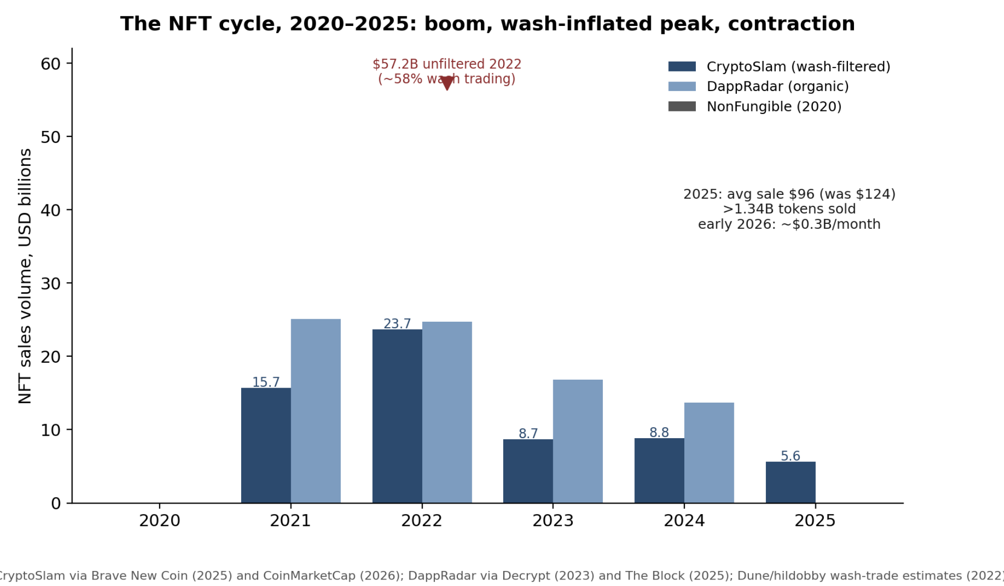


Figure 3. The NFT cycle, 2020–2025. Yearly sales volume by tracker. The unfiltered 2022 peak of $57.2B (DappRadar) roughly halves once wash trading is removed; Dune Analytics estimated ~58% of 2022 Ethereum NFT volume was wash trading, peaking above 80% in January 2022. Sources: refs. [20–25, 29–31].

5.2 How much of the boom was real?

Less than half, at the peak — and the honest answer strengthens rather than weakens the historical argument, because it shrinks the anomaly that needs explaining. The Dune Analytics dashboard maintained by the analyst hildobby, using four conservative filters (self-trades, back-and-forth trades, rapid repurchases, common funding wallets), estimated that 58 percent of 2022 Ethereum NFT volume was wash trading, exceeding 80 percent in January 2022, with incentive-token marketplaces LooksRare and X2Y2 at 98 and 87 percent respectively [29]. Chainalysis documented hundreds of self-financed wallets churning tokens for token rewards [30]; academic work by von Wachter and colleagues, using stricter graph criteria on the 52 largest collections, established a lower bound of $149.5 million of inflated volume even before the incentive-marketplace era [31]; and a 2023 dappGambl study found more than 95 percent of roughly 73,000 collections had become essentially worthless. The art segment proper was always a modest fraction of the total: DappRadar puts art-NFT trading at $2.9 billion in 2021 — against more than $20 billion of collectible and profile-picture volume — falling to $197 million in 2024 and $23.8 million in the first quarter of 2025, with active art traders down 96 percent from the 2022 peak (Figure 4) [27].

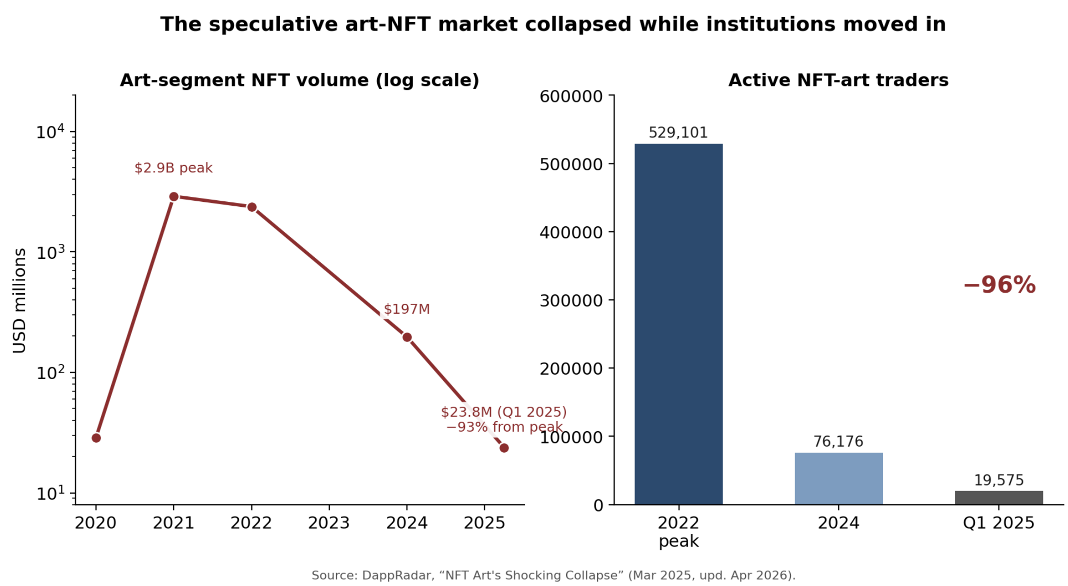


Figure 4. The art segment specifically. Art-NFT trading volume (left, log scale) fell 93% from the 2021 peak; active art-NFT traders (right) fell 96% from the 2022 peak. Source: DappRadar [27].

5.3 Landmarks and aftermath

The boom's landmark sales read today as a table of extremes. Beeple's *Everydays: The First 5000 Days* made $69.3 million at Christie's in March 2021 — then the third-highest auction price for a living artist, after Koons and Hockney, for an artist without a prior gallery sale [20]. Pak's *The Merge* grossed $91.8 million from 28,900 buyers that December. CryptoPunk #5822 sold for $23.7 million in February 2022 and was quietly resold in 2024 into a floor near $59,000; the Punks floor overall fell from ~125 ETH (August 2021) to ~27 ETH (late 2025) [32]. Generative art followed the same curve at smaller scale: Tyler Hobbs's Fidenza series, minted at about $400 in June 2021, saw its floor touch roughly $900,000 that August and stand near $38,000 in August 2026 [35]. Five years on, the buyer of the Beeple, Vignesh Sundaresan, told CNN he had 'made my peace' with writing off his NFT purchases while insisting the work itself would be 'the last thing I would consider selling' [36] — the speculator's ledger and the collector's conviction cohabiting in one portfolio, which is as concise a summary of the era as exists.

Yet inside the wreckage, selective strength: Dmitri Cherniak's *The Goose* brought $6.2 million at Sotheby's in June 2023 — *above* its 2021 purchase price, in the depth of the bear market — in the liquidation sales of Three Arrows Capital [35]. Marketplace infrastructure consolidated rather than vanished: OpenSea, relaunched as OS2 in February 2025 after the SEC dropped its investigation, held more than two-thirds of Ethereum-ecosystem volume by late 2025 on more than $1.4 billion of annual trading, while the wash-trading venues that manufactured the 2022 peak (LooksRare, X2Y2) died with their token incentives [25]. And the surviving demand changed character: analysts describe a 'K-shaped' market in which tokenized Pokémon-card marketplaces clear more than $1 billion annualized, brand and ticketing uses grow, and a Rarible executive summarizes the consensus — 'we're moving past pure speculation into real utility and community-driven projects' [24][25].

5.4 The precedented bust

Read against Section 3, the cycle loses its strangeness. Photography's first gallery economy — the Pictorialist print market Stieglitz built — collapsed too; 291 closed in 1917, *Camera Work* folded the same year, and photography's speculative revival waited five decades. The 1965 Wise show sold nothing. Disney cels sold as $5 merchandise for thirty years before becoming six-figure collectibles. In every prior case the market event and the canonical event ran on different clocks, and the crash of the former predicted nothing about the latter. What distinguishes the NFT cycle is only amplitude and speed — a financialized, globally liquid, 24/7 market compressed photography's half-century of speculative churn into thirty-six months. The question the crash cannot answer — did the institutions keep coming? — is the subject of Section 7. First, however, the instrument itself deserves scrutiny, because the case for the medium runs through an honest account of what the token actually does.

5.5 The generative core

If the movement has an aesthetic center of gravity so far, it is long-form generative art — the practice, descending directly from Molnár and Nake, in which the artist authors an algorithm and the collector mints one output from the space of its possible results. The Art Blocks platform (2020) gave the form its institutional frame, and Hobbs's *Fidenza*, Cherniak's *Ringers*, and Calderon's *Chromie Squiggles* its early canon. The form matters to the thesis for three reasons. First, it is the segment where the sixty-year genealogy is unbroken: the artists cite the plotter generation, the curators (the Whitney's Christiane Paul above all) frame them together, and Zero 10's Basel edition hung Molnár beside DEAFBEEF as one field. Second, it is the segment whose prices, though savaged, decoupled least from artistic reputation — *The Goose* clearing $6.2 million above its bull-market cost in the trough of 2023, MoMA selecting Squiggles rather than celebrity ephemera for its 2025 accession. Third, it is the segment that could not exist off-chain: a work whose medium is 'script plus seed, output fixed at mint' is native to the receipt in a way no JPEG is, because the token does not point at the work — it parameterizes it. When later sections argue that the medium survived its market, generative practice is the concrete referent.

6. The receipt thesis: what a token certifies, and what it cannot

6.1 Mechanics

Technically, an NFT is an entry in a smart contract implementing a token standard — ERC-721 (finalized June 2018), which assigns each token a unique identifier and an optional metadata pointer (tokenURI), or ERC-1155 (2019), which adds editions [28]. Three properties follow. Issuance is attributable: a token minted from an artist's verified contract address carries its origin cryptographically, which for born-digital work makes the mint itself the provenance event. Custody is auditable: every transfer is timestamped on a public ledger, producing — for the first time in art history — a complete, self-updating, forgery-resistant chain of custody. And conditions are programmable: royalties, burns, and unlock conditions can be attached in code. These are exactly the three functions — attribution, custody, condition — that catalogues raisonnés, gallery archives, and authentication committees exist to perform, performed badly and expensively by institutions and cheaply if narrowly by a ledger. Hence the receipt thesis: the NFT's durable contribution is infrastructural. It solved — for born-digital objects — the ownership problem that had kept a sixty-year-old medium marketless (Section 4). That the receipt was then itself traded as a speculative asset says something about 2021's liquidity conditions, and nothing about the instrument.

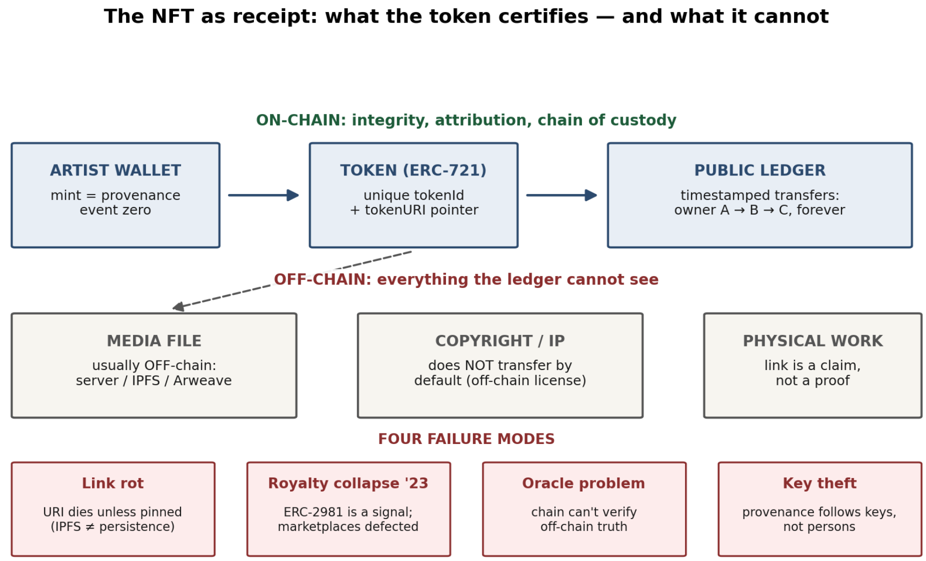


Figure 5. The NFT as receipt. On-chain (top): attribution, custody, programmability. Off-chain (middle): media files, copyright, and physical objects — everything the ledger cannot see. Bottom: the four principal failure modes. Sources: refs. [28, 33, 34, 39–42].

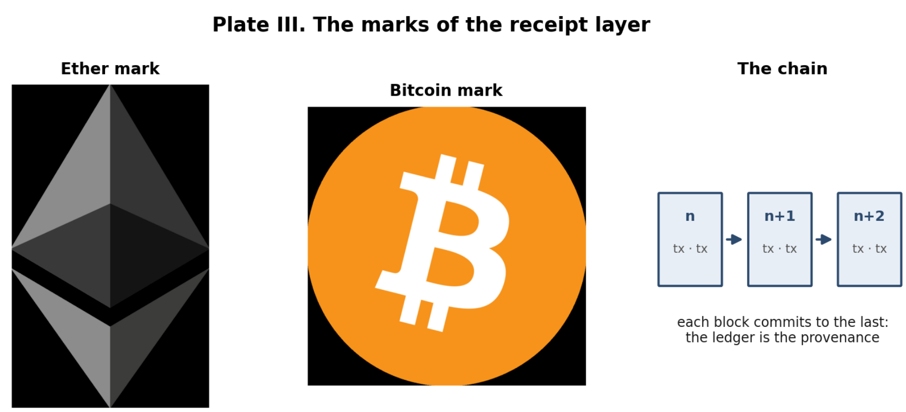


Plate III. The receipt layer's iconography: the Ether mark (the chain on which ERC-721 lives), the Bitcoin mark (the first public ledger), and the structure both share — each block cryptographically committing to its predecessor, which is what makes the custody chain of Figure 5 self-verifying.

6.2 Four failure modes

Link rot. Most tokens do not contain their artwork; they point at it. Media typically lives on ordinary web servers or on IPFS, whose content addressing guarantees integrity (the file cannot be silently swapped) but not persistence (someone must keep pinning it) [39]. Within weeks of the 2021 boom, researchers were documenting high-value tokens whose images had already vanished. Permanent-storage systems (Arweave) and fully on-chain works (Autoglyphs, Art Blocks scripts stored in-contract) answer the objection, but only for the minority of works built that way.

The royalty collapse. The 2021 promise most cited by artists — automatic resale royalties — was never enforced at the protocol layer. ERC-2981 merely declares a royalty; honoring it was marketplace policy, and under competitive pressure from Blur, OpenSea made royalties effectively optional in February 2023 and abandoned enforcement that August: sector-wide creator royalty earnings fell from roughly $76 million a week at the April 2022 peak to under $4 million by mid-2023 [40]. The episode is the cleanest demonstration that the token's guarantees end where off-chain incentives begin — and, notably, the resale-royalty right that crypto briefly delivered and lost is one physical artists in most of the world never had at all.

The oracle problem. A ledger can verify only what happens on the ledger. It cannot verify that the wallet minting a work belongs to the artist, that a token 'attached' to a painting corresponds to that painting, or that any off-chain claim fed into it is true — the oracle problem of the blockchain literature [41]. Garbage in, garbage forever: immutability preserves lies as faithfully as truths. This confines strong provenance guarantees to born-on-chain work and makes hybrid physical-digital registration (Section 8) a socio-technical problem, not a cryptographic one.

Keys, not persons; tokens, not copyrights. Provenance follows private keys: a phished wallet transfers 'ownership' as validly as a sale, as Seth Green learned when his Bored Ape — and with it, he believed, the commercial license underpinning a television project — was stolen and ransomed back for roughly $300,000 [42]. And the token conveys, by default, no copyright whatsoever; whatever rights attach come from ordinary off-chain licenses. The courts have begun mapping this boundary: a New York jury found the MetaBirkins NFTs infringed Hermès's trademarks ($133,000, February 2023), and Miramax's suit over Tarantino's *Pulp Fiction* NFTs settled confidentially, leaving the underlying rights question open [34].

6.3 The relevant baseline is broken

Skeptics measure these failures against an imagined gold standard of traditional provenance. The actual baseline: the Knoedler gallery — founded 1846, older than the Met — sold roughly forty forged 'Rothkos' and 'Pollocks' for some $80 million between 1994 and 2008 on the strength of an invented anonymous-collector provenance narrative [33]. The Andy Warhol Foundation dissolved its authentication board in 2011–12 after spending, by its president's account, some $10 million defending authentication opinions in court; the Basquiat and Haring committees followed within a year [34]. Traditional provenance is a chain of unverifiable human attestations, maintained at ruinous legal cost, that failed catastrophically within living memory at the top of the market. Against that baseline, a public ledger that renders one class of claims — issuance and custody of born-digital works — cheap, instant, and effectively unforgeable is not a gimmick. It is the first genuine innovation in provenance infrastructure since the catalogue raisonné, offered to a market in which, per Deloitte's surveys, 80 percent of wealth managers name authenticity and provenance as the sector's central obstacle and 92 percent of next-generation collectors expect technology to address it [49].

6.4 Born on chain

The failure modes also explain, with some precision, *which* blockchain-native works the institutions took first. Autoglyphs store their generating code and output entirely in the contract; Art Blocks works store script and seed on chain; CryptoPunks' image data was eventually committed to the chain retroactively. For this class the four failure modes above nearly vanish: there is no link to rot, no oracle to consult, no off-chain object whose correspondence must be attested — the ledger entry *is* the work's complete causal history. It is no accident that the Pompidou took a Punk and an Autoglyph, that MoMA took Punks and Squiggles, and that conservation departments have been notably more comfortable with fully on-chain works than with pointer-style tokens: museums, whose institutional core competence is precisely custody-plus-attribution over centuries, recognized the difference between a receipt for an object and an object made of receipt. The distinction gives the receipt thesis its refined form: NFTs are provenance infrastructure for digital art generally, and something stronger — medium — for the on-chain subset that the canon is so far selecting.

7. The institutional turn, 2021–2026

7.1 Museums: from experiment to permanent collection

The museum record is best read as a table (Table 2), but its shape deserves narration. The sequence begins during the boom — ICA Miami's accession of CryptoPunk #5293 in July 2021, the first NFT into a major museum collection [37] — but the decisive entries come after the crash, which is precisely what the precedented-bust argument predicts. The Buffalo AKG (the Albright's successor institution, closing a loop with 1910) acquired tokenized editions of all sixteen works from its *Peer to Peer* exhibition in December 2022 [38]. In February 2023 the Centre Pompidou acquired eighteen NFTs by thirteen artists — CryptoPunk #110 and an Autoglyph among works by Rafaël Rozendaal, Agnieszka Kurant, and Fred Forest — its director framing the acquisition as continuous with the museum's 'support for artists in their conquest of new means of expression, which is the foundation of modern art' [39]; the same month LACMA received twenty-two blockchain works from the pseudonymous collector Cozomo de' Medici [40]. MoMA acquired Refik Anadol's *Unsupervised* in October 2023 after its lobby run drew crowds for a year [41], then in December 2025 added eight CryptoPunks and eight Chromie Squiggles to the permanent collection through a coordinated donor group — the moment one curator of the field called the sign that 'the crypto art movement has arrived in the canon of art history at an institutional level' [43]. The Toledo Museum of Art went further than accepting gifts: in November 2024 it *purchased* Yatreda's *Abyssinian Queen* in stablecoin — the first cryptocurrency acquisition by a major American museum [42]. Curatorial infrastructure hardened in parallel: the Guggenheim's first curator of art and technology (2023), the Whitney's AARON retrospective (2024), Tate Modern's *Electric Dreams* (2024–25).

Date	Institution	Event	Mode
Jul 2021	ICA Miami	CryptoPunk #5293 accessioned	Trustee gift
Dec 2022	Buffalo AKG	16 tokenized works from Peer to Peer	Artist gifts
Feb 2023	Centre Pompidou	18 NFTs by 13 artists (Punk #110, Autoglyph...)	Gifts + purchases
Feb 2023	LACMA	22 blockchain works (2017-2022)	Collector gift
Mar 2023	Guggenheim	First curator of art & technology	Hire
Oct 2023	MoMA	Anadol, Unsupervised; Cheng, 3FACE	Patron gifts

Date	Institution	Event	Mode
Nov 2024	Toledo Museum	Yatreda, Abyssinian Queen - paid in USDC	Purchase
2024-25	Whitney / Tate	AARON retrospective; Electric Dreams	Exhibitions
Dec 2025	MoMA	8 CryptoPunks + 8 Chromie Squiggles	Donor group
2025-26	Art Basel	Zero 10: Miami Beach, Hong Kong, Basel	Fair platform

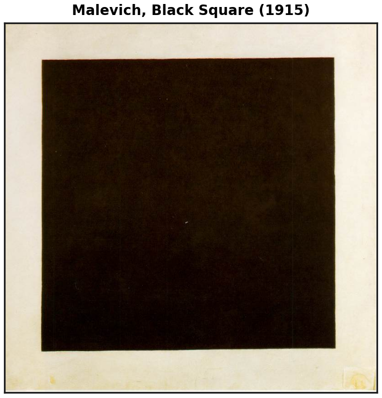
Table 2. The institutional turn, 2021–2026. Sources: refs. [37–45].

7.2 The market's most conservative institution moves

Museums can afford experiments; art fairs cannot. Art Basel's launch of Zero 10 — announced November 2025, named for Malevich's 1915 '0,10' exhibition, debuted at Miami Beach that December with twelve exhibitors spanning digitally native platforms (Art Blocks, Fellowship, Beeple Studios) and blue-chip galleries (Pace, bitforms), with OpenSea as official partner and UBS as global lead partner — is therefore the single most telling datum in this paper [44]. Art Basel's CEO Noah Horowitz: 'Digital art is no longer at the margins — it is integral to how art and the market are evolving in real time.' The expansion tempo removed any suspicion of a one-off: Hong Kong in March 2026 (Sougwen Chung's biometric calligraphy; BottoDAO as a formal exhibitor), then the Swiss flagship in June 2026, co-curated by Trevor Paglen, at twenty exhibitors the largest edition yet, folding Hauser & Wirth, Marian Goodman, and Sprüth Magers into a program that ran from Vera Molnár's 1990 plotter work to DEAFBEEF — deliberately staging the sixty-year genealogy of Section 4 as one continuous field [45]. Paglen's framing — 'most of the art you've been looking at for the last 20 years is digital art' — states the absorption thesis from inside the establishment. Even the critical reception confirms the pattern: The Art Newspaper's complaint that Zero 10 had 'outgrown the digital community that led to its inception' is, word for word, the complaint Pictorialists made when photography outgrew the Photo-Secession [45].

Plate IV. Zero 10's namesake

Malevich, Black Square (1915)



'0,10' installation view, Petrograd, 1915

Plate IV. The name is a thesis: Art Basel called its digital platform Zero 10 after '0,10: The Last Futurist Exhibition' (Petrograd, 1915), where Malevich hung Black Square across a corner — the spot reserved for icons — to declare a new medium's arrival inside an old hanging convention.

7.3 The collectors

Beneath institutions, demand. The Art Basel & UBS Survey of Global Collecting 2025 (3,100 high-net-worth collectors, ten markets) found 51 percent had bought a digital artwork — the largest year-on-year uplift of any medium in both participation and spending — with digital art at 14 percent of fine-art expenditure, third behind painting and sculpture, and above-average shares in France (26%) and Japan (18%) [47]. Generation Z collectors allocate the highest share of wealth to art of any cohort (26 percent) and lead digital participation; women, who outspent men on art by 46 percent in 2024, allocate more of their budgets to digital work than men do [47]. The overall market context makes these shares consequential: global art sales returned to growth in 2025 at $59.6 billion [46], so digital art's 14 percent is a claim on a growing pool — and the survey population is the traditional market's own customer base, not a crypto cohort measured separately (Figure 6). Meanwhile Christie's closure of its dedicated digital-art department in September 2025 [26], often cited as the counter-datum, reads differently against this backdrop: the house explicitly folded digital art into its main twentieth- and twenty-first-century sales — which is not expulsion but mainstreaming, the same administrative absorption photography underwent when it ceased to need a separate advocacy apparatus. Departments are scaffolding; the scaffolding comes down when the wall stands.

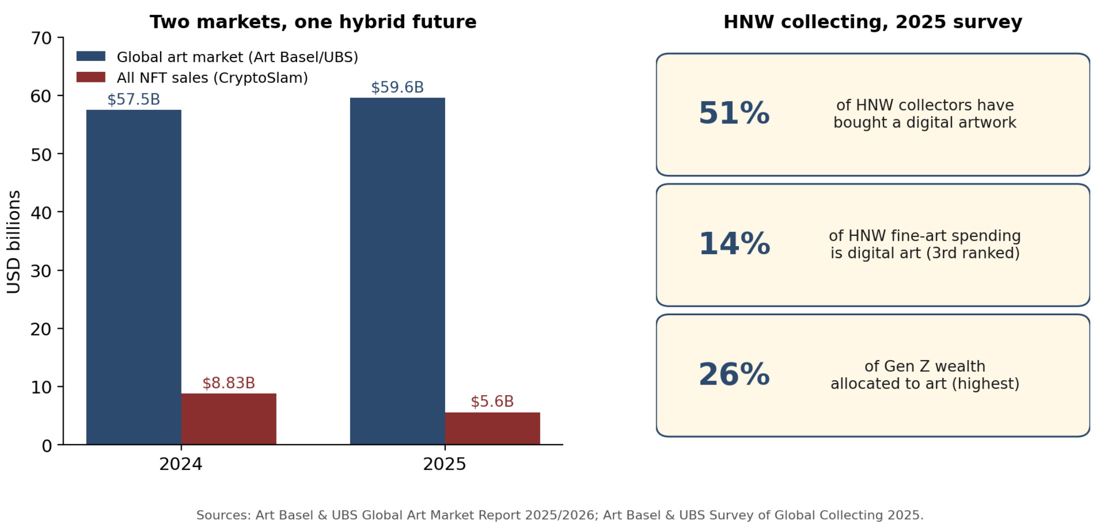


Figure 6. The hybrid market. Left: the traditional market returned to growth in 2025 ($59.6B) while total NFT volume kept contracting. Right: yet a majority of HNW collectors now buy digital art, which ranks third in fine-art spending. Sources: Art Basel & UBS [46][47]; CryptoSlam [21][24].

7.4 The actors

Section 3 argued that legitimation is manufactured by identifiable actors, and the digital turn has its full cast. The Stieglitz role — practitioner-advocate building institutions — is distributed: Christiane Paul at the Whitney, who spent twenty-five years constructing the curatorial scaffolding (artport, *Programmed*, the AARON retrospective) onto which the field snapped; Eli Scheinman, Zero 10's curator, carrying the digitally native scene into the fair system. The Courvoisier role — dealer converting industrial product into gallery object — belongs to the platforms (Art Blocks, Fellowship, bitforms) that Zero 10 elevated to fair-exhibitor status. The Julien Levy role — intermediary placing works into museums — is played by the patron-collectors: Cozomo de' Medici at LACMA, Ryan Zurrer's 1OF1 behind MoMA's Anadol and Punks, SquiggleDAO and the Calderons behind the Squiggles, Yuga Labs' systematic museum-donation program behind ICA Miami and the Pompidou. That the acquisitions are largely donation-driven is sometimes cited as a weakness — museums accepting free tokens rather than spending. The 1938 Met cel was also a gift, engineered by a dealer with inventory to legitimate; the Albright's 1910 purchases were organized by the movement's own impresario. Donation is how contested media enter museums; purchase (Toledo, 2024, and the Pompidou's part-purchases) is how the entry is ratified. Both are now on the record.

8. Scenarios: the hybrid art world

8.1 The demographic escrow

The strongest structural tailwind is generational. Cerulli Associates' estimates of the American wealth transfer — $84 trillion through 2045 in the 2022 analysis, revised to $124 trillion through 2048 in late 2024 — imply that the customer base of the traditional art market will be substantially replaced within two decades by cohorts for whom digital objects have always carried value [48]. Deloitte's Art & Finance series projects nearly a trillion dollars of art and collectibles changing hands over the next decade and reports wealth managers doubling their art-service offerings since 2011 [49]. Nothing guarantees that inheriting millennials and Gen Z collectors will buy tokenized art; but the 2025 collecting survey already shows Gen Z with the highest art-wealth allocation and the strongest digital participation of any cohort [47], and the one demographic claim the thesis requires is weak: only that digitally native collectors will not treat digital media as categorically non-art. The burden of the opposite claim — that the first generations raised on screens will restore the pre-digital hierarchy of media — seems considerably heavier.

A piece of arithmetic sharpens the point, and resolves the apparent paradox of Sections 5 and 7 — collapsing NFT volume beside majority HNW participation. Fourteen percent of high-net-worth fine-art spending, applied to a $59.6 billion market in which HNW demand dominates the upper tiers, implies annual digital-art demand in the billions of dollars — the same order of magnitude as the *entire* remaining NFT market and vastly larger than the $24 million per quarter still flowing through public art-NFT marketplaces [24][27][46][47]. The two data sets are not in tension; they describe a migration. Digital-art demand did not evaporate after 2022 — it left the open token venues and re-entered through galleries, fairs, advisors, and private sales, the channels the traditional market has always used and the surveys measure. This is what absorption looks like from the demand side: the medium's buyers stopped being a separate population with separate venues and became a preference expressed inside the ordinary market. The 2021 anomaly was never the demand; it was the venue.

8.2 Provenance rails for physical art

The receipt is migrating upmarket, from digital works to the provenance of physical ones. Art Basel's parent MCH launched Arcual in 2022 with the Luma Foundation and BCG — blockchain certificates of authenticity, artist-royalty smart contracts, and since 2023 a 'Digital Dossier' carrying an artwork's full documentary history; Artory and Verisart sell adjacent registry services [50]. Adoption is early and disclosure thin — no public gallery-adoption figures exist as of mid-2026 — and Section 6's oracle problem sets the ceiling: a ledger can carry a painting's history, but binding record to canvas remains a human attestation. The plausible end state is accordingly modest and large at once: blockchain registries as the art world's quiet back-office standard — title, condition, exhibition history, royalties — doing for provenance what barcodes did for retail, invisible precisely because ubiquitous. The demand side is documented: authenticity and provenance are the sector's most-cited obstacle among wealth managers (80 percent), and next-generation collectors overwhelmingly expect technology to solve it [49].

8.3 The AI complication

Generative AI simultaneously supplies digital art's next artistic frontier and its next legitimacy war — and the war is running the familiar script at the familiar accelerated tempo. The U.S. Copyright Office has held the line that authorship must be human: the Midjourney images in *Zarya of the Dawn* were excluded from registration (2023); Jason Allen's prize-winning *Théâtre D'opéra Spatial* was refused despite 600-plus prompt iterations, a refusal now in federal litigation; the D.C. Circuit's *Thaler* affirmance (human authorship required; AI assistance permitted) became final when certiorari was denied in March 2026; and the Office's 2025 report concluded that prompting alone 'does not alone provide sufficient control' for authorship [51]. The market, meanwhile, voted early: Christie's first all-AI sale, *Augmented Intelligence*, drew an open protest letter with thousands of signatures calling the models 'mass theft' — and closed in March 2025 at $728,784 with 82 percent of lots sold, a third of bidders new to Christie's, and half its registrants under 45; the top lot was Anadol, and works by Charles Csuri (1966) and Cohen's AARON (1987) sold alongside the new generation, the auction itself staging digital art's genealogy [52]. Anadol's Dataland, billed as the world's first museum of AI arts, opened in Frank Gehry's Grand LA complex in June 2026 [53]. Artists like Sougwen Chung (drawing with a robot trained on her own gesture archive) and Holly Herndon & Mat Dryhurst (consensual training frameworks, a voice offered as a public instrument) are doing what Stieglitz's circle did in 1902: converting a contested technology into a practice with authorship norms. For this paper's thesis the complication is supportive, not corrosive: authorship crises attend every medium-level shift — photography's 'the machine made it' objection, restated for models — and their intensity indexes the shift's depth.

Plate VII. The two test cases of AI authorship

Allen, Théâtre D'opéra Spatial (2022)
registration refused — no human author

Kashtanova, Zarya of the Dawn (2022)
text + arrangement registered; images excluded

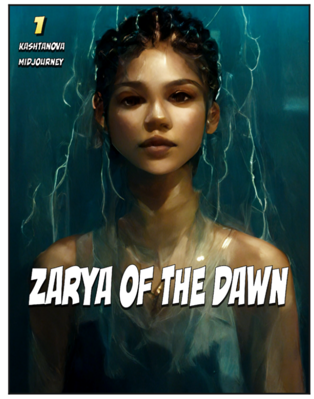


Plate VII. The two test cases — reproducible here precisely because of the rulings they produced. Allen's Théâtre D'opéra Spatial was refused registration outright (no human authorship), leaving the image in the public domain; Kashtanova's Zarya of the Dawn was registered only as to its human-authored text and arrangement, with the Midjourney images excluded. Between them they define the current American doctrine: protection follows the human contribution, and only the human contribution.

8.4 Three scenarios

Absorption (central, ~60%). The trajectory of 2023–26 continues: digital work sells inside general contemporary sales and fairs, blockchain registration becomes back-office plumbing for both digital and physical works, 'NFT' disappears as a category word the way 'daguerreotype' did, and by the 2040s the 2021–25 cycle is remembered as digital art's Pictorialism — the noisy adolescence of a canonical medium. **Bifurcation (~30%).** Institutional embedding continues but the market layer stays crypto-adjacent and volatile; digital art becomes canon while tokenized ownership remains a niche instrument, as artists' resale rights did. **Retreat (~10%).** The institutional turn stalls: museums quietly deaccession, Zero 10 is wound down within five years, HNW digital participation falls back below a quarter, and the episode joins earthworks-scale footnotes. Retreat is the falsifiable branch, and Section 9 states its indicators; the reader should note that every indicator that could have moved toward retreat between 2022 and 2026 — the years of maximum market pain — moved the other way.

9. Conclusion and open questions

The argument of this paper compresses to a sentence: judge the medium by the institutions and the receipt by the infrastructure, and stop judging either by the bubble. Judged that way, digital art in 2026 sits exactly where photography sat around 1910 — first museum purchases secured, dedicated advocacy platforms giving way to general acceptance, a speculative market burned and rebuilding on sounder demand — with one great difference: the clock runs faster. Seventy years from daguerreotype to Albright; fifty-three from the Stuttgart plotters to the Whitney's survey; four from the CryptoPunks to a museum accession; eight to MoMA's permanent collection. If the compression holds, the equivalent of photography's 1940 — the moment the argument ends because the department exists — falls within the 2030s. Art Basel has, in effect, already scheduled it.

The claim is falsifiable, and honesty requires stating what would count against it. Watch five indicators through 2030: (1) museum accessions of blockchain-native work — continued accumulation versus quiet deaccessioning; (2) Zero 10 and successor platforms — expansion versus wind-down; (3) the digital share of HNW fine-art spending — holding above 10 percent versus reverting to low single digits; (4) adoption of blockchain provenance registries by major galleries and estates; (5) the resolution of AI authorship doctrine — a workable human-authorship standard versus a categorical exclusion that strands a generation of practice outside the intellectual-property system. Sustained reversal on three or more would break the thesis; through mid-2026, all five point the same direction.

Open questions remain that this paper has deliberately not settled. Whether the movement's *aesthetic* center of gravity lies in generative systems, AI collaboration, simulation, or forms not yet named is a question for critics, not market data — photography's canon, after all, was made by photographers, not by the 1970s price curve. Whether decentralized royalty enforcement can be rebuilt at the protocol layer, restoring the one artist-economic innovation the market destroyed in 2023, is an open engineering and governance problem. Whether the oracle problem admits institutional solutions robust enough to carry physical-art provenance at scale will determine how far the receipt migrates upmarket. And whether art history will periodize this as one movement or several — the way 'photography' dissolved on close inspection into Pictorialism, straight photography, and their successors — can safely be left to the historians who will, if the argument here is right, be writing that history from inside museums whose digital departments no longer need names.

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Note on data quality: NFT market statistics are methodology-dependent; this paper cites tracker and date for every figure and treats DappRadar organic and CryptoSlam series as bounds rather than point estimates. Claims flagged unverified in the project research notes (research_notes.md) are either hedged or excluded above.

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